

Weekly Current Affairs To The Point by Dhananjay Gautam 23 to 29 March 2025



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GS Paper 2 – Judiciary and Legal Reforms

Fast Track Special Courts (FTSCs): Accelerating Justice for Sexual Crime Survivors

Context: Fast Track Special Courts (FTSCs) play a pivotal role in expediting justice for survivors of sexual crimes in India. With an impressive disposal rate of 96.28%, these courts ensure swift legal proceedings for heinous offenses like rape and crimes under the POCSO Act (Protection of Children from Sexual Offences Act, 2012).



About FTSCs: FTSCs are specialized courts established to tackle the backlog

of cases related to serious crimes such as rape and child sexual abuse. Their goal is to ensure timely justice and reduce the pendency of these sensitive cases, which often suffer from prolonged trials.

Establishment: The Department of Justice, under the Ministry of Law & Justice, launched FTSCs in 2019 as part of a **Centrally Sponsored Scheme**. Funding for the initiative is shared between the **central** government and state governments:

- **60:40** for most states/UTs with legislatures
- 90:10 for Northeastern and hilly states/UTs

Aiming for a total of **790 FTSCs**, including exclusive POCSO (e-POCSO) courts, these courts are designed to ensure efficient and time-bound justice.

Operational Target: Each FTSC is expected to dispose of **41-42 cases per quarter** and at least **165 cases annually**, contributing significantly to reducing the backlog of cases.

Why FTSCs are Essential?

- 1. Reducing Delayed Justice: The Supreme Court of India in 2019 directed the establishment of FTSCs to ensure speedy disposal of POCSO cases. The Criminal Procedure Code (CrPC) and POCSO Act mandate strict timelines for investigation and trial. Prolonged trials weaken the deterrent effect of the law and fail to serve justice to victims.
- 2. Enhancing Public Confidence: By speeding up legal processes, FTSCs send a clear message that society will not tolerate sexual crimes. This helps in strengthening the rule of law and builds public trust in the judicial system.

Key Recommendations for Strengthening FTSCs:

The Indian Institute of Public Administration (IIPA) has recommended several measures to enhance the effectiveness of FTSCs:

- 1. Continuation of the FTSC Scheme: FTSCs should continue as a vital mechanism for ensuring streamlined and expedited trials in cases of sexual violence.
- 2. Strengthening Judicial Infrastructure:
 - Appoint **specialized judges** with experience in **handling POCSO cases**.
 - Sensitize judicial officers and staff on the nuances of sexual violence cases to ensure compassionate handling.
- 3. Technological Upgradation:

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• Equip courtrooms with audio-video recording systems, enabling efficient e-filing of cases and digitization of court records.

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- **Modernize court procedures** with the help of technology to expedite trials and reduce manual errors.
- 4. Strengthening Forensic Support:
 - Increase the number of forensic labs to speed up the collection and analysis of evidence.
 - **Train forensic personnel** to ensure **timely submission of DNA reports**, facilitating quicker trials and ensuring justice.
- 5. Establishment of Vulnerable Witness Deposition Centres (VWDCs):
 - Set up **VWDCs** in every district to facilitate **child-friendly** and **sensitive** recording of testimonies from survivors, especially minors.
- 6. Appointment of Child Psychologists:
 - Appoint a **child psychologist** at every FTSC to **assist victims** throughout the pre-trial and trial processes, providing the emotional and psychological support they need.

The Road Ahead: Empowering Justice:

The **Fast Track Special Courts** have proven to be a crucial step in delivering **justice without delay** for survivors of **sexual crimes**. However, continuous improvement in **judicial infrastructure**, **technological advancements**, and **forensic support** is essential to ensure that these courts continue to be a powerful tool in the fight against sexual violence in India. Through these measures, FTSCs can become an even more **effective** and **compassionate** part of the judicial system, offering **timely justice** for those who need it most.

FOGETHER WE SCALE HEIGHTS

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Sub-Categorisation of Scheduled Castes (SCs) in Andhra Pradesh

Context: The Andhra Pradesh Cabinet has approved the one-member commission's recommendations on sub-categorisation of Scheduled Castes (SCs) to ensure a more equitable distribution of reservation benefits. This demand has been ongoing for over **30 years**, with previous efforts including the Justice Ramachandra Rao Commission (1996).



What is Sub-Categorisation?

Sub-categorisation refers to dividing the SC category into smaller sub-castes to ensure a fair distribution of benefits, particularly in areas such as:

- Education •
- Employment •
- Affirmative Action

Historical Context & Supreme Court Rulings:

1. Punjab's 1975 Reservation Policy:

- **Punjab Government** issued a **notification** giving **first preference** in SC reservations to the **Balmiki** and Mazhabi Sikh communities, considered the most backward SC groups in the state.
- This move was challenged after the **Supreme Court's ruling in E.V. Chinnaiah (2004)**, which struck down a **similar Andhra Pradesh law**.

2. E.V. Chinnaiah Case (2004) – SC's Earlier Stance:

- The Supreme Court ruled that once included in the Presidential list (Article 341/342), SCs and STs form a **single**, indivisible class.
- States were **not** allowed to **sub-classify** or **create quotas** within the SC/ST reservations.
- 3. Shift in 2020 Recognizing Inequality within SCs:
 - The **Supreme Court reconsidered** its 2004 stance, acknowledging that **not all SCs face the same** level of disadvantage.
 - The 2018 Jarnail Singh v. Lachhmi Narain Gupta ruling introduced the "creamy layer" concept for SCs, reinforcing the idea of inequality within the category.

4. Landmark 2024 Supreme Court Ruling:

- The Supreme Court upheld the concept of sub-classification within SCs and STs, allowing affirmative action benefits to be extended more equitably.
- **Key Clarification:**
 - Article 341 does not prohibit sub-classification; it only restricts the President's power to add or remove SC groups from the list.
 - States can now create **sub-quotas within SCs**, provided **strict guidelines** are followed.

Arguments in Favour of Sub-Categorisation:

Addresses Underrepresentation:

Some SC/ST groups remain underrepresented in education and employment despite existing reservations.

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SCs are Not a Homogeneous Group:

• Some sub-castes within SCs are **more disadvantaged** than others, making **sub-classification necessary** for true **social justice**.

Substantive Equality Under Article 14:

• Article 14 (Right to Equality) supports differentiation to achieve real equality among disadvantaged groups.

May Enable a Caste Census:

• A **caste census** could provide **accurate data** on representation, **helping to redistribute** reservation benefits **fairly**.

Arguments Against Sub-Categorisation:

Risk of Political Manipulation:

• Some fear that **political leaders** may **exploit** sub-classification **for electoral gains**, rather than ensuring true **social justice**.

Violates the Constitution's Intent:

• Critics argue that **altering the President's SC list** (Article 341) through **state-level subclassification** is **unconstitutional**, as only **Parliament** can modify this list.

Conclusion & Way Forward:

Legal Backing with Caution:

- States now have judicial support for sub-classification but must ensure data-backed and fair implementation.
- Judicial oversight is needed to prevent misuse of the policy.

Data-Driven Sub-Classification:

• Sub-classification should be based on **"quantifiable and demonstrable data"** rather than **political motives**.

Excluding the Creamy Layer:

• Policies should **exclude the "creamy layer"** (economically advanced SC/ST members) from **reservation benefits** to **prioritize the most disadvantaged groups**.

By following these measures, **sub-categorisation** can become a powerful tool for ensuring **genuine social justice** while maintaining **constitutional integrity**.

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GS Paper 3 – Environment and Climate Change

Okjökull: The First Glacier Lost to Climate Change

Context: Iceland's **Okjökull Glacier** was officially declared dead in **2014**, marking it as the **first glacier lost due to humaninduced climate change**. Satellite images taken over three decades show its complete disappearance.

A Memorial for Ice:

In **2023**, Iceland established the **world's first iceberg graveyard**, commemorating **15 major glaciers** listed on the **Global Glacier Casualty List**—either already lost or critically endangered. Among them is **Anderson Glacier** in Washington, the first U.S. glacier declared dead in **2015**.

Understanding Earth's Cryosphere:

The **cryosphere** refers to all the **frozen components of Earth**, including:

- Glaciers
- Ice sheets
- Sea ice
- Permafrost
- Snow cover

The term comes from the Greek word **"kryos," meaning frost or ice cold**.

The Two Remaining Ice Sheets:

Only two **massive ice sheets** remain on Earth today:

- 1. Greenland Ice Sheet
- 2. Antarctic Ice Sheet

Both contain more than **70% of the planet's freshwater ice**, with ice over **2 kilometers thick**.

Cryosphere's Role in Climate and Life:

- **Regulating Global Temperature**: Reflects sunlight (albedo effect), keeping the planet cool.
- Maintaining Sea Levels: Stores freshwater and prevents rapid sea-level rise.
- Supporting Ecosystems: Essential for marine and land species.
- Marking Climate Change: Sensitive to temperature changes, acting as an early warning system.

Threats to the Cryosphere:

- 1. **Global Warming**: Rising temperatures accelerate ice melt.
- 2. Rising Sea Levels: Melting glaciers contribute to flooding in coastal regions.
- 3. Loss of Habitats: Ice-dependent species face extinction.
- 4. Permafrost Thawing: Releases carbon dioxide and methane, intensifying global warming.
- 5. Disrupted Snowfall Patterns: Affects freshwater availability and ecosystems.

Global Efforts to Protect the Cryosphere: Download Our Application









- Paris Agreement (2015): Aims to limit global warming to 1.5°C.
- International Cryosphere Climate Initiative (ICCI): Works on policies to protect frozen regions.
- **IPCC Reports**: Highlight the need for urgent action.
- National Mission for Sustaining the Himalayan Ecosystem (NMSHE): India's initiative under NAPCC to protect the Himalayas.
- **CryoNet (WMO)**: Monitors changes in the cryosphere globally.
- Sustainable Development Goals (SDGs): Goal 13 (Climate Action) and Goal 15 (Life on Land) focus on mitigating climate impacts.
- Arctic Council: Promotes sustainable policies in the Arctic region.
- Global Ice Monitoring Initiatives: Programs like Global Cryosphere Watch (GCW) and CryoSat Mission track ice mass loss.

A Call to Action:

The **cryosphere is essential** for maintaining Earth's climate, biodiversity, and water resources. Preserving it is crucial for **future generations and the health of our planet**.

With **2025 declared the International Year of Glaciers' Preservation**, the time to act is **NOW**.

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To the Point



GS Paper 3 – Science and Technolog

Progress on GM Food Crops: Insights from DBT Official

Daily Current Affairs 23 to 29 March

Context: The **Department of Biotechnology (DBT)** has recently acknowledged progress in Genetically Modified (GM) food crops, signaling advancements in research and development.

What Are Genetically Modified (GM) Food Crops?

GM crops are plants whose genetic material has been artificially **modified** using biotechnology to introduce desirable traits such as:

- **Pest Resistance** (e.g., **Bt cotton**, **Bt brinjal**)
- Herbicide Tolerance (e.g., GM soybean)
- Drought & Salinity Resistance
- Nutritional Enhancement (e.g., Golden Rice enriched with Vitamin A)

GM Crops in India: Current Status:

Currently, **Bt Cotton** is the **only commercially cultivated GM crop in India** since its introduction in **2002**. Other developments include:

- **Bt Brinjal**: Approved in **2010** but later **banned** due to public concerns.
- GM Mustard (DMH-11): Approved by GEAC in 2022 but still faces legal and environmental challenges.
- Golden Rice: Under research but not yet approved for commercial use.

India's Bio-Economy and GM Crop Influence:

Growth of the Bio-Economy:

- India's **Bio-economy** has grown **16-fold**, from **\$10 billion in 2014** to **\$165.7 billion in 2024**.
- It now contributes **4.25% of India's GDP**, with a **17.9% CAGR** over the past four years. •

Key Sectors in Bio-Economy:

- Bio-industrial Segment (enzymes, biofuels, bioplastics) 47% ٠
- **Biopharma** (medicines, diagnostics) **35%** ٠
- Bio IT/Research Services (contract research, clinical trials) 9% ٠
- **Bio-agriculture 8.1%** •

Statewise Contributions:

- Maharashtra: 21% (\$35 billion)
- Karnataka: 19% (\$32 billion)
- Telangana: 12% (\$19 billion)

Startup Ecosystem:

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- India had **10,075 biotech startups in 2024**.
- Expected to grow to **22,500 by 2030**, creating **35 million jobs**.

Advantages of GM Crops:

- Higher Yields Enhances food security and farmer income.
- Reduced Pesticide Use Crops like Bt Cotton lower pesticide dependence.
- **Climate Resilience** GM crops can **withstand droughts and soil salinity**.
- Nutritional Benefits Golden Rice helps combat Vitamin A deficiency.

Challenges & Concerns:

- Environmental Impact Possible effects on biodiversity, soil health, and pollinators.
- Health Risks Long-term human health impacts remain under debate.
- **Farmer Dependency** GM seeds are often **patented by corporations**, increasing dependency.
- Ethical & Religious Concerns Genetic modification faces opposition from cultural and religious groups.

Regulatory Framework for GM Crops in India:

- **Genetic Engineering Appraisal Committee (GEAC)** Primary body regulating GM crops.
- Food Safety and Standards Authority of India (FSSAI) Approves GM food imports.
- Environment Protection Act, 1986 Governs the use and safety of GM organisms.
- BioE3 Policy Aims to enhance biotechnology use in food crops, pharmaceuticals, and agriculture.

Global Persp<mark>ective o</mark>n GM Crops:

- Countries like the USA, Brazil, and China have widely adopted GM crops.
- The **EU and India** remain cautious due to environmental and ethical concerns.
- The debate continues, with scientists advocating the potential benefits, while activists raise safety concerns.

The Road Ahead:

With advancements in **biotechnology and regulatory frameworks**, India's approach to **GM food crops** will play a crucial role in **sustainable agriculture**, **food security**, **and economic growth**. However, addressing **public concerns and ensuring long-term safety** remains vital for future adoption.

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GS Paper 1 – Geography

Mongolia: The Land of Eternal Blue Sky

Context: India and **Mongolia** have reaffirmed their commitment to deepening their strategic **partnership**, fostering cooperation in various sectors, including trade, defense, and culture.

Political Overview:

- Landlocked Nation: Mongolia is a landlocked country situated in **north-central Asia**.
- Bordering Nations: It shares its borders with Russia to the north and China to the south.
- **Capital: Ulaanbaatar**, the coldest capital city in the world, is Mongolia's political and economic hub.

Geographical Highlights:

Dominant Landforms: Mongolia is predominantly a highland plateau, with approximately 80% of its terrain covered in vast steppes (grasslands).



- **Desert Landscape:** The **Gobi Desert**, located in the southern part, is one of the world's largest cold deserts, home to unique wildlife such as the **Bactrian camel** and the elusive **snow leopard**.
- **Mountain Ranges:** The country boasts several major mountain chains, including:
 - **Altai Mountains** Known for their rugged terrain and diverse wildlife.
 - **Khangai Mountains** A forested mountain range offering a contrast to the arid steppes. 0
 - **Khentii Mountains** Historically significant as the birthplace of **Genghis Khan**. 0

Water Bodies and Natural Heritage:

- Longest River: The Orkhon River, which flows through the famous Orkhon Valley, a UNESCO **World Heritage Site**, known for its rich historical and cultural significance.
- Lakes and Wetlands: Mongolia is home to stunning lakes like Lake Khövsgöl, often called the "Blue Pearl of Mongolia," which holds nearly 2% of the world's fresh water.

Did You Know?

- Mongolia is known as the "Land of the Eternal Blue Sky" because it experiences over 250 sunny days a year!
- The Naadam Festival, Mongolia's biggest traditional event, showcases "The Three Manly Games" wrestling, horse racing, and archery.
- Mongolia has one of the lowest population densities in the world, with vast open landscapes and a deeply rooted nomadic culture.

This remarkable nation, with its unique geography and rich cultural heritage, continues to be a fascinating destination on the global map.

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GS Paper 3 – Science and Technology

Astronauts' Recovery After Space Missions: Health, Rehabilitation & Challenges

Context: A **SpaceX capsule** carrying astronauts **Sunita Williams**, **Barry** Wilmore, Aleksandr Gorbunov, and Nick Hague safely splashed down in the **Gulf of Mexico** following their mission aboard the **International** Space Station (ISS).

- Williams and Wilmore completed a nine-month mission on the ISS, having arrived in June last year via Boeing's Starliner capsule.
- NASA provides a structured recovery program for Hague, Williams, and Wilmore, while Roscosmos manages Gorbunov's rehabilitation.

Impact of Spaceflight on the Human Body:

Extended space missions significantly impact astronauts' bodies due to prolonged exposure to microgravity.

Key Physical Challenges:

- Fluid shifts toward the brain, affecting vision and balance
- Muscle weakening due to lack of gravitational resistance
- **Reduced bone density**, increasing the risk of fractures •

Countermeasures in Space:

To minimize these effects, astronauts follow strict exercise regimens and nutrition plans while aboard the ISS.

Coping with Psychological and Physiological Stress:

- Space agencies implement stress management programs to help astronauts cope with isolation, workload, • and confinement.
- **Mental well-being** is as important as physical health for long-duration missions.

Challenges in Spaceflight Research:

- Due to **the small number of astronauts**, data on the **long-term effects** of space travel is still **limited**.
- **Gender-based physiological differences** in response to spaceflight are being studied, though no conclusive evidence has been found.

How Astronauts Are Monitored in Space:

In 2024, NASA introduced updated medical protocols to improve astronaut health monitoring before, during, and after space missions.

Monitoring During Long Missions:

For missions exceeding 30 days, astronauts must:

- Conduct self-evaluations at 2 weeks, 3 months, 6 months, and 9 months after launch
- Submit medical reports to the crew medical officer •
- Participate in daily private health conferences for the first week, followed by weekly check-ins. ٠

Medical Tests in Space:

- Hearing & Eye Exams: Every three months •
- Body Mass Check: Monthly ٠
- Blood & Urine Tests: At six months or as needed

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- Blood Circulation Monitoring: Screening for deep-vein thrombosis at one and two months post-launch
- Radiation & Strength Tests: Conducted regularly throughout the mission

Post-Flight Rehabilitation Process:

After splashing down, astronauts begin a **structured rehabilitation program** to help them readjust to Earth's **gravity**. **Customized Recovery Plans**:

- NASA tailors the reconditioning program to each astronaut.
- Most astronauts regain pre-flight fitness within 45 days, but some require extended rehabilitation.

Medical Examinations Upon Return:

Immediate Tests (Day of Return):

- Physical Exam & Neurological Assessment
- ECG (Heart Monitoring), Eye Tests, Skin Checks
- Blood & Urine Analysis
- Orthostatic Tolerance Tests (measuring ability to stand without dizziness)

Follow-up Examinations:

- Conducted at 3 days, 1-2 weeks, and 2 months post-return
- Additional tests if medically required

Mental Health <mark>Monitoring:</mark>

• **Psychologists evaluate astronauts** to ensure a **smooth mental transition** back to normal life.

Importance o<mark>f Physica</mark>l Rehabilitation:

Physical therapy is **essential** to help astronauts **safely regain strength** and **prevent injuries**.

Early Recovery & Assessments:

- **Day of Return:** Crew surgeons assess the need for **massage therapy**.
- First Week: 2-hour daily reconditioning with elliptical, rowing, cycling, gait training, and stretching exercises.

Progressive Rehabilitation:

- Second Week: Introduction of jogging and water-based exercises to improve mobility.
- Daily Monitoring: Physiotherapists adjust exercises based on progress tracking.

Key Focus Areas:

NASA's program focuses on restoring:

- Aerobic capacity & muscle strength
- Bone density & balance
- Stamina & coordination
- Neurovestibular function (balance and spatial awareness)

Completion of Rehabilitation:

Once astronauts **fully recover**, they are **cleared to resume normal duties**.

This structured recovery process ensures astronauts **return to peak physical and mental health** after their demanding space missions.

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GS Paper 3 – Agriculture and Related Issues

Parliamentary Panel Recommends Boosting Fertilizer Subsidy and Domestic Production

Context: A **Parliamentary Standing Committee on Chemicals and Fertilizers** has recommended that the **Union Fertilizers Ministry** seek additional funds to ensure the **seamless implementation** of fertilizer subsidy programs for farmers.

Key Recommendations of the Committee:

Increased Budget Allocation:

- The panel urged the Ministry to request **additional funds** at the **revised estimate stage** to prevent any adverse impact on farmers.
- The initial budget allocation for the **Department of Fertilizers (2025-26)** was **□1,84,704.63 crore**, but the **Ministry of Finance** reduced it by **7.38% to □1,71,082.44 crore**.
- This budget cut has impacted crucial schemes such as the **Nutrient-Based Subsidy (NBS) Scheme** and the **Urea Subsidy Scheme**.

Expansion of Nano Fertilizer Production:

- The panel advocated for **scaling up production** of **Nano Urea** and **Nano DAP (Diammonium Phosphate)** to meet increasing demand.
- It emphasized **speedy establishment of production units** to ensure the timely availability of these fertilizers.
- Popularization among farmers is necessary, as studies show Nano Urea significantly boosts crop yield (e.g., peas saw a 6.14%–14.82% increase in yield, sugarcane 1.65%–4%).

Achieving Self-Sufficiency in Fertilizer Supply:

- While India imports fertilizers and raw materials, the panel criticized the lack of mining lease agreements for domestic exploration.
- It urged the Central Government to secure mining leases for essential raw materials to reduce dependency on imports.
- A combined investment from Government, Public, and Private sectors is necessary for self-reliance in fertilizer production.

Addressing Underutilization of Funds:

The panel pointed out **significant underutilization** of allocated funds in **2024-25**, affecting key fertilizer categories:

- 20% unutilized under indigenous Phosphorus & Potassium (P&K) fertilizers.
- 12% unutilized under imported P&K fertilizers.
- 14.76% unutilized under indigenous Urea.
- **59.57%** unutilized under the **Market Development Assistance (MDA) scheme**.
- It recommended **full utilization** of budgetary allocations for the **effective implementation of subsidy schemes**.

Continuation of Urea Subsidy Scheme:

- Recognizing **urea's crucial role in food grain production**, the panel stressed the need to **continue the Urea Subsidy Scheme**.
- It also highlighted that **Nano DAP** could **reduce dependence on conventional granular DAP**, offering a sustainable alternative through **seed treatment and foliar application**.

Government Initiatives in Fertilizer Subsidy and Soil Health Management:

Nutrient-Based Subsidy (NBS) Scheme:

- Implemented on April 1, 2010, the NBS scheme covers Phosphatic & Potassic (P&K) fertilizers.
- Under this scheme, a **fixed subsidy is provided** based on the **nutrient content**, including **Di-Ammonium Phosphate (DAP)**.

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P&K fertilizers are decontrolled, allowing companies to set the Market Retail Price (MRP) under government monitoring.

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Urea Subsidy Scheme:

- Urea is supplied at a fixed MRP of 242 per 45 kg bag (excluding neem coating and taxes), unchanged since March 1,2018.
- The government covers the cost difference between market price and MRP through subsidies.

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Special Package for DAP (2024-25):

- To tackle **geopolitical disruptions in fertilizer procurement**, the Government approved a **one-time special** package for DAP subsidies.
- An additional subsidy of 3,500 per MT was granted from April 1, 2024, to March 31, 2025, beyond NBS rates.
- This measure aims to **keep DAP prices affordable** while ensuring **adequate supply**.

Impact of Long-Term Chemical Fertilizer Use and Recommendations

Findings from ICAR Study:

- No harmful effects on soil fertility if fertilizers are used judiciously and in balanced proportions.
- However, **imbalanced fertilizer use** can lead to:
 - Nutrient deficiencies and declining soil health. 0
 - **Overuse of nitrogenous fertilizers (urea)** resulting in **lower crop yields** over time. 0
 - Even balanced NPK fertilization failing to prevent secondary and micronutrient deficiencies. 0
- **Drip irrigation (fertigation)** enhances water and nutrient efficiency, reducing fertilizer consumption.

Soil Health Management Recommendations (ICAR):

- Farmers should adopt soil test-based integrated nutrient management.
- Balanced use of:
 - Inorganic fertilizers (NPK). 0
 - Organic sources like manure and bio-fertilizers.
- Training and awareness programs are essential for farmers.

Promotion of Organic Fertilizers under GOBARdhan Initiative:

- The Market Development Assistance (MDA) scheme provides **1,500 per MT** for organic fertilizers. •
- Organic manure production is linked with:
 - SATAT scheme (Ministry of Petroleum & Natural Gas) for biogas production. \circ
 - Waste-to-Energy Program (Ministry of New & Renewable Energy). 0
 - Swachh Bharat Mission (Rural).
- The Government has allocated 1,451.84 crore (2023-26), including 360 crore for research in organic fertilizers.

Conclusion:

The Parliamentary Panel's recommendations focus on boosting fertilizer subsidies, increasing domestic production, and ensuring long-term soil health. Government initiatives like the NBS Scheme, Urea Subsidy, and GOBARdhan program aim to:

- Ensure affordable fertilizer availability.
- Reduce dependency on imports. ٠
- Promote sustainable agricultural practices.

A balanced fertilizer approach, integration of organic alternatives, and adoption of efficient irrigation methods are critical for sustaining soil fertility and food security.

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GS Paper 3 – Infrastructure – Railways

Meghalaya's Railway Debate: Opposition, Economic Prospects, and Connectivity Hurdles

Context: Despite decades of **opposition from Khasi pressure groups**, the Indian Railways has decided to **halt railway projects** to Byrnihat and Shillong. This decision leaves **Shillong as the only state capital in India without rail connectivity**.

Meanwhile, **new protests have erupted** in the Jaintia Hills against the **proposed railway line to Jowai**, the largest town in the region.

Current Railway Connectivity in Meghalaya:

Meghalaya has only **one operational railway station** at **Mendipathar in North Garo Hills**, which has been functional since **2014**. This station offers **daily passenger train services to Guwahati** and recently received its **first freight shipment**.

Beyond this, the **Northeast Frontier Railways (NFR)** had planned **three additional railway projects**, but all have been met with **strong opposition**.

Proposed Railway Projects in Meghalaya:

1. Tetelia-Byrnihat Railway Line (Sanctioned in 2010):

- A 21.5 km rail link between Tetelia (Assam) and Byrnihat (Meghalaya).
- Work on the **19 km Assam portion** is **complete**, but local resistance has stalled progress on the **Meghalaya** side.
- The Railways is now considering **terminating the project at the Assam border**.

2. Byrnihat-Shillong Railway Line (Sanctioned in 2011):

- A 108.76 km railway project with 10 proposed stations, connecting Byrnihat to Shillong.
- In **2017**, **209.37** crore was allocated for **land acquisition**, but **protests by the Khasi Students' Union (KSU)** have prevented progress.
- With no resolution in sight, the **Railways has requested the Meghalaya government to return the unused funds**.

3. Chandranathpur-Jowai Railway Line (Approved in 2023):

- A planned railway link between Chandranathpur (Assam) and Jowai (Meghalaya).
- The project is currently in the survey phase, but Jaintia organizations have already opposed it.

Overall Outlook:

Despite growing demand for improved infrastructure, **widespread resistance from pressure groups has stalled all railway expansion efforts**. As a result, **Shillong remains the only state capital without a railway connection**.

Why Are Railway Projects Facing Opposition in Meghalaya?

1. Fear of Large-Scale Migration:

- The Khasi Students' Union (KSU) has been opposing railway expansion in the Khasi Hills since the 1980s.
- Their biggest concern is that **railways will lead to an influx of outsiders**, threatening the indigenous **Khasi and Garo populations**.

2. Demand for Inner Line Permit (ILP):

- The KSU has long pushed for ILP to regulate entry and stay of non-locals in Meghalaya.
- ILP is already enforced in Arunachal Pradesh, Nagaland, Mizoram, and Manipur.
- Without ILP, they fear an **uncontrolled migration flow**, which could **alter Meghalaya's demographic balance**.

3. Lack of Protective Mechanisms:







- The KSU has clarified that they **are not against railways in principle** but want **strong legal safeguards like ILP** before any project is approved.
- They argue that **road travel can be monitored**, but **railways would allow unchecked migration**.

4. Resistance Spreading to Jaintia Hills:

- The Jaintia National Council (JNC) has also joined the opposition, citing concerns over protecting local identity and land.
- JNC leaders believe Meghalaya **lacks a proper system to regulate migrant entry**, making rail expansion a **potential threat** to local communities.

Overall Concern:

Without **legal protections like ILP**, indigenous groups fear that **rail connectivity will trigger a demographic shift**, affecting the **cultural and economic stability of local communities**.

Diverse Perspectives on Rail Connectivity in Meghalaya:

1. Opposition as a Bargaining Strategy for ILP:

- Some believe that opposition groups are **using the railway issue as leverage** to pressure the government into implementing **Inner Line Permit (ILP)**.
- They argue that the general public is neutral, and rail connectivity is crucial for Meghalaya's economic future.

2. Economic Advantages of Rail Connectivity:

- Meghalaya's economy depends heavily on **small-scale** agriculture (75%) and the service sector.
- Road transport leads to higher costs, making goods more expensive.
- Rail connectivity would lower transportation costs, increase trade, and boost business opportunities.
- Chief Minister Conrad Sangma has openly supported railway expansion, highlighting its potential to reduce logistics costs and improve commerce.

3. Support for Railways in Garo Hills:

- Unlike the strong opposition in the Khasi and Jaintia Hills, **many Garo leaders support railway expansion**.
- Garo communities see railways as an opportunity for economic development and better access to markets.

Overall Perspective:

While **Khasi and Jaintia groups oppose railway expansion**, the **economic benefits are hard to ignore**. In the **Garo Hills**, many leaders and residents **welcome railway projects**, recognizing their **potential to improve trade and connectivity**.

Conclusion:

Meghalaya's railway debate reflects a clash between concerns over identity preservation and the push for economic progress.

- **Opposition groups fear large-scale migration** and **demand safeguards like ILP** before any railway project proceeds.
- Supporters argue that better rail connectivity would transform Meghalaya's economy, lowering costs and boosting trade and development.
- While Khasi and Jaintia organizations remain resistant, **many in the Garo Hills are eager to see railway expansion**.

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With no clear resolution, Meghalaya **continues to remain one of the least connected states**, missing out on the **economic and infrastructural benefits of rail networks**.

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GS Paper 3 – Indian Economy

India's Trade Dilemma: Balancing US Tariff Pressure and Chinese Investment Rules

Context: With **border tensions easing**, India is considering **improving economic ties** with China. Policymakers see this as an **opportune moment** to reassess trade barriers.

At the same time, **the US is pressuring India** to **reduce tariffs** and **accept Washington's trade terms**. As a result, India faces a critical **balancing act between China and the US**.

India-China Bilateral Trade: Key Insights

- In **FY24, India-China trade** reached **\$118.40 billion**, making China **India's top trading partner once again**.
- China accounted for 15% of India's total imports.
- India **imported goods worth \$101.74 billion** from China, out of its total imports of **\$675.42 billion**.

India's Expanding Trade Deficit with China:

India's trade deficit with China **stands at a massive \$83 billion**, primarily due to:

- Limited Export Diversification India mainly exports primary commodities, lacking a strong presence in high-value sectors.
- 2. Market Access Barriers India faces restrictions in key sectors such as agriculture, pharmaceuticals, and IT/ITeS, despite having export potential.

China's Low <mark>Investme</mark>nt in India:

- China ranks only 22nd in FDI equity inflows into India, contributing a modest \$2.5 billion (April 2000– September 2024).
- Despite rapidly expanding trade volumes, Chinese investments in India remain minimal.
- However, **Beijing is keen to increase investment flows**, signaling **potential changes** in India's approach.

India Considers Easing Trade Barriers on China Amid US Pressure

Relaxing 2020 Trade & Investment Restrictions:

- **Discussions are underway** to **ease trade restrictions** imposed after the **2020 Galwan clash**.
- Potential measures include:
 - Lifting tariff and non-tariff barriers.
 - **Easing visa restrictions** for Chinese professionals.
 - Reopening access to select banned Chinese apps.
 - Allowing targeted Chinese investments to address the trade deficit.

Indian Industry Push for Trade Normalization:

- SMEs and major industries have urged the government to remove trade restrictions to ensure uninterrupted supply chains.
- Key industry demands include:
 - **Easing BIS certification norms** for Chinese imports.
- Visa extensions for Chinese workers in major infrastructure projects. **Download Our Application**

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Balancing US-China Relations:

- Engaging **China economically** could help **counterbalance US tariff pressure**.
- A Finance Ministry presentation has advocated for selectively easing trade restrictions, indicating India's flexible approach to global trade.

Cautious Approach to Chinese Investments:

- India is considering gradual approval for Chinese investments, particularly in joint ventures where Chinese firms hold minority stakes.
- The **Economic Survey 2023-24** suggested:
 - Encouraging Chinese investments to boost India's industrial capabilities. 0
 - **Discouraging direct imports of finished goods** to protect local businesses. 0

China Plus One Strategy: India's Position:

What is the China Plus One Strategy?

- Many multinational companies are **reducing dependence on China** by shifting part of their manufacturing and supply chains to other countries.
- Factors driving this shift:
 - Rising labor costs in China.
 - Geopolitical tensions (e.g., US-China trade war). 0
 - Supply chain disruptions (COVID-19, global conflicts, etc.). 0

India's Limited Success in Capturing China Plus One:

- A December 2024 NITI Aayog report noted that India has had "limited success" in attracting global companies under the China Plus One strategy.
- **Reasons for slow progress:**
 - Regulatory hurdles and bureaucratic delays. 0
 - **Infrastructure gaps** compared to China.
 - Uncertainty in trade policies.

Shifting Trends in India-China Trade Relations:

- **Recent developments suggest a shift toward a more balanced trade relationship**:
 - SAIC Motors reducing its stake in MG Motors India. \circ
 - Shein re-entering India through a partnership with Reliance Retail. 0
- These moves indicate that India may allow controlled Chinese investments while maintaining trade barriers in sensitive sectors.

Conclusion: A Strategic Balancing Act

India now faces a crucial decision - whether to:

- Ease trade barriers for increased Chinese investment.
- Continue restricting trade and face rising import costs. •

While US pressure to cut tariffs grows, India sees an opportunity to leverage its position strategically. Any policy shift will likely be gradual and aligned with long-term economic interests—ensuring self-reliance while keeping trade doors open.

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GS Paper 3 – Security and Defence

Tavasya: India's Fourth Krivak-Class Stealth Frigate Takes to the Waters

Context: India has successfully launched **Tavasya**, the fourth and **final followon Krivak-class stealth frigate**, at **Goa Shipyard Ltd. (GSL)**. This marks a **major milestone** in India's naval expansion, strengthening its fleet with advanced warships built under **Russian technology transfer**.

Krivak-Class Frigate Deal: A Strategic Partnership:

- In October 2016, India and Russia signed an Inter-Governmental Agreement (IGA) for the construction of four follow-on Krivak-class frigates.
- **Two of these frigates** were built in **Russia**, while the other **two are being built at GSL** under a **technology transfer agreement**.
- **Tavasya** is the **second frigate** to be constructed in India, showcasing the nation's **growing shipbuilding capabilities**.

India's Krivak-Class Frigate Timeline:

Indian-Built Frigates (Under Construction in Goa Shipyard):

- INS Triput Launched in July 2023, set for Indian Navy delivery in 2026.
- INS Tavasya Launched in March 2025, final follow-on Krivak-class frigate.

Russian-Built Frigates:

- INS Tushil Commissioned in December 2024 at Kaliningrad, Russia, reached home port Karwar in February 2025.
- INS Tamal Undergoing advanced sea trials, expected to be commissioned by June 2025.

Tavasya: Advanced Warship with Cutting-Edge Technology

Technical Specifications:

- **Class: Krivak IV** (Follow-on **Talwar-class** frigate).
- **Propulsion:** Powered by Zorya-Mashproekt gas turbine engines from Ukraine.
- Stealth Technology: Reduced radar visibility for enhanced survivability.
- Multi-Role Capabilities:
 - Anti-Submarine Warfare (ASW)
 - Anti-Aircraft Defense
 - Surface Combat Missions
- Advanced Weapon Systems: Equipped with state-of-the-art sensors and combat systems for superior operational effectiveness.

A Leap Forward for India's Naval Power:

The successful launch of Tavasya highlights India's growing self-reliance in warship construction and its strategic naval collaboration with Russia. With these stealth frigates, the Indian Navy strengthens its maritime defense in the Indo-Pacific region, ensuring superior combat readiness for future challenges.

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GS Paper 1 – Ancient History

Lapis Lazuli: The Earth's Most Enchanting Blue

Context: Lapis Lazuli is a mesmerizing **deep-blue metamorphic rock**, treasured for its vibrant color and semi-precious gemstone status. This legendary stone has been admired for **millennia**, gracing jewelry, ornaments, and even ancient pigments.

Origins of the Name:

- Lapis (Latin) meaning "stone."
- Lazuli (Persian: Lazward) meaning "blue."

The Unique Composition of Lapis Lazuli

The rich blue hue of Lapis Lazuli comes from lazurite, which makes up 25-40% of the stone. The shade of blue varies based on **sulfur content** within lazurite.

Other minerals present include:

- **Pyrite** Creates **golden flecks**, adding a starry-sky effect.
- **Calcite** Appears as **white streaks**, reducing the intensity of the blue.
- **Diopside & Sodalite** Found in smaller quantities, contributing to its unique texture.

Did You Know?

The finest **Afghan Lapis Lazuli** contains minimal calcite and abundant golden pyrite specks, making it highly prized.

Where is Lapis Lazuli Found?

The world's most renowned Lapis Lazuli deposits are located in:

- Badakhshan, Afghanistan Mined for over 6,000 years, producing the highest-quality stones.
- **Chile, Russia, and the United States** Other significant sources. •

Lapis Lazuli Through the Ages:

Ancient India:

- Imported from **Badakhshan** as early as **1000 BCE**. •
- Indus Valley Civilization (Mohenjo-daro & Harappa) crafted lapis ornaments and jewelry.

Egyptian Royalty:

- Worn by **pharaohs** and **priests** as a symbol of **power and wisdom**. ٠
- Ground into powder for **cosmetic eye shadow** and **ritualistic use**.

European Renaissance:

- Transformed into **ultramarine pigment**, one of the most **expensive and coveted blues** in history.
- Used by great artists like Michelangelo and Vermeer for their masterpieces.

A Gemstone of Legends:

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From adorning the crowns of kings to being a prized pigment of painters, Lapis Lazuli has left an indelible mark on human civilization. Its celestial **blue depths**, flecked with golden pyrite, continue to symbolize wisdom, truth, and divine beauty.

This version enhances readability, adds historical context, and highlights essential facts in an engaging way. Let me know if you'd like any refinements.

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GS Paper 3 – Information Technology

Challenge to Government's Use of Section 79(3)(b) of the IT Act

Context: A legal challenge has been raised against the government's **interpretation and use of Section 79(3)(b)** of the **Information Technology Act, 2000**, arguing that it **circumvents due process** and **bypasses safeguards** outlined in **Section 69A**.

Understanding Section 79 & Safe Harbour Protection:

- Section 79: Provides safe harbour protection to intermediaries (social media platforms, search engines, etc.), shielding them from liability for user-generated content.
- Section 79(3)(b): Removes this protection if an intermediary fails to act on government notifications to block or remove unlawful content.

Section 69A: The Lawful Route for Blocking Content

- Empowers the **government** to block content **only on specific grounds** laid out in **Article 19(2) of the Constitution**, which allows **reasonable restrictions** on free speech.
- As per the **Shreya Singhal Judgment (2015)**, content **can only be censored** through:
 - 1. The procedure provided under Section 69A, or
 - 2. A court order.

MeitY's 2023 Directive & 'Sahyog' Portal:

- The Ministry of Electronics and Information Technology (MeitY) issued a directive allowing ministries, state governments, and police authorities to issue blocking orders under Section 79(3)(b).
- In **2024**, MeitY launched the '**Sahyog' portal**, enabling authorities to **issue and upload blocking orders**, further operationalizing this interpretation.

Key Concerns Raised:

1. Misuse of Section 79(3)(b):

- Section 79(3)(b) does not grant direct blocking powers to the government. Instead, it merely defines conditions under which an intermediary loses its safe harbour protections.
- Using it as a **content-blocking tool distorts its intended purpose**.

2. Violation of the Shreya Singhal Judgment:

- The **Supreme Court had ruled** that content takedowns must follow the **procedure under Section 69A**, ensuring **due process** and **safeguards** against arbitrary censorship.
- **MeitY's directive bypasses this legal protection**, allowing content to be removed without **the scrutiny of a judicial or independent authority**.

Why This Matters:

This challenge raises critical **free speech concerns**, highlighting **potential overreach in content regulation**. If **Section 79(3)(b) is used as a censorship tool**, it could **weaken legal protections**, allowing content removal without the **checks and balances** established by **law and the judiciary**.

This version is **clear, engaging, and legally structured** while emphasizing key arguments. Let me know if you'd like any refinements

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GS Paper 3 – Environment, biodiversity, and climate change

Unveiling Thriving Ecosystems Beneath the George VI Ice Shelf: A Groundbreaking Discovery

Context: The **George VI Ice Shelf** is located in **George VI Sound**, nestled between **Alexander Island** and **Palmer Land**. It borders the **Bellingshausen Sea** in the Southern Ocean, a region rich in **floating ice shelves** and intricate underwater geography.

- Length: Extends from Ronne Entrance to Niznik Island.
- **Governance**: Falls under the **Antarctic Treaty System**, with active research primarily led by the **UK** and the **USA**.

Key Discoveries from the Challenger 150 Initiative:

The **Challenger 150 Initiative** has revealed remarkable findings beneath the George VI Ice Shelf, changing our understanding of marine ecosystems in extreme conditions.

Thriving Deep-Sea Ecosystems:

- Scientists uncovered a variety of flourishing ecosystems, including large corals, sponges, icefish, and giant sea spiders.
- These ecosystems have **survived for centuries**, despite being isolated from sunlight and surface nutrients.
- The presence of complex life in such extreme conditions suggests **unknown nutrient transport pathways**, opening exciting new avenues for scientific exploration.

New Species Identified:

• Among the unique discoveries were **giant phantom jellyfish**, **octopi**, **vase-shaped sponges** (potentially centuries old), and **sea spiders**.

What Are Deep-Sea Ecosystems?

Deep-sea ecosystems refer to marine habitats located below **200 meters** in depth, primarily within the **aphotic zone**—a vast expanse comprising **90%** of Earth's marine environment. These ecosystems include:

- **Abyssal Plains**: These deep-sea plains host species like **sea cucumbers**, which rely on **marine snow**—organic particles that provide essential nutrients.
- **Hydrothermal Vents**: Rich in **chemosynthetic life**, such as **tubeworms** and **yeti crabs**, these ecosystems thrive in extreme conditions without sunlight.
- **Whale Falls**: The decaying bodies of whales create temporary, yet highly productive ecosystems, supporting creatures like **hagfish**.

Significance of the Discovery:

The findings under the **Challenger 150 Initiative** provide profound insights into marine science, challenging previous assumptions about life in extreme, nutrient-poor environments.

Scientific Relevance: The discovery reshapes our understanding of life's resilience, proving that ecosystems can thrive without the expected nutrient sources.
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- Climate Change Insights: As polar ice shelves continue to melt due to global warming, these ecosystems may undergo drastic changes. Studying these deep-sea habitats offers crucial insights into how ecosystems might respond to climate change.
- Marine Conservation: The discovery underscores the urgency of creating robust international frameworks to protect the fragile marine biodiversity of the Southern Ocean.

International Cooperation & the Ocean Decade:

The Challenger 150 Programme is a key initiative within the UN Decade of Ocean Science for Sustainable Development (2021-2030). This effort emphasizes the importance of multilateral scientific collaboration in deep-ocean exploration and conservation.

Endorsed by **UNESCO/IOC**, the initiative is aligned with global sustainable development goals, particularly SDG 14 (Life Below Water), which aims to protect and restore marine ecosystems globally.

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GS Paper 3 – Environment, Disaster Management

India's Heat Action Plans Lack Long-Term Vision, Study Reveals

Context: A recent study has found that most **Heat Action Plans (HAPs)** in Indian cities lack **long-term strategies** to effectively combat **extreme heat**. Even cities with such plans face challenges in their **implementation**.

The report, titled **"Is India Ready for a Warming World? How Heat Resilience Measures Are Being Implemented for 11% of India's Urban Population in Some of Its Most At-Risk Cities,"** was conducted by the **Sustainable Futures Collaborative (SFC)**, a research organization based in New Delhi.



The study raises concerns that **insufficient planning** could lead to **more heat-related fatalities** as heatwaves intensify due to **climate change**.

Understanding Heat Action Plans (HAPs):

A Heat Action Plan (HAP) serves as an early warning and preparedness system designed to mitigate the impact of rising temperatures. These plans include both immediate interventions and long-term resilience strategies to protect vulnerable populations from heat-related health risks.

Key Components of Heat Action Plans:

Immediate Measures:

- Utilizing weather forecasts and early warning systems to alert authorities and the public.
- Conducting public awareness campaigns about heatwave dangers.
- Establishing cooling shelters and heat relief centres.
- Ensuring **access to clean drinking water** to prevent dehydration.
- Equipping **hospitals with necessary medical supplies** and training healthcare workers for heat-related emergencies.

Long-Term Strategies:

- **Urban planning solutions** such as increasing **tree cover** and **green spaces** to reduce heat.
- Using heat-resistant building materials to minimize the urban heat island effect.
- Implementing **cool roofing technology** to keep indoor temperatures lower.
- Enhancing **coordination among government agencies**, healthcare systems, and emergency responders for effective heatwave management.

Implementation of Heat Action Plans in India:

As of July 2024, the National Disaster Management Authority (NDMA) reported that HAPs are being implemented in 23 heatwave-prone states in partnership with state governments.

India's Escalating Heatwave Crisis:

Early Arrival of Extreme Heat:

- February **2024** witnessed **record-breaking temperatures**, with official **heatwave alerts in Goa and Maharashtra**.
- States like Odisha, Telangana, and Maharashtra recorded temperatures exceeding 40°C.
- **31 States and Union Territories** saw **night temperatures** at least **1°C above normal**, with **22 states/UTs** experiencing **3°C to 5°C** higher-than-usual temperatures.

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Rising Heatstroke Fatalities:

- Data from the NDMA reveals a worrying increase in heatstroke deaths, rising from 530 in 2020 to 730 in 2022.
- However, in **2024**, official reports indicated a decline, with **269 suspected** and **161 confirmed heatstroke deaths**.
- Contradicting this, the non-profit organization HeatWatch recorded 733 heat-related deaths across 17 Indian states between March and June 2024, raising concerns over data accuracy and heatwave preparedness.

Key Insights from the Study : The research identified **nine major Indian cities**, each with a population of over **one million**, expected to face **severe increases in dangerous heat levels**. The study was based on **88 interviews** with officials from **city, district, and state governments**, as well as representatives from **disaster management, healthcare, urban planning, and labor sectors**.

Major Findings:

- 1. **Short-Term Measures Exist**: All nine cities have emergency protocols, such as **access to drinking water** and **adjusted work schedules**, to tackle **immediate heat risks**.
- 2. Long-Term Planning is Lacking: Essential long-term solutions—including cooling solutions for vulnerable groups, insurance for lost wages, fire safety measures, and electricity grid upgrades—were either absent or poorly executed.
- 3. Uncoordinated Urban Planning Efforts: While efforts like expanding urban greenery are being made, they lack a focused strategy to help the most at-risk populations.
- 4. **Over-Reliance on Healthcare Solutions**: Most **long-term strategies** were geared toward **treating heatrelated illnesses**, rather than **preventing heat exposure** in the first place.
- 5. Institutional and Financial Challenges:
 - A lack of coordination between municipal, district, and state departments remains the biggest hurdle.
 - Limited funding is another major barrier to implementing sustainable heat resilience strategies.

The Need for a Comprehensive National Heat Strategy:

As global efforts to curb greenhouse gas emissions continue to lag, India must prioritize heat adaptation strategies.

Key Actions for a National Heat Strategy:

- Integrating **sustainable cooling solutions** like **green buildings**, **passive cooling techniques**, and **urban greening** into city planning.
- Avoiding over-reliance on **air conditioning**, which exacerbates **environmental damage** due to **ozone-depleting refrigerants**.
- Strengthening **national policies** to ensure that **heat resilience strategies** are **well-funded**, **well-coordinated**, **and effectively implemented**.
- Developing a **National Heat Strategy** as part of India's **National Adaptation Plan**, ensuring its inclusion in global discussions ahead of **COP30 in Brazil**.

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This study highlights the **urgent need for India** to move beyond **short-term emergency responses** and develop a **long-term, sustainable approach** to combat **rising heatwaves** and protect its **urban population**.

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GS Paper 2 – Governance, Constitution, Polity, Social Justice

Judiciary's In-House Inquiry & Removal of Judges in India: A Detailed Overview

Context: Chief Justice of India **(CJI) Sanjiv Khanna** has initiated an **unprecedented in-house inquiry** into Delhi High Court judge **Justice Yashwant Varma**. This follows an incident where **bundles of cash** were allegedly discovered at his residence after a fire broke out on **March 14, 2025**.

Unlike the **constitutional impeachment process**, this **in-house inquiry** is an internal mechanism for judicial accountability. A **three-member panel** has been formed to investigate the allegations. The inquiry panel comprises:



- Chief Justice G S Sandhawalia (Himachal Pradesh High Court)
- Justice Anu Sivaraman (Karnataka High Court)

How Can a Judge Be Removed in India?

Constitutional Provisions:

The process of removing a **Supreme Court judge** is governed by **Article 124(4)** of the **Indian Constitution**, while **Article 218** extends these provisions to **High Court judges**.

Grounds for Removal:

A judge can be removed only on two specific grounds:

- Prove<mark>n Misbeh</mark>aviour
- Incapacity

The Impeachment Process:

The **removal of a judge** follows a **strict parliamentary procedure**, which involves:

- 1. Impeachment Motion
 - A motion is introduced in either Lok Sabha or Rajya Sabha.
 - It requires the approval of **two-thirds of the members present and voting** in each House.
 - Additionally, the votes in favour must exceed **50% of the total membership** of that House.

2. Final Approval

- If both Houses approve, the **President of India** issues an order for removal.
- If Parliament is dissolved or its tenure ends before the process is completed, the **impeachment motion fails** automatically.

The In-House Procedure for Judicial Accountability:

Why Was an Internal Mechanism Needed?

The need for an internal disciplinary system arose after allegations of **financial misconduct** against **Bombay High Court Chief Justice A M Bhattacharjee** in **1995**. The Supreme Court, in the case **C. Ravichandran Iyer v. Justice A.M. Bhattacharjee (1995)**, observed that there was a gap between **bad behaviour** and **impeachable misconduct** under **Article 124**.

To address this, a **five-member committee** was formed to devise an **internal mechanism** for handling complaints against judges. The **Supreme Court adopted the procedure in December 1999**.

Revisions in 2014:

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In 2014, a **sexual harassment complaint** against a **Madhya Pradesh High Court judge** led the Supreme Court to further refine the **in-house inquiry process** in **Additional District and Sessions Judge 'X' v. Registrar General High Court of Madhya Pradesh**. Justices **J S Khehar and Arun Mishra** outlined a **seven-step process** for handling judicial misconduct.

How Does the In-House Inquiry Work?

Step 1: Receiving the Complaint

- Complaints can be **submitted to the CJI, a High Court Chief Justice, or the President of India**.
- The High Court Chief Justice or the President forwards the complaint to the CJI.
- If the CJI finds the complaint frivolous or baseless, it is dismissed.

Step 2: Preliminary Inquiry

- The CJI may request a preliminary report from the concerned High Court Chief Justice.
- If the preliminary findings suggest **serious misconduct**, the **CJI conducts a further review**.

Step 3: Formation of an Inquiry Committee

- If the **CJI determines a formal inquiry is necessary**, a **three-member committee** is formed.
- This typically includes:
 - Two Chief Justices of High Courts
 - **One Senior High Court Judge**
- The committee follows natural justice principles, ensuring the accused judge gets a fair opportunity to present their case.

Step 4: Conducting the Inquiry

- The committee investigates the allegations and submits a confidential report to the CJI.
- The report classifies the misconduct as:
 - Not serious enough for action
 - Serious enough to warrant resignation or removal

Step 5: Post-Inquiry Actions

- If the **misconduct** is **minor**, the **CJI may issue an advisory** to the judge.
- If the **misconduct is serious**, the **CJI advises the judge to resign or retire voluntarily**.
- If the judge **refuses to step down**, the **CJI can instruct the High Court Chief Justice to stop assigning them judicial work**.
- If the judge still does not resign, the CJI informs the President and the Prime Minister, recommending formal removal proceedings.

Why Is This Inquiry Significant?

The ongoing **in-house inquiry** against **Justice Yashwant Varma** demonstrates the Supreme Court's commitment to **judicial accountability** without needing a lengthy **impeachment process**. As a **precautionary measure**, **CJI Sanjiv Khanna has already directed Delhi High Court Chief Justice D K Upadhyaya to stop assigning cases** to Justice Varma.

This case highlights the **effectiveness of the in-house inquiry mechanism**, ensuring that judicial officers **uphold integrity** while maintaining the **independence of the judiciary**.

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GS Paper 1 – Geography

Places in News: Iran & Its Strategic Importance

Context: Iran's **Revolutionary Guards** have unveiled **new missile systems** on three strategically significant islands in the **Persian Gulf—Greater Tunb, Lesser Tunb, and Abu Musa**. These islands, located near the **Strait of Hormuz**, hold immense geopolitical importance as a major **global oil transit route**.

Political Overview of Iran:

Location & Borders:

Iran is situated in the Middle East, bordered by:

- South: Gulf of Oman and Persian Gulf
- North: Caspian Sea
- West: Iraq
- Northwest: Turkey
- North: Armenia & Azerbaijan
- East: Afghanistan & Pakistan
- Northeast: Turkmenistan

Strategic Significance:

- **Strait of Hormuz**: This crucial waterway handles **one-fifth of the world's oil trade**, making it a global flashpoint.
- **Military Presence**: Iran has frequently reinforced its military presence in the **Persian Gulf** to counter regional tensions.
- Energy Powerhouse: Iran holds the world's second-largest natural gas reserves and fourthlargest crude oil reserves.

Geographical Highlights of Iran:

Landforms & Terrain:

Iran's landscape is dominated by the Iranian Plateau, which features:

- Vast Deserts:
 - o Dasht-e Kavir (Great Salt Desert)
 - Dasht-e Lut (Lut Desert) (One of the hottest places on Earth)
- Mountain Ranges:

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- Zagros Mountains (West) A natural barrier between Iran and Iraq.
- Alborz Mountains (North) Home to Mount Damavand (5,609 m), the highest peak in the Middle East.

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Major Rivers:

- **Karun River** Iran's only navigable river, crucial for trade.
- **Safid River** Flows into the Caspian Sea, vital for agriculture. **Download Our Application**





Why Iran is in the Global Spotlight?

- Energy Hub: Iran's oil and gas reserves are critical for global energy security.
- Military & Defense: Iran frequently upgrades its defense capabilities, leading to regional tensions.
- **Nuclear Controversy:** Its nuclear program remains a subject of international negotiations. •
- **Geopolitical Influence**: Iran plays a key role in Middle Eastern politics, often at odds with the **U.S.**, Israel, and Gulf nations.

With Iran reinforcing its **military presence in the Gulf**, global powers are closely monitoring developments. The Strait of Hormuz remains a strategic chokepoint, where any conflict could have far-reaching economic consequences.

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Tackling Black Carbon: A Fast-Track Solution for Climate & Clean Air Benefits

Context: A recent report by the **Clean Air Fund** highlights that cutting down black carbon—alongside other super pollutants—is the fastest way to achieve immediate climate gains while simultaneously improving air quality, public health, and economic growth.

What is Black Carbon?

Black carbon, commonly known as **soot**, is a major component of **fine**

particulate air pollution (PM2.5). It is classified as a Short-Lived Climate Pollutant (SLCP), remaining in the atmosphere for just days to weeks, yet exerting a disproportionate warming effect.

Major Sources of Black Carbon Emissions:

- **Fossil Fuel Combustion** (coal, diesel engines)
- **Biomass Burning** (wood, crop residue, wildfires)
- Industrial Processes (brick kilns, waste burning)

Top Global Emitters:

- **China** World's largest black carbon emitter
- India Second-largest emitter, with major contributions from biomass burning and diesel transport

The Alarming Impact of Black Carbon:

A Major Driver of Global Warming:

Black carbon is one of the key super pollutants, alongside methane, responsible for nearly half of global warming. Unlike CO₂, which stays in the atmosphere for centuries, black carbon traps heat immediately, making its reduction a quick-win strategy for climate mitigation.

Regional Climate Disruptions:

- Accelerated Ice & Glacier Melting Black carbon deposits on snow and ice, reducing reflectivity and increasing melting rates. It accounts for 39% of mass loss in the Yala Glacier (Tibetan Plateau).
- Monsoon Disturbances Disrupts Asian & West African monsoons, increasing risks of floods & droughts.

Public Health & Air Pollution:

- Causes respiratory diseases, heart conditions, and premature deaths due to toxic fine particulate pollution (PM2.5).
- Over **7 million** premature deaths annually are linked to **air pollution**, with black carbon being a significant contributor.

Key Solutions to Reduce Black Carbon:

Target High-Impact Sectors in the Arctic - Curb emissions from gas flaring, shipping, and residential heating to protect fragile ecosystems.

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GS Paper 3 - Environment, Ecology



- Integrate Black Carbon Reduction into National Policies Countries must include black carbon targets in their clean air laws and climate strategies, especially in revisions of their Nationally **Determined Contributions (NDCs).**
- Strengthen Waste Management Systems Preventing open waste burning and improving solid waste disposal can significantly cut black carbon emissions.

The Takeaway:

Reducing black carbon offers a double benefit-an immediate slowdown of climate change and a significant improvement in public health. With rapid, coordinated action, we can make a real difference in both the climate fight and air pollution crisis.

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GS Paper 3 – Water Management & Sustainability

Farakka Barrage: 50 Years of Engineering Marvel & Water Diplomacy

Context: The **Farakka Barrage**, a key water infrastructure project on the **Ganga River**, marks **50 years of operation in 2025**. Since its commissioning on **April 21**, **1975**, this massive structure has played a critical role in **water management**, **navigation**, **and India-Bangladesh river relations**.



About Farakka Barrage:

Location & Strategic Importance:

- Situated in Murshidabad district, West Bengal, just 18 km from the Bangladesh border.
- A key structure influencing **the hydrology of both India and Bangladesh**.

Construction & Commissioning:

- Built over **12 years** at a cost of **130 crores**.
- Officially operational since April 21, 1975.

Purpose & Functionality:

- Ensures smooth navigation for the Kolkata Port by flushing out silt from the Bhagirathi-Hooghly River.
- **Diverts 40,000 cusecs of water** into the **Farakka Feeder Canal** to maintain **Hooghly River flow**, especially during the **dry season**.
- Plays a crucial role in **India-Bangladesh water-sharing agreements**.

India-Bangladesh Water Agreements:

- **1977** Farakka Agreement First formal pact on Ganga water-sharing between India and Bangladesh.
- **1996** Ganga Water Treaty A **30-year agreement** ensuring equitable distribution of Ganga waters, still in effect today.

Hooghly River & Its Significance:

Origin & Course:

- Also called **Bhagirathi-Hooghly or Kati-Ganga**.
- A 260 km-long distributary of the Ganga River.

The Ganga **splits in Murshidabad**, forming two rivers:

- **Padma River** Flows into Bangladesh.
- Hooghly River Flows through West Bengal into the Bay of Bengal.

Hydrology & Water Flow:

- Above Kolkata, the Hooghly River is heavily silted.
- The Farakka Feeder Canal supplies additional water, especially in the dry season.

Tributaries feeding the Hooghly include:

- Haldi River
- Ajay River

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- **Damodar River**
- **Rupnaravan River** •

Cities & Bridges Along the Hooghly River:

Major Cities on Its Banks:

- Jiaganj •
- Azimganj
- Murshidabad •
- Baharampur
- Kolkata •
- Howrah •

Iconic Bridges Over Hooghly River:

- Howrah Bridge – A cantilever bridge linking Kolkata & Howrah, an engineering marvel.
- Bally Bridge Connects Bally & Baranagar, an important transport link. •

Why Farakka Barrage Matters?

- **Essential for Kolkata Port's Survival** Prevents silt buildup and maintains **navigability**.
- Key to Water Management Ensures a steady flow to Hooghly while balancing Bangladesh's needs. •
- Vital for Indo-Bangladesh Relations A focal point in water-sharing diplomacy between the two nations.

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GS Paper 2 – Governance & Social Justice

Supreme Court Sets Up National Task Force to Curb Student Suicides

Context: The **Supreme Court of India** has constituted a **National Task Force** to tackle the growing issue of **student suicides** in **higher educational institutions**. This move highlights the urgent need to address **mental health concerns** and create a **supportive academic environment**.



Alarming Rise in Student Suicides:

According to the National Crime Records Bureau (NCRB) 2022 Report, more

than **13,000 students** lost their lives to **suicide** in India. The issue has been escalating at an **annual rate of 4%**, which is **double the national average**.

Key Statistics:

- States with Highest Student Suicides: Maharashtra, Tamil Nadu, and Madhya Pradesh account for **one-third** of student suicides in India.
- **Gender Trends**: Between **2021-2022**, **male student suicides** saw a **6% decline**, whereas **female student suicides** surged by **7%**.

Formation of the Task Force:

Objectives and Responsibilities:

The **10-Member Task Force** is assigned to examine the root causes of **student suicides**, which include:

- Academic Pressure: High competition in institutions and coaching centers like Kota.
- Mental Health Challenges: Rising cases of depression, anxiety, and stress among students.
- Discrimination: Caste, gender, and social biases leading to distress.
- **Family and Financial Strain**: Excessive parental pressure and economic hardships.
- Lack of Support Systems: Insufficient counseling services and mental health infrastructure.
- Social Media & Peer Pressure: Cyberbullying and unhealthy comparisons affecting students' selfesteem.

Authority and Reporting:

- **Surprise Inspections**: The Task Force has the authority to **conduct unannounced inspections** in educational institutions.
- **Evaluation of Existing Policies**: Reviewing **laws and frameworks** in higher education to suggest improvements.
- **Reporting Timeline**: Submission of an **interim report in four months** and a **final report within eight months**.

Existing Government Initiatives:

National-Level Measures:

- Manodarpan Initiative: A program by the Union Education Ministry offering psychological support via a toll-free helpline and website.
- National Mental Health Policy: Aimed at enhancing mental health awareness and infrastructure in institutions.

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State-Level Actions: Download Our Application





- Rajasthan Government Initiatives:
 - Introduced **mental health guidelines** in **2022 and 2023**.
 - Appointed **90 psychological counselors** for student support.
 - Established a **104 helpline** for immediate assistance.
 - **10,000 hostel gatekeepers trained** to recognize distress signals.
 - **'Dinner with DM' Initiative** in **Kota**, where students can discuss their concerns with district officials.

Way Forward: Prioritizing Student Well-Being

Recommendations for a Healthier Academic Environment:

- Focus on Mental Health: The IC3 Institute emphasizes shifting the academic system from a competition-driven approach to one that nurtures student well-being.
- **Integrated Career and Counseling System**: The **NCRB Report** advocates for a **strong support system** to help students **navigate their aspirations and mental health challenges**.
- Institutional Reforms:
 - **Regular mental health screenings** in schools and colleges.
 - **Awareness programs** to **reduce stigma** around mental health.
 - Encouraging open conversations on academic stress and mental well-being.

With **student suicides surpassing farmer suicides**, immediate action is crucial. A **collaborative approach** between the **government**, **institutions**, **and families** can ensure a **healthier**, **stress-free learning environment** for students.

If you or someone you know is struggling, reach out to mental health support services immediately. Help is available.

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GS Paper 3 – Science & Technology

Euclid Space Telescope: Unlocking the Secrets of the Universe

Context: The **Euclid Space Telescope** has captured breathtaking images of galaxies in various shapes and sizes, offering new insights into the **cosmic evolution** of the universe.

About the Euclid Space Telescope:

- **Named After: Euclid of Alexandria**, a legendary Greek mathematician known as the "Father of Geometry."
- Mission Under: The European Space Agency's (ESA) Cosmic Vision Programme, designed to explore the fundamental nature of the universe.
- Launch Vehicle: SpaceX Falcon 9 rocket.
- Operational Lifespan: Minimum 6 years of scientific exploration.
- **Orbit**: Positioned **1.5 million km from Earth** at **Lagrange Point 2 (L2)**, where gravitational forces create a stable observational environment.
- Telescope Dimensions: 4.7 meters tall and 3.7 meters in diameter.
- Image Quality: Produces images four times sharper than ground-based telescopes.

Scientific Goals: Unlocking Cosmic Mysteries:

- Understanding Dark Energy: Investigating why the universe is expanding at an accelerating rate.
- Mapping Dark Matter: Observing how galaxies and cosmic structures have evolved over billions of years to reveal the distribution of dark matter.
- **3D Mapping of the Universe**: Creating a detailed **three-dimensional cosmic map** to analyze **gravity and the effects of cosmic expansion**.

Advanced Scientific Instruments:

1. Visible-Wavelength Camera (VIS - VISible Instrument):

- Captures high-resolution images of distant galaxies.
- Detects **gravitational lensing**—a phenomenon where **dark matter bends light from distant objects**, helping scientists study its properties.

2. Near-Infrared Spectrometer and Photometer (NISP):

- Measures the **speed at which galaxies are moving apart**, offering insights into the influence of **dark energy over time**.
- Developed with **NASA's contribution**, including **sensor-chip electronics and detectors**.

Key Observations & Data Release:

- **Deep Field South Region**: In just one week of observation, Euclid has recorded **26 million galaxies**, some as far as **10.5 billion light-years away**.
- Mission Goal: To survey an astonishing **1.5 billion galaxies** over six years, covering **one-third of the sky**.
- First Data Release: The initial cosmology findings are expected to be unveiled in October 2026.

With its groundbreaking observations, the **Euclid Space Telescope** is poised to **redefine our understanding of the universe**, uncovering the **hidden forces shaping cosmic evolution**

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GS Paper 3 – Indian Economy & Financial Sector

Gold Monetisation Scheme (GMS): Transforming India's Gold Economy

Context: The **Government of India** has announced that from **March 26**, **2025**, it will discontinue **Medium-Term (MTGD) and Long-Term (LTGD) Gold Deposits** under the **Gold Monetisation Scheme (GMS)**.

What is the Gold Monetisation Scheme (GMS)?

- Launched: November 2015, as an improved version of the previous Gold Deposit Scheme (GDS) and Gold Metal Loan (GML) Scheme.
- **Purpose**: Encourages individuals, institutions, and government entities to **deposit idle gold** in banks instead of storing it in lockers.
- Interest Earning: Depositors earn interest on their gold deposits, which can be redeemed in cash, gold bars, or coins—but not in the same form as deposited (e.g., jewellery).

Objectives of GMS:

- **Mobilize Idle Gold**: Encourage households and institutions to deposit gold, unlocking its economic value.
- Reduce Gold Imports: Integrate gold into the formal financial system, lowering India's dependency on gold imports.
- Help Reduce Current Account Deficit (CAD): By reducing gold imports, GMS helps improve India's trade balance.

Type of Dep <mark>osit</mark>		Tenure	Usage & Redemption
Short-Term Deposit (STGD)	Gold	1-3 years	Banks use these for domestic needs and lending . Redemption: Gold or Cash .
Medium-Term Deposit (MTGD)	Gold	5-7 years	Used by the government and RBI for gold reserves . Redemption: Cash Only . (<i>To be discontinued in March 2025</i>)
Long-Term Gold Depo <mark>sit</mark> (LTGD)		7-12 years	Used for monetary policy and national reserves . Redemption: Cash Only . (<i>To be discontinued in March 2025</i>)

Types of Gol<mark>d Deposit</mark>s under GMS:

Other Key Gold-Related Schemes:

1. Sovereign Gold Bond (SGB) Scheme (Now Discontinued):

- Gold bonds issued in denominations of 5g, 10g, 50g, and 100g.
- Aimed to **reduce demand for physical gold** by offering **gold-linked investment returns**.

2. Indian Gold Coin Initiative:

- Launched alongside GMS and SGB in 2015.
- First-ever national gold coin featuring the Ashoka Chakra emblem.
- Promoted as a **trusted**, **certified alternative** to imported gold coins.

The **Gold Monetisation Scheme** plays a crucial role in integrating gold into the **formal financial system**. However, with the discontinuation of **MTGD and LTGD**, the future of gold deposit schemes may evolve, requiring new investment alternatives

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GS Paper 1 – Geography

Place in News: Türkiye

Context: Recently, **mass protests erupted in Türkiye** following the **arrest of a key political rival** of **President Recep Tayyip Erdoğan**. The situation has intensified political tensions in the country, drawing global attention.

Geopolitical Importance of Türkiye

- Strategic Location: Türkiye is a transcontinental country, bridging Asia and Europe.
- Bordering Nations: Shares boundaries with Greece and Bulgaria (northwest), Georgia and Armenia (northeast), Azerbaijan and Iran (east), Iraq and Syria (southeast).
- Surrounding Water Bodies: Bordered by the Black Sea (north), Mediterranean Sea (south), and Aegean Sea (west).



Geographical Highlights

- Major Rivers: Euphrates, Tigris, and Kizilirmak.
- Highest Peak: Mount Ararat (5,137 meters), a significant cultural and geographical landmark.
- Key Straits:

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- **Bosphorus Strait**: Connects the **Black Sea to the Sea of Marmara**, a vital route for global trade.
- **Dardanelles Strait**: Links the **Sea of Marmara to the Aegean Sea**, playing a crucial role in maritime navigation.
- **Sea of Marmara**: An **inland sea**, which serves as a **natural passage** between the Black Sea and the Aegean via the **Bosphorus and Dardanelles Straits**.

Türkiye's Global Influence

- **NATO Member**: Türkiye is a crucial member of **NATO** and plays a strategic role in global defense.
- **Economic Significance**: Positioned as a key hub for **energy pipelines** and **trade routes**.
- **Cultural Heritage**: Home to **Istanbul**, a city rich in historical significance, blending Eastern and Western cultures.

The unfolding political scenario in Türkiye could have **far-reaching implications on regional stability**, trade, and diplomatic relations with key global players. As developments continue, Türkiye remains a **pivotal nation in global geopolitics**.

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GS Paper 2 – Governance, Policies & Laws

The Boilers Bill, 2024: A Modern Approach to Boiler Safety & Regulation

Context: The **Lok Sabha has passed The Boilers Bill, 2024**, marking a significant shift from the **century-old Boilers Act of 1923**. This new legislation aims to modernize boiler regulations, enhance **ease of doing business (EoDB)**, and prioritize **worker safety** while eliminating outdated provisions.



Background: The Need for a New Boilers Law

- The **Boilers Act of 1923** was initially enacted to regulate the **manufacturing, installation, operation, alteration, and repair of steam boilers** to ensure safety.
- The last amendment in **2007** allowed **independent third-party inspections**, but **further reforms were necessary** to match modern industry standards.
- The **Boilers Bill, 2024**, aligns with the **Jan Vishwas (Amendment of Provisions) Act, 2023**, which focuses on **decriminalization and business-friendly reforms**.
- The Bill has been completely redrafted using **modern drafting techniques**, ensuring better clarity and efficiency.

Key Features of the Boilers Bill, 2024:

1. Repealing the Outdated Boilers Act, 1923:

- The new Bill completely replaces the 100-year-old law to incorporate modern safety and operational standards.
- 2. Boosting Ease of Doing Business (EoDB):
 - **Three out of seven criminal offences** related to boilers have been **decriminalized** to reduce legal complications for businesses.
 - Certain penalties have been shifted to **administrative fines**, making compliance smoother.
- 3. Categorization of Offences for Balanced Regulation:
 - Severe offences that endanger life and property: Criminal penalties retained.
 - Lesser offences: Converted into fiscal penalties, handled through an executive mechanism instead of courts.

4. Enhanced Safety Provisions:

- The Bill mandates that **only qualified and competent personnel** can **repair and inspect boilers**, ensuring **maximum safety for workers**.
- State-of-the-art inspection mechanisms will be introduced to minimize risks.

5. Removal of Redundant & Outdated Provisions:

- **Obsolete sections** from the **pre-constitutional era** have been **removed**.
- New definitions and updates have been added for better clarity and precision.

6. Alignment with Jan Vishwas Act, 2023:

• The Bill follows the **decriminalization agenda** of the **Jan Vishwas (Amendment of Provisions) Act, 2023**, making compliance **less burdensome for businesses**.

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7. Clear Division of Powers Between Centre & States:

- Since boilers fall under the Concurrent List of the Constitution, both the Central and State Governments can legislate on them.
- The roles and responsibilities of the Central Government, State Governments, and Central Boilers Board have been clearly defined to avoid conflicts.

Understanding Boilers: A Crucial Industrial Asset:

A boiler is a pressurized vessel where steam is generated, used in various industries for energy production and manufacturing.

As of 2024, India has nearly 40 lakh steam boilers operating across industries such as:

- **Power generation**
- **Chemical processing** •
- Manufacturing •
- Food & beverage industry •

Boilers are **critical for industrial operations**, and **ensuring their safety** is essential for both **economic** growth and worker well-being.

Conclusion:

The Boilers Bill, 2024, is a progressive step towards modernizing India's boiler regulations. By removing archaic laws, enhancing safety standards, and making compliance easier, the Bill ensures a balanced approach between industrial growth and safety. This reform will encourage investment, streamline operations, and protect workers, paving the way for a more efficient and safer boiler industry in India.

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GS Paper 1, 3 – Geography & Disaster Management & Environment

South Island: The Jewel of New Zealand

Context: A **powerful 6.7 magnitude earthquake** recently struck off the coast of **New Zealand's South Island**, sending tremors across the region. Authorities are assessing the impact, but no major damage has been reported so far.

Exploring South Island: Nature's Masterpiece:

Geography & Location:

South Island, the larger and southernmost of New Zealand's two main islands is a land of broathtaking landscapes. It lies in the southwestern Pagific

- islands, is a land of breathtaking landscapes. It lies in the southwestern Pacific Ocean, separated from:
 - North Island by Cook Strait (to the north).
 - Stewart Island by Foveaux Strait (to the south).

The Majestic Southern Alps:

Covering nearly **75%** of the island, the **Southern Alps** run from **southwest to northeast**, creating a stunning mountainous backbone. The highest peak, **Mount Cook (Aoraki) at 3,754 meters**, dominates the skyline and attracts climbers and adventurers worldwide.

This mountain range divides the island into two contrasting landscapes:

- The Westland Plain (narrow, rugged coastal strip).
- The **Canterbury Plains** (vast, fertile lands in the east).

Fiordland: A World Heritage Wonderland

The **Fiordland National Park**, located in the **southwest**, is a natural wonder known for its:

- Dramatic fjords (inlets) such as Milford Sound and Doubtful Sound.
- High-altitude lakes and pristine forests.

This breathtaking wilderness is part of **Te Wāhipounamu**, a **UNESCO World Heritage Site** since **1990**, recognized for its unique ecosystems and untouched beauty.

Lakes of Stunning Beauty:

South Island is home to some of New Zealand's most mesmerizing lakes, including:

- Lake Tekapo Famous for its crystal-clear waters and stargazing opportunities.
- Lake Wakatipu A serpentine-shaped lake surrounded by snow-capped mountains.
- Lake Pukaki Known for its vivid turquoise color, fed by glacial meltwater.

Vibrant Cities & Culture:

While known for its landscapes, South Island also boasts thriving urban centers:

- Christchurch The largest city, known as the "Garden City" due to its beautiful parks.
- **Dunedin** Rich in **Scottish heritage**, home to **Otago University** and **Larnach Castle**.
- Invercargill A gateway to the southern wilderness and a hub for New Zealand's farming industry.

Did You Know?

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South Island is home to the world's only alpine parrot, the Kea, known for its intelligence and mischievous nature.

- Milford Sound is often referred to as the "Eighth Wonder of the World". •
- The Southern Alps are still rising due to tectonic activity. •

South Island is not just a destination—it's an experience. From towering peaks to serene lakes, from lush forests to thriving cities, it truly is a land of wonders.

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India Losing 3% of GDP Annually Due to Road Accidents

Context: India faces a **huge economic setback**, losing **3% of its GDP** annually due to road accidents. The Minister of Road Transport and Highways has highlighted that around **five lakh accidents occur every year**, leading to substantial financial and human losses.

Road Accidents in 2022: A Grim Reality

- **Total Accidents:** 4,61,312
- **Injuries:** 4,43,366
- Fatalities: 1,68,491
- Increase Compared to 2021:
 - Accidents: 11.9%
 - **Deaths:** 9.4%
 - Injuries: 15.3%
- Accident Severity (Deaths per 100 Accidents): 36.5 in 2022, down from 37.3 in 2021
- Victim Demographics:
 - 66.5% of victims were young adults (18-45 years)
 - 83.4% of fatalities were from the 18-60 age group
- Most Affected Vehicle Categories:
 - **Two-Wheelers:** 44.5% of deaths
 - **Pedestrians:** 19.5%
 - **Cars/Taxis/Vans:** 12.5%
 - Trucks: 6.3%

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• Leading Cause: Overspeeding (72.3% of accidents, 71.2% of deaths)

The Economic Toll of Road Accidents:

How Road Accidents Impact GDP

- Healthcare Costs: Treatment of accident victims burdens healthcare infrastructure.
- Infrastructure Damage: Accidents damage roads and public property, requiring costly repairs.
- **Loss of Productivity:** Many victims suffer temporary or permanent disabilities, reducing workforce efficiency.
- Higher Insurance and Legal Costs: Increased claims and legal disputes strain financial resources.
- **Reduced Tourism & Transport Efficiency:** Unsafe roads deter travelers and disrupt commercial transport.
- Loss of Human Capital: The deaths of young and working-age individuals negatively affect economic growth.

Government Initiatives to Enhance Road Safety:

Key Policies and Measures

• National Road Safety Policy (2010): Focuses on better road infrastructure, strict law enforcement, public awareness campaigns, and enhanced emergency care.

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3% GDP LOST DUE TO...

GS Paper 3 – Economy & Infrastructure





- Electronic Detailed Accident Report (e-DAR) & Integrated Road Accident Database (iRAD): Centralized platforms for **data collection and analysis** to improve safety strategies.
- Swift Assistance to Accident Victims:
 - **25,000 reward** for **Good Samaritans** helping accident victims.
 - **Compensation:** 2.5 lakh for grievous injuries, 5 lakh for fatalities. 0
 - **Hit-and-Run Compensation:** 2 lakh for fatalities, 50,000 for grievous injuries.
- **Vehicle Fitness & Inspection Centers:**
 - **Old and unfit vehicles** contribute to accidents. \circ
 - The government is establishing model Inspection and Certification Centers across 28 \circ States/UTs by 2024 to ensure roadworthiness.
- **IIT Madras Collaboration:** Establishing a **Center of Excellence for Road Safety** to drive research and innovation in safety measures.
- Accident Blackspot Rectification: Identifying and improving accident-prone zones on national highways.
- Mandatory Road Safety Audits: Ensuring all highway projects undergo safety evaluations at design, construction, and operation stages.
- Motor Vehicles Amendment Act (2019): Enforced stricter penalties for traffic violations like overspeeding, drunk driving, and not wearing helmets or seat belts.

India's Global Commitments to Road Safety

- Decade of Action for Road Safety (2021-2030): A UN initiative to reduce global road deaths by 50% by 2030.
- Brasilia Declaration (2015): India joined 100+ nations in committing to the Sustainable Development Goal (SDG) 3.6, aiming to halve road accident fatalities by 2030.

The Road Ahead: Learning from Global Best Practices

- Adopting the Systems Approach: •
 - o Countries like Australia and Sweden have successfully reduced accident fatalities by integrating systematic safety policies.
 - India can **implement similar models** to achieve its target of **50% reduction in fatalities.**
- Leveraging Indian Research Institutions:
 - Institutes like **IITs and the Central Road Research Institute (CRRI)** have conducted extensive research on road safety.
 - The **government can collaborate with these institutions** to design and implement **data-driven** \circ safety policies.
- **Corporate Sector Involvement:**
 - Companies can fund research, support awareness campaigns, and promote road safety 0 initiatives.

Conclusion

India faces an **urgent need for stronger road safety measures** to curb **economic and human losses** from road accidents. Adopting global best practices, strengthening enforcement, leveraging technology, and fostering collaborations will be key to reducing fatalities and securing economic stability.

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GS Paper 3 – Environment, Disaster Management & Economy

Permafrost Melting: A Rising Environmental Threat in the Kashmir Himalayas

Context: A recent study published in *Remote Sensing Applications: Society and Environment* has **shed light on the alarming impact of permafrost degradation** in the Jammu & Kashmir (J&K) Himalayas. With **climate change accelerating global warming**, the **melting of permafrost poses serious environmental**, **infrastructural**, **and security risks** in this ecologically fragile region.



Understanding Permafrost and Its Importance:

Permafrost refers to **ground that remains frozen for at least two consecutive years**, with temperatures at or below **32°F (0°C)**. It plays a **vital role in maintaining ecosystem balance**, regulating **water cycles**, and **stabilizing mountain slopes**. However, **rising temperatures and human activities** are now causing its rapid degradation, leading to **severe consequences** for both nature and human settlements.

Key Findings of the Study:

Extent of Permafrost in J&K and Ladakh

- **64.8%** of the total **geographical area** of J&K and Ladakh is covered by **permafrost**.
- This is classified into:
 - **Continuous Permafrost (26.7%)** Most of the soil remains frozen.
 - **Discontinuous Permafrost (23.8%)** More than half of the soil is frozen.
 - **Sporadic Permafrost (14.3%)** Found in isolated patches.

Threat of Glacial Lake Outburst Floods (GLOFs)

- The study identified **332 proglacial lakes**, of which **65 pose risks of GLOFs**—a phenomenon where glacial lakes suddenly burst, causing catastrophic floods.
- Recent disasters linked to permafrost melting:
 - **Chamoli Disaster (2021)** A deadly flash flood in Uttarakhand, triggered by a glacier collapse.
 - **South Lhonak Lake Flood (2023)** A massive GLOF event in Sikkim, causing widespread destruction.

Infrastructure and Security Risks:

- **Strategic roads and military installations in Ladakh** are built on permafrost zones, making them **vulnerable to sudden ground instability, landslides, and sinkholes**.
- Thawing permafrost weakens soil stability, increasing the risk of road failures, damaged pipelines, and collapsing structures.

Hydrological and Ecological Disruptions

- **Changes in River Flow:** Permafrost acts as **a natural water reservoir**. As it melts, **river flow becomes unpredictable**, leading to **water shortages in some areas and flooding in others**.
- Groundwater Depletion: Melting permafrost alters subsurface water storage, affecting agriculture, drinking water supply, and hydroelectric projects.

What's Causing Permafrost Degradation?

 Rising Surface Temperatures: Climate change has led to unprecedented warming in highaltitude regions, accelerating permafrost thawing. *Download Our Application*







- Natural Triggers: Earthquakes and seismic activities weaken frozen ground, leading to sudden collapses.
- **Human Activities:**
 - **Deforestation and Urbanization** Reducing land cover exposes soil to heat. \cap
 - Infrastructure Development Construction of roads, tunnels, and dams disrupts \circ permafrost layers.
 - Tourism and Military Activities Increased human footprint leads to environmental \circ stress in permafrost regions.

The Way Forward: Strategies for Mitigation and Adaptation:

1. Integrated Planning for Sustainable Development

- Permafrost and cryosphere data must be integrated into infrastructure and land-use planning. •
- Implementation of **risk-sensitive zoning regulations** to prevent construction in vulnerable areas.

2. Advanced Monitoring & Technology

Use of satellite-based remote sensing and ground-based LiDAR technology to track permafrost degradation and its effects on geomorphological changes (such as landslides and sinkholes).

3. Strengthening Environmental Impact Assessments (EIA)

EIA frameworks should explicitly evaluate permafrost-related risks, ensuring that projects account for potential threats like GLOFs, slope instability, and ecosystem shifts.

Did You Know?

- Permafrost stores nearly 1,700 gigatons of carbon-twice the amount present in Earth's atmosphere! When it melts, huge amounts of greenhouse gases like carbon dioxide and methane are released, worsening global warming.
- The Arctic and Himalayas are among the fastest warming regions on Earth, making permafrost degradation a major climate crisis.

Conclusion:

The melting of permafrost in the Kashmir Himalayas is not just an environmental issue but a serious socio-economic and security challenge. Urgent action is required to monitor, mitigate, and adapt to this growing crisis. Through scientific advancements, policy interventions, and sustainable development strategies, India can reduce the impact of permafrost thaw and safeguard its fragile Himalayan ecosystem.

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GS Paper 3 – Indian Economy & Financial Sector

Banking Laws (Amendment) Bill, 2024: Key Reforms and Parliamentary Debate

Context: Both the **Lok Sabha and Rajya Sabha** have passed the **Banking Laws (Amendment) Bill, 2024**, introducing **significant changes in banking regulations**, including **allowing bank account holders to nominate up to four beneficiaries**.

Understanding the Banking Laws (Amendment) Bill, 2024:

The Bill was **introduced in the Lok Sabha on August 9, 2024**, and **passed on December 3, 2024**. It amends five major banking laws:

- 1. Reserve Bank of India (RBI) Act, 1934
- 2. Banking Regulation Act, 1949
- 3. State Bank of India (SBI) Act, 1955
- 4. Banking Companies (Acquisition and Transfer of Undertakings) Act, 1970
- 5. Banking Companies (Acquisition and Transfer of Undertakings) Act, 1980

Key Features of the Bill:

1. More Nominees for Deposits

- Customers can now **nominate up to four beneficiaries** instead of just one.
- Nominations can be made **simultaneously or successively**.

2. Revised 'Fortnight' Definition for Cash Reserves

- Banks will now calculate **cash reserves using fixed calendar periods**:
 - 1st to 15th of the month
 - **16th to month-end**
 - This replaces the **old Saturday-to-Friday system** for greater clarity.

3. Extended Director Tenure in Co-operative Banks

 Directors in co-operative banks can now serve for up to 10 years, an increase from the earlier 8year limit.

4. Dual Directorship in Co-operative Banks

• A director in a **central co-operative bank** can now **hold a board position in a state co-operative bank**, provided they are a member.

5. Higher 'Substantial Interest' Threshold

- Previously, holding shares worth 5 lakh was considered substantial interest.
- The new limit is now **2 crore**, reflecting inflation and market growth.

6. Unclaimed Funds Transfer to Investor Protection Fund

• **Dividends, shares, and bond payments unclaimed for over seven years** will now be moved to the **Investor Education and Protection Fund (IEPF)**.

7. Autonomy in Auditor Payments

• Banks will now **independently decide their auditors' remuneration**, removing the **earlier dependence on RBI and the Central Government**.

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Parliamentary Debate and Key Arguments:

Government's Stand

Finance Minister Nirmala Sitharaman defended the Bill, stating it strengthens banking regulations and improves **customer experience**. Key arguments made by the government:

- Public Sector Banks (PSBs) recorded 1.41 lakh crore profit in FY 2023-24.
- Non-Performing Assets (NPAs) have significantly reduced under financial reforms.
- 912 bank fraud cases involving wilful defaulters are under investigation by the Enforcement Directorate (ED).
- Loan write-offs are accounting measures, not waivers—banks continue pursuing recoveries.

Opposition's Concerns

1. Wilful Defaulters & Loan Write-offs:

- The Indian National Congress (INC) criticized the 87,000 crore loan write-off linked to 50 wilful defaulters, including names like Mehul Choksi and Rishi Agarwal.
- They pointed out that large corporate defaulters get write-offs, while small borrowers face severe penalties.

2. Lack of Detailed Scrutiny:

Opposition members questioned the government's decision to amend five banking laws at once, demanding a Joint Parliamentary Committee (JPC) review.

3. Rising NPAs in Banks:

Critics highlighted that **10 lakh crore in NPAs** has built up over the past five years, mostly due to a small group of high-profile defaulters.

4. Challenges in Rural & Co-operative Banks:

- **Opposition raised concerns over:**
 - **Over 4,000 financial frauds in co-operative banks** in the last five years.
 - **Outdated banking technology in rural areas**, increasing risks. 0
 - The 2 crore 'substantial interest' limit is static and should be inflation-linked. \sim

Government's Counterarguments

- The Banking Laws (Amendment) Bill, 2024 will modernize banking governance and improve financial sector stability.
- The government cited **post-2014 banking reforms**, including:
 - Wider financial inclusion through Jan Dhan accounts. \cap
 - Increased direct benefit transfers (DBTs) reducing middlemen corruption. \circ
 - Tighter regulations on loan defaulters and fraudsters. 0

Conclusion:

The Banking Laws (Amendment) Bill, 2024 marks a significant shift in banking regulations, introducing customer-friendly provisions, governance improvements, and regulatory clarity. However, concerns about oversight, transparency, and handling of large-scale NPAs remain points of debate. The long-term success of these reforms will depend on their implementation and monitoring in the coming years.

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GS Paper 3 – Security & Strategic Affairs

Senkaku Islands Dispute: Latest Developments & Key Facts

Context: Japan has **raised serious concerns** over an **extended incursion by Chinese Coast Guard ships** near the **disputed Senkaku Islands** in the **East China Sea**. This incident marks **one of the longest violations of Japan's territorial waters** by Chinese vessels, escalating tensions in the region.



About the Senkaku Islands:

Geographical Location

- The Senkaku Islands are an uninhabited island group located in the East China Sea.
- They lie approximately **90 nautical miles north of Japan's Yaeyama Islands (Okinawa Prefecture)** and **120 nautical miles northeast of Taiwan**.
- These islands are known by different names:
 - Japan: Senkaku Islands
 - **China**: Diaoyu Islands
 - **Taiwan**: Diaoyutai Islands
 - o **Internationally**: Pinnacle Islands

Composition and Geology:

- The island group consists of eight main islands, including:
 - Uotsuri Island (largest at 3.6 sq. km)
 - Kuba Island
 - Taisho Island (Kumeakashima Island)
 - Kitakojima Island
 - Minamikojima Island
 - Tobise Island
 - Okinokitaiwa Island
 - Okinominamiiwa Island
- The total land area of the **Senkaku Islands is approximately 6.3 square kilometers**.
- They are composed of **conglomerate sandstone**, **tuff**, **and andesitic lava**, with **coral outcroppings elevated during the Holocene era**.
- The region is **geologically active** with **volcanic features and fault lines** that influence land formation.

Senkaku Islands Territorial Dispute:

Japan's Claim

• Japan incorporated the Senkaku Islands into its territory in 1895, asserting that they were unclaimed and not administered by any other country at the time.

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- After World War II, the U.S. administered the islands as part of the Ryukyu Islands before transferring control to Japan in 1972.
- Today, Japan administers the Senkaku Islands as part of Ishigaki City, Okinawa Prefecture.

China & Taiwan's Claim

- China and Taiwan argue that the Senkaku Islands have historically been part of Chinese territory, citing old maps and records from the Ming and Qing dynasties.
- Both Beijing and Taipei **dispute Japan's sovereignty over the islands**, leading to repeated tensions in the region.

Strategic Importance of the Senkaku Islands:

- **Rich fishing grounds** and potential **undersea oil and gas reserves** make the islands economically significant.
- Their location in the East China Sea gives them strategic military value.
- Control over the islands impacts **exclusive economic zones (EEZs)** of the countries involved.

Current Situation & Future Outlook:

- China has increased patrols near the islands, leading to frequent confrontations with Japanese Coast Guard vessels.
- Japan has **strengthened its maritime security** and seeks **support from allies like the U.S.** to counter Chinese assertiveness.
- The dispute remains unresolved, with diplomatic tensions rising over China's persistent territorial claims.

The Senkaku Islands dispute is a flashpoint in East Asian geopolitics, with Japan, China, and Taiwan all staking claims over the territory. As tensions escalate, the region remains a focal point for maritime security and strategic interests in the Asia-Pacific.

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GS Paper 1 – Universe & Physical Geography

Neutrinos: The Mysterious Ghost Particles

Context: The **AMoRE experiment** in South Korea has reported **no signs of neutrinoless double beta decay (0\nu\beta\beta)**. This highly anticipated result places new constraints on the nature of neutrinos and their possible role as **Majorana particles**.

What Are Neutrinos?

Neutrinos are **nearly massless, electrically neutral subatomic**

particles that interact extremely weakly with matter. They belong to the **lepton family**, which does not experience the **strong nuclear force**.

Origins of Neutrinos:

These elusive particles are produced in several high-energy processes, including:

- Radioactive decay of certain atomic nuclei
- Nuclear fusion in stars (such as the Sun)
- Supernova explosions
- **Cosmic ray interactions** in the atmosphere

The Invisible Travelers:

Neutrinos are the **second most abundant subatomic particles in the universe**, after photons. An astonishing **100 trillion neutrinos** pass through the human body **every second** without leaving a trace!

Why Are Neutrinos So Hard to Detect?

Since neutrinos rarely interact with matter, capturing them requires:

- Extremely sensitive detectors
- Massive observation times
- **Deep underground laboratories** to shield from background noise

The Mystery of Antiparticles

Every elementary particle has an **antiparticle**, which has the same mass but opposite charge.

- **Example**: The **electron** has an antiparticle called the **positron** (same mass, opposite charge).
- Neutrinos also have **antineutrinos**, but distinguishing them is challenging since they **lack an electric charge**.

Could Neutrinos Be Their Own Antiparticles?

The Majorana Hypothesis:

Unlike most particles, which have distinct antiparticles, **Majorana particles** are their **own antiparticles**. If neutrinos are **Majorana particles**, it could:

- Solve the mystery of matter-antimatter asymmetry in the universe
- Explain why matter dominates over antimatter

What Is Double Beta Decay?

Regular Beta Decay:

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A neutron inside an unstable atomic nucleus transforms into a **proton**, emitting:

- An electron
- An antineutrino

Double Beta Decay $(2\nu\beta\beta)$:

A rare process where **two neutrons** transform into **two protons**, emitting:

- **Two electrons** •
- **Two antineutrinos**

This has been **experimentally observed** in certain isotopes.

Neutrinoless Double Beta Decay $(0\nu\beta\beta)$:

A hypothetical process where only two electrons are emitted, and no neutrinos are produced. If this decay occurs, it would mean:

- **Neutrinos and antineutrinos are the same particle** (Majorana particles).
- The experiment could reveal the **absolute mass of neutrinos**.

AMoRE Experiment: Shedding Light on Neutrinos

Location: South Korea

Method: Observed 3 kg of molybdenum-100 (Mo-100), an isotope known to undergo double beta decay.

Extreme Conditions: Detectors were cooled to near absolute zero to capture tiny energy shifts.

Findings:

- No evidence of 0vββ was found.
- If $0\nu\beta\beta$ exists, Mo-100 nuclei would decay in at least 10^{24} years—a trillion times longer than the age of the universe!
- The neutrino's mass is estimated to be **below 0.22-0.65 billionths of a proton's mass**, but it is still not confirmed to be zero.

What's Next for Neutrino Research?

Although the AMoRE experiment did not find evidence of $0\nu\beta\beta$, it has helped refine the search parameters. Future experiments will:

- Use larger detectors with even greater sensitivity
- Observe different isotopes for 0vββ
- Continue the quest to uncover the true nature of neutrinos

The **mystery of neutrinos** remains unsolved, but each experiment brings us **one step closer** to unlocking their secrets











GS Paper 2 – Governance & Education Policy

AN INDIAN CHILDREN'S POETRY INITIATIVE

Baalpan Ki Kavita" Initiative: Reviving the Magic of Childhood Rhymes

Context: The **Union Ministry of Education** has launched the **"Baalpan Ki Kavita" Initiative**, a unique effort to **revive and preserve traditional Indian nursery rhymes**. This initiative aims to create a **comprehensive collection** of rhymes and poems for young children in **all Indian languages** and **English**.

Objective of the Initiative:

The primary goal of this initiative is to **enhance foundational learning** by providing children with **engaging and culturally rich poems**. These rhymes will help young learners:

- Connect with Indian heritage and traditions
- Develop a joyful learning experience
- Strengthen language and cognitive skills

How to Participate?

The **Ministry of Education**, in collaboration with **MyGov**, is inviting **entries from the public**. Participants can contribute:

- Existing traditional rhymes
- Folklore-inspired verses
- Newly composed joyful poems

Categories for Submission:

The contest welcomes submissions under three age-specific categories:

- 1. Pre-Primary (Ages 3 to 6)
- 2. Grade 1 (Ages 6 to 7)

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3. Grade 2 (Ages 7 to 8)

Entries can be in **any Indian language** or **English**, and should reflect the **cultural essence of India**.

Why is This Initiative Important?

- **Preserves indigenous knowledge** by documenting **folk rhymes** and **traditional poetry**.
- Helps in early childhood development through rhythmic learning.
- Promotes multilingual education, in line with the National Education Policy (NEP) 2020.

Interesting Fact:

Studies show that **rhymes and rhythm-based learning** improve **memory retention**, **phonetic skills**, and **creativity** in young children. This initiative will **bridge modern learning with India's rich linguistic heritage**.

Don't Miss Out! Contribute your favorite **childhood rhyme** or create a **new joyful poem** to be a part of this **national-level collection**











GS Paper 3 – Economy

Public Accounts Committee's Recommendations for GST Regime: Simplifying India's Tax System

Context: The **Goods and Services Tax (GST)**, a landmark reform in India's tax structure, was officially introduced on **1st July 2017** by **Prime Minister Narendra Modi**. It replaced numerous indirect taxes, such as VAT and excise duties, with a unified **destination-based consumption tax**. The aim of GST is to reduce the cascading effect of taxes, creating a **unified national market** that encourages **economic growth** and **trade**.



First proposed during **Atal Bihari Vajpayee's** tenure, the concept of GST gained momentum with the introduction of the **Constitution (122nd Amendment) Bill** in **December 2014**. It was subsequently passed in 2015 and ratified in 2016 as the **101st Constitutional Amendment**.

The Vision of GST: Key Objectives

- **Simplification of India's Tax System:** GST integrates multiple **Central and State taxes**, aiming to reduce **tax-related complexities**.
- Economic Growth and Broader Tax Base: GST is designed to stimulate economic activity, enhance tax compliance, and increase the overall tax base.
- **Unified National Market:** One of its core goals is to create a seamless market by eliminating statespecific barriers, allowing businesses to operate with greater efficiency across India.

However, despite its promising goals, the **GST regime** has faced various challenges and criticism, particularly regarding its complex compliance requirements.

Public Accounts Committee's Latest Recommendations for GST Reform

In its **19th Report**, the **Public Accounts Committee (PAC)** has highlighted the need for significant reforms to make the GST regime **more efficient** and **business-friendly**. The PAC's recommendations focus on easing compliance and addressing operational challenges that continue to trouble taxpayers.

1. Streamlining Compliance Procedures:

The PAC has urged the **Finance Ministry** to simplify the current **GST framework**. Key proposals include:

- **Consolidation of Forms:** Reducing the number of forms required for compliance to make the filing process more straightforward.
- **Tiered Compliance System for MSMEs:** Introducing a **tiered approach** to GST compliance, where smaller businesses face reduced filing frequency and simplified documentation requirements.
- **Reducing Compliance Costs for Small Businesses:** By simplifying processes, especially for **MSMEs**, the burden of compliance can be reduced significantly.

2. Addressing the Biometric-Based Aadhaar Authentication:

The **Aadhaar authentication system** has been a central part of the **GST compliance process**, but the PAC has raised concerns over its **complexity**. The **biometric verification process** has created issues for some taxpayers, especially in remote areas, potentially undermining the **"One Nation, One Tax"** vision of GST.

3. Reforming the GST Portal for Better User Experience:

The PAC has recommended that the **GST portal** be made more **user-friendly**. This includes:

- **Clearer Guidance for Taxpayers:** Providing better instructions during the filing process to avoid errors.
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Enhanced Portal Navigation: Streamlining the portal to ensure taxpayers can navigate it easily, reducing errors and frustration.

4. Simplification of Criminal Penalties:

The PAC has stressed the need to reconsider the harsh criminal penalties for unintentional errors in GST compliance. While the intention is to encourage tax compliance, the committee suggests that honest taxpayers should not face severe penalties for minor mistakes.

5. Leveraging Data Analytics and AI for Accurate Revenue Projections:

The PAC recommended adopting data analytics and AI tools to more accurately project GST revenue. This can help address the decline in the share of indirect taxes in total tax revenue and improve financial forecasting.

6. Efficient Refund System:

One of the most pressing issues facing the GST regime is the **inefficient refund process**. The PAC has called for:

- Clear Timelines for Refund Processing: Establishing fixed timelines for refund disbursement to ensure liquidity for businesses.
- Grievance Redressal Mechanism: A dedicated system for resolving refund-related issues promptly.

7. Automation for MSME Compliance:

To further ease the burden on Micro, Small, and Medium Enterprises (MSMEs), the PAC has recommended the **automation** of the **return filing** and **refund processing** systems. This would reduce manual intervention and ensure smoother compliance with reduced frequency.

Additional Insights: The Future of GST

While the PAC's recommendations aim to streamline the current system, the journey toward a fully functional **GST regime** is ongoing. Despite initial hurdles, GST has contributed significantly to the Indian economy:

- **Increased Tax Collection:** The move to a unified tax system has led to improved **tax compliance** and higher **revenue collection**.
- Boost to Inter-State Trade: By removing inter-state barriers, GST has facilitated smoother trade between states, benefiting **supply chains**.
- **Technological Integration:** The use of **technology**, such as AI and machine learning, will play a pivotal role in optimizing compliance processes and improving the accuracy of tax collection and revenue projection.

However, as businesses continue to face challenges related to **GST compliance**, the PAC's recommendations offer a potential pathway for improvement—one that can create a more **business-friendly environment**, reduce friction, and promote greater **economic efficiency**.

Conclusion:

The PAC's proposals, if implemented effectively, could transform the GST framework into a more streamlined, efficient, and user-friendly system. As India continues to evolve its tax policies, these reforms will play a crucial role in shaping the future of the country's taxation system, making it more conducive to economic growth and business development.

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India's Push into the Deep Sea: A Strategic and Economic Imperative

Context: India is making significant strides toward exploring the vast, untapped resources of the deep ocean. With projects like **Matsya-6000**, India aims to enhance its technological prowess and secure economic and strategic advantages in the underwater domain.



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Deep Sea Technology Latest News:

Recently, India completed wet testing of its Matsya-6000 submersible, a remarkable achievement under the Samudrayaan Project. Developed by the National Institute of Ocean Technology (NIOT), this deep-sea submersible can dive **up to 6 km below the surface**, aiming to explore underwater mineral resources off the Indian coast. This project is a crucial part of India's Deep Ocean Mission, aiming to place India among the select nations with humanrated submersibles operating at such extreme depths.

Background:

India's push into the deep sea is not just about scientific exploration—it's a **multidimensional effort** involving economic strength, digital infrastructure, national security, and global competition. According to Vice Admiral Biswajit Dasgupta (Retd), developing deep-sea capabilities is essential for strategic parity with other nations, especially **China**, which has made considerable progress in this field.

The foundation of India's current efforts can be traced to the Deep Ocean Mission, launched in 2018, aimed at exploring the ocean's vast resources and building a **robust technological framework** to access them.

Importance of Deep Sea Matters for India:

The deep sea holds enormous potential for India's economic growth, technological development, and national **security**. Some key aspects include:

1. Mineral and Energy Resources:

- The seabed within India's Exclusive Economic Zone (EEZ)—which spans 200 nautical miles (about 370 **km**) from the coastline—holds valuable resources like polymetallic nodules, gas hydrates, oil, and other rare-earth elements.
- These resources are critical for **India's growing industrial and energy needs**, particularly in sectors like electronics manufacturing, renewable energy, and defense.

2. Food and Nutraceuticals:

- Deep-sea fisheries and marine bio-resources offer substantial economic and nutritional benefits. ٠
- Developing efficient harvesting methods could bolster **India's food security**. ٠

3. Oceanographic and Climate Data:

- Deep ocean exploration contributes to climate modelling, weather forecasting, and environmental research.
- Such data is crucial for **predicting and mitigating climate change impacts**.

4. Digital Economy Infrastructure:

- Over **95% of global internet traffic** is transmitted through **undersea fiber-optic cables**.
- Ensuring the security, maintenance, and expansion of these cables, especially with Indian participation, is crucial for the nation's **digital economy**.

5. National Security:

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- The deep sea is becoming a **space of strategic competition**.
- **China** has already unveiled a **cable-cutting device** capable of damaging undersea infrastructure, highlighting the need for **India to enhance its domain awareness, monitoring systems, and countermeasures**.

Challenges of Deep Sea Technology:

While the potential benefits are immense, developing deep-sea capabilities poses several challenges:

1. Communication Underwater:

- Communication in deep water is hindered by factors like temperature, pressure, and salinity.
- Developing Very Low Frequency (VLF) and Extremely Low Frequency (ELF) sound systems is essential but costly.
- 2. Pressure Resistance:
 - At depths of **6 km**, pressure exceeds **380 atmospheres**—equivalent to the weight of **several hundred elephants pressing down on a single square meter**.
 - Designing **pressure-resistant materials and submersibles** is a highly complex engineering challenge.
- 3. Cost and Expertise:
 - Building deep-sea technologies demands massive financial investments, specialized research, and a skilled workforce.
 - Countries like **China, the US, Japan, and France** have already made substantial progress.
- **4.** Safety Concerns: The OceanGate Titan submersible tragedy in 2023 highlighted the risks of insufficient safety measures in deep-sea exploration.

What India N<mark>eeds to D</mark>o Next:

India's **Deep Ocean Mission** is a promising start, but more needs to be done to achieve comprehensive deep-sea capabilities. Key recommendations include:

- **1. Create a Dedicated Ministry:** Upgrade the **Department of Ocean Development** to a **full-fledged Ministry of Ocean Affairs**, with a **Cabinet-rank Minister** to drive coordination and accountability.
- 2. Boost Funding and Speed: Approve projects in mission-mode with clear deadlines, adequate budgets, and transparent review mechanisms.
- 3. Establish Centers of Excellence:
 - Invest in **academic institutions and research labs** focused on deep ocean science and technology.
 - Encourage **innovation and skill development** to build a world-class workforce.
- 4. Support Industrial Partnerships: Incentivize private companies to participate in deep-sea mining, cablelaying, salvage operations, and submersible development.
- 5. Create a 10-Year Roadmap:
 - Formulate a comprehensive plan with defined milestones across **technology**, **governance**, **infrastructure**, **and security**.
 - Ensure regular **monitoring and evaluation** to stay on track.

Conclusion: India's ambition to emerge as a **global economic and strategic power** cannot ignore the depths of the ocean. From **minerals and food resources** to **digital infrastructure and security**, the **deep sea holds the key to the future**. With **Matsya-6000** as a starting point, India must accelerate efforts to build a **robust, well-funded, and forward-looking deep ocean capability**. Achieving this will not only boost India's **scientific and economic stature** but also ensure **strategic parity with global powers**.

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GS Paper 2 – Polity, Governance & Judiciary

Supreme Court Ruling: Legal Difference Between Preparing for Rape and Attempting It

Context: The Supreme Court has intervened in a controversial **Allahabad High Court ruling** that downgraded charges against three accused from **attempted rape to mere preparation**. The case has sparked renewed discussions about the **legal distinction between "preparation" and "attempt"** in criminal law.

Legal Difference between Preparation and Attempt: Latest News

The **Supreme Court** has stayed an **Allahabad High Court ruling** that reduced charges against three accused from **attempted rape to mere preparation**, calling the judgment **insensitive and legally flawed**. The High Court had **removed attempted rape charges** and instead directed trial under **lesser offences**, including:

- **IPC Section 354B**: Using criminal force against a woman with intent to disrobe.
- Sections 9/10 of POCSO Act, 2012: Aggravated sexual assault.

The case highlights the critical legal distinction between:

- **Preparation** (generally not punishable)
- Attempt (criminally punishable)

Background of the Case:

The case originated from an appeal against a **POCSO court order** that had summoned the accused for trial under:

- Section 376 IPC (rape)
- Section 18 of the POCSO Act (punishment for attempt)

On March 17, 2025, the Allahabad High Court downgraded the charges, terming the act as mere "preparation."

Distinction Between 'Preparation' and 'Attempt':

Key Legal Distinction:

- **Preparation**: Planning or arranging the means to commit an offence.
- Attempt: The stage where the accused takes concrete steps towards committing the crime.

Legal Criteria for 'Attempt' (Abhayanand Mishra v. State of Bihar, 1961)

To establish an attempt, the prosecution must prove:

- 1. Intention to commit the offence.
- 2. Preparation to commit the offence.
- 3. Concrete steps taken towards committing the offence.
- 4. **Proximity requirement:** The act must be close enough to the intended crime to be considered an attempt.

Where Attempt Begins (State of Maharashtra v. Mohd. Yakub, 1980):

• "Attempt begins where preparation ends."

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• Without an **overt act** leading to the crime, the accused **cannot be punished** for mere preparation.

Allahabad HC Downgrades Attempted Rape Charges:

The **Allahabad High Court** ruled that the prosecution failed to prove the offence had progressed beyond mere **preparation**.

HC's Reasoning:

- The court relied on the **1836 English case Rex v. James Lloyd**, which required proof of the accused's **intent to gratify their passions despite resistance**.
- It noted **no claim of penetrative assault**, a key requirement for proving rape under the **IPC**.
- Therefore, the HC reduced the charges to **IPC Section 354B** (assault with intent to disrobe a woman).

Reduced Charges and Punishment:

- Section 354B IPC: Punishment of 1 to 5 years in prison.
- This is significantly lesser than the punishment under **Section 376 IPC** or **Section 18 of the POCSO Act**.

Historical Precedents in Attempted Rape Cases:

The **Lloyd ruling (1836)** continues to influence Indian courts in deciding whether an accused has attempted to commit rape.

Recent Applications of the Lloyd Ruling:

- May 2024: The Rajasthan High Court applied the Lloyd test to reduce an attempted rape conviction to Section 354 IPC (outraging a woman's modesty).
- **2004** (Aman Kumar & Anr v. State of Haryana): The Supreme Court lowered an attempted rape conviction to a lesser offence using similar logic.

SC's Criticism and Potential Legal Reassessment:

On March 25, 2025, the Supreme Court took suo motu cognizance of the Allahabad HC's ruling, issuing a stay order and condemning the HC's reasoning as "insensitive and legally flawed."

SC's Remarks:

- The SC criticized the HC for **failing to appreciate the gravity of the offence**.
- It noted that the observations were **not only legally incorrect but also lacking in sensitivity toward the victim.**

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Possible Legal Reassessment:

The Supreme Court's intervention presents an opportunity to:

- Redefine the legal standard for attempted rape.
- Provide clear guidelines for distinguishing between preparation and attempt.

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GS Paper 3 – Science & Technology & Space Exploration

Gaia Mission: Mapping the Milky Way with Unprecedented Precision

Context: The **Gaia Mission**, launched by the **European Space Agency (ESA)** in 2013, has concluded its primary operations with groundbreaking contributions to astronomy.

Gaia Mission Latest News:

On March 27, 2025, the ESA confirmed that the Gaia space observatory was "passivated" (drained of energy) and placed into a safe "retirement orbit" around the Sun.

About the Gaia Mission:

- Full Name: Originally named Global Astrometric Interferometer for Astrophysics (GAIA), later simplified to Gaia.
- Launch Date: 2013 by the European Space Agency (ESA).
- **Objective:** To create the most **precise 3D map of the Milky Way** using **astrometry** (measuring positions and movements of celestial bodies).
- **Position:** Placed at **Lagrange Point 2 (L2)**, approximately **1.5 million km from Earth** (behind Earth when viewed from the Sun), ensuring an **unobstructed cosmic view**.

Scientific Instruments:

1. Twin Telescopes:

- Captured light from **different directions** to enhance precision.
- 2. Digital Camera:
 - Nearly **1 billion pixels**, the largest ever flown in space.

3. Three Key Instruments:

- Astrometer: Measures precise locations of celestial bodies.
- **Photometer:** Determines the **brightness and temperature of stars**.
- Spectrometer: Identifies chemical composition and motion of objects.

Key Discoveries of Gaia:

1. Mapping the Milky Way in 3D:

Gaia provided the **first precise 3D map** of the Milky Way, revealing its complex structure:

- The central bar and spiral arms.
- A warped, wobbly disc, likely caused by past collisions with smaller galaxies.
- **Ripples** in the galaxy from these collisions may have contributed to the formation of **new stars, including the Sun**.

2. Discovery of New Black Holes:

- Discovered a **new class of black holes** that are **invisible**, detectable only by their **gravitational effects**.
- Identified one of the closest black holes to Earth.

3. Tracking Asteroids and Space Threats:

• Identified over **150,000 asteroids**, mapping their **orbits and potential threats** to Earth.

The **Gaia Mission** has redefined our understanding of the **Milky Way**, offering insights into the galaxy's structure, stellar evolution, and cosmic hazards.

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GS Paper 1 – Geography & Environment

Debrigarh Wildlife Sanctuary: A Hidden Gem of Odisha

Context: Debrigarh Wildlife Sanctuary, situated in the **Bargarh district of Odisha** near the **Hirakud Dam (Mahanadi River)**, is a vibrant ecosystem known for its rich biodiversity and historical significance. It was declared a **wildlife sanctuary in 1985** and has since become a vital habitat for various flora and fauna.



Historical Significance:

The sanctuary holds a special place in India's freedom struggle. Veer

Surendra Sai, a noted freedom fighter, established his base at **Barapathara**, located within the sanctuary, during his rebellion against the British.

Ecological Features:

Vegetation

The sanctuary predominantly comprises **dry deciduous mixed forests**, with key tree species including:

- Sal
- Asana
- Bija
- Aanla
- Dhaura

Flora and Fauna:

The sanctuar<mark>y harbor</mark>s a wide range of wildlife, including:

- Carnivores: Tiger, Leopard, Hyena
- Herbivores: Spotted Deer, Antelopes, Sambar, Gaur, Nilgai, Bison
- Others: Sloth Bear, Langur Monkeys

Debrigarh Wildlife Sanctuary's Unique Initiative: Indian Bison Fest

In a **first-of-its-kind initiative**, the sanctuary recently hosted the **'Indian Bison Fest'** aimed at promoting awareness about the conservation of the **Indian Bison (Gaur)** and highlighting its ecological significance.

The Majestic Indian Bison (Gaur):

Overview:

The **Indian Bison (Gaur)** is one of the **largest extant bovines** and among the most impressive wild cattle species in the world, with a **shoulder height reaching up to 220 cm**.

Habitat:

- Found in **forested hills** and **grassy areas** of **South and Southeast Asia**.
- Western Ghats in Southern India is one of the most extensive strongholds, particularly in the Wayanad Nagarhole Mudumalai Bandipur complex.

Distribution:

- Global Population: Approximately **13,000 to 30,000** individuals.
- India hosts nearly **85% of the population**, with smaller populations in **Burma** and **Thailand**. **Download Our Application**







Conservation Status:

- **IUCN Red List: Vulnerable**
- **CITES**: **Appendix I** (Prohibits international trade)
- **The Wildlife Protection Act, 1972**: **Schedule I** (Highest protection under Indian law) •

State Recognition:

The Gaur is recognized as the State Animal of Goa and Bihar.

Additional Facts & Knowledge:

- The Gaur is known for its immense strength and muscular build. Adult males can weigh up to 1,500 kg.
- Unlike other wild cattle, **Gaurs are primarily diurnal**, but they may become **nocturnal** in areas with frequent human disturbance.
- **Conservation efforts** include habitat protection, anti-poaching measures, and awareness programs like the Indian Bison Fest.
- They have a **complex social structure**, usually found in **small herds** led by a **dominant female**.

Debrigarh Wildlife Sanctuary is not only a treasure trove of biodiversity but also a symbol of India's natural heritage and historical legacy. Conservation initiatives like the Indian Bison Fest play a crucial role in safeguarding these remarkable creatures and their habitat for future generations.

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GS Paper 1 – Coastal Geography & Ecosystems

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The Indian Coastal Crisis

Context: India's coastal regions are grappling with a **dual crisis**:

- 1. **Illegal Light Fishing**: Depleting marine life and affecting traditional livelihoods.
- 2. **Coastal Erosion**: Threatening **33.6% of the coastline**, as highlighted by recent government data.

About India's Coastal Region:

Extensive Coastline:

- India boasts a 7,500 km coastline, stretching across 9 states and 4 Union Territories (UTs).
- Supports livelihoods, trade, and biodiversity.

Economic Hub:

- Contributes approximately **4% to India's GDP** through **fisheries, tourism, and shipping**.
- Ports like Mumbai and Chennai handle nearly 70% of India's trade.

Biodiversity Hotspots:

- **Mangroves:** E.g., **Sundarbans**, the largest tidal halophytic mangrove forest in the world.
- **Coral Reefs:** E.g., **Gulf of Kutch**, housing some of India's most diverse marine life.
- Endangered Species: E.g., Olive Ridley turtles nesting along the Odisha coast.

Population Pressure:

Over 250 million people live within 50 km of the coast, increasing vulnerability to natural disasters.

Climate Vulnerability:

- Rising Sea Levels: 3.2 mm/year, contributing to erosion and habitat loss.
- **Frequent Cyclones:** Increasingly impacting coastal settlements.

Significance of Coastal Ecosystems:

1. Carbon Sequestration:

- **Mangroves** absorb and store **4x more carbon** than terrestrial forests, playing a crucial role in **climate change mitigation**.
- **Example: Bhitarkanika mangroves (Odisha)** serve as a major carbon sink.

2. Fisheries Support:

- **Coastal waters contribute 70% of India's fish production**, crucial for livelihoods.
- **Example: 16 million fishers** rely on coastal fishing for income.
- 3. Natural Barriers:
 - Coral Reefs and Sand Dunes: Act as buffers against coastal erosion and storm surges.
 - **Example: Gulf of Mannar's reefs** shield Tamil Nadu's shoreline from erosion.

4. Tourism Revenue:

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- Coastal tourism generates approximately **\$11 billion annually**, boosting local economies.
- Examples: Goa and Puri beaches attract millions of tourists each year. •

5. Cultural Heritage:

- Coastal areas house UNESCO World Heritage Sites and age-old traditions.
- Examples: Chola temples (Tamil Nadu) and Koli fishing communities (Maharashtra).

Issues Plaguing Indian Coastal Systems:

1. Illegal Light Fishing:

- Despite bans, mechanized boats use **bright LED lights** to attract fish, particularly harming **juvenile** populations.
- **Examples: Maharashtra and Andhra Pradesh** are worst-hit, impacting traditional fishers.

2. Coastal Erosion:

- Rising sea levels and activities like **sand mining** contribute to erosion.
- Example: Dakshina Kannada (Karnataka) lost 48.4% of its coast in 30 years.

3. Pollution:

- **Plastic waste and industrial effluents** are choking marine life and degrading water quality.
- **Example: Versova Beach (Mumbai)** required massive cleanups to restore its ecosystem.

4. Habitat Destruction:

- Mangroves and wetlands are cleared for infrastructure projects, compromising natural storm defenses.
- Example: Mumbai lost 40% of its mangroves since 1987 due to urban expansion.

5. Weak Enforcement:

- Lack of stringent monitoring encourages illegal construction and fishing.
- Example: Adani Port (Kerala) faced Coastal Regulation Zone (CRZ) violations due to poor oversight.

Way Forward:

1. Strict Enforcement:

- AI Drones and increased Coast Guard patrols to detect illegal activities.
- Example: Kerala's crackdown on LED-equipped boats significantly reduced illegal light fishing.

2. Eco-Friendly Infrastructure:

- Artificial reefs and sand replenishment methods to curb erosion.
- **Example: Puducherry's submerged breakwaters** reduced erosion by **30%**.

3. Community Participation:

- Engaging **local fishers** in conservation initiatives ensures sustainable fishing practices.
- **Example: Tamil Nadu's fisher unions** actively patrol against illegal trawling.

4. Climate Adaptation:

Relocating high-risk coastal settlements to safer areas.





Example: Odisha's cyclone-resistant homes for vulnerable communities.

5. Research & Funding:

- Expanding studies on erosion and allocating budgets for **mangrove restoration**.
- **Example: NCCR's satellite mapping** helps track erosion hotspots accurately.

Conclusion:

India's coasts are integral to its ecology, economy, and cultural heritage, yet they face growing threats from erosion, pollution, and overfishing. A balanced approach involving stricter enforcement, community involvement, and sustainable policies is essential to protect these ecosystems for future generations.

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