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HIMADRI STATION

(Syllabus: GS Paper 3 - Sci and Tech)



India's first winter of Arctic research: why it matters

ANJALI MARAR
BENGALURU, DECEMBER 18

HIMADRI, INDIA'S Arctic Research Station at Ny-Ålesund in the Norwegian archipelago of Svalbard in the Arctic Ocean, will now remain operational throughout the year. On Monday, India sent off its first winter expedition, comprising four scientists from four different institutions, to Himadri.

Bases in the Arctic

At least 10 countries have set up permanent facilities at the International Arctic Research base in Ny-Ålesund, a small town above the 78th parallel N, about 1,200 km from the North Pole. The Svalbard group of islands is the closest human habitation to the North Pole.

The mean temperature in Ny-Ålesund in February, the coldest month, is minus 14 degree Celsius, and that in July, the warmest, is 5 degree Celsius. Due to the extreme cold, taking scientific observations or sampling has remained largely limited to the summer months. India will join a small group of countries that operate their Arctic research bases through the winter.

Arctic research

The polar regions, Arctic and Antarctica, offer pristine environments for scientists to study a range of natural phenomena for atmospheric, oceanic, biological, geological, glaciological and earth sciences research. In recent years, climate change research has been attracting scientists to the Arctic region.

The area above the Arctic Circle, north of latitude 66° 34'N, is part of eight countries — Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the US — who make up the Arctic Council, plus the Arctic Ocean.

Scientific research in the Arctic is governed by international legal instruments like the Svalbard Treaty of 1920 and the UN Convention on the Law of the Sea, apart from the individual jurisdictions of the Arctic countries.

Impact of warming

Temperatures in the Arctic region have risen by about 4 degree Celsius on average over the last 100 years. 2023 was the warmest year on record. The extent of Arctic sea ice has been declining at the rate of 13 per cent per decade, according to the Intergovernmental Panel on Climate Change. At this rate, the Arctic could become ice-free in less than 20 years.

The melting sea ice can have global impacts reaching beyond the Arctic region. Rising sea levels can influence atmospheric circulation. An increase in tropical sea surface temperatures could lead to increased precipitation in the tropics, a shift in the Inter Tropical Convergence Zone, and high chances of an increase in extreme rainfall events.

On the other hand, milder weather due to global warming could make the Arctic a more habitable and a less hostile place. There could be a rush to explore and exploit the Arctic's resources, and countries will seek to control trade, navigation and other strategic sectors in the region.

India in the Arctic

India signed the Svalbard Treaty in Paris in 1920. But it took until 2007 for the first Indian expedition comprising five scientists to visit the International Arctic Research facilities at Ny-Ålesund with the purpose of initiating studies in Arctic microbiology, atmospheric sciences, and geology.

India's permanent research station, Himadri, began operations in July 2008. (Dakshin Gangotri in Antarctica was set up much earlier in 1984, two years after India's first expedition there. Dakshin Gangotri is now submerged under ice, but India's two other stations, Maitri and Bharti, are in use.)

Himadri, which is currently manned for about 180 days every year, has so far hosted more than 400 Indian researchers who have made a total of about 200 visits to Svalbard.

The winter expedition by four scientists from the Indian Institute of Tropical Meteorology, Pune; IIT-Mandi, Raman Research Institute, Bengaluru, and National Centre for Polar and Ocean Research, Goa, the nodal agency for India's polar explorations, will last until January 15, 2024. The research areas will include atmospheric sciences, astronomy, astrophysics, and climate studies. Scientists will study lightning over the Arctic in winter, the role of precipitation in climate change, characterisation of radio frequency environment, and the role of aerosols on climate change.

Himadri has been equipped for observations during polar nights (that last longer than 24 hours), and supplied with special winter gear, transport, and logistics support from Norwegian agencies.

Anjali Marar works at the Raman Research Institute, Bengaluru.

EXPLAINED SCIENCE

Context: HIMADRI, INDIA'S Arctic Research Station at Ny-Ålesund in the Norwegian archipelago of Svalbard in the Arctic Ocean, will now remain operational throughout the year.

India and Arctic

- **Svalbard Treaty**: India signed the Svalbard Treaty in Paris in 1920.
- **Indian Expedition to the Arctic**: The first Indian expedition, consisting of five scientists, visited the International Arctic Research Facilities at Ny-Ålesund in 2007.
- **Initiating Arctic Studies**: The purpose of the expedition was to initiate studies in Arctic microbiology, atmospheric sciences, and geology.
- **Establishment of Himadri:** India's permanent research station, Himadri, commenced operations in July 2008.
- **India's Antarctic Presence:** Dakshin Gangotri in Antarctica was established in 1983, two years after India's first expedition. While Dakshin Gangotri is now submerged, India's other Antarctic stations, Maitri and Bharti, remain in use.

Himadri Station

- **About:** It is the designated place for global scientific research in Svalbard, facilitated by Norway.
  - It is a small station with facilities for laboratories and accommodation for eight people.
- **Location:** The Himadri station is situated in the Ny-Alesund region of Svalbard.
- **Gruvebadet Observatory**: India has an atmospheric science facility that houses various atmospheric observation networks.
- The country has initiated new scientific projects in the Canadian High Arctic (Nunavut region) and plans to initiate studies in Greenland soon.

Arctic Research

- **About:** The polar regions, including the Arctic and Antarctica, provide ideal settings for scientific exploration across various disciplines such as atmospheric, oceanic, biological, geological, glaciological, and earth sciences.
- **Recent Focus**: In recent times, the Arctic region has become a focal point for climate change research, attracting scientists from around the globe.

THE HINDU

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TELECOMMUNICATION BILL 2023

Syllabus GS Paper 2 – Polity)



Omnibus Telecom Bill in Lok Sabha, legislation to streamline regulation

The Hindu Bureau
NEW DELHI

The Telecommunications Bill, 2023, introduced in the Lok Sabha on Monday, proposes the first comprehensive rewrite of telecommunications law in 138 years, consolidating spectrum rules, right of way, dispute resolution between service providers and the Department of Telecommunications or local governments, and other aspects of telecom regulation into one fresh statute. The Bill will replace the Telegraph Act, 1885.

The Bill will replace Telegraph Act, 1885. BLOOMBERG

Previous changes have been enabled by other laws and incremental amendments to the Act.

Instead of licensing, the Bill refers only to "authorisations" that will have to be obtained by telecom operators and other providers of telecom services, which have been defined as "transmission ... of any messages, by wire, radio, optical or other electromagnetic systems, whether or not ... subjected to rearrangement, computation or other processes". This wide definition could potentially include within its ambit a range of internet-based communications services.

The law folds in many of the amendments and structures that telecom regulation and administration have accumulated in the decades since the Telegraph Act was passed.

CONTINUED ON ▸ PAGE 14

Context: Recently, the Union minister for Communications, Electronics & Information Technology introduced the Telecommunications Bill, 2023 in the Lok Sabha.

Telecommunications Bill, 2023

- **About**: This Bill, 2023, aims to amend and consolidate laws pertaining to the development, expansion, and operation of telecommunication services and networks, spectrum assignment, and related matters.
- **Replacing Historic Legislation**: The new Bill is designed to replace the outdated Indian Telegraph Act, 1885, the Indian Wireless Telegraphy Act, 1933, and the Telegraph Wires (Unlawful Possession) Act, 1950.
- P**owers to specify standards**: The central government may prescribe standards and assessments for telecom equipment, infrastructure, networks, and services.
- **Right of way:** Facility providers may seek a right of way over public or private property to establish telecom infrastructure. Right of way must be provided on a non-discriminatory and non-exclusive basis to the extent possible.

National Security and Emergency Measures

- The **Bill grants the government authority to take control of telecom** services and intercept messages during times of national security concerns or emergencies.
- It states that in the **event of a public emergency or disaster management,** the Central Government, State Government, or specially authorized officers can take temporary possession of telecommunication services or networks.
- The **Bill provides for mechanisms to prioritize the routing of messages** from authorized users during public emergencies.

Importance of the Telecommunication Sector

- The Bill **emphasizes the significance of the telecommunication sector** as a crucial driver for economic and social development.
- **It underscores the role of telecommunication as the gateway to digital services** and emphasizes the need for a legal framework ensuring safe and secure telecommunication networks for digitally inclusive growth.

PIB

Dec 18

JN.1 VARIANT

(Syllabus: GS Paper 3 – Sci and Tech)

Centre issues advisory to States in view of a recent upsurge in COVID-19 cases and detection of first case of JN.1 variant in India

Context: After **the identification of the JN.1 variant in India**, the Central government issued an advisory to states.

JN.1 Variant of Covid

- **About:** JN.1 is a severely immune-evasive and fast-spreading variant, markedly different from XBB and all other prior versions of this virus.
- **Origin**: The sub-variant JN.1 traces its lineage to the BA.2.86 variant, commonly known as Pirola, rather than being an entirely new variant.
- **Early Detection**: The first instances of the JN.1 variant were identified in the United States in September. Globally, the initial case was detected as early as January in the same year.
- **Genetic Distinction**: While JN.1 shares similarities with Pirola, it only possesses one additional mutation on the spike protein. In contrast, Pirola harbors more than 30 mutations on this crucial protein.
- **Symptoms**: There is no evidence to suggest that JN.1 can cause worse symptoms or spread faster than the variants already in circulation.

Significance of Spike Protein Mutations

- The spike protein mutations in Sars-CoV-2, particularly in Pirola, are of paramount concern to researchers.
- These mutations are vital as they impact the virus's ability to attach to receptors on human cells, facilitating its entry into the host cell.

DTE

Dec 18

NOMA AS A NTD

(Syllabus: GS Paper 3 – Sci and Tech)

What is 'noma', the latest addition to WHO's list of neglected tropical diseases

Context: Recently, the **World Health Organization (WHO) officially added noma,** one of the world's most underrecognized health challenges, to its list of neglected tropical diseases (NTD).

Noma Disease

- **About**: It is a severe and aggressive gangrenous process (a condition wherein body tissues die due to infection or lack of blood supply) that affects the mouth, nose, and lips.
- **Also known as**: Cancrum oris or Gangrenous stomatitis
- Noma usually begins as an ulcer on the mucus membrane at the alveolar margin of the mouth and rapidly spreads into other parts of the mouth, including teeth, jawbone, cheek, tongue, lips, and nose.
    - This eventually results in extensive necrosis and destruction of soft tissues and bones.
- **Symptoms**: Swollen gums, swollen cheek lining, and ulcer formation.
- **Risk Factors**: Poor oral hygiene, malnutrition, weakened immune systems, infections, and extreme poverty.
- **Treatment**: The conditions associated with noma are often life-threatening, if not treated appropriately on time.

Neglected Tropical Diseases (NTDs)

- **About**: NTDs are a diverse group of tropical infections that are common in low-income populations in developing regions of Africa, Asia, and the Americas.
- **Caused by**: Pathogens, such as viruses, bacteria, protozoa, and parasitic worms.
- **13 neglected Tropical Diseases:** ascariasis, Buruli ulcer, Chagas disease, dracunculiasis, hookworm infection, human African trypanosomiasis, leishmaniasis, leprosy, lymphatic filariasis, onchocerciasis, schistosomiasis, trachoma, and trichuriasis.

INTERNATIONAL YEAR OF CAMELIDS

(Syllabus: GS Paper 2 – IR)

Why UN has declared 2024 the International Year Of Camelids

Context: The **United Nations has declared 2024 the International Year Of Camelids**. The decision has been taken to highlight the significant importance of camelids in the lives of people across the world.

Objective of The International Year of Camelids 2024

- **Objective**: To raise awareness about the underexplored potential of camelids.
- **Camelid Sector**: Encouraging increased investment in the camelid sector is a key focus to unlock its benefits.
- **Research and Development:** The initiative advocates for heightened research activities to better understand and harness the capabilities of camelids.
- **Capacity Development Emphasis**: The International Year emphasizes the importance of capacity development in the camelid sector to enhance expertise and skills.
- **Innovative Practices and Technologies**: The campaign supports the adoption of innovative practices and technologies within the camelid industry to maximize its impact.

Importance of Camelids

- **Nutritional Contributions**: Camelids contribute significantly to meeting the United Nations' Sustainable Development Goals by providing a source of milk and meat, aiding in the global fight against hunger.
- **Versatile Fiber Production**: These animals also offer valuable fibers that can be utilized for clothing and shelter, promoting sustainability and resource efficiency.
- **Transportation and Fertilizer**: Beyond sustenance, camelids serve as a means of transportation and supply organic fertilizer for agricultural practices, enhancing livelihoods and ecological practices.
- **Resilience in Harsh Environments**: Camelids' ability to thrive in challenging conditions, such as the highlands of the Andes and arid lands in Africa and Asia, makes them vital contributors to the resilience of local communities.
- **Climate Change Ambassadors**: Given their adaptability, camelids can serve as ambassadors to raise awareness about climate change, especially in regions where their presence significantly impacts the livelihoods of inhabitants.

ECONOMIC TIMES

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ASTRASHAKTI 2023
(Syllabus: GS Paper 3 – Sci and Tech)

Indian Air Force successfully testfires 'SAMAR' air defence missile system at Exercise Astrashakti

Context: Recently, India showcased the potency of the indigenous Akash missile system in the 'Astrashakti 2023' exercise.

Astrashakti 2023

- **Exercise**: The air force exercise takes place at the Suryalanka Air Force Station in Andhra Pradesh.
- **Objective**: To serve as a platform for showcasing the advanced capabilities of indigenous weapon systems.
    - To underscore India's commitment to exporting its domestically developed weapon systems to the global market.
- **SAMAR Demonstration**: SAMAR air defence missile's successful firing trials, known as SAMAR, are demonstrated during the exercise.
- **Akash Weapon System Display**: A single firing unit of the Akash weapon system engages and destroys four unmanned aerial targets simultaneously, demonstrating its capabilities.
- **Firing Level Radar**: FLR is responsible for detecting and tracking the target.
- **Firing Control Centre**: Processes the information related to the engaged targets.
- **Akash Air Force Launcher**: AAFL, equipped with five armed missiles, launches the first two Akash missiles at the initial targets. The same launcher is then assigned for the next two targets.

SAMAR (Surface to Air Missile for Assured Retaliation)

- **About**: Developed by a unit under IAF's Maintenance Command, it is an air defense system.
- The **system features a twin turret launch platform capable** of launching 2 missiles in both single and salvo modes.
- It **possesses the ability to engage aerial threats** using missiles that operate at a speed range of 2 to 2.5 Mach.

THE HINDU

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COMPTROLLER AND AUDITOR GENERAL
(Syllabus: GS Paper 2 – Polity)

Far fewer CAG audits of Centre tabled in Parliament

Jasmin Nihalani
CHENNAI

In 2023, only 18 audits of the Union government, prepared by the Comptroller and Auditor General (CAG), were tabled in Parliament. Audits tabled in Parliament have been decreasing for some years now.

On average, 22 reports were tabled each year between 2019 and 2023, compared with 40 tabled between 2014 and 2018. The number of reports tabled peaked in 2015 at 53, but in four of the past six years, 20 or fewer reports were tabled. The decline coincides with a reduction in staff strength and budget cuts for the CAG. In 2023-24, allocation to the Indian Audit and Accounts Department formed 0.13% of the Union Budget.

Context: In 2023, only 18 audits of the Union government, as prepared by the Comptroller and Auditor General (CAG), were tabled in Parliament, continuing a trend of decreasing audits being presented in Parliament over the past few years.

Comptroller and Auditor General (CAG)

- **About**: CAG holds the status of an independent authority according to the Constitution of India.
- **Role**: The CAG serves as the head of the Indian audit and account department, assuming the crucial responsibility of being the chief guardian of the public purse.
- **Appointment:** CAG is appointed by the President of India by a warrant under his hand and seal.
- **Tenure:** 6 years or up to the age of 65years, whichever is earlier.
- **Removal**: He/She can resign any time from his office by addressing the resignation letter to the president.
    - He/She can also be removed by the president on same grounds and in the same manner as a judge of the Supreme Court.

Duties of CAG

- The **CAG conducts audits on expenditures from the Consolidated Fund of India**, the consolidated fund of each state, and the consolidated fund of each union territory with a Legislative Assembly.
- Auditing extends to the **Contingency Fund of India, the Public Account of India, as well as the contingency fund** and public account of each state.
- **In an advisory capacity, the CAG provides guidance to the President** on the prescribed form in which the accounts of the Centre and states should be maintained.
- **Audit reports related to the accounts of the Centre and state** are **submitted to the President and governor** respectively.

PIB

Dec 17

EGYPT

(Syllabus: GS Paper 1 – Geography)

PM congratulates His Excellency Abdelfattah Elsisi on winning Egyptian Presidential Elections



Context: The Prime Minister of India has congratulated His Excellency Abdelfattah Elsisi on winning Egyptian Presidential Elections.

Egypt

- **Location**: In the northeastern corner of Africa.
- **Bordered by**: Mediterranean Sea to the north, the Gaza Strip of Palestine and Israel to the northeast, the Red Sea to the east, Sudan to the south, and Libya to the west.
- **The Gulf of Aqaba**: Separates Egypt from Jordan and Saudi Arabia.
- **Capital**: Cairo
- **Highest Mountain**: Mount Catherine at 2,642 meters
- **River**: Nile
- **Desert**: Egypt includes parts of the Sahara desert and of the Libyan Desert.

LIVEMINT Page 2

PMMY AND SUPI SCHEMES

(Syllabus: GS Paper 2 – Govt Schemes)

Women major beneficiaries of Mudra, Stand-Up India schemes

MINT



New Delhi: The government's plans to empower women got a major fillip, especially in the rural regions, with women getting a large portion of loans under the Pradhan Mantri Mudra Yojana (PMMY) and Stand-Up India (SUPI). A total of 306.4 million loans under the PMMY, comprising 69% of the total sanctioned loans, were given to women as of 24 November, a finance ministry statement said. Under SUPI, as of 24 November, out of 209,000 loans sanctioned, 84% were sanctioned to women entrepreneurs. RHIK KUNDU

Context: Recently, the **government's initiatives to empower women** received a significant boost, particularly in rural areas, as women secured a substantial portion of loans through the **Pradhan Mantri Mudra Yojana (PMMY) and Stand-Up India (SUPI)**.

Pradhan Mantras Mudra Yojana Scheme

- **About**: Initially, Pradhan Mantri Mudra Yojana (PMMY) offers unsecured loans of up to 10 lakh to small/micro enterprises that are non-corporate and non-farm in nature.
- **Launched**: In 2015
- **Objective**: To encourage young people to become 1st generation entrepreneurs.
- **Eligible Banks for Loan**: Banks, NBFCs, Micro finance Institutions (MFIs) and financial intermediaries as notified by MUDRA Ltd.
- **Loan Instruments**
    - **Shishu**: covers loans up to Rs 50,000/-
    - **Kishor**: covers loans above Rs 50,000/- and upto Rs. 5 lakh
    - **Tarun**: covers loans above Rs 5 lakh and up to Rs 10 lakh

Stand-Up India Scheme

- **Launched**: On 5th April 2016
- **Nodal Ministry**: Ministry of Finance
- **Aim**: To foster entrepreneurship at the grassroots level, emphasizing economic empowerment and the generation of employment opportunities.
- An **extension of this scheme** has been **granted until the year 2025.**
- **Facilitates Bank Loans**: To motivate all bank branches to offer loans. Prospective applicants can apply for the scheme through the following channels:
    - In person at the branch.
    - Via the Stand-Up India Portal
    - Through the Lead District Manager (LDM).

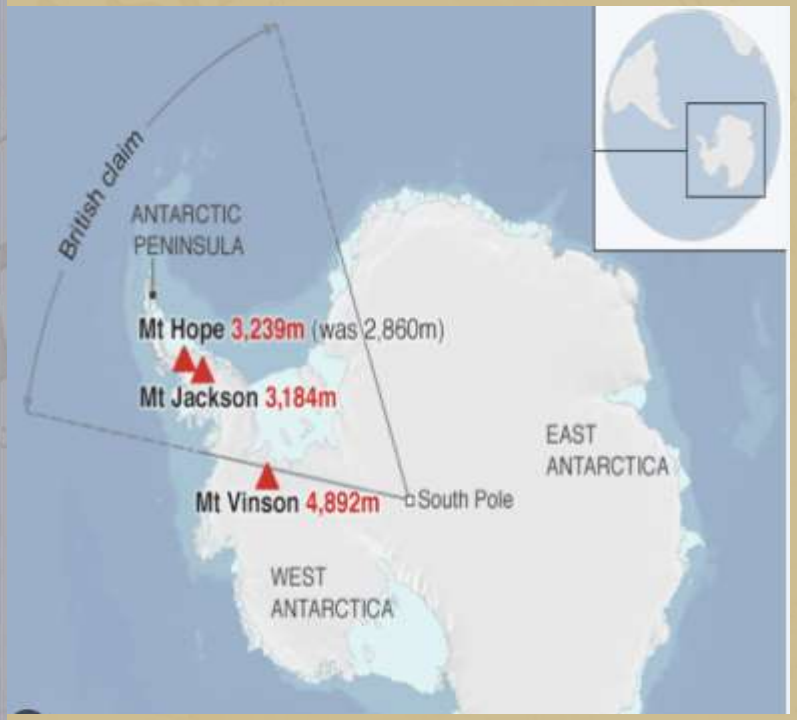
TIMES OF INDIA

Dec 18

MOUNT VINSON

(Syllabus: GS Paper 1 – Geography)

Kerala's Shaikh Hassan Khan now scales Mount Vinson in Antarctica



Context: Recently, **Kerala government employee Shaikh Hassan** Khan has **climbed Mount Vinson**.

Mount Vinson

- **About**: It holds the title of the highest mountain in Antarctica.
- **Altitude**: Rising to an elevation of 4,892 meters (16,050 feet) above sea level.
    - It is part of the Sentinel Range of the Ellsworth Mountains, near the Ronne Ice Shelf.
- **A Cluster of Peaks**: Five other towering peaks, constituting Vinson Massif, share the same region as Mount Vinson, collectively representing the next five highest summits in Antarctica.
- **Distance from the South Pole**: 1,200 Kilometers

Ellsworth Mountains

- **About**: The Ellsworth Mountains encompass the Antarctic mountain ranges.
- **Geographical Dimensions**: Spanning a considerable 360 kilometers (224 miles) in length and 48 kilometers (30 miles) in width, forming a north to south mountainous configuration.

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