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DAILY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

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1. Why SEBI's New Plan Has Irked Mutual Funds

1. Background and Context

The Securities and Exchange Board of India (SEBI), the statutory regulator established under the *SEBI Act, 1992*, has proposed new rules to cap brokerage and transaction costs that Asset Management Companies (AMCs) can charge investors. These costs, currently levied over and above the Total Expense Ratio (TER), have been seen as opaque and potentially exploitative. SEBI's move aims to ensure investor protection and promote transparency in the mutual fund ecosystem. The announcement, however, led to an 8% fall in mutual fund company shares as fund houses expressed strong dissatisfaction.

2. Key Proposal by SEBI

- SEBI proposed **reducing brokerage limits** from *0.12% (12 bps)* to *0.02% (2 bps)* for cash market transactions and from *0.05% (5 bps)* to *0.01% (1 bp)* for derivatives.
- These charges would now come under the **umbrella of Total Expense Ratio (TER)** — the annual cost that mutual funds charge investors, which includes management, research, and operational expenses.
- Objective: Prevent *double-charging* of investors and make TER more transparent and all-inclusive.
- SEBI also proposed mandatory **upfront disclosure of TER** with a clear breakdown of components, improving transparency and investor understanding.

'SACHETISATION' OF MFs

- > Some fund houses already offer SIPs with **small-ticket sizes**
- > Sebi has proposed SIPs for ticket size as low as **Rs 250...** and to popularise them, it has proposed to subsidise the costs for market intermediaries
- > Such SIPs can be offered in any scheme **except debt, and sectoral & thematic, small & mid-cap funds**
- > To limit the subsidy, the number of SIPs per PAN card will be **restricted to three**

3. Impact on Mutual Funds and Market Participants

- AMCs will now need to **bear research and operational expenses themselves** rather than passing them to investors.
- This will **reduce profit margins** and increase operational costs for fund houses in the short term.
- Institutional equity platforms that rely on revenue from trade execution and research may experience income reduction.
- However, **investor protection and transparency** will improve as costs will reflect genuine execution charges rather than bundled fees.
- The **entire value chain** (distributors, brokers, transfer agents) might share the burden, as AMCs could attempt to offset their losses by reducing commissions or cutting costs.

4. Positive Provisions for AMCs

- SEBI proposed allowing AMCs to **offer investment management and advisory services** to *non-pooled funds* (such as family offices, pension funds, insurers).
- Each client's funds would be managed individually, ensuring segregation and tailored investment strategies.
- AMCs must set up **separate business units** for these services to prevent conflict of interest and information leakage.
- Globally, this dual-role model (advisory + distribution) is common, thus aligning Indian regulations with global best practices.



5. Implications for Retail Investors

- Investors will gain from **greater cost transparency**, as all-inclusive TER will show clearly what they are paying for.
- The **cap on additional charges** could improve long-term returns since excessive costs will be curbed.
- It will help **restore investor confidence**, making mutual funds a more transparent and trustworthy investment avenue.
- In the short run, however, the immediate benefit to retail investors may be marginal until the new norms stabilize.

6. Legal and Regulatory Basis

- Under **Section 11 of the SEBI Act, 1992**, SEBI has the mandate to protect investor interests and regulate the securities market.
- The **SEBI (Mutual Funds) Regulations, 1996**, particularly Regulation 52, governs the structure and limits of expenses that AMCs can charge.
- SEBI's proposed reform aligns with the **principles of accountability and transparency** under Article 38 of the Constitution (Directive Principles promoting economic justice).

Conclusion

SEBI's proposal marks a major shift towards **cost rationalization, transparency, and investor protection** in India's mutual fund industry. While fund houses may see short-term profit compression, the move enhances long-term trust, governance, and fairness in financial markets.

UPSC Relevance

- **GS Paper 3 (Economy):** Regulatory framework of financial markets, SEBI's role, issues in investor protection, financial sector reforms.
- **GS Paper 2:** Role of statutory and regulatory bodies.
- **Key Concepts:** Total Expense Ratio (TER), Asset Management Company (AMC), SEBI Regulations, investor protection mechanisms.
- **Analytical Angle:** Balancing investor welfare with financial sector profitability and institutional sustainability.

2. U.S. is Doing a Trade Deal with India, Says Trump

1. Background and Context

At the **APEC (Asia-Pacific Economic Cooperation) CEO Summit in Gyeongju, South Korea**, former U.S. President **Donald Trump** stated that the United States is working on a **new trade deal with India**, emphasizing his "great relationship" with Prime Minister Narendra Modi. This statement comes amid ongoing negotiations to strengthen Indo-U.S. trade ties, which have experienced friction due to tariff disputes and geopolitical tensions. Trump also reiterated his earlier claim that he had helped to de-escalate tensions between India and Pakistan in May, through diplomatic engagement and trade leverage.

2. Key Highlights of Trump's Remarks

- Trump said, "We're doing a trade deal with India... I have great respect and love for Prime Minister Modi."



- He praised PM Modi as “tough as hell,” highlighting personal rapport as a factor in bilateral relations.
- He claimed that trade diplomacy helped him intervene during India-Pakistan hostilities, asserting that both countries ceased fighting after his mediation attempts.
- Trump also praised Pakistan’s Army Chief, General Asim Munir, calling him “a great fighter.”
- His remarks reflect an attempt to portray the U.S. as a strategic balancer in South Asian geopolitics.

3. Underlying Trade Issues and Economic Context

- During Trump’s presidency, the U.S. imposed **up to 50% tariffs on Indian goods**, including an additional 25% on certain imports, causing strain in bilateral trade relations.
- India lost its **Generalized System of Preferences (GSP)** status in 2019, which had allowed duty-free access for some exports to the U.S.
- The ongoing negotiations aim to restore **market access**, resolve tariff disputes, and promote **reciprocal trade benefits** in sectors like defense, pharmaceuticals, IT services, and agriculture.
- The statement also reflects **America’s Indo-Pacific economic engagement strategy**, seeking to counterbalance China’s dominance in the region.



4. Constitutional and Legal Dimensions

- International trade negotiations fall under the purview of **Article 73** and **Article 253** of the **Indian Constitution**, empowering the Union government to enter into treaties and international agreements.
- The **Foreign Trade (Development and Regulation) Act, 1992** governs India’s trade policies and international agreements.
- On the U.S. side, trade pacts require congressional approval under the **Trade Promotion Authority (TPA)** framework.
- Both nations are members of the **WTO**, bound by principles of non-discrimination, most-favored-nation (MFN) treatment, and fair trade.

5. Geopolitical Implications

- The remarks indicate **Washington’s renewed interest in strategic economic engagement with India**, aligning with its Indo-Pacific security architecture (QUAD).
- For India, deepening trade with the U.S. helps diversify export destinations and reduce dependency on China.
- Trump’s self-claimed role as a mediator between India and Pakistan, however, contrasts with India’s official stance that **Kashmir and related issues are strictly bilateral**.
- This underlines the **delicate balance between strategic autonomy and global partnerships** in India’s foreign policy.

Conclusion

Trump’s statement symbolizes the evolving trajectory of Indo-U.S. relations, where **economic diplomacy intertwines with strategic and political narratives**. While the U.S. seeks to fortify its trade foothold in



South Asia, India aims to leverage such ties for technology, investment, and defense cooperation. Despite past tariff frictions, both sides recognize the **mutual strategic and economic value** of the partnership.

UPSC Relevance

- **GS Paper 2:** India–U.S. bilateral relations, diplomacy, and global groupings (APEC, QUAD).
- **GS Paper 3:** International trade, tariff policy, WTO issues, and impact on the Indian economy.
- **Key Concepts:** Trade diplomacy, tariff barriers, GSP status, strategic partnership, Indo-Pacific strategy.
- **Analytical Angle:** Balancing India’s national interests with global power partnerships; role of trade as a tool of foreign policy and conflict resolution.

3. Government Prepares Debt Recast Plan for Power DISCOMs

1. Background and Context

The Central Government is formulating a **comprehensive debt restructuring plan** for state-owned **power distribution companies (DISCOMs)** — one of India’s most financially stressed sectors. With cumulative unsustainable debt estimated at **₹2.74 lakh crore**, this initiative aims to revive DISCOMs’ financial health, reduce fiscal pressure on states, and promote **private sector participation** in power distribution. The proposal, prepared by a **Group of Ministers on Fiscal Viability of DISCOMs** led by Power Minister **Manohar Lal**, is seen as the **most sweeping reform in two decades** for India’s electricity distribution sector.

2. Key Features of the Proposed Scheme

- **Debt Restructuring and Privatization:** The Centre will **take over DISCOMs’ unsustainable debt** to make them financially viable and attractive for private investors. Management control would be transferred to strategic private partners.
- **Three Reform Options for States:**
 - (a) **Privatize majority ownership** (minimum 51% equity sale) – access to 50-year interest-free loans under the **Special Assistance to States for Capital Investment (SASCI)** scheme.
 - (b) **Partial stake divestment (minimum 26%)** – management rights transferred to private entities; state to retain partial control while unsustainable debt taken over by the Centre.
 - (c) **Listing model** – states not opting for privatization must list DISCOMs within three years and report continuous profits for five years to qualify for government capex support.
- **Financial Support Mechanism:** Includes **₹78,119 crore** central outlay via SASCI loans, **3.5% interest subvention** for five years, and **equity grants** for infrastructure development and grid modernization.
- **Performance-based Incentives:** Access to benefits will depend on **financial performance**, including achieving at least an **‘A’ rating** in the **Power Finance Corporation (PFC) Integrated Ratings** system.

Bank	Total discom exposure	Of which restructured advances*	Net profit 2014-15
Canara Bank	26,300	6,500	2,703
Central Bank	18,300	14,400	606
Bank of India	14,900	4,000	1,709
Union Bank (I)	12,100	3,000	1,782
Syndicate Bank	11,500	4,300	1,523
PNB	10,700	5,700	3,062
SBI	10,700	4,000	13,102
Others	55,900	30,000	6,995
Total	1,60,400	71,900	31,481

*Loans already classified as restructured before UDAY
Compiled by BS Research Bureau
Source: Banks, Anand Rajni Research, Capgemini

3. Objectives and Expected Outcomes

- Restore **financial sustainability and creditworthiness** of DISCOMs.



- Attract **private capital, managerial efficiency, and accountability** in electricity distribution.
- Enable **modernization of grids** and promote investment in technology and infrastructure.
- Reduce the **fiscal burden on states** by transferring unviable debt to the Centre.
- Encourage **market-based reforms** aligning with the long-term goals of the **Electricity Act, 2003**, which emphasizes competition, efficiency, and consumer interest.

4. Constitutional and Legal Framework

- **Electricity Act, 2003:** Provides for **unbundling of state electricity boards**, enabling privatization and introducing competition in generation and distribution.
- **Article 73 and Article 282** of the Constitution: Allow the Union government to provide financial assistance to states for implementing reforms in sectors of national importance.
- **Article 293:** Regulates state borrowing; hence, the Centre's role in taking over DISCOM debt is legally significant.
- **Concurrent List (Entry 38):** Electricity is a concurrent subject, allowing both Centre and states to legislate and reform the sector collaboratively.

5. Challenges and Concerns

- Resistance from states over **loss of control** in power utilities and political sensitivity around privatization.
- Risk of **moral hazard**, as repeated bailouts may reduce pressure for operational reforms.
- Need for **robust regulation** to ensure fair pricing and prevent private monopolies.
- Ensuring that consumer interests remain protected while introducing private management.

Conclusion

The proposed DISCOM debt recast scheme signifies a **transformative step** in India's power sector reform journey, balancing fiscal consolidation, privatization, and performance-based governance. If executed effectively, it could resolve decades-old inefficiencies in the electricity distribution segment and strengthen India's energy infrastructure and fiscal discipline.

UPSC Relevance

- **GS Paper 3:** Infrastructure (Energy sector reforms), Public Sector Management, Fiscal Policy, Government Schemes.
- **GS Paper 2:** Centre-State relations, cooperative federalism, and public service delivery.
- **Key Concepts:** DISCOM debt, SASCI scheme, privatization, fiscal viability, electricity distribution reforms.
- **Analytical Angle:** Evaluating the effectiveness of privatization and central intervention in achieving energy efficiency, financial sustainability, and federal balance.

4. India and China Hold Military Talks on Eastern Ladakh Situation

1. Background and Context

India and China held the **23rd round of Corps Commander-level talks** on **October 25** at the **Moldo-Chushul border meeting point** on the Indian side of the Line of Actual Control (LAC) in eastern Ladakh.



These high-level talks aim to de-escalate tensions and maintain stability along the LAC, where both nations have been locked in a prolonged standoff since **May 2020** following the **Galwan Valley clashes**. The talks reflect continuing diplomatic and military engagement to ensure peace in a region that remains one of the most sensitive flashpoints in India-China relations.

2. Key Highlights of the 23rd Corps Commander-Level Talks

- The meeting focused on **maintaining peace and tranquillity** along the LAC in eastern Ladakh through effective communication and risk management mechanisms.
- Both sides reiterated commitment to **implement previous agreements** and avoid incidents that may escalate tensions.
- The talks covered key friction points such as **Depsang Plains, Demchok, and Hot Springs**, where disengagement is yet to be fully achieved.
- China's Defence Ministry, in its official statement, emphasized the need for continued dialogue to "promote the transition of the border situation to normal management and control."
- The Indian side stressed the need for **complete disengagement and restoration of the pre-April 2020 status quo**, consistent with India's firm stance on sovereignty and territorial integrity.



3. Background of the Border Dispute and Previous Engagements

- The India-China border, spanning over **3,488 km**, remains **undemarcated** and contested along several sectors, primarily in **Ladakh, Arunachal Pradesh, and Sikkim**.
- The **Galwan Valley clash (June 2020)** led to the death of 20 Indian soldiers and several Chinese casualties, marking the most serious confrontation in decades.
- So far, multiple rounds of military and diplomatic talks under the **Working Mechanism for Consultation and Coordination (WMCC)** have been held to prevent further escalation.
- Partial disengagement has occurred in areas like **Pangong Tso and Gogra Post**, but a complete resolution remains elusive.

4. Constitutional and Legal Dimensions

- The **Indian Constitution (Article 1)** defines India's territory, including all areas that legally belong to the Union of India, thereby underscoring India's claim over disputed regions.
- **Article 51** under the Directive Principles of State Policy promotes the **peaceful settlement of international disputes**—a principle reflected in India's approach to border negotiations.
- The **Vienna Convention on Diplomatic Relations (1961)** and the **UN Charter (Article 2(4))** also support peaceful resolution of conflicts without the use of force.
- India's engagement is consistent with bilateral agreements such as the **1993 Agreement on Maintenance of Peace and Tranquillity along the LAC**, and subsequent agreements of **1996, 2005, and 2013**, all aimed at maintaining border stability.



5. Strategic and Geopolitical Implications

- These talks hold significance for **regional security and Indo-Pacific stability**, especially amid China's assertiveness across multiple borders.
- They are crucial for **India's defence preparedness** and strategic positioning in Ladakh, where infrastructure upgrades continue, including all-weather roads and forward logistics.
- The continuing dialogue signals both nations' preference for **conflict management over confrontation**, despite persistent trust deficits.
- The situation also affects **India's relations with the Quad nations** (U.S., Japan, Australia), where New Delhi seeks to balance deterrence with diplomacy.

Conclusion

The 23rd round of India-China military talks underscores the **continuing complexity of the border standoff** and the importance of sustained engagement to maintain stability along the LAC. While progress has been incremental, dialogue remains the only viable mechanism to prevent escalation and preserve peace. For India, the challenge lies in combining **firm defence posturing with strategic restraint** to safeguard sovereignty while keeping diplomatic channels open.

UPSC Relevance

- **GS Paper 2:** India's foreign policy, bilateral relations, and border management with neighbouring countries.
- **GS Paper 3:** Defence preparedness, security challenges, and strategic infrastructure development along borders.
- **Key Concepts:** Line of Actual Control (LAC), Corps Commander-level talks, Working Mechanism for Consultation and Coordination (WMCC), border diplomacy, and peaceful conflict resolution.
- **Analytical Angle:** Balancing national security interests with diplomatic engagement in a changing Indo-Pacific security architecture.

5. CEA Warns that Dollar Stablecoins Could Disrupt Monetary Policy

1. Background and Context

Chief Economic Adviser (CEA) **V. Anantha Nageswaran** has cautioned that the **increasing global popularity of U.S. dollar-denominated stablecoins** could significantly disrupt global monetary systems and central banking functions. Speaking in Mumbai, he highlighted that the growth of stablecoins represents a new challenge for monetary policy and traditional banking systems worldwide. The issue gains importance as stablecoins—digital tokens pegged to stable assets like the U.S. dollar—are becoming increasingly integrated into international financial transactions and payment ecosystems.

2. What Are Stablecoins? (Definition)

Stablecoins are a type of **cryptocurrency designed to minimize price volatility** by being pegged to a stable asset such as a fiat currency (e.g., USD) or commodity (e.g., gold). Examples include **Tether (USDT)** and **USD Coin (USDC)**. They combine the **transactional efficiency of digital currencies** with the **stability of traditional money**, making them attractive for cross-border payments, decentralized finance (DeFi), and digital trade. However, they can also undermine domestic monetary control if widely adopted.





3. Key Concerns Highlighted by the CEA

- Stablecoins, especially **U.S. dollar-backed ones**, could **intensify dollarization** in emerging economies by increasing dependence on the U.S. dollar for transactions.
- Their rise could **reduce the effectiveness of monetary policy transmission**, as they bypass traditional banking and regulatory channels.
- They pose **competition to banks** by attracting deposits away from the formal financial system and acting as new intermediaries.
- The **opacity in reserve management and regulatory oversight** of stablecoins could create systemic risks and potential financial instability.
- The dominance of dollar stablecoins could **enhance U.S. monetary influence globally**, reducing policy autonomy for developing countries like India.

4. Global and Regulatory Context

- Major economies, including the **U.S., EU, and India**, are exploring frameworks for regulating stablecoins under **Financial Stability Board (FSB)** and **G20 guidelines**.
- The **Reserve Bank of India (RBI)** has repeatedly expressed concerns about cryptocurrencies and stablecoins undermining the country's **monetary sovereignty**.
- In India, the legal framework for digital assets is evolving under the **Prevention of Money Laundering Act (PMLA)**, and the **Foreign Exchange Management Act (FEMA)** governs cross-border currency flows.
- Constitutionally, **Article 246 read with List I (Union List, Entry 36 and 46)** vests monetary regulation and banking control with the **Union Government and the RBI**.
- The growing use of dollar-backed stablecoins challenges these sovereign powers, potentially necessitating stronger **central bank digital currency (CBDC)** frameworks as a countermeasure.

5. Strategic and Policy Implications for India

- The **RBI's Digital Rupee (CBDC)** project becomes crucial as a **domestic alternative** to foreign stablecoins, ensuring financial sovereignty and traceability.
- India needs **robust crypto-asset regulation**, including mandatory reserve disclosures, licensing of issuers, and capital adequacy norms.
- Coordination between the **Finance Ministry, RBI, and international regulators** will be key to mitigating risks from global stablecoin penetration.
- Policy must balance **innovation and financial inclusion** with **monetary stability and anti-money laundering safeguards**.

Conclusion

The CEA's warning underscores the disruptive potential of U.S. dollar stablecoins in reshaping the global financial architecture. While they offer efficiency and technological innovation, their unchecked proliferation could erode monetary policy control, reduce banking stability, and threaten financial sovereignty. For India, developing a strong **regulatory framework and accelerating CBDC adoption** will be essential to safeguard macroeconomic stability and policy autonomy.



UPSC Relevance

- **GS Paper 3:** Monetary policy, financial stability, digital currency regulation, and fintech innovation.
- **GS Paper 2:** Role of institutions like RBI in ensuring economic sovereignty; global financial governance.
- **Key Concepts:** Stablecoins, dollarization, monetary policy transmission, CBDC (Central Bank Digital Currency), financial sovereignty.
- **Analytical Angle:** Balancing fintech innovation with regulatory control—ensuring India’s monetary autonomy in a globalized digital economy.

6. Government to Review Notified Rates under Export Incentive Schemes

1. Background and Context

The Government of India has constituted a **high-level committee** chaired by former secretary **Neeraj Kumar Gupta** to review the **notified rates** under two key export incentive schemes — the **Remission of Duties and Taxes on Exported Products (RoDTEP)** and the **Rebate of State and Central Taxes and Levies (RoSCTL)**. This move aims to ensure that exporters are adequately compensated for taxes and duties not refunded through other mechanisms, thereby enhancing the **competitiveness of Indian exports** in global markets. The review follows concerns from export industries about high input costs and declining export growth amidst global trade slowdown.

2. About the RoDTEP and RoSCTL Schemes (Definitions and Objectives)

- **RoDTEP (Remission of Duties and Taxes on Exported Products):** Introduced in 2021 under the **Foreign Trade Policy**, it replaced the MEIS (Merchandise Exports from India Scheme). It provides rebates for **embedded taxes and duties** such as electricity duty, VAT on fuel, and mandi tax, which are not otherwise refunded.
- **RoSCTL (Rebate of State and Central Taxes and Levies):** Launched in 2019, it specifically benefits the **textiles and apparel sector**, refunding state and central taxes like electricity duty, VAT on fuel, and mandi tax on raw materials used in production.
- Both schemes are **WTO-compliant**, focusing on tax remission rather than direct subsidies, aligning with international trade norms under the **Agreement on Subsidies and Countervailing Measures (ASCM)**.



3. Key Objectives of the Review Committee

- To **evaluate the adequacy and fairness of existing rebate rates** under both schemes, ensuring they reflect current market realities and input costs.
- To **streamline procedures** and ensure faster reimbursement to exporters to avoid working capital blockages.
- To identify **overlaps or inefficiencies** between central and state taxes being reimbursed.
- To recommend **rationalized rates** and simplified structures that enhance predictability and transparency.



- To align the schemes with the upcoming **Foreign Trade Policy (2025-30)** and India's broader export diversification agenda.

4. Legal and Policy Framework

- The schemes operate under the **Foreign Trade (Development and Regulation) Act, 1992**, empowering the Centre to frame policies promoting exports.
- The **Constitutional backing** arises from **Article 286**, which restricts states from imposing taxes on exports, and **Entry 41 of the Union List**, allowing the Union to legislate on trade with foreign countries.
- The review aligns with **WTO's non-subsidization principle**, avoiding disputes similar to those India faced earlier under the **MEIS** scheme.
- The move supports commitments under the **National Logistics Policy (2022)** and **Make in India** initiative by ensuring cost-competitiveness for exporters.

5. Strategic and Economic Significance

- India's exports face pressure due to **global demand slowdown**, high logistics costs, and input price volatility. Reviewing rebate rates will **improve liquidity and global competitiveness** of Indian exporters.
- The move may help boost exports from sectors like **textiles, leather, engineering goods, and chemicals**, which are heavily impacted by unrefunded taxes.
- Enhanced rebate mechanisms would also aid in **employment generation**, particularly in labor-intensive sectors.
- By making these schemes more efficient and transparent, India strengthens its case for **WTO compliance** and fair-trade credibility.

Conclusion

The government's decision to review notified rates under RoDTEP and RoSCTL marks an important step toward **modernizing India's export promotion framework**. By ensuring that exporters receive timely and accurate reimbursements of unrefunded taxes, the move will enhance India's export competitiveness, foster industrial growth, and ensure alignment with global trade rules. The initiative reflects a balance between **fiscal prudence, trade facilitation, and WTO compliance**.

UPSC Relevance

- **GS Paper 3:** Indian Economy, External Sector, Export Promotion Schemes, WTO-related issues.
- **GS Paper 2:** Government policies for industrial growth, trade policy formulation.
- **Key Concepts:** RoDTEP, RoSCTL, Export Competitiveness, WTO Compliance, Subsidy vs Remission.
- **Analytical Angle:** Evaluating India's export policy reforms in the context of global trade challenges, fiscal management, and WTO obligations.



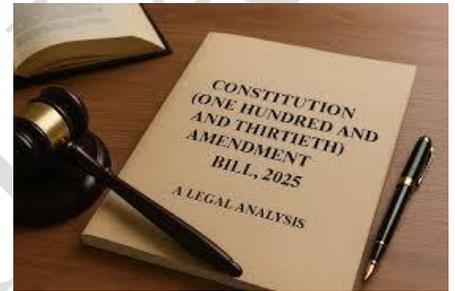
7. Constitution (One Hundred and Thirtieth Amendment) Bill, 2025 – Scrutiny on ‘Arrest’ and ‘Detention’ Provisions

1. Key Provisions of the Bill

- The Bill seeks to amend **Articles 75, 164, and 239AA** of the Constitution, which deal with the **Union and State Councils of Ministers**, and **special provisions for Delhi**.
- It provides that if a **Minister (Union/State) is arrested and detained in custody for 30 consecutive days** for an offence punishable with imprisonment of **five years or more**, he/she shall be **removed from office** by the **President (on advice of PM) or Governor (on advice of CM)**.
- If the **Prime Minister or Chief Minister** is detained similarly, they must **resign by the 31st day**, failing which they **automatically cease to hold office**.
- The Bill is currently referred to a **Joint Parliamentary Committee (JPC)** for further scrutiny.

2. Constitutional and Legal Context

- **Article 75(1)**: The Prime Minister is appointed by the President; other Ministers are appointed on the advice of the PM.
- **Article 164(1)**: Corresponding provision for the States with the Governor and Chief Minister.
- **Article 239AA(6)**: Provides for Council of Ministers for Delhi.
- **Principle of Collective Responsibility** under **Article 75(3)** ensures that the Council remains answerable to the Lok Sabha.
- The **Bill introduces a new clause (likely Article 75(5A))** to specify disqualification based on prolonged detention.
- Related **Criminal Procedure Code (CrPC)** and **Bharatiya Nagarik Suraksha Sanhita (BNSS)** provisions:
 - **Section 41 & 41A (CrPC) / Section 35 (BNSS)** – Conditions for arrest and notice of appearance.
 - **Section 167(2) CrPC / Section 187 BNSS** – Default bail provision if investigation not completed within 60–90 days.



3. Judicial Precedents & Interpretations on Arrest and Detention

- **Joginder Kumar vs State of U.P. (1994)** – Arrest must be justified; it should not be routine or mechanical.
- **Amarawati vs State of U.P. (2004)** – Arrest in cognisable offences is **discretionary**, not mandatory.
- **Arnesh Kumar vs State of Bihar (2014)** – Police must record reasons for arrest; unnecessary arrests violate personal liberty.
- **Satender Kumar Antil vs CBI (2022)** – Reinforced compliance with Sections 41 & 41A; bail should be the rule.
- **Deenan vs Jayalalithaa (1989)** – Power to arrest is discretionary; courts generally do not intervene in investigative discretion.



4. Concerns and Criticisms Raised

- **Discretionary nature of arrest** gives enforcement agencies wide power — potential for **political misuse** to unseat opposition ministers.
- **“Thirty consecutive days” detention rule** is seen as **arbitrary** since **default bail** provisions under CrPC/BNSS often exceed 30 days.
- The phrase **“any law for the time being in force”** brings offences under **special acts** like **PMLA, NDPS, UAPA**, which have **stringent twin bail conditions**, making bail extremely difficult.
- Courts often consider **“gravity of offence”** beyond the triple test (flight risk, evidence tampering, witness threat), leading to prolonged custody.
- **Judicial subjectivity** under Article 21 (liberty jurisprudence) may influence bail decisions, increasing unpredictability.

5. Implications & Possible Misuse

- May encourage **political vendetta** through selective arrests by politically influenced agencies.
- Could **destabilize governments** if top ministers or CMs are arrested in controversial cases.
- Contradicts the **presumption of innocence** and may **erode federal balance**.
- **Ethical governance** requires removing tainted ministers, but mechanisms must be **free from political manipulation**.
- **National Police Commission (1977)** had observed that nearly **60% arrests were unnecessary or unjustified**, highlighting misuse potential.

Conclusion

The Constitution (130th Amendment) Bill aims to uphold **constitutional morality** by ensuring that individuals under serious criminal detention do not hold ministerial office. However, the **vagueness around arrest discretion, short detention threshold, and inclusion of offences under stringent special laws** make the Bill vulnerable to **political misuse**. Greater **judicial and parliamentary scrutiny** is essential before enacting such a law to maintain the **balance between probity in public life and protection of personal liberty**.

UPSC Relevance

- **GS Paper II:** Polity – Structure, organization, and functioning of the Executive; Issues and challenges pertaining to the federal structure; Parliament and State Legislatures; Separation of powers; Role of judiciary.
- **Keywords for UPSC:** Constitutional Morality, Ministerial Responsibility, Article 75 & 164, BNSS 2023, Arrest and Detention, Bail Jurisprudence, Political Accountability, Misuse of Power, Rule of Law, Arnesh Kumar Judgment.
- **Potential UPSC Question:** *“The proposed 130th Constitutional Amendment seeks to uphold constitutional ethics but raises serious questions about misuse of arrest powers. Examine.”*



8. A Decade After the Paris Agreement – The Unstoppable Transition towards Climate Action

1. Background and Achievements of the Paris Agreement (2015–2025)

- The **Paris Agreement (COP21, 2015)** is a landmark global treaty under the **United Nations Framework Convention on Climate Change (UNFCCC)** aimed at limiting global warming to “well below 2°C” and pursuing efforts to **limit it to 1.5°C** above pre-industrial levels.
- Despite rising emissions, the Agreement has altered the global trajectory — projected warming reduced from 4–5°C (pre-2015) to approximately 2–3°C, demonstrating the impact of **collective action** and **multilateral cooperation**.
- It is grounded in the principles of **equity** and **common but differentiated responsibilities (CBDR)**, allowing flexibility based on national circumstances.
- **Definition – Nationally Determined Contributions (NDCs):** Voluntary national climate plans submitted by each country outlining targets for emission reduction and adaptation actions.

2. Structural Strength: Fairness, Justice, and Multilateralism

- The Agreement ensures **fairness and inclusivity**, promoting **international solidarity** with nations most vulnerable to climate change.
- It respects **sovereign national circumstances** while ensuring all countries contribute to global climate goals.
- The Agreement has successfully **mobilized global finance, technology, and capacity-building** for low-carbon pathways, making it an enduring instrument of **global climate governance**.

3. Global Progress in Energy Transition and Sustainable Technology

- The last decade has seen a **monumental transformation** in the global energy and mobility sectors:
 - **Renewable energy** (solar, wind, hydro) has become **cheaper and more competitive** than fossil fuels.
 - **Electric vehicles (EVs)** now account for **nearly 20% of new global car sales**, driven by advances in **battery storage and clean technology**.
 - The shift has created **green jobs**, enhanced **energy security**, and reduced **carbon intensity** of growth.
- **India’s Role:** India has emerged as a **leader in climate action**, achieving **50% installed electricity capacity from non-fossil sources** (five years ahead of target) and committing to **net-zero emissions by 2070** under the vision of **Viksit Bharat @2047**.



4. The International Solar Alliance (ISA) – A Model for Climate Multilateralism

- Jointly launched by **India and France at COP21 (2015)**, the ISA embodies the principle of “**One Sun, One World, One Grid.**”
- Now a **coalition of over 120 member and signatory nations**, the ISA focuses on:
 - **Capacity building and training,**



- **Financial mechanisms** for underfunded energy transitions,
- **Promoting solar energy accessibility and affordability.**
- The ISA's success demonstrates how **South–South cooperation** and **climate diplomacy** can operationalize the ideals of the Paris Agreement.

5. Key Priorities Ahead of COP30 (Belém, Brazil)

1. **Raising Global Ambition:** Enhance commitments to reduce emissions faster to keep 1.5°C goal alive.
2. **Ensuring Just and Inclusive Transition:** Support vulnerable nations and communities through **Green Climate Fund, Loss and Damage Fund**, and initiatives like **Coalition for Disaster Resilient Infrastructure (CDRI)**.
3. **Protecting Natural Carbon Sinks:** Conserve forests, mangroves, and oceans that act as vital **carbon absorbers**.
4. **Empowering Non-State Actors:** Engage local governments, businesses, scientists, and citizens for **grassroots implementation**.
5. **Defending Climate Science:** Strengthen the **Intergovernmental Panel on Climate Change (IPCC)** and combat **climate misinformation** globally.

6. The Path Ahead – An Unstoppable Global Transition

- The **Paris trajectory is irreversible** due to:
 - Global industries investing in clean technologies,
 - Local authorities embedding sustainability in policies,
 - The rising economic viability of renewables,
 - And the necessity of **climate adaptation** for survival.
- Despite geopolitical or economic challenges, **multilateralism remains the most effective path** for global climate progress.

Conclusion

Ten years after its adoption, the **Paris Agreement stands as a testament to collective human resolve and cooperative multilateralism**. While the pace of transition must accelerate to meet the 1.5°C goal, the shift toward renewable energy, sustainable mobility, and climate justice is now **economically, environmentally, and politically irreversible**. The challenge ahead is to maintain ambition, equity, and trust among nations to ensure a livable planet for future generations.

UPSC Relevance

- **GS Paper III:** Environment, Conservation, Climate Change, and Sustainable Development.
- **GS Paper II:** International Relations, Global Environmental Governance, Multilateral Institutions.
- **Key Concepts for UPSC:**
 - Paris Agreement, UNFCCC, CBDR, NDCs, ISA, Green Climate Fund, Loss and Damage Fund, Carbon Neutrality, CDRI, IPCC, COP30.



- **Possible UPSC Question:** “Ten years after the Paris Agreement, the world stands at a crossroads between ambition and action. Critically examine the progress and challenges of global climate governance.”

9. Norway and India – Green Maritime Partners for a Sustainable Blue Economy

1. India–Norway Maritime Partnership: Background and Evolution

- India and Norway share deep maritime ties rooted in their **ocean-based economies** and commitment to a **sustainable blue economy**.
- The partnership gained momentum with the **India–Norway Ocean Dialogue (2019)** and the establishment of the **India–Norway Task Force on Blue Economy**, focusing on sustainable ocean management, green shipping, and pollution mitigation.
- The recent entry into force of the **India–EFTA Trade and Economic Partnership Agreement (TEPA) on October 1, 2025**, has provided a major boost to maritime cooperation by opening trade, technology, and investment opportunities between India and European Free Trade Association (EFTA) nations.
- Both countries view **oceans as natural assets**, linking economic growth with environmental sustainability, aligning with the goals of **Sustainable Development Goal (SDG) 14 – Life Below Water**.

2. Strengthening Maritime Cooperation and Industry Linkages

- **Norway’s Maritime Cluster** includes ship designers, equipment manufacturers, shipyards, shipping companies, insurers, and financial institutions, representing a comprehensive maritime ecosystem.
- India has emerged as a **hub for global shipbuilding, ship recycling, and digital maritime technology**, supported by its skilled workforce and competitive shipyards.
- Around **10% of ships ordered by Norwegian shipowners** are currently being built in India — highlighting the trust in Indian maritime manufacturing.
- Notably, **Cochin Shipyard** recently secured **14 vessel orders** from Norway’s Wilson ASA, reflecting India’s growing stature in the global shipbuilding value chain.
- The **10th Joint Working Group on Maritime Cooperation (2025)** between India and Norway discussed green shipping, maritime safety, ship recycling, and training — strengthening institutional mechanisms for collaboration.



3. Green Shipping and the Sustainable Blue Economy

- **Definition – Blue Economy:** Refers to the sustainable use of ocean resources for economic growth, improved livelihoods, and ocean ecosystem health.
- Norway aims to **reduce emissions from domestic shipping and fisheries by 50% by 2030 (from 2005 levels)** while promoting **low- and zero-emission fuels** such as **hydrogen and ammonia**.
- Norway has pioneered **zero-emission, autonomous vessels** such as *Yara Birkeland* (world’s first autonomous electric container ship) and *ASKO ferries*.
- The **International Maritime Organization (IMO)** has adopted a **Net-Zero Framework for global shipping**, supported by Norway, though consensus on its implementation is pending.



- Both nations support **green shipping corridors, maritime decarbonization, and research collaborations** under global maritime frameworks.

4. Inclusivity and Human Resource Development in Maritime Sector

- Norway and India are actively promoting **gender equality and inclusion** in the maritime sector, aligning with **SDG 5 – Gender Equality**.
- The **Maritime SheEO Conference (since 2019)**, supported by Norway, encourages greater participation of women in maritime professions.
- India ranks among the **top global suppliers of seafarers**, and Indian nationals are the **second-largest group working aboard Norwegian-controlled vessels**.
- Under **TEPA**, both nations agreed to facilitate **on-board training opportunities** for Indian and Norwegian seafarers, ensuring **skill mobility and workforce development**.

5. India's Maritime Vision and Global Cooperation

- India's **Maritime India Vision 2030** and **Amrit Kaal Vision 2047** aim to position India as a **global maritime leader**, with focus on **port modernization, green infrastructure, logistics efficiency, and digital transformation**.
- The **International Solar Alliance (ISA)** model of India–France collaboration serves as an inspiration for maritime multilateralism, emphasizing technology transfer and sustainable development.
- Norway and India's collaboration embodies the concept of "**blue diplomacy**", reflecting **responsible ocean governance and collective climate action**.
- The upcoming **3rd India–Nordic Summit (Oslo)** will further institutionalize cooperation in **ocean governance, trade, innovation, and sustainability**.

6. Shared Challenges and Global Responsibilities

- Both countries face **climate change threats, marine pollution, and biodiversity loss**, necessitating a **science-based and cooperative maritime strategy**.
- As **major ocean nations**, India and Norway advocate for **global maritime security, decarbonization, and equitable access to ocean resources**.
- Norway's approach of aligning **environmental responsibility with economic growth** provides a model for India's **blue economy mission**.
- The partnership also advances **climate justice** by balancing the needs of developing and developed economies under frameworks like the **UNFCCC and Paris Agreement**.

Conclusion

The India–Norway maritime partnership symbolizes a **forward-looking global collaboration** where sustainability, technology, and inclusivity converge. As the world transitions toward a **low-carbon blue economy**, both nations stand at the forefront of **green maritime innovation, ocean governance, and climate leadership**. Their shared commitment to cleaner oceans, fair trade, and inclusive growth reinforces the idea that economic prosperity and environmental stewardship can — and must — sail together.



UPSC Relevance

- **GS Paper II:** India's bilateral relations, international cooperation, maritime diplomacy, and global partnerships.
- **GS Paper III:** Environment, sustainable development, blue economy, renewable technologies, and climate change mitigation.
- **Key Concepts for UPSC:** Blue Economy, Green Shipping, Maritime India Vision 2030, Net-Zero Framework (IMO), India–EFTA TEPA, Maritime SheEO Initiative, Sustainable Ocean Governance.
- **Possible UPSC Question:** “Discuss how India's partnership with Norway reflects the convergence of maritime diplomacy and sustainable blue economy goals.”

10. India's Awareness and Perception of Artificial Intelligence (AI) – Insights from the Pew Global Survey

1. Key Findings of the Pew Survey (2025)

- The **Pew Research Center** conducted a survey across **25 countries** to assess public awareness and perception of **Artificial Intelligence (AI)**.
- India ranked **lowest in AI awareness**, with only **14% of respondents** saying they have heard or read “a lot” about AI, and another **32% having read a little** — totaling **46% awareness**, compared to the **25-country median of 81%**.
- Despite low awareness, **Indians showed the highest trust (90%)** that their **government can effectively regulate AI**, the **highest confidence level** among all surveyed nations.
- Only **19% of Indians aged 18–34** reported significant awareness of AI — the **second lowest among youth populations globally**, indicating an awareness gap even among digitally active demographics.

2. India's Unique Paradox: Low Awareness but High Confidence

- While **Indians have limited exposure** to AI knowledge or discourse, they express **strong institutional trust** in government regulation and governance mechanisms.
- This reflects India's **state-led digital governance model**, marked by initiatives like **Digital India, IndiaAI Mission**, and **AI for All Strategy (NITI Aayog)**, where **public confidence in State oversight** remains high.
- Conversely, the **low AI literacy** could be due to **digital divide, unequal access to advanced education**, and **limited inclusion of AI in public discourse or curricula**.



3. Global Context and Correlation with Economic Development

- The survey found a strong correlation between **GDP per capita** and **AI awareness**: wealthier nations (e.g., **Japan, U.S., Germany, France**) have higher awareness levels — around **50%** have heard a lot about AI.
- Low-income countries like **India (14%)** and **Kenya (12%)** show limited awareness, revealing a **digital knowledge gap** between developed and developing nations.



- This disparity mirrors the “**AI Divide**”, where technological understanding, innovation, and access to AI-driven tools are concentrated in advanced economies.

4. Public Attitude Toward AI – Limited Concern and Optimism

- Only **19% of Indians** said they are “more concerned than excited” about AI use — among the **lowest levels of concern globally**.
- This low concern might stem from **limited comprehension of AI risks** (such as bias, job displacement, surveillance, or misinformation).
- Indians’ optimism aligns with the country’s **aspirational view of technology** as an enabler of **growth, inclusion, and governance reform**, rather than a threat.

5. Legal and Institutional Framework for AI Regulation in India

- India does not yet have a **specific AI regulation law**, but several **institutional and policy frameworks** govern AI ethics and use:
 - **NITI Aayog’s National Strategy for Artificial Intelligence (2018)** – promotes “AI for All” for inclusive growth.
 - **Digital Personal Data Protection Act, 2023 (DPDP Act)** – regulates data use and privacy, indirectly influencing AI accountability.
 - **IndiaAI Mission (2024)** – focuses on research, compute infrastructure, and AI innovation for national development.
 - **Ethical AI Guidelines** (proposed by MeitY) emphasize transparency, accountability, and fairness in AI deployment.
- At the **global level**, AI regulation efforts include the **EU AI Act (2024)**, **OECD AI Principles (2019)**, and **UNESCO’s AI Ethics Framework (2021)** — emphasizing **human-centric AI**.

6. The Way Forward – Building AI Awareness and Capacity

- India’s challenge lies in **bridging the gap between trust and understanding**. Awareness campaigns, **AI literacy programs**, and **curriculum integration** at school and university levels are essential.
- **Public-private partnerships** can enhance AI education, reskilling, and ethical governance.
- Developing an **AI Rights Charter**, ensuring **algorithmic transparency**, and establishing an **independent AI oversight body** can strengthen accountability.
- Empowering citizens with **digital literacy** will be crucial to harness AI’s potential while mitigating ethical, social, and employment-related risks.

Conclusion

India’s case highlights a paradox of **low AI awareness but high institutional trust**, emphasizing the need for a **citizen-centric approach to AI governance**. While the government’s proactive policy stance is commendable, real empowerment will come from **public understanding, ethical awareness, and inclusive participation** in the AI revolution. Building “AI for All” requires not only innovation but also informed citizenry capable of engaging with the technology responsibly.

UPSC Relevance

- **GS Paper II:** Government policies, regulation of technology, role of governance in innovation.



- **GS Paper III: Science and Technology** – Artificial Intelligence, ethical concerns, digital divide, and technological inclusiveness.
- **Key Concepts for UPSC:** Artificial Intelligence (AI), AI Ethics, Digital Governance, AI Divide, Data Protection Act 2023, NITI Aayog's AI for All, Global AI Regulation.
- **Possible UPSC Question:** “India’s AI landscape reflects a paradox of high trust but low awareness. Discuss the implications of this for democratic governance and technological regulation.”

11. China’s WTO Complaint Against India’s PLI Scheme – Understanding the Legal and Economic Implications

1. Background: China’s Complaint at the WTO

- China has filed a **formal complaint at the World Trade Organization (WTO)** alleging that India’s **Production-Linked Incentive (PLI) schemes** violate global trade rules.
- The complaint targets three PLI programs — (i) **Advanced Chemistry Cell (ACC) battery manufacturing**, (ii) **Automotive sector (Advanced Automotive Technology)**, and (iii) **Electric Vehicle (EV) production** — which China claims provide **unfair, trade-distorting subsidies**.
- China contends that India’s requirement for **Domestic Value Addition (DVA)** in these schemes discriminates against imported goods, violating WTO’s **Subsidies and Countervailing Measures (SCM) Agreement, GATT, and TRIMs Agreement**.

2. Understanding the Production-Linked Incentive (PLI) Scheme

- Launched in **2020**, the PLI scheme is a **flagship industrial policy initiative** aimed at strengthening **domestic manufacturing, exports, and integration into global value chains**.
- It provides **financial incentives based on incremental production/sales** in selected strategic sectors, encouraging both Indian and foreign manufacturers to invest in India.
- Objectives include:
 - Reducing import dependence and boosting domestic value chains.
 - Encouraging **technology transfer, MSME participation, and employment generation**.
 - Positioning India as a global hub in emerging technologies like **EVs, batteries, and electronics**.
- PLI for **ACC batteries** requires **25% DVA**, while PLI for **automobiles** mandates **50% DVA**, which China interprets as **local content requirements** favoring domestic products.



3. WTO Rules on Subsidies – The SCM Agreement

- The **Agreement on Subsidies and Countervailing Measures (SCM)** governs industrial subsidies under the WTO framework.
- **Definition (Article 1):** A subsidy is a **financial contribution** by a government or public body that **confers a specific benefit** to an enterprise or industry.
- **Categories of Subsidies under SCM:**



1. Prohibited Subsidies:

- **Export subsidies** (linked to export performance).
- **Import Substitution (IS) subsidies** – those contingent upon using domestic over imported goods (Article 3.1(b)).

2. **Actionable Subsidies:** Allowed but can be challenged if they **adversely affect trading partners** (e.g., through injury or nullification of benefits).

3. **Non-Actionable Subsidies:** Generally permitted (e.g., R&D, regional development, environmental adaptation).

- China's claim: India's PLI schemes amount to **prohibited IS subsidies** because incentives depend on **domestic value addition** rather than neutral market performance.

4. Related WTO Legal Provisions – GATT and TRIMs

- **GATT Article III.4 – National Treatment Obligation:** Prohibits countries from treating **imported goods less favorably** than domestic goods.
- **TRIMs Agreement (Article 2.1):** Forbids investment measures inconsistent with GATT's national treatment obligations.
- **Illustration under TRIMs:** Any measure requiring or incentivizing the use of domestically produced goods over imported ones is **prohibited**.
- Thus, if India's DVA requirements are interpreted as **local content mandates**, they could breach both **GATT and TRIMs** in addition to **SCM**.

5. India's Defence and Dispute Resolution Process

- India maintains that the **DVA component** under PLI is **not equivalent to local content requirements** — domestic value addition can occur through **design, innovation, and service components**, not merely by using local materials.
- The WTO dispute process will begin with **consultations** between India and China. If unresolved, it will move to a **WTO dispute panel** for adjudication.
- However, since the **Appellate Body of the WTO** has been non-functional since **2019**, any appeal could **delay final resolution indefinitely**, allowing India to **continue its PLI schemes** in the interim.

6. Strategic and Economic Implications

- The complaint reflects **growing trade tensions between India and China**, particularly as India strengthens **domestic manufacturing** under **Atmanirbhar Bharat**.
- Many developed economies, including the **U.S. (CHIPS Act)** and **EU (Green Industrial Plan)**, have adopted **subsidy-based industrial policies**, potentially weakening China's moral standing in this case.
- A WTO ruling against India could have implications for **industrial policy sovereignty**, but a prolonged dispute may also expose the **limitations of WTO's current adjudication system**.

Conclusion

China's WTO complaint against India's PLI scheme underscores the **tension between industrial self-reliance and global trade norms**. While the **PLI scheme is vital for India's manufacturing competitiveness and green transition**, it must navigate carefully within **multilateral trade rules**. India's



defense will likely hinge on demonstrating that **DVA is not synonymous with local content** and that the schemes aim at **technological capacity-building rather than protectionism**. The case also revives debate on the need for **WTO reforms** to accommodate the industrial policies of emerging economies.

UPSC Relevance

- **GS Paper II:** International Relations – India–China relations, WTO structure and dispute resolution mechanisms.
- **GS Paper III:** Indian Economy – Industrial Policy, Subsidies, Trade Policy, and Globalization.
- **Key Concepts for UPSC:** Production-Linked Incentive (PLI) Scheme, WTO's SCM Agreement, GATT Article III, TRIMs Agreement, Domestic Value Addition (DVA), Import Substitution Subsidy, Dispute Settlement Mechanism at WTO.
- **Possible UPSC Question:** “Discuss the legal and economic implications of China's WTO complaint against India's PLI scheme. How does this case highlight the challenges of balancing industrial policy with global trade obligations?”

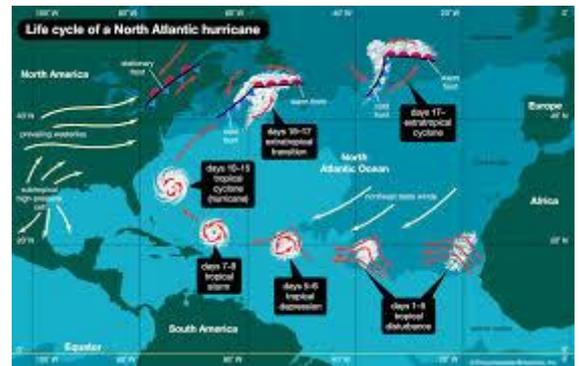
12. Tropical Cyclones – Formation, Classification, and Forecasting

1. Introduction and Definition

- A **tropical cyclone** is an intense low-pressure system forming over warm tropical oceans, characterized by **strong winds, heavy rainfall, and storm surges**.
- These storms are known as **hurricanes** in the Atlantic and eastern Pacific, and **typhoons** in the western Pacific.
- **Definition (IMD):** A tropical cyclone is a non-frontal synoptic-scale low-pressure system developing over tropical waters, with organized convection and a definite cyclonic surface wind circulation.
- Cyclones derive energy from **latent heat of condensation** when warm, moist air rises from the ocean surface, forming towering cumulonimbus clouds.

2. Conditions Required for Cyclone Formation

- **Warm Sea Surface Temperature (SST):** At least **26.5°C** up to a depth of 50 meters to provide sufficient heat and moisture.
- **Atmospheric Instability:** Continuous upward motion of warm moist air sustaining deep convection.
- **Coriolis Force:** Required for initiating rotation; thus, cyclones rarely form within **5° latitude** of the equator.
- **Low Vertical Wind Shear:** Minimal variation of wind speed and direction with altitude, as high shear disrupts cyclone organization.
- **High Humidity in Mid-Troposphere:** Aids in sustaining cloud formation and storm intensity.
- **Pre-existing Low-Pressure Disturbance:** Acts as the initial trigger for cyclone development.
- **Definition – Coriolis Effect:** The deflection of moving air due to Earth's rotation, to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.





3. Structure of a Cyclone

- **Eye:** The calm, cloud-free center of the cyclone, characterized by light winds and low pressure.
- **Eyewall:** A ring of intense thunderstorms surrounding the eye, producing the **strongest winds and heaviest rainfall**.
- **Rainbands:** Spiral bands of clouds and thunderstorms that extend outward, bringing heavy rain and gusty winds.
- **Air Circulation:** Warm, moist air spirals inward at the surface, rises near the eyewall, and diverges outward at high altitudes, maintaining the cyclone's energy cycle.

4. Classification of Cyclones (India Meteorological Department – IMD)

- Based on **maximum sustained wind speed**, IMD classifies cyclones in the North Indian Ocean as:
 - **Depression:** 31–49 km/h
 - **Deep Depression:** 50–61 km/h
 - **Cyclonic Storm:** 62–88 km/h
 - **Severe Cyclonic Storm:** 89–117 km/h
 - **Very Severe Cyclonic Storm:** 118–165 km/h
 - **Extremely Severe Cyclonic Storm:** 166–220 km/h
 - **Super Cyclonic Storm:** >222 km/h
- Classification helps in issuing **early warnings** and implementing **disaster preparedness measures** by agencies like **IMD and NDMA**.

5. Monitoring and Forecasting Cyclones

- **Observation Tools:**
 - **Satellites:** Infrared and microwave sensors provide continuous data on storm intensity, structure, and eye formation.
 - **Buoys and Radar:** Measure sea-level pressure, wind speed, and temperature near the storm.
 - **Aircraft Reconnaissance (Hurricane Hunters):** Used mainly in the Atlantic to collect in-situ data using **dropsondes**.
- **Forecasting Models:**
 - **Numerical Weather Prediction (NWP) models** simulate atmospheric and oceanic conditions.
 - **Data Assimilation Systems** integrate satellite, radar, and ground data to improve forecast accuracy.
 - Presently, cyclone tracks can be predicted **3–5 days in advance** with reasonable precision.
- **Definition – Wind Shear:** The change in wind speed or direction with altitude. High shear can disrupt the vertical structure of a cyclone, weakening or preventing its formation.



6. Challenges and Advances in Cyclone Forecasting

- Forecasting intensity and landfall remains difficult due to **rapid intensification, data gaps, and complex ocean-atmosphere interactions**.
- **Technological advancements** such as **high-resolution models, satellite constellations, and AI-based prediction systems** are improving accuracy.
- India's **IMD** has become a **Regional Specialized Meteorological Centre (RSMC)** recognized by the **World Meteorological Organization (WMO)** for issuing cyclone advisories for the Indian Ocean region.

Conclusion

Tropical cyclones are among the most destructive natural phenomena, driven by complex oceanic and atmospheric interactions. Understanding their formation, classification, and monitoring mechanisms is critical for **disaster management, coastal planning, and climate resilience**. Improved forecasting models, regional cooperation, and community awareness are essential to minimize loss of life and economic damage in cyclone-prone regions like India's east coast.

UPSC Relevance

- **GS Paper I:** Important Geophysical Phenomena – Cyclones, their characteristics, and impact.
- **GS Paper III:** Disaster Management – Mitigation, forecasting, preparedness, and institutional mechanisms (NDMA, IMD).
- **Key Concepts for UPSC:** Tropical Cyclone, Coriolis Effect, Wind Shear, Eyewall, Latent Heat of Condensation, IMD Classification, RSMC, Numerical Weather Prediction.
- **Possible UPSC Question:** *“Explain the conditions necessary for the formation of tropical cyclones and discuss the measures taken by India to improve cyclone forecasting and disaster preparedness.”*