



India's Arctic Expedition

This editorial is based on [“India's Arctic Imperative”](#) which was published in The Hindu on 16/04/2024. The article discusses various research stations in the Arctic and emphasises that if the Indian government is interested in benefiting from seabed mining and resource exploitation in the region, it should strongly support sustainable extraction practices.

For Prelims: [Arctic Region](#), [Climate Change](#), [Himadri Research Base](#), [Greenland](#), [Permafrost](#), [Global Warming](#), [Polar bears](#), [National Centre for Polar and Ocean Research \(NCPOR\)](#), [Arctic Amplification](#), [Intergovernmental Panel on Climate Change \(IPCC\)](#), [IndARC](#), **Albedo**, [Polar Jet Streams](#).

For Mains: Significance of the Arctic Region for India, Recent Challenges Related to the Arctic Region, India's Arctic Policy.

In December 2023, when four Indian climate scientists arrived in Oslo to begin acclimatisation for India's maiden winter expedition at the [Arctic](#), they had little idea of what lay ahead. Himadri, India's research station in the International Arctic Research Base at Svalbard in Norway, had until then hosted missions only in the summer. A winter expedition entails living in the intense cold (as low as -15 degrees Celsius) after a period of rigorous acclimatisation. More concerning for Indian researchers was the daunting prospect of polar nights. It has now become necessary for India to tide over these challenges to sustainably harness the potential of Arctic region.

Note:

Arctic Region:

▪ **Location and Geography:**

- The Arctic region is located at the northernmost part of Earth, centered around the North Pole.
- It includes the Arctic Ocean and parts of several countries, including Canada, Russia, the United States, Norway, and Greenland.
- The region experiences extreme cold temperatures, with ice covering much of the area, especially in the winter.

▪ **Climate and Environment:**

- The Arctic is characterized by its cold climate, with temperatures often dropping below freezing.
- The region is covered by ice, including sea ice and ice caps, which play a crucial role in regulating the Earth's climate by reflecting sunlight.
- The Arctic is home to a unique ecosystem, including polar bears, seals, whales, and various species of birds.



What is the Significance of the Arctic Region?

▪ Economic Significance:

- Arctic region has rich deposits of coal, gypsum and diamonds and also substantial reserves of zinc, lead, placer gold and quartz.
 - **Greenland** alone possesses about a quarter of the world's rare earth reserves.
 - The Arctic also contains a wealth of unexplored hydrocarbon resources amounting to 30% of the world's undiscovered natural gas.
- India is the **3rd largest energy-consuming country** in the world, the 3rd-largest **oil importer**. Increasing ice-melt makes these resources more accessible and feasible for extraction.
 - The Arctic can therefore potentially address **India's energy security** needs and

deficiency of strategic and rare earth minerals.

▪ **Geographical Significance:**

- The Arctic helps circulate the world's [ocean currents](#), moving cold and warm water around the globe.
 - Also, Arctic sea ice acts as a huge white reflector at the top of the planet, bouncing some of the sun's rays back into space, helping keep the Earth at an even temperature.

▪ **Geopolitical Significance:**

- The melting Arctic ice is also raising geopolitical temperatures to levels not seen since the Cold War. China referred to trans-Arctic shipping routes as the **Polar Silk Road**, identifying it as a third transportation corridor for the [Belt and Road Initiative \(BRI\)](#), and is the only country, apart from Russia, to be constructing **nuclear ice-breakers**.
 - As a result, it is crucial to counter China's soft power maneuvers in the Arctic, in line India is also taking a keen interest in the Arctic states through its [Arctic policy](#).

▪ **Environmental Significance:**

- The Arctic and the [Himalayas](#), though geographically distant, are interconnected and share similar concerns. The Arctic meltdown is helping the scientific community to better understand the glacial melt in the Himalayas, which has often been referred to as the 'third pole' and has the largest freshwater reserves after the North and South poles.
 - Therefore, the study of the Arctic is critical to Indian scientists. In line, India launched its first scientific expedition to the Arctic Ocean in 2007 and opened the [Himadri research base](#) in the Svalbard archipelago (Norway), and has been actively engaging in research there ever since.

What are the Reasons Behind India's Growing Interest in the Arctic Region?

▪ **Climatic Occurrences Similar to the Arctic Sea Region:**

- For over a decade, India's **National Centre for Polar and Ocean Research** saw no reason for a winter mission to the Arctic. What changed Indian policy, ostensibly, was scientific data showing that the Arctic was warming faster than previously thought. When facts tying catastrophic climatic occurrences in India to the melting of Arctic Sea ice emerged, decision-makers felt compelled to act.

▪ **Prospecting Trade Routes:**

- India is seized of the opening up of Arctic Sea routes, primarily the [Northern Sea](#) Route, and would like to route Indian trade through the region. This might help India reduce costs for shipping companies along with time, fuel, and security costs for transmitting goods.

▪ **Emerging Geopolitical Threats:**

- China's growing investments in the Arctic have raised concern in India. Russia's decision to grant China expanded access to the Northern Sea Route has deepened this anxiety.
- India's increasing focus on the Arctic comes at a time of heightened tensions in the region, fuelled by the [Russia-Ukraine conflict](#) and exacerbated by the suspension of various regional cooperative forums.
 - There are concerns about the potential repercussions of these tensions, especially given Russia's growing reliance on its nuclear deterrent on the Kola Peninsula. For India, which aims to maintain constructive relations with both western nations and Russia, these developments carry significant strategic implications.

▪ **Consequences for the Himalayas and Indian Monsoon:**

- India is no newcomer to the Arctic. Its involvement in the region goes back to 1920, with the signing of the Svalbard Treaty in Paris. In 2007, India undertook its first research mission to investigate Arctic microbiology, atmospheric sciences, and geology.
- A year later, India became the only developing country, aside from China, to establish an Arctic research base. After being granted 'observer' status by the Arctic Council in 2013, India commissioned a multi-sensor moored observatory in Svalbard in 2014 and an atmospheric laboratory in 2016.
 - The work at these stations focuses on examining Arctic ice systems and glaciers and the consequences of Arctic melt on the Himalayas and the Indian monsoon.

What are the Different Challenges Facing the Arctic Region?

▪ **Policy Divide in India:**

- The issue of Indian engagement in the Arctic divides the country's academic and policy communities. Opinions are split over the potential impacts of the changing climate in the Arctic on India's economy. The concern primarily stems from mining in the region for fossil fuels, an area where India has yet to articulate a clear economic strategy.
 - The proponents of economic exploitation in the Arctic advocate a pragmatic approach in the region, especially around oil and gas exploration, and mining and the skeptics warn about the potential environmental consequences.

▪ **Arctic Amplification:**

- In recent decades, the warming in the Arctic has been much faster than in the rest of the world. The [permafrost](#) in the Arctic is thawing and in turn releasing carbon and methane which are among the major [greenhouse gases](#) responsible for [global warming](#) amplifying the melting of ice, thereby driving the arctic amplification.

▪ **Rising Sea Level Concern:**

- Melting Arctic ice adds to rising sea levels, which in turn increases [coastal erosion](#) and elevates storm surge as warming air and ocean temperatures create more frequent and intense coastal storms like it can significantly impact India which has a 7,516.6 km of coastline and important port cities.
 - According to the [World Meteorological Organisation's](#) report, '[State of Global Climate in 2021](#)', sea level along the Indian coast is rising faster than the global average rate.

▪ **Emerging Race Course:**

- The opening of the shipping routes and possibilities in the arctic is giving thrust to the race of resource extraction leading to the geopolitical poles: US, China and Russia, jockeying for position and influence in this region.

▪ **Threat to Biodiversity:**

- The absence of year-long ice and higher temperatures are making the survival of Arctic animal life, plants and birds difficult. [Polar bears](#) need sea ice to hunt seals as well as to move across the large home ranges.
- Due to shrinking ice, life of polar bears along with other Arctic species are under threat. Also, warming seas have triggered a poleward shift in fish species reshuffling the [food web](#).
 - Tundra is returning to swampy state because sudden storms are ravaging coastlines especially interior Canada and Russia, and [wildfires](#) are damaging permafrost in tundra areas.

What are the Different Steps to be taken with respect to the Arctic Region?

▪ **Collaboration With Norway:**

- Norway, the present chair of the Arctic Council, has close ties with India. Since the late 1980s, the two countries have collaborated to investigate changing conditions in the Arctic and Antarctic, as well as their impact on South Asia.
- As climate change ends up more deeply affecting the Arctic and the South Asian monsoon, these efforts need to be accelerated over time to address both the Himalayan and Arctic region challenges.

▪ **Alignment With Arctic Countries:**

- India's present policy is to cooperate with Arctic countries in **green energy**, and green and clean industries, as a way of bolstering its 'responsible stakeholder' credentials. With Denmark and Finland, for instance, Indian collaboration has come in areas such as **waste management**, pollution control, **renewable energy**, and green technology.

▪ **Following Sustainable Mode of Resource Extraction:**

- While the Indian government seems keen to benefit from **seabed mining** and resource exploitation in the Arctic, it ought to unequivocally back a sustainable mode of extraction.
 - It is believed that a partnership with Norway could be transformational for India as it would enable greater Indian participation in the Arctic Council's working groups, tackling issues such as the blue economy, connectivity, maritime transportation, investment and infrastructure, and responsible resource development.

▪ **Aligning India's Arctic Policy with the Arctic Council's Objectives:**

- A partnership with Nordic Countries is likely to be focused on scientific research and

climate and environmental protection. These are two of the six pillars that comprise India's Arctic Policy (the other four being economic and human development; transportation and connectivity; governance and international cooperation; and national capacity building).

- India would perhaps still look to explore economic opportunities in the Arctic. Arctic Council could, then, help India design a sustainable policy that accommodates the needs of both the scientific community and industry.

▪ **Devising a Nodal Body:**

- Presently, the **National Centre for Polar and Ocean Research (NCPOR)** deals with polar and Southern Ocean realms which includes the Arctic. The Ministry of External Affairs provides the external interface to the Arctic Council.
 - There is a need to devise a single nodal body to explicitly deal with Arctic Research and Development and coordinate all the activities of the Government of India relating to the Arctic

▪ **Moving Beyond Scientific Approach:**

- India needs to go beyond the purely scientific approach in the Arctic. In keeping with its growing stature and consequent say in world affairs, it should be well positioned to understand the dynamics of the Arctic demography and governance, and become the voice of arctic tribes and raising their issues in global forums.

▪ **Adopting a Global Ocean Treaty:**

- It is important to place **global ocean governance** under scrutiny and make progress towards a collaborative global ocean treaty with special attention to polar regions and associated sea level rise challenges.

Conclusion

The Arctic region is a unique and fragile ecosystem that plays a crucial role in regulating the Earth's climate. However, it is facing unprecedented environmental changes due to climate change, including rapid ice melt and rising temperatures. These changes have significant implications for the region's wildlife, indigenous communities, and global climate patterns.

International cooperation and sustainable practices are essential for preserving the Arctic's delicate environment and ensuring its long-term viability.

Drishti Mains Question:

Discuss India's strategic interests, challenges, and potential collaborations in the Arctic region, considering geopolitical shifts and environmental concerns.

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Which of the following statements is/are correct about the deposits of 'methane hydrate'? (2019)

1. Global warming might trigger the release of methane gas from these deposits.
2. Large deposits of 'methane hydrate' are found in Arctic Tundra and under the sea floor.
3. Methane in atmosphere oxidizes to carbon dioxide after a decade or two.

Select the correct answer using the code given below.

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (d)

Mains

Q. How do the melting of the Arctic ice and glaciers of the Antarctic differently affect the weather patterns and human activities on the Earth? Explain. **(2021)**

Q. What are the economic significances of discovery of oil in Arctic Sea and its possible environmental consequences? **(2015)**

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