DAILY CURRENT AFFAIRS 08-10-2024

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Nearby river contributes to the rise of Mt Everest

Syllabus: GS-1; Geography

Context

- Mount Everest, currently 8,849 metres tall, has over the past 89,000 years, grown about 15 to 50 m higher than expected because a nearby river is eroding rock and soil at its base, helping push it upwards, according to a new study.

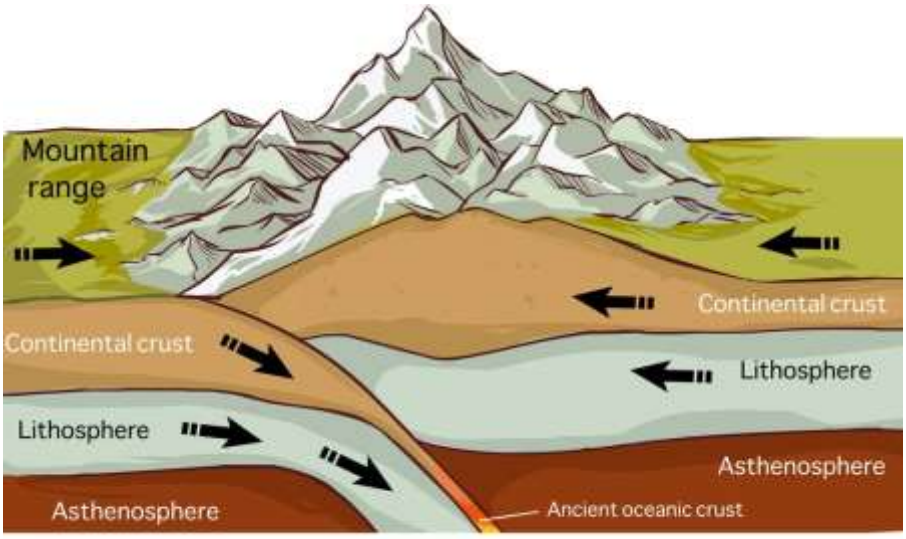
More to know

- The rise of Mount Everest, as part of the Himalayan uplift, is primarily attributed to **tectonic forces** rather than direct contributions from nearby rivers.
- However, rivers do play a significant role in the overall **geomorphology** of the region and contribute indirectly to the height of Mount Everest by influencing erosion processes and sediment deposition.

1. Tectonic Uplift and Mount Everest

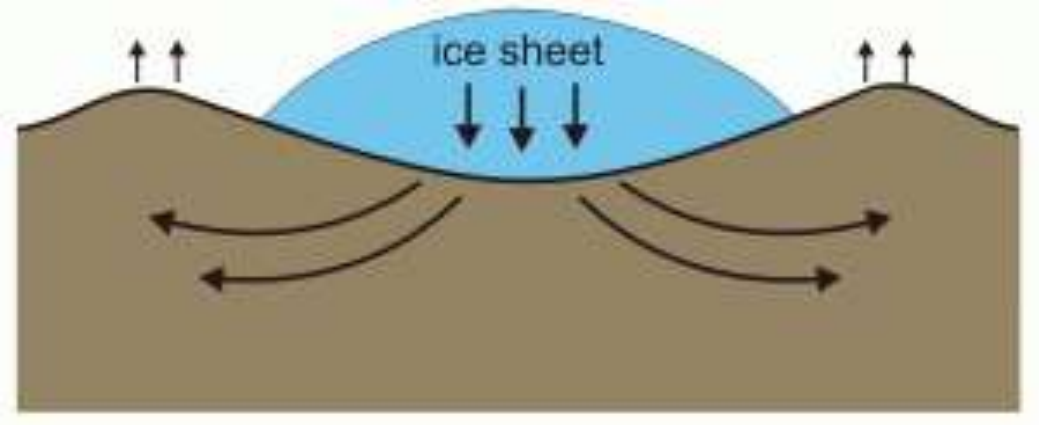
- Mount Everest is part of the Himalayas, which formed due to the collision of the **Indian Plate with the Eurasian Plate** around 50 million years ago.
- The continuous compression of the Earth's crust along the plate boundaries causes the uplift of the mountains, including Everest.

- This tectonic process is still ongoing, with the Himalayas rising approximately 5 millimeters per year, and Mount Everest continues to grow as a result of these tectonic forces.



2. Role of Nearby Rivers in Erosion

- Rivers such as the **Kosi, Dudh Kosi, and Bhotekoshi** (tributaries of the Ganges) drain the Himalayan region around Mount Everest.
- These rivers play a crucial role in eroding the mountains.
- As rivers cut through the rock, they remove sediments and debris, which lightens the load on the Earth's crust.
- This process is called **isostatic rebound.**
- In response to erosion, the Earth's crust can rise to maintain equilibrium, contributing to the overall elevation of the region.
- While erosion by rivers counteracts uplift by removing material, it also helps reveal newer, higher layers of rock that continue to rise due to tectonic forces.



3. Riverine Sediment Deposition and Uplift

- Rivers in the Himalayan region carry massive amounts of sediment from the mountains to the plains.
- The deposition of these sediments in areas like the Indo-Gangetic Plain causes the Earth's crust to sink under the weight of the deposits.
- However, the unloading effect in mountainous regions, as **rivers carry away large volumes of material, can also contribute to the rise of these region**s.
- The ongoing removal of material allows deeper rock layers to rise, thus maintaining or even increasing the elevation of the mountains.

4. Glacial-Melt Contribution

- The rivers around Mount Everest are often fed by glacial melt.
- As glaciers retreat due to climate change, more water is added to rivers, increasing their erosive power.
- This process contributes to the modification of the landscape around Mount Everest and accelerates erosion.

5. Climate and Fluvial Processes

- The climate also plays a role in determining the erosive power of rivers.
- The monsoon season brings heavy rains to the region, which increases the flow of rivers and their ability to erode the landscape.
- During heavy rainfall, rivers can carve deeper valleys and carry more sediment, contributing to changes in the height and structure of the surrounding terrain.

Conclusion

- In conclusion, nearby rivers contribute to the geomorphological processes that affect Mount Everest, primarily through erosion and sediment removal.
- However, the rise of Mount Everest is predominantly driven by tectonic activity rather than river action.
- Understanding this balance between erosion and uplift is key to grasping how the height of Mount Everest continues to evolve.

Shompen tribe

Syllabus: GS-1; Tribes of India

Context

- 'Shompen people prize their freedom above all', says former ASI director in Andaman Islands

About

- The Shompen tribe is one of the most isolated and lesser-known indigenous tribes in India, residing in the **Great Nicobar Island** of the Andaman and Nicobar Islands.

Location and Habitat

- The Shompen people live in the dense, tropical forests of the Great Nicobar Island, especially near the **Galathea and Alexandra Rivers**.
- Their habitat is part of the Great Nicobar Biosphere Reserve, a region known for its rich biodiversity.

Ethnic Group and Language

- The Shompen are classified as a Scheduled Tribe and fall under the category of **Particularly Vulnerable Tribal Groups (PVTGs).**
- They are believed to be of **Mongoloid origin.**
- The Shompen language is distinct and part of the **Austroasiatic language family,** though they also have limited interaction with the Nicobarese people, speaking some **Nicobarese dialects.**

Lifestyle and Subsistence

- The Shompen lead a **semi-nomadic** lifestyle and rely heavily on hunting, fishing, and gathering for subsistence.
- They engage in shifting cultivation and grow crops like tapioca, yam, and fruits.
- Their diet includes wild fruits, honey, fish, and forest animals.

Social Structure

- Shompen society is organized in small, kin-based groups.
- They traditionally live in communal longhouses made of bamboo, palm leaves, and other forest materials.
- They are largely endogamous (marrying within their group) and have a patriarchal structure.

Interaction with Outsiders

- The Shompen have historically remained isolated from the outside world.
- However, limited contact has been established with the Nicobarese and occasionally with Indian government officials.
- The Indian government has adopted a non-interference policy to protect their lifestyle and culture.

Challenges and Issues

- The Shompen face threats due to developmental activities in the Nicobar Islands, including the proposed construction of **infrastructure projects.**
- Their population is small and vulnerable, making them **susceptible to diseases** from outsiders, loss of traditional lands, and environmental degradation.

Efforts by the Government

- Several measures have been taken to protect their culture and habitat under the **Andaman and Nicobar Protection of Aboriginal Tribes Regulation (ANPATR) 1956.**

Cultural Practices

- The Shompen practice animism and have their own rituals connected to nature and spirits. They rely on traditional knowledge for medicine and healing.
- Their cultural practices are simple, as they live in close harmony with nature.

Conservation Efforts

- The Indian government has declared the Great Nicobar Biosphere Reserve to protect the Shompen tribe's habitat.
- Various schemes for their welfare have been designed, keeping in mind their unique needs and the importance of preserving their traditional way of life.

Prime Minister's Internship Scheme

Syllabus: GS-2; Education, Government policies and Interventions

Context

- The Ministry of Corporate Affairs has launched the Prime Minister's Internship Scheme in a pilot phase for the country's youth.

- Through this scheme, PM envisions to provide internships to 1 crore young people over the next five years.

About

- The Prime Minister's Internship Scheme is a government initiative designed to provide young professionals and students with opportunities to gain hands-on experience in the functioning of government bodies, **contribute to national development projects, and enhance their skills.**
- The scheme aims to provide students with internship opportunities to address youth unemployment.

Objective

- The scheme aims to involve educated youth in governance, policy formulation, and project execution, allowing them to contribute to various sectors while gaining exposure to the working of government institutions.

Key Features

- **Eligibility:** The scheme is generally open to students in their final year of undergraduate or postgraduate courses, as well as young professionals. Specific requirements may vary depending on the department or ministry offering the internship.
- **Duration:** Internships typically last between 6 weeks to 6 months, depending on the requirements of the program and the ministry involved.
- **Departments:** Interns are placed in various central ministries, departments, and government-affiliated organizations. Each ministry may have specific projects for which interns are selected.
- **Stipend:** Some internships under the scheme offer stipends, while others may not. The amount of the stipend, if provided, varies based on the ministry and duration of the internship.
- **Selection Process:** The selection process typically involves an online application, submission of a CV, and sometimes a statement of purpose or cover letter.
- Shortlisted candidates may be interviewed or required to undergo a review process depending on the ministry or department.

Benefits

- **Professional Development:** Interns acquire hands-on experience in government functioning and policy-making.
- **Networking Opportunities**: Interns have the chance to interact with senior officials, policy makers, and experts from various fields.

- **Contributing to Governance:** Interns work on real-time projects that contribute to policy analysis, project monitoring, and administrative reforms.
- **Certification:** Upon successful completion of the internship, interns receive certificates from the respective ministry or department.

Hyderabad disaster response and asset protection agency (HYDRAA) Ordinance

Syllabus: GS-2; Governance & Public Policy

Context

- Telangana governor Jishnu Dev Varma had approved an ordinance that gives more power to the controversial Hyderabad Disaster Response and Asset Monitoring and Protection Agency (HYDRA), an agency that has been demolishing illegal structures in and around Hyderabad.

About

- The Hyderabad Disaster Response and Asset Protection Agency (HYDRAA) Ordinance was introduced by the Telangana government in October 2023.
- It was enacted to strengthen disaster management efforts and ensure timely responses to emergencies within the city of Hyderabad.

Key Features of the HYDRAA Ordinance

Purpose:

- To establish a dedicated authority, the Hyderabad Disaster Response and Asset Protection Agency (HYDRAA), responsible for managing and responding to disasters in Hyderabad.
- To protect life, property, and critical infrastructure during emergencies such as floods, fires, and other disasters.

HYDRAA's Responsibilities:

- **Disaster Preparedness:** Developing strategic plans for disaster risk reduction, preparedness, and response.
- **Rapid Response:** HYDRAA is expected to deploy resources quickly during natural or man-made disasters.

- **Asset Protection:** Safeguarding key public and private assets, including critical infrastructure like hospitals, schools, bridges, and government buildings.
- **Collaboration:** Coordinating with other state and national disaster management agencies to ensure seamless disaster response.

Organizational Structure:

- CEO Appointment: A Chief Executive Officer (CEO) heads HYDRAA, appointed by the Telangana government, overseeing its day-to-day operations.
- Coordination with Local Bodies: HYDRAA works closely with the Greater Hyderabad Municipal Corporation (GHMC), police departments, and other state agencies.
- Special Disaster Teams: HYDRAA includes specialized teams trained in disaster response, such as flood rescue, fire emergencies, and evacuation operations.

Emergency Powers:

- The ordinance grants HYDRAA special emergency powers during crises to take immediate action, such as evacuation, resource mobilization, and requisitioning private property for rescue operations.
- Ensures legal backing to deploy emergency protocols swiftly without bureaucratic delays.

Funding:

- The ordinance outlines the creation of a dedicated Disaster Management Fund to finance the agency's operations. The government allocates a portion of the state budget to support HYDRAA's functioning.

Technology and Innovation:

- HYDRAA incorporates modern technology such as GIS mapping, drone surveillance, and early warning systems to enhance disaster monitoring and response.
- Smart City Integration: HYDRAA aligns with Hyderabad's Smart City initiatives to integrate disaster management into urban planning.

Critical Minerals

Syllabus: GS-3; Economic Development, Environment, and Science & Technology

Context

- A **Memorandum of Understanding (MoU**) has been struck by the US and India to broaden and diversify vital mineral supply chains.
- The MoU aims to enhance the mutual benefits of essential minerals exploration, extraction, processing, recycling, and related operations between the United States and India by utilising complementary strengths.

What are Critical Minerals?

- Critical minerals are those minerals that are **economically and strategically important for a country** but have supply risks due to limited domestic availability, reliance on imports, or geopolitical factors.
- They are essential for high-tech applications and future technologies, including renewable energy, electric vehicles, aerospace, defense, and electronics.

List of Critical Minerals in India

Some of the key critical minerals identified by the Indian government include:

- **Lithium:** Used in lithium-ion batteries for electric vehicles (EVs), smartphones, and renewable energy storage.
- **Cobalt:** Also used in batteries for EVs and renewable energy systems, as well as in the aerospace industry.
- **Nickel:** Important for stainless steel production and battery technologies.
- **Rare Earth Elements (REEs):** A group of 17 elements critical for electronics, magnets, wind turbines, and military applications. Important REEs include Neodymium, Dysprosium, and Praseodymium.
- **Graphite:** Used in battery production, steelmaking, and the nuclear industry.
- **Chromium:** Essential for stainless steel production, alloys, and chemical applications.
- **Titanium:** Critical for aerospace applications, defense, and high-tech industries due to its strength and corrosion resistance.
- **Vanadium:** Used in energy storage systems, aerospace, and steel manufacturing.
- **Platinum Group Metals (PGMs):** Includes Platinum, Palladium, and Rhodium, which are essential for catalytic converters, fuel cells, and jewelry.

Importance of Critical Minerals in India

- **Strategic Significance:** Critical minerals are essential for India's defense, space programs, and advanced manufacturing sectors.
  They are crucial in producing defense equipment, satellites, and missile technology.
- **Green Economy:** The push towards renewable energy and electric vehicles requires a steady supply of minerals like lithium, cobalt, and rare earth elements for the production of batteries and solar panels.
- **Technological Innovation:** Critical minerals are necessary for technological innovations in electronics, IT hardware, and communication devices, key sectors for India's digital economy.
- **Economic Growth:** Industries dependent on critical minerals contribute significantly to GDP and job creation in India.
  The availability of these minerals supports industrial growth, innovation, and exports.

India's Domestic Reserves and Challenges

India has limited domestic production of many critical minerals and depends heavily on imports for its requirements. Here's an overview of the domestic scenario:

- Lithium: India has minimal reserves of lithium.
  Some potential resources were recently identified in the **Karnataka and Rajasthan** regions, but they are not fully explored.
  The country currently relies on imports, mainly from **Australia and Chile.**
- Cobalt: India's cobalt reserves are very limited.
  India primarily imports cobalt from countries like **Democratic Republic of Congo (DRC),** which holds the largest global reserves.
- Rare Earth Elements (REEs): India has some reserves of rare earth elements, particularly in the Monazite sands found in coastal regions of **Tamil Nadu, Odisha, and Kerala**.
  However, India lags behind countries like China in the extraction, processing, and refining of these minerals.
- Nickel: India has limited nickel reserves and largely depends on imports from countries like **Indonesia and Russia**.
- Graphite: India has a significant amount of natural graphite resources, mainly found in **Jharkhand, Arunachal Pradesh, and Odisha.**
  However, India still imports a considerable quantity of graphite.
- Chromium: India has substantial chromium deposits, especially in the **Sukinda Valley of Odisha**, which is one of the largest chromium-rich regions globally.
- Vanadium: In 2020, traces of vanadium were discovered in **Arunachal Pradesh,** but production is still at an exploratory stage.

India's Initiatives for Critical Minerals

Recognizing the importance of securing critical minerals for the future, the Indian government has taken several steps:

- **KABIL (Khanij Bidesh India Ltd.):** In 2019, India established KABIL, a joint venture of NALCO (National Aluminium Company Limited), HCL (Hindustan Copper Limited), and MECL (Mineral Exploration Corporation Limited).
  KABIL's primary aim is to explore and acquire critical mineral assets overseas, ensuring a steady supply of key minerals like lithium and cobalt.
  KABIL has been exploring partnerships with countries like Argentina, Bolivia, and Chile for lithium and cobalt.
- **Domestic Exploration:** The Indian government has been focusing on domestic exploration and research for critical minerals, particularly in the North-Eastern regions and Andaman and Nicobar Islands.
- **Strategic Partnerships:** India has entered into strategic partnerships with countries like Australia, Japan, and the US to secure supply chains for critical minerals.
  These partnerships aim to enhance cooperation in exploration, extraction, and processing technologies for critical minerals.
- **Atmanirbhar Bharat Initiative**: As part of the Atmanirbhar Bharat (Self-Reliant India) campaign, the government aims to reduce dependency on imports by developing domestic capacities for mining, processing, and refining critical minerals.
  The initiative also emphasizes the development of downstream industries like EV manufacturing, electronics, and defense production.

Global Context and Geopolitical Significance

- **China's Dominance:** China controls a significant portion of the global supply of rare earth elements, lithium, and cobalt. India's reliance on imports from China for critical minerals is a concern, especially given geopolitical tensions.
- **Resource Nationalism:** Many countries with large reserves of critical minerals are adopting protectionist policies or resource nationalism, which could restrict the global supply of these minerals.
  This has pushed India to seek diversified supply chains and develop strategic reserves.
- **Supply Chain Vulnerability**: The global supply of critical minerals is prone to disruptions due to factors like trade restrictions, political instability in supplier countries, and environmental concerns.
  Ensuring a secure and stable supply chain is crucial for India's national security and economic development.

Challenges and the Way Forward

- **Lack of Domestic Reserves:** India's limited reserves of several key critical minerals, especially lithium and cobalt, pose a major challenge.
- **Processing Capabilities**: India lacks advanced processing and refining capabilities for critical minerals like rare earth elements.
  Most rare earths mined in India are exported in raw form due to the lack of processing facilities.
- **Environmental Concerns:** Mining and processing of critical minerals can have significant environmental impacts.
  India must balance the need for minerals with sustainable mining practices.
- **Technological Development:** India needs to invest in research and development (R&D) to create technologies that reduce dependence on critical minerals or find alternatives.

Conclusion

- Critical minerals are essential for India's transition to a high-tech and green economy.
- To secure its future energy and technological needs, India must diversify its sources of critical minerals, enhance domestic exploration, and invest in processing infrastructure.
- Securing reliable supplies of these minerals is crucial for India's national security, defense, and economic development.