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China's emerging Arctic engagements: Should India reconsider its approach towards the polar north?

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ABSTRACT

Climate induced geo-physical transformations occurring in the Arctic are also attributing to geopolitical transformations of the region. Opening up of the Arctic is resulting in a geopolitical race amongst the Arctic and non-Arctic states to dominate emerging economic and strategic opportunities in the region. Transformations in the Arctic assume global links and possess a potential of significantly impacting the Arctic as well as the Asian states. China's assertiveness to become a Polar Great Power has set a course for new Asian perceptions towards the region. In pursuits of its economic, environmental, scientific, social and strategic endeavours, China is making significant inroads in the region to meet its short and long-term objectives. This paper makes an attempt to reconsider India's approach towards the Arctic not by taking China as a benchmark, but rather as a useful backdrop to broaden and deepen India's engagements in the circumpolar north.

KEYWORDS

India's Arctic; China; geopolitics; Arctic; polar regions

Introduction

China's polar engagements in the Arctic dates back with country's signing of the Spitsbergen Treaty in 1925, and recognising Norwegian sovereignty over the Archipelago of Spitsbergen.¹ The treaty granted all signatory states with equal rights to resource exploitation and trade, while granting sovereignty over the archipelago of Spitsbergen (now called Svalbard) to Norway.² Initially, after signing the treaty China did not pay much attention towards the Arctic because of multiple economic, political and technological constraints at home. China's ambitions in the Arctic started growing post 2000 when the country attained strong economic and political power and was seen as an emerging world power in global affairs. China established its first Arctic scientific research station at Ny-Ålesund, on Svalbard in October 2003.³ Ho Jintao, then the President and General Secretary of the Communist Party of China stressed that, "scientific research in the polar areas is a great cause that would benefit both the current generation and the generations to come".⁴ Since the establishment of a scientific research base in the Arctic, China's ambitions in the region did not remain just confined to scientific and climate research. The Arctic's strategic importance remained well rooted in the minds of Chinese policy makers. China initially never declared any of its strategic polar

ambitions in the Arctic, but the seeds for such ambitions kept germinating well under its diplomatic covers of scientific and climate change research. Since 2005, China's polar activities in the Arctic and Antarctic witnessed great leap-style developments. These developments in the polar regions mainly focused on capacity building and polar infrastructure development.⁵ During the same year, for the first time a leading Chinese polar scientist talked in public about China's ambitions of becoming a "polar great power". This notion was further elaborated by another senior Chinese polar official in 2013, when he stressed that China's goal of becoming "polar great power" was the key component of Beijing's maritime strategy.⁶ Finally, an official stamp to these notions was put by CCP's General Secretary Xi Jinping when he used the term "Polar Great Power" first time in his speech in Hobart, Australia in 2014.⁷ The usage of such terminology by CCP General Secretary was a clear indication to the world and domestic political system, that polar affairs have great importance in China's policy spheres and strategic planning. Therefore, in order to fulfil the state's ambition various domestic state agencies in China started collaborating towards country's polar infrastructure development projects. This paper highlights China's emerging engagements in the Arctic in terms of country's scientific research activities and other strategic and economic developments that are being planned and carried out in the region. A further attempt is made to seek a few questions of "why" and "how" India needs to reconsider its approach to a physically distant but ecologically near region in change.

China's Arctic infrastructure

China has maintained a physical presence in the Arctic since 2003 by setting up its first Arctic scientific research base, Yellow River Station on Svalbard Island of Norway. The Yellow River Station is a two-story building with a total floor area of 500 square metres and has the capacity to accommodate 20–25 people.⁸ Chinese scientists at the Yellow River Station are engaged in undertaking scientific research in atmospheric and aurora observations.⁹ The Yellow River station is equipped with a physics observatory, marine laboratory and a dry laboratory for field investigations.¹⁰ In 2012, China in cooperation with Iceland started setting up its second Arctic research station at Karholl, close to the community of Laugar in Reykjadalur, 65 km east of Akureyri. Basically, this scientific research station is an Aurora Observatory which is a joint venture of "Icelandic Centre for Research" and "Polar Research Institute of China". This Aurora Observatory station aims to understand solar-terrestrial interaction and space weather by conducting polar upper atmosphere observations, such as auroras, geomagnetic field variations and other related phenomena.¹¹ This new scientific research base will be an add on to Polar Aurora research that is being conducted at China's Zhongshan Station in the Antarctic and at its Arctic Yellow River station at Svalbard. Apart from these permanent research bases China also sets up temporary ice research stations on Arctic ice floes¹² during its polar voyages of *MV Xue Long*.¹³ This enables Chinese scientists to use these ice floes for establishing temporary scientific bases to carry Arctic strategic science research,¹⁴ while simultaneously avoiding sovereignty issues with the Arctic states in the region. In December 2016 China became successful in establishing its first ground receiving satellite in Kiruna, Sweden.¹⁵ This remote-sensing ground receiving station can collect remote sensing data on climate change, minerals, environment etc. and can provide China with greater freedom and security to operate its space projects, some of which have military

applications too. Further, this ground-receiving facility can be used by Beijing to gather satellite data from anywhere on the Earth at a much higher speed. This will play an important role in China's "Gaofen project" which is a network of observation satellites orbiting the Earth.¹⁶ The Gaofen project will enhance China's global surveillance capabilities throughout the world.¹⁷ China's pace for fulfilling its Arctic ambitions has even crossed traditional hurdles when it comes to meeting the country's scientific and strategic interests. Chinese scientists on the 9th Arctic voyage of *MV Xue Long* deployed an unmanned ice station system for first time in the Arctic.¹⁸ Understanding the variation in sea ice requires continuous observations of sea ice melting in summer, spring and autumn ice melts. As working on Arctic sea ice is complex and full of multiple challenges, such unmanned stations can easily perform unattended observations of multiple fluxes in the ocean, sea ice and atmosphere and can remotely transfer acquired observation data back home. These observation stations enable China to carry out scientific research of a dual nature that has both scientific and strategic implications.

China's continuous logistic support of goods and polar scientists in the Arctic and Antarctic was initially maintained by the country's only operational ice breaker, *MV Xue Long*. *The Xue Long* was initially an ice-strengthened cargo ship purchased from the Ukraine in 1993. After undertaking several refits and modifications, China converted this ice-strengthened cargo ship to its polar research and resupply vessel.¹⁹ The vessel is capable of breaking 1.1 metre of ice at a speed of 1.5 knots.²⁰ In June 2019, China inducted its second, but first domestically built polar research vessel *MV Xue Long 2* in service. *The Xue Long 2* is greatly advanced and far more capable than *MV Xue Long*. It is a polar class 3²¹ icebreaker with a dual directional hull and bow making it capable of breaking ice in either direction of travel.²² The vessel includes complex scientific infrastructures on board which includes dry and wet laboratories, a large Aft working deck equipped with cranes and winches, a moon pool with a scientific hangar for deploying scientific instruments, large forward cargo hold, heavy crane and cargo fuel tanks for undertaking resupply missions to scientific research stations. Apart from this, *MV Xue Long 2* is equipped with a hangar and landing platform for two helicopters.²³ *MV Xue Long 2* has enhanced China's research and operational capabilities in the polar regions and such a mobile platform in the Arctic will further enable China to carry deep seabed research in the region without any territorial issues from the Arctic littoral states. Arctic deep sea research will enhance China's knowledge with mineral resource exploration, mapping of Arctic sea bed for submarine transits and other such domains. This will have significant implications for Arctic and non-Arctic states involved in the region.

China's polar administrative organisations

The Chinese Communist Party (CCP) considers the polar regions under the areas of their marine domains. Since 1964, all matters related to polar affairs (scientific research to strategic affairs) were administrated by State Oceanic Administration (SOA) of China, which from 2008 itself was under the direct supervision of Ministry of Land and Natural Resources of China.²⁴ But from March 2018 SAO along with the Ministry of Land and Resources, the State Bureau of Surveying and Mapping and some other organisations were made defunct and all responsibilities of these organisations came directly under the newly formed Ministry of Natural Resource of the People Republic of China

(MNRPRC).²⁵ As per Article 3 of the functional allocation internal organisation and staffing requirements of the MNRPRC, it is the ministry's responsibility to implement policies and decision-making arrangements of the Party's Central Committee and adhere to strengthen the party's centralised and unified leadership over the work related to natural resources. Since CCP is a sole dominating authority over Chinese society and an organisation responsible for the state's decision making on behalf of its citizen, therefore CCP's role in polar affairs is of no difference. CCP members hold the most senior bureaucratic positions in almost every administrative organisations of China, and this same tradition has also been maintained in polar administration.²⁶ CCP party secretaries in each government agency hold an equivalent authority as an administrative head of that organisation and in China's polar agencies it is the CCP secretaries that are in charge of polar strategic, personnel and finance matters. Under the new administrative setup, China's Arctic and Antarctic Administration (CAA) and Polar Research Institute of China (PRIC), the two primary organisations responsible for polar affairs, have now become "directly affiliated institutions" of MNRPRC.²⁷

China's Arctic and Antarctic administration

China's Arctic and Antarctic administration is divided into eight divisions ([Figure 1](#)). The General Affairs Division of CAA is basically responsible for undertaking various internal administrative duties, promoting scientific work of China's polar expeditions and managing various polar activities. CAA's Policy and Planning Office undertakes strategic planning and studies on Chinese polar policies. It works on the formulation and implementation of China's polar strategic goals. The division also works on formulating various polar related laws and supervises strict implementation of those laws.²⁸ The Operation and Finance Division within CAA coordinates on the financing and procurement activities of the country's Arctic and Antarctic expeditions. The division undertakes all the work related to manning and supervision of construction at various projects in the Chinese polar stations. Apart from this, operation and finance division is also responsible for the safety and emergency response management of polar expeditions and maintains a comprehensive record of Chinese polar activities. The Science Programs Division at CAA is responsible for China's Polar Scientific Information Management System and continuously observes alterations in the polar environment. It guides and coordinates all the polar scientific research projects and activities undertaken on its Arctic and Antarctic bases. China's international cooperation with other international players on polar affairs is maintained by the International Cooperation Division of CAA. This division conducts studies on international polar conventions, treaties and policies and imparts knowledge to Chinese polar expeditioners on the polar environment management system. It also administers China's polar representative offices abroad and seeks international information on polar research.²⁹

Formulation of various strategies of human resource management, i.e. from recruitment, personnel's postings, deployments, payment of their wages, to assessment, training, rewards, punishments, etc. is the responsibility of the Personnel Office division of CAA. This division conducts political examination of personnel who need to be sent abroad on state's polar assignments. Recruitment and selection of foreign institutions and personnel for fulfilling China's scientific and strategic interests in the polar regions is taken care

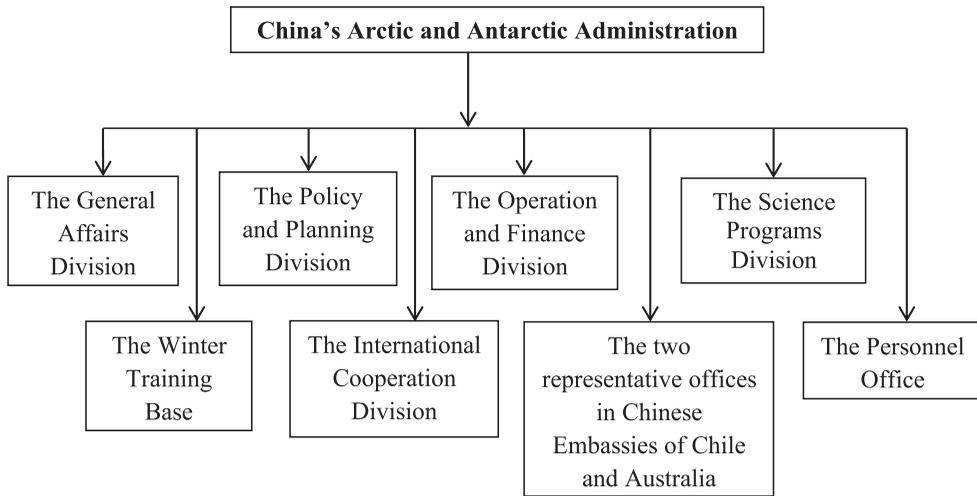


Figure 1. Organisational structure of China's Arctic and Antarctic administration.

of by this office. This division also maintains complete records, archives and information of its personnel employed at home and abroad.³⁰ CAA has also maintained one winter training base which is located inside the Yabuli Ski Resort, in Shangzhi City of Heilongjiang Province in Northeast China. Yabuli Ski Resort is at an altitude of 1374 metres with an average winter temperature of about -25°C which reaches to lowest at -33°C in winters. This makes it a perfect place for Chinese polar expeditioners to carry out their training programmes prior to undertaking a polar expedition as the natural environment of the base resembles the weather conditions of the polar regions.³¹ This winter base is also used for training Chinese military personnel and Special Forces for conducting operations in extreme conditions.³² Lastly, CAA also coordinates with two of its representative offices in the Chinese Embassies of Chile and Australia. These representative offices help in facilitating China's Antarctic polar expeditions that sets for country's Antarctic bases, by providing them with the required supplies and materials needed. Through both of these offices China coordinates with various Antarctic agencies of Chile and Australia to promote international research and cooperation amongst its polar scientists.

Polar Research Institute of China

The second important Chinese organisation that is responsible for conducting China's polar affairs is the Polar Research Institute of China (PRIC). PRIC was established in 1989 and is currently the only scientific research and security centre dedicated to polar explorations in China. PRIC is responsible for China's scientific research and logistic support for its polar expeditions in the Arctic and Antarctic. It coordinates with the day to day working of Chinese polar stations at the Arctic and Antarctic. All the scientific and research expeditions of China's icebreakers, are directed and coordinated by PRIC.³³ Located in Shanghai, the working of PRIC is divided into various departments and laboratories so that each of these departments can work effectively and efficiently on the

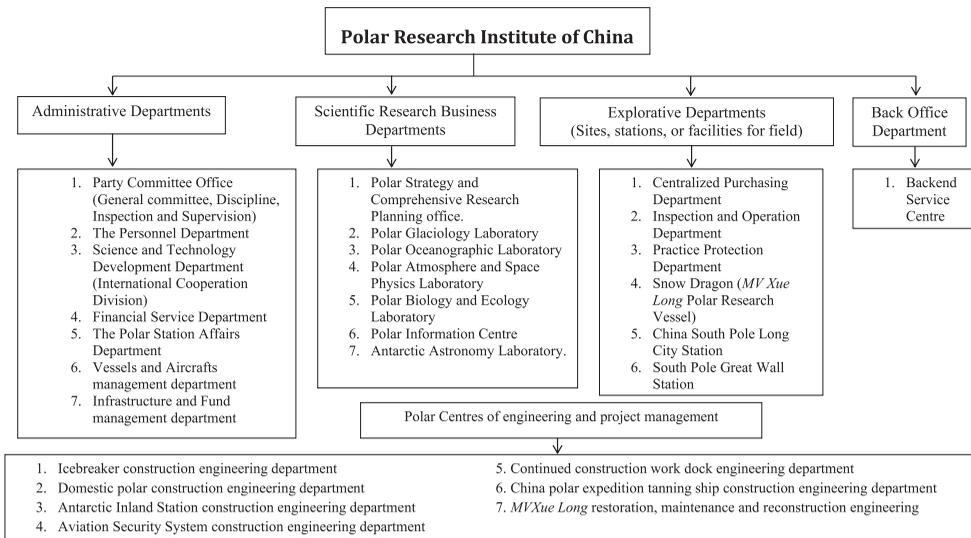


Figure 2. Organisational structure of Polar Research Institute of China. [Information Generation Source: <http://www.pric.org.cn/detail/sub.aspx?c=31>].

designated task. Though they work independently on science, management, research, logistics, construction and engineering, but their coordination among each other makes PRIC one of the most comprehensive units of China's overall conduct of polar affairs (Figure 2). The division of polar strategic studies within PRIC analyse polar conditions and conduct research on strategic issues such as polar politics, economy, science and technology and security studies. It is responsible for providing advice to the Chinese government on strategic decision-making related to the polar regions.³⁴ PRIC is also responsible for construction and management of China's polar science databases, polar information networks, polar archives, polar library and for providing public welfare services.³⁵ The institute publishes Chinese and English journals on polar research, the access to some of which remains restricted to the general public. The research published in these journals is just circulated to some selected group of experts working in that particular polar domain. PRIC has been also associated with various Chinese universities and international academic institutions involved in polar scientific and strategic research. It attracts young doctorate students of Chinese universities undertaking polar research to pursue and complete their doctorate degrees under the supervision of the experts working at PRIC. The China-Nordic Research Centre (CNARC) established in the year 2013 in Shanghai, is an example of PRIC's such international associations in polar research.

China's Arctic involvements

China has been active in the Arctic since the signing of the Spitsbergen treaty. In its engagements with the Arctic, the country has maintained its same traditional approach of great-leap-forward style developments. China's interests in the Arctic are multidimensional in nature and cover wider prospects for its overall development. Therefore, in order to cater all its national priorities in the region China has been making inroads in the Arctic through multiple gateways.

Scientific research

China does not have any direct coast linkages with the Arctic, but it calls itself a “Near-Arctic State” being one of the continental states near the Arctic Circle.³⁶ China is concerned by the rapid climate changes occurring in the Arctic as this is directly linked to its weather and climate system. Any changes to the Arctic ice has direct consequences to the weather pattern in China that has a potential of impacting Chinese agriculture, which can ultimately effect the country’s economic interests and food security. Continuous retreat into the Arctic sea ice can significantly affect China’s continental and ocean environment. As per *Dr. Huigen Yang*, the director of Polar Research Institute of China;

The Chinese public has understood the linkage between the unprecedented sea-ice retreat in the Arctic Ocean in September 2007 and the heavy snow disasters that happened in southern China in January of 2008. Many Chinese have also realized that if all Arctic and Antarctic ice sheets melt, the consequent sea level rise would affect China’s coastline and the most populated and prosperous regions such as Guangzhou, Shanghai and Tianjin would be totally under water.³⁷

Therefore, taking note of all these changes occurring in the Arctic and analysing their future impact to Chinese interests, the country’s polar scientists are giving due importance to scientific research in the Arctic. Till date China has sent nine expeditions of its polar research vessel *MV Xue Long* to the Arctic.³⁸ These research expeditions’ focused on studying Arctic ice sheets, marine biology, geology, meteorology and aspects of chemistry such as ocean acidification and non-biodegradable pollutants at sea.³⁹ China’s pursuits of technological advances in the Arctic’s scientific research attained new heights on its 9th Arctic expedition, when Chinese scientists for the first time successfully installed unmanned ice station systems in the region.⁴⁰ These unmanned ice stations are considered to be effective add-on’s to China’s Arctic scientific research as these can provide uninterrupted observation data back home in absence of any manhandled research station or expedition vessel. Multiple Arctic voyages have led to advances in China’s scientific research in the polar north and has simultaneously enhanced China’s operational and navigation techniques in the region. It has enabled Chinese ice navigators and polar scientists with practical information, knowledge and complications while operating through different shipping routes of the region. China is also collaborating with Nordic countries in scientific research through bilateral and multilateral cooperation.

Arctic resources

The opening up of the Arctic is paving way for abundance of natural resources present in the region. The Arctic is estimated to hold potentially 90 billion barrels of oil, 1670 trillion cubic feet of natural gas, and 44 billion barrels of technically recoverable natural gas liquids in region’s 25 geologically defined areas. All these resources accounts for an estimated 22% of the total world’s undiscovered, but technically recoverable resources.⁴¹ Apart from these petroleum reserves, the Arctic holds vast concentrations of minerals like iron, gold, nickel, lead, platinum and various other rare earth elements such as titanium, cobalt, copper, manganese etc. that form an essential component of modern technology. These rare earth elements find their applications in manufacturing of smartphones, electric/hybrid cars, solar panels, wind turbines, watches, hi-tech electronic gadgets and advanced

weaponry. China's hunger and assertiveness for all these resources is increasing and Beijing wants to dominate all these strategically important elements of the polar north. Advancement in technology and the rapid growth of Chinese industry since 1990 has made it the world's largest importer of raw materials.⁴² In order to meet its industrial raw material needs at home, China wants to maintain a strong foothold in these resource rich areas. China is pursuing these interests in the Arctic through its State-Owned Enterprises (SOEs), by investing billions of dollars on various resource extraction projects in Nordic countries that hold sovereignty over such Arctic resources. Huge investment projects of these Chinese SOEs are on the one hand securing China's current and future demands of raw materials, on the other hand, are paving way for infrastructure development in these Nordic States. Increasing Chinese involvement in the form of investment projects has brought Nordic States to a conundrum where all these Nordic states are cautious and simultaneously finding it difficult to resist development and economic opportunities. Local Greenland authorities are finding it hard to cope with Danish authorities, on their decision regarding Chinese mining projects and investment in Greenland. Denmark, which still maintains a final say in Greenland's foreign, security and defence matters⁴³ is deeply concerned with increasing Chinese involvement in the island's mining sector whereas, Greenlanders (who are mainly Inuit people) visualises Chinese investment as a positive component to their growing economy that has a potential of providing job opportunities to local population.

China is also investing in various Russian oil and gas projects in the region. Russia, which possesses greater territorial sovereignty over Arctic resources as compared to the other Arctic states, considers its Arctic zone as a strategic resource base and a solution for solving country's social and economic problems.⁴⁴ As Arctic oil and gas exploration projects require huge investment and advanced technological capabilities, Russia finds it difficult to manage these challenges alone and is therefore seeking financial and technological investments in the region. Therefore China, which is economically capable and resource hungry naturally fits well in Russia's Arctic geopolitical equation. China's state owned company, China National Petroleum Corporation (CNPC) in 2013 bought 20% share in Russia's Yamal LNG project dominated by Russian Novatek (50.1%). The other partners in Yamal LNG project include French Total (20%) and China's Silk Road Fund (9.9%).⁴⁵ The success of this venture was witnessed when first Liquefied Natural Gas (LNG) shipment from Russia's Yamal LNG project arrived at China's Jiangsu province.⁴⁶ This LNG transit through the Northern Sea Route significantly reduced shipping distance by half, as compared to traditional routes through the Malacca Strait. As per China's 13th five year plan, China is determined to control greenhouse gases and significantly reduce its carbon emissions by promoting low-to-zero carbon emission technologies and fuels for its domestic consumption.⁴⁷ China by the end of 2020 aims to account for about 15% of its energy consumption coming from non-fossil fuel based energy resources. LNG constitutes an important component in pursuit of these endeavours with its current demand of 209.7 billion cubic metres to an estimated projection of 620 billion cubic metres by 2030.⁴⁸ China's domestic production of LNG will account for only about 50% of its LNG needs, thereby leaving it dependent on imports to meet further needs. Availability of vast LNG reserves in Russian Arctic is enabling China to invest in Russian LNG projects, thereby making Russia as China's top foreign LNG supplier. Once Yamal LNG project reaches its full operational limit, it will provide



Figure 3. 'Power of Siberia Gas Pipeline'. Image Source: <https://ig.ft.com/gazprom-pipeline-power-of-siberia/>.

China with an annual supply of 3.5 million tons of LNG.⁴⁹ China and Russia in 2014, struck another big US\$55 billion gas pipeline deal between Russia's energy giant "Gazprom" and China National Petroleum Corporation (CNPC). This gas pipeline also known as the "Power of Siberia" is the largest network of gas transmission from Russia's Irkutsk and Yakutia gas production plants to Russian Far East cities and China. Under this agreement Russia has to supply China with 38 billion cubic metres of natural gas per year for 30 years.⁵⁰ Further, Chinese investments are also visible in the development of Russian offshore oil and gas drilling on the Russian eastern Arctic oil and gas projects in Sakhalin Island. In *Sakhalin-III* oil and gas fields China's "Sinopec" is in joint venture with Russia's "Rosneft". There are also plans to connect already operational Sakhalin gas pipelines (from Sakhalin to Vladivostok) with "Power of Siberia" at the Amur Gas Plant to further enhance gas supplies to China via land route (Figure 3). Since the Arctic continues to remain as a region of immense potential for unexploited natural resources; China will leave no stone unturned to benefit from these resources. Hence China's emerging partnerships with Nordic countries is a clear justification of country's future endeavours in pursuits of its growing energy needs.

Arctic shipping routes

The dramatic climate change taking place in the Arctic is significantly leading to recession in the Arctic sea ice, which ultimately is opening up new shipping routes of the world. If the Arctic sea ice continues to retreat at this current unprecedented rate it is estimated that by 2050 Arctic summers may become completely ice free.^{51 52} There are basically three shipping routes in the Arctic: 1. The North-western Passage, which traverses through the Canadian archipelagos; 2. The Transpolar Route, from the Atlantic to Pacific through North Pole; and 3. The North-eastern Passage or the Northern Sea Route (NSR) from Europe to Asia along the Russian coast (Figure 4).

Ship voyages from Europe to Asia through North-western Passage and the transpolar route are difficult and not currently feasible due to sea ice extent, floating icebergs and

other operational limitations, but ship traffic through NSR along the Russian coast is gaining more prominence. NSR is believed to offer tremendous shipping benefits for goods traversing between Europe and Asia in terms of reduced costs and travel time. It has been estimated that the shipping distance between Rotterdam and Shanghai is 23% shorter than using the traditional Suez and Malacca route.⁵³ This reduction not only reduces travel distance and time between Asian and European markets but also significantly reduces the cost of goods reaching consumer markets and saves significant amounts of shipping fuel. NSR currently remains open for commercial shipping for a limited number of days in summer depending on the sea ice conditions. The shipping voyages through this route are mostly escorted by icebreakers, but the continuous warming in the region is making this route a prospective alternative to traditional shipping routes. Though the economic returns of NSR are higher for Russia in terms of shipping tariffs, port services, tariffs for icebreaker services etc., but NSR's potential for its future energy shipments is well understood by Beijing's policymakers. China's initiative of its Silk Road Economic Belt and its twenty-first-century Maritime Silk Road has been further extended to its polar dimension. An initiative to develop "Polar Silk Road" to enhance connectivity and socio-economic development in the Arctic is a clear justification of the importance of NSR in China's future polar power pursuits.⁵⁴ Energy voyages to China through NSR from Russia and Europe will serve as a significant alternative to its



Figure 4. 'Arctic Shipping Routes'. Image Source: <http://library.arcticportal.org/1498/>.

current heavy oil and gas shipments dependency from the Gulf and Middle-East countries. NSR will also offer a safe route to Chinese energy shipments from non-traditional threats of piracy, which otherwise are active in the Indian Ocean. Strategically, in any war-like scenario with either U.S. or India, NSR could offer an alternative safe passage to any kind of naval blockade imposed on Chinese goods and energy shipments flowing through the Indian Ocean.

Strategic interests

Apart from numerous economic opportunities that the rapidly changing Arctic is bringing, its strategic implications cannot be ruled out. In case of any direct military confrontation between the United States and China, Arctic will offer the shortest missile trajectory routes for Chinese and the U.S. ICBM's to reach each other's mainland. If launched from the North Pole, China's Dongfeng 31 A (long-range missile with an estimated range of 11,200 km), can easily destroy a series of large U.S. cities on the East Coast and New England, such as Ann Arbor, Philadelphia, New York, Boston, Portland, Baltimore and Norfolk.⁵⁵ The rapid modernisation of People Liberation Army-Navy (PLAN) and its ambitious plans of becoming a global maritime power with blue water capabilities also have an Arctic dimension. This notion has been justified by President Xi Jinping himself, when in November 2014 he stated that; "Polar affairs have a unique role in our maritime development strategy, and the process of becoming a polar power is an important component of China's process to become maritime great power."⁵⁶ Arctic ice conditions offer a perfect hiding base for submarines operating in the region. The thick ice sheets makes detection of submarines operating beneath the ice difficult and enable operational success to their missions. In any war-like situation with either the U.S. or Russia, if China successfully deploys any submarine in the Arctic waters with either nuclear or even conventional warheads, it can pose a direct threat to Europe, Russia and United States. China till date has two icebreakers (one domestically built) for its commercial and strategic operational needs. United States currently possesses only one operational ice breaker in service (The Polar Star), which is quite old and suffering from operational limitations and budget cuts.⁵⁷ Recently, Beijing also revealed its future plans for the construction of its first nuclear powered icebreaker, at its own shipyard. This proposed new icebreaker is estimated to be 152 metres long, 30 metres wide and 18 metres deep with a displacement of 30,000 tons. The new icebreaker is expected to be powered with two nuclear reactors on-board with a capability of crushing Arctic ice at a maximum speed of 11.5 knots.⁵⁸

The opening up the Arctic Ocean is also bringing new opportunities in the form of enhancing digital connectivity. The region's opening is seen as a new ground for laying fibre optic cables for high speed internet to connect remote areas of the region with rest of the globe. China's vision of developing "Polar Silk Road" through the Arctic (as highlighted in its Arctic White Paper), clearly envisions the country's ambitions to dominate the new opening region through geopolitics of connectivity. Further, in order to provide digital connectivity to the region, China is seeking inroads to develop "data silk road" through the Arctic to make its dominance further strong in the region.⁵⁹ The Chinese telecom companies along with its Finnish counterparts has been in negotiation for laying underwater fibre-optic cables for high speed internet between Europe and Asia along the Arctic's Northeast Passage. The project is expected to provide fastest data link

between Europe and Asia.^{60 61} This 10,500 km long seabed fibre optic cable (from Japan and China to Kirkenes, Norway and the Kola Peninsula in Russia, and from Norway through Finland to central Europe), will offer much higher digital connectivity through an alternative route and will enhance multiple economic and strategic concerns between Asia and Europe. Building “data silk road” through the Arctic will enhance China’s current data speed connectivity with Europe and serve as a strategic alternative to its current communication channels which passes through the Indian and Pacific Oceans. China’s emerging bilateral relations with all the Nordic countries and Russia in particular, clearly justify the importance of changing Arctic in Beijing’s strategic policy spheres.

India’s Arctic history

A thorough research on the subject shows that India’s connections with the Arctic are pre-historic and the reference to these date back to Vedic literature. The validity to this has been acknowledged by the great Indian legendary scholar, Lokamanya Bal Gangadhar Tilak in 1903 through his scholarly work, “The Arctic Home in the Vedas”. Tilak’s classic work argues that the original home of the Aryans during the pre-glacial period was the North Pole (Arctic), which they left due to an ice deluge around 8000 B.C. They migrated southwards, where some of them travelled towards Europe and the rest travelled towards India in search of better land settlements. Tilak’s book supports his argument by presenting different accounts of Vedic calendars, Avestic passages, Vedic chronology, and various Vedic hymns along with their detailed interpretation.⁶² This scholarly work that has been mostly neglected till date is a priceless account on Vedic history that justifies India’s ancestral connections with the Arctic.

The year 2020 has formally marked the 100th year of India’s engagements with the Arctic. It was in the year 1920 that India as a country under the British overseas dominions became signatory to the Spitsbergen treaty.⁶³ In 2007, India first established its physical foothold in the region by setting up its first Arctic scientific research station “Himadri” at Ny-Ålesund, on Svalbard Island of Norway.⁶⁴ Since the establishment of a permanent Arctic station, India’s endeavours mainly focused on scientific research in climate change and melting of the Arctic sea ice.⁶⁵ Melting Arctic sea ice, liberation of vast amounts of methane gas and the accelerated rate at which global warming is taking place in the Arctic, has direct links to the Indian monsoon system. Scientific evidence suggests that the receding polar ice caps and river runoff will result in sea levels rising and will significantly impact the world’s ocean current circulation systems.⁶⁶ Variation in ocean levels possesses a potential of impacting India’s densely populated coastal cities and islands in the Indian Ocean and Bay of Bengal. India’s Arctic pursuits are mainly coordinated by Ministry of Earth Science through various agencies with National Centre for Polar and Ocean Research (NCPOR) at its epicentre. India’s Arctic research mainly includes atmospheric, biological, marine and earth sciences and glaciological studies.⁶⁷ India got the permanent observer status in the Arctic Council’s 2013 meeting in Kiruna, Sweden. Looking at India’s past experience and potential for research and scientific collaborations in the Arctic, this observer status was reconfigured to India during (7 May 2019) Arctic Council’s ministerial meeting at Rovaniemi, Finland.⁶⁸

India's endeavours in the Arctic

India's engagements in the Arctic are mainly focused on scientific research. These include understandings in atmospheric research, which mainly encompasses investigations into aerosols and precursor gases in relation to their radiative, physical chemical and optical properties. It further studies the effects of space weather on aoral ionosphere. India's Arctic biological research focuses on studying sea ice microbial communities whereas, its marine research involves critical investigation into phytoplankton pigments, nutrients, pH, sea-water salinity and other such ecological parameters. Indian research under Earth Sciences and glaciological observations aims to understand photochemical production of carbon monoxide and its diurnal variability in Arctic snow.⁶⁹ India's priority in the Arctic is mainly focused on studying and mapping the links between Arctic sea ice melting and variation in the Indian monsoon system. Scientific analysis suggests that:

It is not as if average rainfall during the monsoons has changed, it is that there is increased variability in when the rainfall happens and where. This is directly related to heating in the atmosphere. Since a warmer atmosphere can hold more water, it takes more water to make rainfall happen, and when it falls, it is more water in a more concentrated area. When the rainfall happens, heat dissipates. That heat is transported to the Arctic. So after a massive downpour in Uttarakhand, or in Kashmir, within 15 days you will see greater melting in the Arctic. The connection in the other direction – from the Arctic to the Himalayan region – is more complicated, and takes longer, but the study of precipitation and temperatures in the Arctic from June to October tells us how the monsoon will be in the coming year. For example, you may have read about the western disturbance in the newspapers when they talk about the monsoon. This is created by the oscillation in the air as it moves over ice and snow in the Arctic. If there is less oscillation, the air will have less moisture, leading to less rainfall in the monsoons.⁷⁰

-M. Ravichandran, Director of India's National Centre for Polar and Ocean Research

India's other major concern due to melting Arctic sea ice is rising sea levels in the Indian Ocean. India's large coastline with a number of coastal cities and large number of island territories in the Indian Ocean will make the country's coastal population exposed to climate vulnerabilities from the sea. It has been estimated that one third of India's total population live in coastal areas, which in the coming years would be vulnerable to coastal flooding, increased rainfall, cyclones, storms etc.⁷¹ Thus, India's scientific research in the Arctic to study Arctic ice melting and other related domains remains of utmost importance for protecting the country's vital interests in the region.

Reconsidering India's Arctic engagements and a way ahead

Leaving aside environmental challenges, the opening up of the Arctic is bringing a lot of economic opportunities. It is not only the dominant Arctic five, that are looking at exploiting the region's huge economic potential and aims to gain their strategic objectives but also, many non-Arctic Asian states like Singapore, Japan, South Korea are getting involved in the region's emerging geopolitics. India's approach towards the polar north needs to be broadened and deepened in the context of emerging opportunities and challenges of the circumpolar north. Most of the Arctic and non-Arctic states are coming up with their state's official policy drafts on the Arctic, clearly depicting their state's priorities and national interests in the region. Even China that was initially considered to possess

some hidden interest and strategic objectives in the Arctic, in January, 2018 came up with a policy draft outlining its detailed objectives for the region. This official white paper titled “China’s Arctic Policy” released by “State Council Information Office of the People’s Republic of China”, has set a clear mandate for China’s short and long-term goals in the region for its domestic and international audience.⁷²

Till date India does not have any official white paper on its Arctic strategy, apart from one short brief available on the Ministry of External Affairs of India’s website, which mainly testifies India’s scientific approach towards the region.⁷³ Therefore looking at the current emerging geopolitics of the Arctic and the way Asian players are becoming active in the region, the first and foremost priority for India could be to draft its “Arctic Strategy”. This strategy document could depict India’s immediate, medium term and long-term approaches towards various emerging issues in the circumpolar north. India’s engagements in the Arctic need to be projected by highlighting India as a civilian power rather than a military power. This could be achieved by offering India’s strong base of polar scientific research to address issues of climate change, resource exploitation and energy development in cognisance with ecologically sustainable development goals. India could push for its traditional ideology of peace, mutual respect and cooperation in the Arctic on issues of sovereignty, freedom of navigation and territorial claims. The Indian Navy’s “Benign Role”⁷⁴ to address challenges of disaster reliefs, search and rescue, humanitarian assistance, salvage operations, assistance in hydrographical surveys etc. could be used in the Arctic to further justify India’s social commitments towards the region in an exceptional way.

India has a long history of its scientific engagements with the polar regions. India’s pursuits in advanced research in the Arctic carries country’s past experiences from the Antarctic and the Himalayas (which is also called the “Third Pole”⁷⁵). All of India’s scientific endeavours in the Arctic and Antarctic are coordinated by the autonomous institute “National Centre for Polar and Ocean Research (NCPOR)”, under the Ministry of Earth Sciences. This sole institution is responsible for undertaking all of India’s polar research expeditions, providing logistics facilities at India’s scientific bases at the Arctic and Antarctic, sending scientists and facilitating manpower on all such missions, etc. NCPOR maintains close collaboration with the Norwegian Polar Institute, for advanced scientific research in the Arctic.⁷⁶ Norway supports India’s endeavours in Arctic research and India’s only Arctic research station “Himadri” is also located at Ny-Ålesund in the Svalbard archipelago of Norway.⁷⁷ India needs to further maintain and strengthen such bilateral and multilateral relations with all other Scandinavian countries and should broaden its sphere of Arctic research in its scientific and social endeavours. Collaborations in social science research, on a similar pattern to India’s scientific collaborations on polar issues with foreign universities and institutions, can surely enhance India’s influence in the region.

India’s Arctic and Antarctic expeditions are carried by charting out polar ice breaker ships of other countries. It is a right time for India to acquire or construct its own at least one Polar Research Vehicle (PRV) with the most advanced ice breaking facilities for its Arctic and Antarctic missions. This will help India in attaining new heights in scientific research in the polar regions and could make the country’s scientific community self-reliant in broadening India’s national interests in these regions. Acquisition of PRV can enhance the Indian Navy’s operational, technical and navigational range in the polar

regions. There has already been a proposal by NCPOR for either acquiring or constructing India's polar class vessel⁷⁸, but these plans have met with continuous delays due to "cost escalations" involved in contracting to foreign companies. Moreover, the Indian government's plans for construction of such polar class vessel at home under its "Make in India" initiative, rests with the fact that there are very few companies in the world that have got the expertise in construction of such polar vessels. Indian companies neither have such technological capability nor any skill for undertaking such projects.⁷⁹ The current need of the hour is for India to become a real emerging power, it needs to have its own at least one PRV with advanced ice breaking capabilities so as to make the country self-reliant in its polar pursuits.

India is currently the world's second largest importer of coal, third largest importer of oil and fourth largest importer of natural gas. This accounts for 84% of India's oil, 50% of its natural gas and 15% of the country's coal consumption totally dependent on its imports.^{80 81} Looking at India's current growth rate, these projections tend to increase in the coming years. Currently, the majority of India's crude oil demands are met by its energy shipments from the Middle East. The Arctic possesses huge reserves of mineral wealth and energy resources. Analysing India's trajectory of rising demand for energy (especially oil and gas), the Arctic could possibly become a significant alternative for meeting the country's energy needs. Till date ONGC Videsh (a Central Public Sector Enterprise) is the only Government of India's overseas unit responsible for undertaking oil and gas exploration and development projects outside India. ONGC is in collaboration with Russian oil and gas companies on three different projects in the region. These joint projects include Sakhalin-1 oil and gas field in Russia's Far-East, Imperial Energy in the Tomsk region of Western Siberia, and Indian investments in Vankor field, which is located in the north-eastern part of West Siberian Basin.⁸² Such joint cooperation needs to be further enhanced by encouraging more Indian oil companies to venture into partnerships with foreign companies for joint exploration and exploitation of energy projects in the Arctic. This would enhance the required skills and expertise of Indian oil companies in Arctic drilling and could open new avenues for India's future energy needs.

India and Russia shares a long history of their strong bilateral relations. Russia is the biggest stakeholder in Arctic resources and its large coastline along the Northern Sea Route provides it with a greater strategic advantage and strong geopolitical control in regulating shipping through this region.⁸³ Russia also maintains a strong fleet of icebreakers (even nuclear powered) with most advanced technological and icebreaking capabilities in the region.⁸⁴ An option of using Russia's expertise in either construction or direct acquisition of polar vessels for India could well be explored. Also India's collaborations with Russia through investments in development of Russian Arctic oil and gas sector could take this relationship between the two countries to new heights. Such joint energy investment ventures could also be forged with other Arctic states in the region through bilateral and multilateral engagements. India needs to raise its concerns regarding "Arctic Paradox"^{85 86} against the states engaged in region's resources exploitation and should strengthen its call for the sustainable development of such Arctic resources.

India has been granted the permanent observer country status in the Arctic council since 2013 along with other 13 countries. This status was reconfigured to India in 2019 in the Arctic Council's ministerial meeting at Rovaniemi, Finland.⁸⁷ It has been articulated that even after getting permanent observer status in the Arctic council, India's presence

and participation in the core working group meeting of the Arctic councils' remains to be very low as compared to other Asian states, especially China.⁸⁸ India needs to show consistency and permanent presence in all working group meetings of the Arctic council. This can enhance India's active participation in Arctic governance and will project the Indian approach towards different issues within the council. India's active participation in the Arctic councils' core working group meetings can serve as a geopolitical counterbalance to other dominant players within the council. An argument put forward, in support of appointing a "polar ambassador"⁸⁹ to represent India's voice in the Arctic council and facilitate cooperation between Indian authorities and other member states within the Arctic Council demands serious consideration.

Finally, along similar lines on which India is undertaking scientific research in the Arctic, the country also needs to establish a solid base for social science research in the region. This can enable Indian policymakers to look into the region from multiple perspectives. The Arctic needs to be well projected as a crucial component in India's policy perspectives. India provides a huge manpower force of merchant shipping personnel to the shipping industry globally. A pool of skilled manpower could also be trained for navigational and other merchant shipping operations in the polar regions. This can be achieved by creating general awareness about the changing scientific, commercial, environmental and geopolitical scenario of the Arctic and by introducing the topic in schools and university curriculums. Indian researchers need to be motivated to pursue research in polar studies from both the scientific and geopolitical perspectives. Taking note of the emerging shift in the geopolitics of the region, the Indian government could create a pool for social science research grants specifically for researchers pursuing higher social science research in the polar region. Along with India's scientific collaborations, research collaborations in social sciences in partnership among Indian and foreign universities pursuing Arctic research is highly recommended.

Conclusion

Transformations in the Arctic at an unprecedented rate are paving way for environment as well as geopolitical challenges in the region. The Arctic and non-Arctic states are becoming expedient and at the same time are at conundrums with the emerging changes in the region. China's steadily growing engagements with the Arctic and its grand vision of aggressively accessing the region's resources and routes of strategic importance are seen with considerable caution and concern not only by the Arctic, but also by non-Arctic states. In order to fulfil its economic and strategic ambitions, China is making inroads in the Arctic through discourses of connectivity, shorter routes, scientific research and climate change. It is further enhancing its influence by making huge investments in energy, mining and other development projects of Arctic countries. Developments in China's Arctic infrastructure and its collaborations with the Arctic states in scientific and social science research domains clearly depict the Arctic's importance in Chinese policy spheres. Chinese leadership is trying to align the country's current developments in polar research in accordance with the required needs of the changing Arctic. Recently, polar education and knowledge is also being promoted at a young stage in schools and university curriculums of China, along with a strong sense of patriotism. This is inculcated by the fact that whenever any Chinese polar expedition to the Arctic or Antarctic is

planned to set sail or its ship returns back to its home ports after completing a polar voyage, such an event is marked with huge celebrations. Open access at such events is provided to school children and the general public on-boards or on decks of China's polar vessels to arouse sentiments of polar patriotism among its fellow citizens.⁹⁰

Till date India's engagements in the Arctic mostly remains confined to scientific research. The twenty first century Arctic is not only bringing new environmental challenges, but is also opening doors for new economic and strategic opportunities and engagements. India's long expertise in the Antarctic sea ice research and the country's thorough scientific knowledge of the Hindukush Himalayan region could be used in India's pursuits of its Arctic endeavours. Indian policy makers need to set a clear roadmap for the country's Arctic priorities from economic, social, scientific, energy and to some extent from strategic perspectives as well. India's traditional approaches of mutual cooperation, respect of sovereignty and benefitting all mankind, can be used for setting India's roadmap to its Arctic strategy. India needs to enhance its bilateral and multilateral engagements with the Arctic as well as non-Arctic players that share mutual common interests in the region. The proposed initiatives such as Agreement on Reciprocal Logistics Support (ARLS), between India and Russia⁹¹, could truly strengthen cooperation between both the navies on various emerging Arctic issues. Finally, a vision of Asia's collective approach towards transforming the Arctic through a dialogic politics could add a new dimension to region's emerging geopolitics.⁹² In cooperation and collaboration with other Asian observer states in the Arctic Council (such as South Korea, Japan, Singapore and even China), India could explore for new possibilities of playing meaningful role in various initiatives aimed at sustainable Arctic futures.

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Notes

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