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India's Arctic Strategy: Bridging the Gap Between Polar Ambitions, Scientific Capability and Geopolitical Interests

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Recent Developments:

- The **Parliamentary Standing Committee on External Affairs** presented its **Fourteenth Report** titled **"India's Role and Presence in the Arctic and Antarctic Regions"** to the Lok Sabha.
- The Committee assessed India's scientific, diplomatic, strategic and institutional engagement with the polar regions and highlighted a widening gap between India's **Arctic ambitions and operational capabilities**.
- The report contains **29 recommendations across 19 themes**, focusing on polar diplomacy, research infrastructure, Arctic governance, shipping routes, climate security and India's strategic role.
- Key recommendations include appointing a **Polar Ambassador**, pursuing **full membership of the Arctic Council when reviewed**, increasing funding for polar research, and expediting an indigenous **Polar Research Vessel**.
- It also recommended updating the **Arctic Policy, 2022** by adding **"Geopolitics and Strategy"** as a guiding pillar, reflecting the Arctic's growing strategic relevance.

India's Arctic Engagement and Credentials:

Historical and Institutional Foundations:

- India's Arctic engagement traces back to the **1920 Svalbard Treaty**, which grants signatory states certain rights in the Svalbard archipelago under Norwegian sovereignty, including scientific and commercial access.
- India established **Himadri**, its permanent Arctic research station at **Ny-Ålesund (Svalbard)** in **2008**, marking a sustained scientific presence in the region.
- India became an **Observer State in the Arctic Council in 2013**, enabling participation in discussions but without decision-making rights reserved for Arctic States.
- Arctic research is coordinated primarily by the **National Centre for Polar and Ocean Research (NCPOR)** under the Ministry of Earth Sciences, covering climate science, atmospheric studies, glaciology, marine ecosystems and polar biology.
- The **PRITHVI programme**, through its **Polar Science and Cryosphere Research (PACER)** component, supports India's long-term polar research across the Arctic, Antarctic, Himalaya and Southern Ocean.

Arctic Policy, 2022:

- India's **Arctic Policy (2022)** provides a structured framework for engagement, focusing on scientific research, environmental protection, economic cooperation, connectivity, human development and international collaboration.
- The policy reflects India's traditional **science-led and sustainability-oriented approach**, but evolving geopolitics now demands stronger integration of strategic considerations.

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- The Parliamentary Committee therefore recommended explicitly incorporating “**Geopolitics and Strategy**” into the policy to address emerging challenges related to maritime routes, energy competition, critical minerals and infrastructure rivalry.

Why the Arctic Matters to India:

Climate Security and Monsoon Linkages:

- The Arctic is a key component of the **global climate system**, and rapid warming there has far-reaching impacts beyond polar regions.
- Emerging studies suggest possible **Arctic–Indian monsoon linkages**, where changes in sea ice, temperature gradients and atmospheric circulation may influence South Asian weather patterns.
- Since India depends heavily on the **Southwest Monsoon**, Arctic climate variability becomes relevant for agriculture, water security, disaster preparedness and long-term climate planning.
- Enhanced Arctic observation can significantly improve India’s **climate modelling and monsoon forecasting capabilities**.

Sea-Level Rise and Coastal Vulnerability:

- Melting Arctic ice contributes to **global sea-level rise**, posing risks to coastal ecosystems and infrastructure worldwide.
- India’s long coastline and dense coastal population make it vulnerable to **flooding, erosion, displacement and infrastructure damage**.
- Thus, Arctic change must be viewed as part of India’s broader **national climate-security framework**, not just an environmental concern.

Critical Minerals and Energy Security:

- The Arctic holds significant reserves of **critical minerals and hydrocarbons**, though their extraction is constrained by environmental, technological and geopolitical challenges.
- Engagement with Arctic states can help India diversify its **critical mineral supply chains**, essential for renewable energy, electronics, batteries, pharmaceuticals and advanced manufacturing.
- However, such engagement must align with **environmental sustainability, international law and indigenous rights**.

Geopolitical and Maritime Significance:

Great-Power Competition:

- The Arctic is increasingly a zone of **strategic competition** involving Russia, the United States, China and other global actors.
- Russia dominates Arctic geography and infrastructure, while the United States maintains strong strategic interests through Alaska and NATO frameworks.
- China, despite lacking Arctic territory, identifies itself as a “**Near-Arctic State**” and has expanded its scientific, commercial and infrastructural presence.
- India’s balanced relations with **Russia, the United States and Nordic countries** provide a strong diplomatic base for nuanced Arctic engagement.

Arctic Council and India’s Position:

- The **Arctic Council** is the primary intergovernmental forum for Arctic governance, comprising eight Arctic States and several Observer countries.
- India currently holds **Observer status**, limiting its role in decision-making.

- The Parliamentary Committee recommended that India should aim for **full membership when the Council reviews its structure**, while strengthening bilateral ties with Arctic States.
- It also proposed a **quadrilateral platform among India, Japan, South Korea and Singapore** to enhance coordination among Asian Observer countries.

Northern Sea Route (NSR):

- The **Northern Sea Route**, running along Russia's Arctic coast, is becoming increasingly navigable due to declining sea ice.
- It offers a potential **shorter maritime link between Asia and Europe**, reducing dependence on traditional routes like the Suez Canal.
- India and Russia have explored cooperation on NSR development, and the Committee recommended accelerating feasibility studies and cargo expansion.
- However, India must carefully assess **seasonal constraints, insurance costs, ice navigation requirements, environmental risks and geopolitical uncertainties** before large-scale adoption.

Institutional and Capability Gaps:

Need for a Polar Ambassador:

- India currently lacks a dedicated high-level diplomatic mechanism for polar affairs.
- Responsibilities are fragmented across multiple ministries, leading to **coordination challenges and policy diffusion**.
- The Committee recommended appointing a **Polar Ambassador** to ensure unified leadership in Arctic and Antarctic diplomacy.
- This would enable a **whole-of-government approach**, integrating foreign policy, science, defence, shipping, energy and climate strategy.

Absence of a Polar Research Vessel:

- India does not yet possess an indigenous **ice-class Polar Research Vessel**, limiting its operational capacity in Arctic waters.
- Dependence on foreign or chartered vessels restricts **research continuity, flexibility and autonomy**.
- Although the Cabinet approved the project in **2014 (₹1,051 crore estimate)**, implementation has been delayed.
- The Committee urged expedited construction, along with interim leasing arrangements.
- China's **Xuelong icebreaker** demonstrates how early investment in infrastructure accelerates polar capability.

Funding and Human Resources:

- India's Arctic expenditure remains modest at around **₹17.53 crore (2024–25)**, indicating a mismatch between ambition and investment.
- The Committee recommended a **30% increase in funding** for polar programmes and expansion of scientific manpower in NCPOR.
- Additional investment is needed in **satellite systems, climate modelling, logistics, field stations and international collaboration**.

India's Antarctic Dimension:

Strengthening Southern Polar Presence:

- India operates two Antarctic research stations: **Maitri and Bharati**, supporting long-term scientific studies.

- The Committee recommended accelerating **Maitri-II**, as the existing station has outlived its operational lifespan.
- India continues to support Antarctica as a **peaceful, demilitarised and environmentally protected global commons** under the Antarctic Treaty System.
- Antarctic engagement also enhances India's credibility as a **responsible scientific and environmental stakeholder**.

Way Forward:

From Science to Strategic Polar Policy:

- India must evolve from a **purely scientific Arctic presence** to a comprehensive strategy integrating **science, diplomacy, security, trade, climate and resources**.
- A **Polar Ambassador mechanism** should coordinate inter-ministerial efforts and international engagement.
- The **Polar Research Vessel** project must be fast-tracked with interim solutions to avoid capability gaps.
- Arctic funding and manpower should be significantly enhanced, with stronger integration of Arctic data into **monsoon forecasting and climate risk systems**.
- India should deepen cooperation with **Nordic countries, Russia, the United States, Japan, South Korea and Singapore**, while maintaining strategic autonomy.
- A coherent **Indian Arctic narrative** should emphasise science, sustainability, rules-based governance, climate justice and responsible engagement.
- India must also recognise that Arctic governance is primarily shaped by **sovereign Arctic States under international law**, requiring a balanced and realistic approach.

Value Addition for UPSC:

Key Concepts:

- **Arctic Council:** Intergovernmental forum of eight Arctic States with Observer countries like India.
- **Himadri:** India's Arctic research station in Svalbard (2008).
- **Svalbard Treaty (1920):** Grants equal access rights under Norwegian sovereignty.
- **Observer Status:** Allows participation but no voting rights.
- **Northern Sea Route:** Emerging Arctic shipping corridor along Russia.
- **Polar Research Vessel:** Essential ice-class ship for Arctic scientific operations.
- **Quasi-Global Commons:** Concept highlighting Arctic's global environmental significance.

Mains-Ready Conclusion:

India's Arctic engagement is transitioning from a **narrow scientific initiative to a multidimensional strategic necessity**. However, a clear gap persists between ambition and capability. Strengthening institutions, funding, infrastructure and diplomacy will enable India to convert its scientific credibility into **meaningful polar influence grounded in sustainability, strategic autonomy and global cooperation**.