



Melting of the Arctic

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This article is based on **“When the Arctic warms, it will affect sea levels and precipitation patterns globally”** which was published in The Indian Express on 02/01/2021. It talks about the **melting arctic ice and its global impact.**

In the Arctic region, the effects of global warming can be seen most dramatically, as the area is warming up twice as fast as the worldwide average. The ice cap in the Arctic is shrinking fast, and the volume of Arctic sea ice has declined by as much as 75%.

As the Arctic ice melts into the sea, it brings global challenges in nature. On the flip side, it opens up the **Northern Sea Route (NSR)**, connecting the North Atlantic to the North Pacific through a short polar arc. Various earth observation studies predict that this route could be ice-free in summer by 2050, if not earlier.

However, before fully commercialising the NSR, the global community must assess the critical impact of melting arctic and associated challenges.

Over the top



Impact of Melting Arctic Ice

- **Global Climate:** The Arctic and Antarctic act like the world's refrigerator. Since they are covered in white snow and ice that reflect heat back into space (**Albedo effect**), they balance out other parts of the world that absorb heat.
 - The loss of ice and the warming waters will affect sea levels, salinity levels, and current and precipitation patterns.
 - Further, less ice means less reflected heat, meaning more intense heat waves worldwide.
 - It will also mean more extreme winters, as the polar jet stream—a high-pressure wind that circles the Arctic region—is destabilised by warmer air, it can dip south, bringing the bitter cold with it.
- **Coastal Communities:** Global average sea level has risen by about 7–8 inches since 1900, and it's getting worse.
 - Rising seas endanger coastal cities and small island nations by exacerbating coastal flooding and storm surge.
 - The Greenland ice sheet's glacial melt is a significant predictor of future sea-level rise; if it melts entirely, global sea levels could rise 20 feet.

- **Food Security:** Polar vortexes, increased heat waves, and unpredictability of weather caused by ice loss are already causing significant damage to crops on which global food systems depend.
 - This instability will continue to mean higher prices and a growing crisis for the world's most vulnerable.
- **Permafrost & Global Warming:** Permafrost in the Arctic region (ground that is permanently frozen) stores large amounts of methane, which is a greenhouse gas that contributes to climate change.
 - When it gets melted, that methane is released, which in turn will increase the rate of global warming.
 - As more quickly the arctic ice is lost, more rapidly permafrost will melt. This will result in a **vicious cycle** that may result in a climate catastrophe.
- **Biodiversity Threat:** Melting of the Arctic ice puts the Arctic region's vibrant biodiversity under serious threat.
 - Habitat loss and degradation, the absence of year-long ice and higher temperatures, are making Arctic marine life's survival, plants and birds difficult while encouraging species from lower latitudes to move north.
 - Loss of ice and melting permafrost spells trouble for polar bears, walruses, arctic foxes, snowy owls, reindeer, and many other species.
 - The Tundra is already returning to the swamp; the permafrost is thawing, sudden storms are ravaging coastlines, and wildfires are devastating interior Canada and Russia.

Flip-side & NSR

- The opening of the Arctic, through NSR, presents substantial **commercial and economic opportunities**, particularly in shipping, energy, fisheries and mineral resources.
 - The distance from Rotterdam to Yokohama will be cut by 40% compared to the Suez route.
- Oil and natural gas deposits, estimated to be 22% of the world's new resources, mostly in the Arctic ocean, will be open to access and mineral deposits including 25% of the global reserves of rare earth, buried in Greenland.

Associated Challenges

- **NSR, Not So Environmentally & Economically Viable:** Lack of deep-water ports, a need for ice-breakers, shortage of workers trained for polar conditions, and high insurance costs add to the difficulties of exploiting the resources of the Arctic.
 - Further, mining and deep-sea drilling carry massive costs and environmental risks.

- **The Arctic, Not A Global Common:** Unlike Antarctica, the **Arctic is not a global common**, and there is no overarching treaty that governs it, only the **UN Convention of Law of the Sea (UNCLOS)**.
 - Large parts of it are under the sovereignty of the five littoral states — Russia, Canada, Norway, Denmark (Greenland) and the US — and exploitation of the new resources is well within their rights.
 - Therefore, the **national economic interest may supersede** the global conservation efforts of the Arctic.
- **Great Game Geo-Politics:** Russia, Canada, Norway and Denmark have overlapped claims for extended continental shelves, and the right to sea-bed resources.
 - However, Russia is the dominant power, with the longest Arctic coastline, half the Arctic population, and a full-fledged strategic policy. It claims that the NSR falls within its territorial waters.
 - On the contrary, the US believes the passage lies in international waters.
 - China, playing for economic advantage, has projected the Polar Silk Road as an extension of the BRI, and has invested heavily in ports, energy, undersea infrastructure and mining projects.

Role of India

- **India's Interest:** India's interests in these developments, though distant, are not peripheral.
 - **India's Climate:** India's extensive coastline makes us vulnerable to the impact of Arctic warming on ocean currents, weather patterns, fisheries and most importantly, monsoon.
 - **Monitoring of Third Pole:** **Scientific research in Arctic developments**, in which India has a good record, will contribute to the understanding of climatic changes in the Third Pole — the Himalayas.
 - **Strategic Need:** The strategic implications of an active China in the Arctic, and its growing economic and strategic relationship with Russia are self-evident and need close monitoring.
- **Step To Be Taken:** India has **observer status in the Arctic Council**, which is the predominant inter-governmental forum for cooperation on the Arctic environment and development aspects.

It is high time that India's presence on the Arctic Council should be underpinned by a strategic policy that encompassed economic, environmental, scientific and political aspects.

Conclusion

The Arctic is an essential system in the global climate system. So just like the Amazon forest is the lungs of the world, the Arctic is like our circulation system and feeds into global climate change everywhere.

Therefore, it is in humanity's interest to treat the Arctic melting as a severe global issue and act accordingly.

Drishti Mains Question

The global community must assess the critical impact of melting arctic and associated challenges. Discuss.