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Daily Current Affairs

To The Point

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GS Paper 3 – Science and Technology

1 A Crisis in American Science: A Golden Moment for India

Context: For decades, the **United States** has stood as the **global leader in scientific innovation**, attracting top talent, producing Nobel laureates, and driving breakthroughs across disciplines. However, a deepening **scientific and funding crisis** is now threatening that dominance — and **offering a unique opportunity for India** to step into a more prominent role.

What's Going Wrong in the US Scientific Landscape?

1. **Funding Freeze:** Major funding bodies like the **National Institutes of Health (NIH)** and **National Science Foundation (NSF)** are **cutting back international collaborations** and freezing new grants. This is stalling critical research across medical, environmental, and tech domains.
2. **Institutional Disruption:** American universities, including several top-tier institutions, are seeing **budget cuts, lab closures**, and **fewer tenure-track positions**, severely impacting the future of academic science.
3. **Scientist Exodus: Early-career and senior scientists** alike are migrating to **Europe, Asia, and Latin America** in search of stable research environments and better funding.

The Diaspora Edge: A Window of Opportunity for India

Tapping into Global Indian Talent:

India-born scientists represent a **significant portion of the US STEM workforce**, with many winning **prestigious global awards** such as the **Lasker, Breakthrough, and even Nobel Prizes**.

From Brain Drain to Brain Gain:

India has a timely opportunity to **reverse the brain drain** by:

- Creating **permanent academic pathways**
- Funding **world-class laboratories**
- Offering **institutional leadership** to returning scientists

How the World Is Responding:

France: Introduced the **"Safe Place for Science"** initiative at Aix-Marseille University to provide secure research environments for displaced scientists.

Germany & Switzerland: Offering **long-term fellowships** and **grant schemes** specifically targeting international researchers seeking stability.

China: Aggressively expanding **"Talent Return" programmes** to bring back overseas Chinese scientists with **generous funding and lab support**.

India's Steps Toward Scientific Repatriation:

1. **VAIBHAV Fellowships:** Connects the **Indian scientific diaspora** with domestic research institutes, promoting collaborative projects and mentorship.
2. **VAJRA Scheme:** Enables **short-term research opportunities** for **NRIs and PIOs**, helping to boost **global collaboration** within Indian R&D.

3. **Anusandhan National Research Foundation (ANRF):** Launched to **strengthen research ecosystems** in Indian universities and **increase R&D investments**, promoting a **culture of innovation**.
4. **Philanthropic Contributions:** As per the **Indian Philanthropy Report 2025**, private funding for the **social sector reached 1.31 lakh crore in 2024**.
   Foundations like the **Tata Trusts, Infosys Foundation**, and **Wipro Foundation** are actively investing in R&D and academic excellence.

Challenges on the Road Ahead:

Despite positive steps, India must address several systemic issues:

- **Inadequate Infrastructure:** Many institutions lack **state-of-the-art laboratories** and **interdisciplinary collaboration platforms**.
- **Low Start-Up Funding:** Indian **research grants** are still **significantly smaller** compared to the US, EU, or China.
- **Short-Term Orientation:** Most schemes focus on **temporary roles**, not **long-term integration** into Indian academia.
- **Bureaucratic Hurdles: Slow approvals**, rigid regulations, and **inefficient fund disbursal** processes deter returning scientists.
- **Low R&D Spending:** India invests just **0.65% of GDP in R&D**, compared to **China's 2.4%** and the **US's 3.45%**, as per **NITI Aayog**.

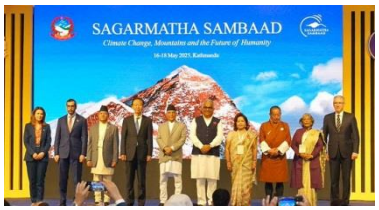
Conclusion: From Knowledge Importer to Innovation Exporter

The **decline of America's scientific edge** presents India with a rare, historic opening. By **modernizing research infrastructure**, **offering global-standard autonomy**, and **strategically welcoming its diaspora**, India can **emerge as a global hub for science and innovation**.

This moment is not just about filling gaps — it's about **reshaping India's scientific destiny** and **transforming it into a net exporter of cutting-edge knowledge** in the 21st century.

GS Paper 1,3 – Indian Geography, Environment

2 Sagarmatha Sambaad: A Call for Global Action to Save Mountain Ecosystems



Context: India's **Union Environment Minister** recently addressed the inaugural **Sagarmatha Sambaad** in **Nepal**, a global dialogue focused on the urgent need to **protect fragile mountain ecosystems**, particularly the **Himalayas**. At the event, India presented a comprehensive **Five-Point Global Action Plan** aimed at building resilience and fostering cooperation across nations that share mountain terrains.

Understanding the Spirit of Sagarmatha Sambaad:

- **"Sagarmatha"**, meaning **"Head of the Sky"**, is the Nepali name for **Mount Everest**, the world's highest peak.
- **"Sambaad"**, meaning **dialogue**, emphasizes the need for **collective conversation and cooperation**.
- The platform symbolizes **ecological responsibility**, recognizing mountains as **climate sentinels and cultural icons**.

Key Messages from India's Address:

1. **Shared Heritage and Responsibility:** India underscored the **deep cultural, ecological, and strategic ties** among **Himalayan nations**, stressing the importance of collaborative efforts.
2. **Climate Inequity:** Despite housing **25% of the global population**, **South Asia contributes only 4%** to historical **CO_2 emissions**, yet it faces **disproportionate climate impacts**.
3. **Shortcomings of the Developed World:** Developed countries are **falling short on climate finance**, **technology transfer**, and **capacity-building commitments**, jeopardizing climate justice for developing nations.
4. **Wildlife Conservation Push:** India called for **transboundary cooperation** under the **International Big Cats Alliance**, particularly for iconic species like **snow leopards, tigers, and leopards**.**Project Snow Leopard** was highlighted as a **model of community-driven conservation**.

India's Five-Point Global Action Plan:

1. **Strengthening Scientific Collaboration:**
   - Promote joint research on **glacier dynamics**, **cryosphere science**, and **mountain biodiversity**.
   - Establish **data-sharing platforms** for transnational environmental monitoring.
2. **Building Climate Resilience:**
   - Invest in **climate-adaptive infrastructure** in mountainous regions.
   - Develop **early warning systems** for disasters like **Glacial Lake Outburst Floods (GLOFs)**.
   - Encourage **risk-resilient development practices**.
3. **Empowering Mountain Communities:**
   - Center policies around the **welfare of indigenous communities**, recognizing their **traditional ecological knowledge**.

- Promote **green livelihoods** like **sustainable tourism**, handicrafts, and **herbal medicine harvesting**.

4. **Mobilizing Green Finance:**
   - Ensure **predictable and adequate funding** under **UNFCCC and the Paris Agreement**.
   - Create mechanisms to **ease access to climate finance** for **developing mountain nations**.
5. **Recognizing Mountain Ecosystems Globally:**
   - Ensure that the **special vulnerabilities and contributions of mountain regions** are reflected in **global climate negotiations**, **SDGs**, and **international reporting frameworks**.

Why the Himalayas Matter:

1. **Climate Moderator:** Act as a **climatic barrier**, blocking cold winds and influencing **Indian monsoons**, which are vital for agriculture and water security.
2. **Lifeline Rivers:** Source of the **Ganga, Brahmaputra, and Indus**, which sustain the livelihoods of **over a billion people** in South Asia.
3. **Biodiversity Reserve:** Home to a rich array of flora and fauna, including **endangered species** like the **snow leopard**, **red panda**, and **Himalayan monal**.
4. **Cultural and Spiritual Hub:** The Himalayas are sacred in **Hinduism and Buddhism**, hosting pilgrimage sites such as **Kailash Mansarovar**, **Badrinath**, and **Amarnath**.
5. **Geostrategic Frontier:** Act as a **natural border** with **China, Nepal, and Bhutan**, playing a critical role in **India's national security and diplomacy**.

India's Initiatives for Mountain Conservation:

National Mission on Sustaining the Himalayan Ecosystem (NMSHE)

- Part of the **National Action Plan on Climate Change (NAPCC)**.
- Focuses on **glacial monitoring**, **ecosystem conservation**, and **climate adaptation** in Himalayan states.

Secure Himalaya Project: In partnership with **UNDP**, supports **biodiversity protection** and **sustainable livelihoods** in high-altitude states like **Ladakh, Sikkim, Himachal Pradesh**, and **Uttarakhand**.

Project Snow Leopard: Promotes **community-based conservation** for snow leopards and their habitat through **science and local engagement**.

International Big Cats Alliance (IBCA): A **global India-led initiative** to protect endangered big cats across **transboundary regions**, focusing on **conservation cooperation** and **data sharing**.

Final Thought: From Dialogue to Action

The **Sagarmatha Sambaad** is more than just a conversation — it's a **call to action**. As **climate change intensifies**, mountain ecosystems are at grave risk. India's comprehensive plan emphasizes **collaboration, resilience, and justice**, recognizing that **protecting the Himalayas is not just regional but a global imperative**.

GS Paper 3 – Economy

3 US Proposal to Tax Remittances Raises Alarm Among Immigrants and Global Economists

Context: A newly proposed bill in the **United States Congress** is causing significant concern among immigrant communities and global economists. The legislation seeks to impose a **5% excise tax on all remittances** sent from the U.S. to foreign countries—**but only if sent by non-citizens**. The tax would apply to individuals on **temporary work visas** (such as H-1B, L-1, F-1) and even **green card holders**, sparing only **U.S. citizens and nationals** from this new burden.

Key Provisions of the Proposed Legislation:

- **Tax Applicability**: The proposed tax will cover all **international remittances** made by **non-citizen residents**, including visa holders and permanent residents.
- **No Minimum Threshold**: There is **no lower limit**, meaning even small transfers would attract the 5% levy.
- **Inclusive of Investment Income**: The bill targets not just wages, but also **income from investments**, such as **stock options**, earned in the U.S. by non-citizens.
- **Collection Mechanism**: The tax is to be **withheld by remittance service providers**—banks, money transfer operators, or digital platforms—and **deposited quarterly** with the U.S. Treasury.

Understanding Remittances and Their Significance:

Remittances are **financial lifelines**—typically **funds sent by migrant workers** to support families in their home countries. Globally, they:

- **Outpace Foreign Direct Investment (FDI)** and **Official Development Assistance (ODA)**.
- Contribute directly to **household income**, **education**, **healthcare**, and **local business activity**.
- Act as a **buffer for national trade deficits**, especially in **developing economies**.

The Indian Context: A Closer Look

- **Overseas Indian Population**: Nearly **5.4 million Indians** reside in the U.S., many of whom are on **temporary work visas or hold green cards**.
- **Top Remittance Source**: The U.S. has emerged as **India's largest remittance contributor**, sending **$32.9 billion** in **FY 2023–24**, forming **27.7%** of India's total inward remittances.
- **India's Global Standing**: According to the **World Bank**, India has been the **top global recipient** of remittances since **2008**, with a **14% global share** in 2024.

Potential Impacts of the Tax:

- **Higher Costs for Immigrants**: This policy would **increase the cost of sending money** to families abroad, disproportionately affecting **middle-income and blue-collar workers**.
- **Possible Decline in Remittance Flows**: A **reduction in remittance volumes** could affect **economic stability** in countries like India, the Philippines, Mexico, and Nigeria.
- **Administrative Challenges**: Transfer service providers would bear **additional compliance burdens** and **operational costs**.
- **Investment Deterrent**: Immigrants may **reconsider holding assets or investing in the U.S.** due to this perceived **double taxation**—since they already **pay federal and state income taxes**.

- **Global Criticism**: Economists and human rights organizations argue the move is **punitive**, particularly against **law-abiding immigrants** who contribute significantly to the U.S. economy.

Broader Economic Insights:

- **India's Remittance Growth**: Inward remittances to India have **more than doubled** from **$55.6 billion in 2010-11** to **$118.7 billion in 2023-24**.
- **Shift in Sources**: Remittances from the **U.S. and U.K.** now constitute **40%** of India's total inflows, compared to **26% in FY17**.
- **Geographic Spread in India**: States like **Maharashtra**, **Kerala**, and **Tamil Nadu** receive **over 50%** of these funds, sustaining household consumption and local economies.
- **World Impact**: Global remittances reached an estimated **$860 billion** in 2023, with **low- and middle-income countries** receiving nearly **$669 billion**.

Final Thoughts: A Policy in the Crosshairs

This proposed tax underscores a growing tension between **domestic fiscal priorities** and **global economic interdependence**. If passed, the bill could not only **burden millions of immigrant workers** in the U.S. but also disrupt the **financial stability of countries reliant on diaspora income**.

Stakeholders, including migrant advocacy groups, international economists, and foreign governments, are expected to **push back strongly**. The coming months will reveal whether this bill proceeds, and how it may **reshape the global remittance landscape**.

GS Paper 3 – Food Security, and Disaster Management

4 Global Hunger Crisis Deepens: Nearly 300 Million Faced Acute Food Insecurity in 2024

Context: The **Global Report on Food Crises (GRFC) 2025**, released by the **Global Network Against Food Crises (GNAFC)**, paints a bleak picture of the world's food security. According to the report, **295 million people** across **53 countries** faced **acute hunger** in 2024—**an increase of 13.7 million** compared to 2023.

This disturbing trend signals a growing inability of communities to access **sufficient, safe, and nutritious food**, often due to a mix of conflict, economic instability, and climate shocks.

About the Report and Its Global Relevance:

The **GRFC** is produced annually through a collaboration between **UN agencies**, the **European Union**, **governmental bodies**, and **non-governmental organizations**. It offers a **comprehensive analysis** of:

- **Acute food insecurity**
- **Malnutrition**
- **Displacement trends**

The 2025 edition focuses on nations already experiencing food crises and highlights both **short-term emergencies** and **medium-term risks** to global food security.

What Is Acute Food Insecurity?

Acute food insecurity refers to a **sudden disruption in one or more of the four pillars** of food security:

- **Availability**
- **Access**
- **Utilization**
- **Stability**

When this disruption overwhelms a country's capacity to respond and requires **urgent external assistance**, it escalates into a **food crisis**.

Catastrophic Hunger on the Rise:

The situation has worsened dramatically in several regions:

- The number of people suffering from **catastrophic levels of hunger**—those at **"Phase 5"** or **famine-level conditions—more than doubled** to **1.9 million**, the **highest** since records began in **2016**.
- Some of the **most affected regions** include:
    - **Sudan** (where famine has been officially declared)
    - **Gaza Strip**
    - **South Sudan**
    - **Haiti**
    - **Mali**
    - **Yemen**

Major Drivers of the Crisis:

The report highlights several **interconnected factors** behind the escalating crisis:

- **Armed conflict** and political instability
- **Forced displacement** and refugee crises
- **Climate change**–induced droughts, floods, and weather extremes
- **Economic pressures** such as inflation and fragile governance

These challenges have created **compound effects**, making it harder for vulnerable populations to recover and secure stable food access.

Mixed Trends: Improvements vs Deterioration:

Although **15 countries**, including **Afghanistan**, **Kenya**, and **Ukraine**, showed signs of improvement, the situation deteriorated in **19 others**, negating overall progress.

This imbalance suggests that without **urgent and systemic action**, global food insecurity could become a **permanent humanitarian emergency**.

UN and Global Response: What Needs to Be Done

The United Nations and its partners have emphasized a **strategic shift** toward **sustainable, long-term interventions**, recommending:

- **Evidence-based, impact-driven responses** tailored to local needs
- **Investments in local food systems**, agriculture, and nutrition services
- **Scaling proven solutions** and pooling global resources
- **Centering community voices** in the decision-making process

A Broader Perspective on Global Hunger:

- In 2024, **hunger levels globally** continued to **exceed pre-pandemic levels**, with **climate-linked disasters** and **regional conflicts** intensifying the crisis.
- The **World Food Programme (WFP)** estimates that **45 million people** in 38 countries are currently on the **edge of famine**.
- According to the **FAO**, nearly **one in nine people** in the world still go to bed hungry every night.

Conclusion: A Call to Action

The findings of the **Global Report on Food Crises 2025** are a stark reminder that **hunger is not just a humanitarian issue—it's a crisis of development, security, and equity**. As the global community continues to grapple with climate change, political instability, and economic volatility, **collaborative and resilient food systems** will be critical to ensuring that no one is left behind.

GS Paper 3 – Environment & Ecology

5 Supreme Court Strikes Down Retrospective Environmental Clearances

Context: In a landmark verdict, the **Supreme Court of India** has declared that **retrospective environmental clearances**—approvals granted **after a project has already started**—are **illegal and unconstitutional**. The Court ruled that such clearances **violate environmental laws** and undermine the **fundamental right to a clean and healthy environment** under **Article 21** of the Constitution.

This judgment marks a pivotal moment in the **legal protection of environmental rights** in India.

What Are Retrospective Environmental Clearances?

Retrospective or *ex post facto* clearances are granted **after industrial or infrastructure projects** have already commenced operations, without undergoing the **mandatory prior environmental impact assessment**.

According to the **EIA Notification, 2006**, issued under the **Environment (Protection) Act, 1986**, any project likely to impact the environment must obtain **prior Environmental Clearance (EC)**. Allowing operations to begin **before such clearance** violates this legal safeguard.

Supreme Court's Firm Stand on Environmental Justice:

- The Court struck down both the **2017 notification** and the **2021 Office Memorandum** that permitted retrospective approvals.
- These provisions, the Court ruled, are **contrary to India's constitutional framework** and **environmental jurisprudence**.
- The judgment strongly emphasized **Article 21**, stating that the **right to life includes the right to live in a pollution-free environment**.

Constitutional Duty to Protect Nature:

The ruling reaffirms constitutional safeguards:

- **Article 48A** (Directive Principles): Directs the **State to protect and improve the environment**, forests, and wildlife.
- **Article 51A(g)** (Fundamental Duties): Imposes a duty on every citizen to **protect and improve the natural environment**, including **forests, lakes, rivers, and wildlife**.

This reflects a **shared responsibility** between the **State and the people** in preserving ecological balance.

Upholding the Polluter Pays Principle:

The Court, while not naming it explicitly, reinforced the **Polluter Pays Principle**, implying:

- **Violators cannot be shielded** by ex post facto approvals.
- **Environmental compensation** must be imposed where damage has occurred.
- Projects that began illegally **must undertake reparations** and mitigation measures.

This aligns with India's evolving stance on **corporate environmental accountability**.

A Step Toward Global Environmental Commitments:

The ruling also has global implications, as it strengthens India's compliance with:

- The **Paris Agreement**, which urges nations to prioritize **sustainable development**.

- The **2030 Agenda for Sustainable Development**, especially:
  - **SDG 13**: **Climate Action**
  - **SDG 15**: **Life on Land**

Allowing retrospective clearances would have undermined India's international reputation and **environmental diplomacy**.

Why This Judgment Matters:

- It reinforces the **Supreme Court's role as a guardian of environmental rights**.
- Prevents a dangerous **precedent of legalizing environmental violations**.
- Encourages **regulatory accountability** by ensuring that authorities enforce **environmental laws in letter and spirit**.
- Sends a strong signal to industries: **compliance is not optional**.

Looking Ahead: Strengthening Green Governance

This judgment is a **clarion call for environmental vigilance**. It urges:

- **Stricter scrutiny** of projects before approval.
- Strengthening of **Environmental Impact Assessment (EIA) mechanisms**.
- Empowering local communities and stakeholders in **environmental decision-making**.
- Encouraging **sustainable project planning** that balances **economic growth with ecological integrity**.

GS Paper 3 – Science and Technology

6 Mosura Fentoni: Ancient Three-Eyed Predator Unearthed in Canadian Rockies

Context: In a stunning paleontological breakthrough, scientists have unveiled **Mosura fentoni**, a **506-million-year-old marine predator** that once ruled the ancient seas during the **Cambrian period**. This extinct creature belonged to the enigmatic group **Radiodonta**, early ancestors of modern arthropods, and exhibits an **extraordinary blend of primitive and advanced anatomical traits**.

A Glimpse Into the Ancient Oceans:

Mosura fentoni is the latest fossil find from the renowned **Burgess Shale** in the **Canadian Rockies**, a site famous for preserving soft-bodied organisms in exceptional detail. The discovery sheds light on the **incredible diversity and evolutionary experimentation** of early marine ecosystems.

Named after **"Mothra," the iconic kaiju** from Japanese cinema, Mosura fentoni earned its name due to its **moth-like hovering appearance** and unusual body design, setting it apart from its radiodont relatives like **Anomalocaris**.

Key Features of Mosura Fentoni:

- **Time Frame**: Thrived around **506 million years ago**, during the **Cambrian explosion**—a period of rapid diversification of life.
- **Group**: Member of **Radiodonta**, an extinct lineage of early arthropods known for their predatory lifestyle.
- **Size**: Measured about the **length of a human index finger**—small, but fierce.
- **Eyes**: Featured **three eyes**—two lateral and one large central eye—offering **advanced visual capabilities** for hunting and navigation.
- **Body Design**: Possessed a **trunk-like body** with **lateral swimming flaps**, similar to how modern rays glide through the water.
- **Rear Segments**: Had a uniquely **segmented rear section** with **16 compact segments**, each lined with **delicate gills**, an innovation that likely enhanced its **respiratory efficiency**.
- **Breathing Mechanism**: Unusually, it **breathed through posterior gills**, a **first among radiodonts**, showing a surprising **convergence with modern arthropods** like **horseshoe crabs, crustaceans, and insects**.

Why Mosura Fentoni Matters:

This discovery provides a rare glimpse into the **evolutionary innovations** of early arthropods. The advanced respiratory system, combined with a high level of mobility and visual acuity, suggests that even **half a billion years ago**, marine predators had already developed complex features that echo in modern-day species.

Moreover, the presence of a **central median eye** is an evolutionary puzzle that continues to fascinate researchers. It hints at **diverse sensory adaptations** that may have allowed species like Mosura fentoni to dominate Cambrian ecosystems.

Wider Implications in Evolutionary Biology:

- **Evolutionary Convergence**: Mosura's traits show that nature often **repeats successful designs**, even across vastly different eras and species.
- **Paleobiological Insights**: Helps scientists understand the **internal anatomy** and **respiratory evolution** of ancient lifeforms.
- **Fossil Record Significance**: Reinforces the **Burgess Shale's role** as a window into the early development of complex ecosystems.

This ancient predator may be long extinct, but it leaves behind a legacy that continues to enrich our understanding of life's deep history.