



**Educrat IAS**  
ACADEMY

**No Need of going to Delhi Now!**  
Prepare for UPSC from Kolkata

# UPSC IAS IPS

**NO NEED OF GOING TO DELHI**

**UPSC 2024 & 2023 TOPPERS**



**AIR 79**

**MEGHNA**

**AIR 153**

**SAHARS**

**AIR 477**

**PARAMITA**

**AIR 165**

**SAIMA**

**AIR 338**

**ASHISH**

**AIR 346**

**BRATATI**

**RESERVE LIST**

**PRIYA**

**EDU- SAMIKSHA**  
**JANUARY 2026** 

**PARK STREET: 9163228921, 9163218921**

Educrat IAS Academy, 2nd floor, North Block, Park Plaza Building, 71, Park Street, Kolkata- 700016

## Contents

<b>1. Mains Analysis .....</b>	<b>7</b>
<b>1.1 China and Pakistan closeness and threats to India .....</b>	<b>7</b>
<b>1.2 Suspension of Sentence and Remedies.....</b>	<b>8</b>
<b>1.3 Water Quality Issues in India .....</b>	<b>10</b>
<b>1.4 Call to ban 10-minute deliveries.....</b>	<b>12</b>
<b>1.5 Improper Use of AI and Ethical Concerns .....</b>	<b>13</b>
<b>1.6 Land Acquisition a Major Hurdle to Development in India .....</b>	<b>15</b>
<b>1.7 USA’s Intervention in Venezuela and its Spill Over Effects .....</b>	<b>17</b>
<b>1.8 Adult Skill Assessment Survey.....</b>	<b>18</b>
<b>1.9 Financial Position of the States.....</b>	<b>20</b>
<b>1.10 India’s Waste Opportunity .....</b>	<b>22</b>
<b>1.11 India as a Global Leader in Food Security .....</b>	<b>24</b>
<b>1.12 The era of Neocolonialism.....</b>	<b>25</b>
<b>1.13 Census in India .....</b>	<b>27</b>
<b>1.14 Brutality of Acid Attacks .....</b>	<b>29</b>
<b>1.15 India-EU ties .....</b>	<b>31</b>
<b>1.16 Issues with Devolution Criteria .....</b>	<b>33</b>
<b>1.17 Taliban to take charge of Afghan Embassy .....</b>	<b>35</b>
<b>1.18 USA’s exit from International Institutions .....</b>	<b>37</b>
<b>1.19 Age of Consent.....</b>	<b>38</b>
<b>1.20 Inclusion of Transgenders.....</b>	<b>40</b>
<b>1.21 India Germany Ties .....</b>	<b>42</b>
<b>1.22 POCSO Act.....</b>	<b>44</b>
<b>1.23 Importance of Early Childhood Care .....</b>	<b>46</b>
<b>1.24 The Next Phase of Urbanization.....</b>	<b>48</b>
<b>1.25 Protest in Iran .....</b>	<b>50</b>
<b>1.26 India’s Maritime Strategy .....</b>	<b>52</b>
<b>1.27 Pax Silica .....</b>	<b>53</b>
<b>1.28 Implications of ISRO’s Setbacks .....</b>	<b>55</b>
<b>1.29 Importance of Startups .....</b>	<b>57</b>
<b>1.30 Canada-China Trade Deal.....</b>	<b>59</b>
<b>1.31 Digital Currencies .....</b>	<b>61</b>
<b>1.32 Board of Peace .....</b>	<b>63</b>
<b>1.33 India-UAE Partnership .....</b>	<b>65</b>
<b>1.34 State-Governor Frictions.....</b>	<b>67</b>
<b>1.35 Implications of Tumbling Rupees.....</b>	<b>68</b>
<b>1.36 Evaluating the Security of Tenure of the Judges.....</b>	<b>70</b>
<b>1.37 Double Taxation Avoidance Agreement (DTAA).....</b>	<b>72</b>

	3
1.38 Water Stress and Management .....	73
1.39 EU and India, Towards a New Global Order .....	76
1.40 Generative AI- A Double-Edged Sword.....	77
1.41 The Debate Over New UGC Guidelines.....	79
1.42 Urban Issues and Transformation.....	80
1.43 INDIA-EU FTA .....	82
1.44 Cryospheric Hazards.....	83
1.45 Looking into Cash Transfers by the Governments.....	85
1.46 Data Privacy.....	87
1.47 The Manufacturing Shift .....	88
1.48 The Digital-Mental Health Nexus .....	90
2. PRELIMS BOOSTER .....	92
2.1 Thorium as Nuclear Fuel .....	92
2.2 National Technology Readiness Assessment Framework (NTRAF).....	92
2.3 Sydney Harbour Bridge.....	93
2.4 National Drug Use Survey (NDS).....	93
2.5 Justice Mission 2025.....	94
2.6 Candida Auris .....	94
2.7 ‘Dance of Dawn’.....	95
2.8 Sudarshan Chakra Defence System .....	95
2.9 UNRWA.....	96
2.10 Pralay Missile.....	96
2.11 PathGennie Software .....	96
2.12 Market Access Support (MAS) Intervention (PIB) .....	97
2.13 Amazon’s Stingless Bees .....	98
2.14 ‘Galaxy Frog (Melanobatrachus indicus) 🐸.....	98
2.15 Electronics Component Manufacturing Scheme (ECMS).....	98
2.16 Nimesulide 📄.....	99
2.17 Bulgaria .....	100
2.18 Bomb Cyclone (Explosive Cyclogenesis) 🌪️.....	100
2.19 Salal Dam.....	101
2.20 Notifiable Diseases.....	101
2.21 Superbugs .....	102
2.22 Cetacean Morbillivirus .....	102
2.23 Red Sea .....	103
2.24 NATGRID .....	103
2.25 RAH-VEER Scheme .....	104
2.26 Monroe Doctrine.....	104

	4
2.27 Rani Velu Nachiyar (PIB) .....	105
2.28 Suryastra Rocket Launcher .....	105
2.29 Olive Ridley Sea Turtles .....	106
2.30 Aditya-L1 .....	106
2.31 Biomaterials.....	107
2.32 National Environmental Standard Laboratory (NESL) (PIB) .....	107
2.33 National Primary Standard Facility for Solar Cell Calibration.....	107
2.34 Somnath Swabhimana Parv .....	108
2.35 India's First Urban Night Safari at Kukrail Forest Area .....	108
2.36 Battery Pack Aadhaar Number (BPAN) .....	109
2.37 Design Linked Incentive (DLI) Scheme (PIB).....	109
2.38 Payments Regulatory Board .....	110
2.39 Popocatepetl Volcano .....	110
2.40 Mpemba Effect.....	111
2.41 Electrification of Indian Railways .....	111
2.42 Wolf Supermoon.....	112
2.43 United Nations Framework Convention on Climate Change (UNFCCC).....	112
2.44 Process of Inclusion in ST .....	113
2.45 ONDC (Open Network for Digital Commerce).....	113
2.46 AYUSHEPC (Ayush Export Promotion Council) (PIB) .....	114
2.47 White dwarf system.....	114
2.48 Bio-bitumen.....	115
2.49 Scramjet.....	115
2.50 International Solar Alliance.....	116
2.51 Exchange Traded Fund (ETF) .....	117
2.52 EOS-N1 (Anvesha).....	117
2.53 PANKHUDI Portal.....	117
2.54 Spina Bifida .....	118
2.55 Source Code .....	119
2.56 Bhairav Battalion .....	119
2.57 Zehanpora stupas.....	120
2.58 Kashmir Markhor .....	120
2.59 Dust EXperiment (DEX) .....	121
2.60 Weimar Triangle.....	121
2.61 PSLV.....	122
2.62 Nipah Virus (NiV).....	122
2.63 Bhoomi Project .....	123
2.64 Kathputli Puppetry.....	123
2.65 Operation Hawkeye.....	124

	5
2.66 Orobanche aegyptiaca .....	125
2.67 Inflation Targeting .....	125
2.68 Valley of Flowers .....	125
2.69 Greenland .....	126
2.70 Man Portable Anti-Tank Guided Missile (MPATGM) .....	126
2.71 Petro-Dollar System.....	127
2.72 Greenwald Limit.....	127
2.73 Passive Euthanasia .....	128
2.74 Bandhgala.....	128
2.75 Havana Syndrome.....	129
2.76 Responsible Nations Index (RNI).....	129
2.77 BRICS India 2026 Logo.....	129
2.78 Shaksgam Valley.....	130
79. Dark Fibre.....	131
2.80 Kuki-Zo.....	131
2.81 Deepfakes.....	131
2.82 Makar Sankranti Across India.....	132
2.83 Similipal National Park.....	133
2.84 Export Preparedness Index .....	133
2.85 Tirukkural.....	134
2.86 Kruger National Park.....	134
2.87 Polymetallic Nodules.....	135
2.88 Unified Pension Scheme.....	135
2.89 Army Day .....	136
2.90 High Seas Treaty (BBNJ Agreement) .....	137
2.91 Chips to Start-up (C2S) Programme.....	137
2.92 BRICS Plus naval exercise.....	138
2.93 Indiaphonte bijoyi .....	138
2.94 Open-sea Marine Fish Farming Project in Andaman Sea.....	139
2.95 Darwin's Bark Spider .....	140
2.96 Chagos Islands .....	140
2.97 Gaza Peace Board .....	141
2.98 Polar Silk Road.....	141
2.99 Indian Skimmer .....	142
2.100 Environmental Protection Fund (EPF).....	142
2.101 Goldilocks Zone for Inflation.....	143
2.102 C-295 Aircraft.....	143
2.103 Internet Governance Internship & Capacity Building Scheme (IGICBS).....	143
2.104 Kumbhalgarh Wildlife Sanctuary .....	144

	6
2.105 UNESCO Media and Information Literacy (MIL) Alliance .....	144
2.106 Artemis II Mission (NASA) .....	145
2.107. Granth Kutir .....	145
2.108 Parakram Diwas .....	146
2.109. Long-Range Anti-Ship Hypersonic Glide Missile (LRAShM) .....	146
2.110 INS Sagardhwani and Sagar Maitri V .....	147
2.111 Solar Radiation Storm .....	147
2.112. Operation Trashi-I .....	148
2.113 Dugong .....	148
2.114 Carbon Credit Trading Scheme (CCTS) .....	148
2.115 Asiatic Wild Dog (Dhole) .....	149
2.116 Advanced Chemistry Cell (ACC) .....	149
2.117 Muna Island .....	150
2.118 Jeevan Raksha Padak Awards .....	150
2.119 Doomsday Clock .....	151
2.120 Kurdish Region .....	151
2.121 Agarwood .....	152
2.122 Sikkim Sundari .....	153
2.123 Aralam Butterfly Sanctuary .....	153
2.124 Polar Vortex .....	154
2.125 Wings India 2026 .....	155
2.126 Day Zero .....	155
2.127 SAMPANN (System for Accounting and Management of Pension) .....	156
2.128 Buddhist Diamond Triangle .....	156
2.129 Menopause Clinics .....	157
2.130 Rojava Region .....	157
2.131 Ethanol Blending .....	158
2.132 Lakkundi Excavations .....	159
2.133 Sela Pass (The Gateway) & Sela Lake (Paradise Lake) .....	159
2.134 V-BAT Autonomous Drones .....	160
2.135 PANCHAM .....	160
2.136 WaSH Warriors .....	160
2.137 Rafah Border Crossing .....	161
2.138 Economic Survey .....	162
2.139 Power Gap Index .....	162
2.140 The Living Root Bridges .....	163
2.141 Paathara (Khoni) Practice .....	163

## 1. Mains Analysis

### 1.1 China and Pakistan closeness and threats to India

**Context:** The recent visit of Pakistan's Deputy Prime Minister to China underlines the continuing consolidation of the **China–Pakistan strategic nexus**, with implications for India's interests in **South Asia and the global order**.

#### Points of Discomfort for India

##### 1. Strategic & Security Concerns

- a. **Two-front security challenge:** Deepening China–Pakistan coordination raises the prospect of collusive pressure on India along both the LAC and LoC.
- b. **Military cooperation:** Chinese defence support to Pakistan (missiles, naval platforms, drones) enhances Pakistan's conventional and asymmetric capabilities against India.
- c. **Nuclear and missile risks:** China's past assistance to Pakistan's nuclear and missile programmes continues to remain a long-term concern.

##### 2. South Asia: Shrinking Strategic Space

- a. **CPEC through PoK:** China–Pakistan Economic Corridor violates India's **sovereignty claims** and legitimises Pakistan's control over PoK.
- b. **China's footprint in neighbourhood:** Pakistan acts as a gateway for China's deeper entry into South Asia, complementing Chinese presence in **Sri Lanka, Nepal, Bangladesh and Maldives**.
- c. **Debt and influence politics:** Chinese projects, often opaque, may shift regional alignments away from India.

##### 3. Indian Ocean Region (IOR)

- a. **Maritime encirclement (String of Pearls):** Gwadar port strengthens China's naval reach in the Arabian Sea, affecting India's maritime security.
- b. **Dual-use infrastructure:** Civilian ports with military potential challenge India's dominance in the IOR.

##### 4. Global & Multilateral Challenges

- a. **Diplomatic shielding of Pakistan:** China repeatedly blocks or dilutes actions against Pakistan-based terrorists at the **UN Security Council**.
- b. **Narrative building:** China–Pakistan coordination attempts to internationalise issues like **Kashmir** and counter India's global rise.
- c. **Pressure in global forums:** Potential challenges for India in institutions like **BRICS, SCO, and UN reforms**, where China's influence is significant.

#### Way Forward for India

##### 1. Strengthen Neighbourhood First Policy

- a. Deepen **developmental, connectivity and people-centric partnerships** with South Asian countries.

- b. Offer **transparent, sustainable alternatives** to Chinese financing.
- 2. Enhance Strategic & Military Preparedness**
  - a. Accelerate **theatre command reforms**, border infrastructure, and jointness.
  - b. Strengthen **maritime domain awareness** and naval capabilities in the IOR.
- 3. Diplomatic Balancing & Coalitions**
  - a. Leverage **Quad, I2U2, Indo-Pacific partnerships** to counterbalance China.
  - b. Engage proactively with **Global South** to project India as a reliable development partner.
- 4. Economic & Technological Resilience**
  - a. Reduce critical dependencies on China through **supply-chain diversification**.
  - b. Invest in **strategic technologies** (semiconductors, AI, defence manufacturing).
- 5. Narrative & Legal Diplomacy**
  - a. Consistently highlight **sovereignty concerns over CPEC**.
  - b. Push for stronger global consensus on **counter-terrorism** and rules-based order.

The Pakistan DPM's China visit reflects a **structural challenge** rather than a transient development. For India, the response must be **multi-dimensional**—combining diplomacy, defence preparedness, regional engagement and global partnerships—to safeguard its strategic autonomy and leadership role in South Asia and beyond.

## 1.2 Suspension of Sentence and Remedies

Recently, the **suspension of sentence of key convicts in serious criminal cases**—including offences involving grave violence and public outrage—has triggered debate on **judicial discretion, victims' rights, and public confidence in the criminal justice system**. While courts have clarified that suspension of sentence is **not an acquittal**, its frequent or poorly reasoned use in heinous crimes raises constitutional and ethical concerns.

### What is Suspension of Sentence?

- **Suspension of sentence** refers to a **temporary halt on the execution of punishment** awarded by a court.
- The **conviction remains intact**, but the convict may be released on **bail** pending appeal.

### Legal Provisions Governing Suspension of Sentence in India

#### 1. Section 389 of the Criminal Procedure Code (CrPC), 1973

- Empowers **Appellate Courts** to:
  - Suspend execution of sentence
  - Release the convicted person on bail during pendency of appeal
- Requires **reasons to be recorded in writing**, especially in serious offences.

#### 2. Distinction to be noted

- **Suspension of sentence** → Judicial power (Section 389 CrPC)
- **Remission/Commutation** → Executive power (Articles 72 & 161, CrPC Sections 432–433)

### When is Suspension of Sentence Granted?

Courts consider the following factors:

- **Nature and gravity of the offence**
- **Length of sentence** and time likely to be spent in appeal hearing

- **Conduct of the accused** during trial
- **Likelihood of misuse of liberty**
- **Prima facie merits of the appeal**
- **Impact on victims and society**

– In cases involving **heinous crimes**, suspension is treated as an **exception**, not the rule.

## Important Supreme Court Judgements on Suspension of Sentence

### 1. Kashmira Singh v. State of Punjab (1977)

- **Held that if appeal hearing is likely to be delayed and the accused has served A substantial part of sentence, suspension may be considered.**
- **Emphasised right to personal liberty (Article 21).**

### 2. Bhagwan Rama Shinde Gosai v. State of Gujarat (1999)

- **Suspension should be considered liberally when: Sentence is short, Appeal is not likely to be heard soon.**
- **But reasons must be clearly recorded.**

### 3. Atul Tripathi v. State of UP (2014)

- Reiterated that suspension of sentence **cannot be granted mechanically.**
  - Courts must assess: Seriousness of crime, Possibility of reoffending, Impact on public order.

### 4. Preet Pal Singh v. State of UP (2020)

- In cases of **heinous offences**, suspension of sentence requires: **Strong and exceptional reasons**, Due consideration of **victims' rights and societal interest**

## Challenges and Issues in Suspension of Sentence

1. **Erosion of Public Confidence-** Suspension in serious crimes may create perception of **elite or institutional bias**.
2. **Victim-Centric Justice Undermined-** Victims often remain unheard during suspension proceedings.
3. **Inconsistent Judicial Standards-** Lack of uniform benchmarks leads to **subjective application**.
4. **Delay in Appeals-** Long pendency incentivises convicts to seek suspension rather than speedy justice.
5. **Risk of Misuse-** Possibility of: Absconding, Witness intimidation, Repetition of offence.
6. **Inconsistent judicial application:** Divergent standards across courts create uncertainty, arbitrariness, and forum-dependent outcomes in suspension jurisprudence.
7. **Legislative and definitional gaps:** Narrow statutory definitions, such as “public servant” under POCSO, may exclude politically influential offenders from aggravated liability.

## Way Forward

1. **Stricter Guidelines for Heinous Crimes-** Clear judicial standards for suspension in offences involving: Sexual violence, Terrorism, Crimes against women and children.
2. **Victim Participation-** Mandatory **victim hearing** before granting suspension.
3. **Stricter evidentiary threshold:** Suspension in life sentence cases should require a clear prima facie indication of likely acquittal or manifest legal error.

4. **Time-bound Disposal of Criminal Appeals-** Special appellate benches for long-pending criminal appeals.
5. **Reasoned & Transparent Orders-** Courts must explicitly balance: Article 21 (accused), Rights of victims, Societal interest
6. **Legislative clarification of special laws:** Parliament should amend statutes like POCSO to expressly include elected representatives where abuse of authority is evident.
7. **Use of Technology-** Digital case tracking to reduce pendency and reliance on suspension.

Suspension of sentence is a **constitutionally valid judicial tool**, meant to protect liberty and prevent miscarriage of justice due to delay. However, in cases of **serious and heinous offences**, its exercise must be **rare, reasoned, and victim-sensitive**. A calibrated balance between **individual rights and collective conscience** is essential to preserve the legitimacy of India's criminal justice system.

### **1.3 Water Quality Issues in India**

In late December 2025 and early January 2026, Indore's Bhagirathpura locality witnessed a **major public health crisis** due to *contaminated municipal drinking water*.

- **Outbreak & health impact:** Dozens to hundreds of residents suffered from **vomiting, diarrhoea, dehydration**; several deaths confirmed (local counts vary from 4 to 9+), with many more hospitalized.
- **Cause:** Laboratory analysis found **bacterial contamination consistent with sewage** in drinking water, pointing to *sewage mixing* with potable supply.
- **Trigger:** Preliminary probes suggest a **pipeline leakage near a toilet structure**, allowing faecal/effluent ingress into the water mains.

#### **Why Water Contamination Is Prevalent in India?**

Water contamination incidents like Indore's are symptomatic of broader systemic challenges:

1. **Aging & Faulty Infrastructure-** Leaky pipes, poor joints, outdated mains allow infiltration of sewage into drinking water lines.
2. Lack of appropriate safety buffers (e.g., insufficient physical separation between sewage and potable lines).
3. **Rapid Urbanisation & Unplanned Growth-** Expansion of settlements often **outpaces infrastructure capacity**.
4. Encroachments and **illegal connections** to water and sewer networks increase contamination risks.
5. **Weak Monitoring and Quality Testing-** Limited **real-time water quality surveillance**.
6. **Pollution of Source Water-** Rivers and lakes — the primary sources.

7. **Low Public Awareness- Household-level awareness** on safe storage, boiling/filtration practices is variable, especially among economically weaker communities.

### Gaps in Local Bodies That Undermine Prevention

1. **Poor Maintenance and Neglect-** Complaints about water quality often are either **ignored, closed without action, or delayed** replies from helplines.
2. **Weak Accountability and Oversight- Delayed infrastructure upgrades** despite recorded complaints.
3. **Administrative inertia** means issues remain unresolved until **crisis thresholds are crossed**.
4. **Limited Technical Capacity-** Many municipal bodies lack **in-house water quality labs** or trained personnel to interpret and act on contamination risks.
5. **Fragmented Coordination-** Poor **inter-departmental coordination** between public health, engineering, and urban planning wings results in fragmented responses
6. **Reactive Rather Than Proactive Approach-** Most action is **crisis-driven** instead of being based on a continuous risk assessment and early warning system.

### Way Forward — Policy & Governance Solutions

1. **Strengthening Infrastructure- Replace/rehabilitate old pipelines** with materials and designs that prevent seepage.
2. Ensure **proper physical separation** of sewage and potable lines.
3. Build **pressure management systems** to reduce leak susceptibility.
4. **Enhanced Monitoring & Data Systems-** Deploy **real-time water quality sensors** for parameters like turbidity, chlorine residual, coliform presence.
5. **Institutional Reforms in Local Bodies-** Establish **autonomous water quality units** within municipal corporations with trained professionals.
6. Introduce **performance audits** tied to water safety metrics.
7. Strengthen **citizen grievance redressal**, with accountability mechanisms for unresolved complaints.
8. Map vulnerable zones (slums, low-income settlements) for priority surveillance.
9. Conduct **mass awareness campaigns** on safe household water treatment: boiling, chlorination, RO/UF usage where feasible.
10. **Enforce stringent water safety standards** under the Bureau of Indian Standards (BIS) and link them to municipal compliance benchmarks.
11. Tie funding and awards (like Swachh Survekshan) with **verified water quality outcomes**, not just cleanliness scores.
12. Foster **citizen science initiatives** to crowdsource water testing data.

The Indore water contamination incident underscores **critical vulnerabilities** in urban water supply systems — from infrastructure decay and administrative lapses to inadequate surveillance and civic accountability. While rapid urbanisation and legacy issues aggravate risks across India, the **way forward lies in systemic strengthening of municipal capacities, robust monitoring mechanisms, stakeholder coordination, and community participation**. Ensuring safe and potable drinking water is not just an engineering task but a **governance imperative** fundamental to public health and human rights.

## 1.4 Call to ban 10-minute deliveries

The recent call to ban 10-minute delivery services (offered by quick-commerce platforms) has reignited concerns around worker safety, ethical business practices, urban sustainability, and consumerism. While such services symbolise technological efficiency, they also expose deeper structural and ethical dilemmas.

### Arguments For and Against Banning 10-Minute Delivery (Multi Dimensional Analysis)

Dimension	Arguments in Favour of Ban	Arguments Against Ban
<b>Worker Safety &amp; Labour Rights</b>	Extreme delivery timelines encourage <b>rash driving</b> , accidents, and <b>workplace stress</b> for gig workers	Platforms claim <b>no strict penalties</b> for delay and rely on <b>dark stores</b> , not riders, for speed
<b>Ethical Concerns</b>	Promotes “ <b>speed over human life</b> ”, commodifying labour as disposable	Ethical responsibility lies in <b>regulation</b> , not prohibition of innovation
<b>Urban Governance</b>	Adds to <b>traffic congestion</b> , road accidents, and civic disorder in dense cities	Efficient logistics can <b>reduce multiple individual trips</b> , lowering emissions
<b>Public Health &amp; Safety</b>	Time pressure risks <b>unsafe driving</b> , threatening pedestrians and riders	Safety risks exist in all delivery models, not unique to 10-minute delivery
<b>Economic Sustainability</b>	Encourages <b>unsustainable business models</b> , predatory pricing, and investor-fuelled losses	Drives <b>job creation</b> , startup innovation, and supply chain efficiency
<b>Consumer Behaviour</b>	Fosters <b>instant gratification culture</b> and hyper-consumerism	Reflects <b>evolving consumer preferences</b> in urban India
<b>Environmental Impact</b>	Higher frequency of short trips increases <b>carbon footprint</b>	Localised dark stores may reduce long-distance transport emissions
<b>Legal &amp; Regulatory Gaps</b>	Gig workers lack <b>social security, insurance, and legal protection</b>	Banning may push the sector into <b>informality or job losses</b>
<b>Ethics of Care</b>	Violates principle of <b>human dignity</b> and safe working conditions	Ethical operations can be ensured via <b>codes of conduct and audits</b>

#### Ethical Analysis (UPSC GS-IV Lens)

- **Utilitarianism:** Benefits to consumers must not outweigh **harm to delivery workers and public safety**.
- **Deontological Ethics:** Human life and dignity cannot be compromised for **commercial efficiency**.
- **Justice & Fairness:** Asymmetric power between platforms and gig workers demands **state intervention**.
- **Rights-based approach:** Right to safe working conditions overrides right to instant convenience.

## Way Forward:

### 1. Worker-Centric Regulations

- Enforce **minimum delivery time norms** set by regulators, not platforms
- Mandatory **accident insurance, health coverage, and rest periods**
- Implement **social security for gig workers** under the Code on Social Security, 2020

### 2. Platform Accountability

- Transparent algorithms ensuring **no speed-based penalties**
- Regular **third-party safety audits**
- Public disclosure of **delivery pressure metrics**

### 3. Urban Safety Measures

- Geo-fencing high-risk zones
- Speed limiters and **AI-based driving behaviour monitoring**
- Coordination with city traffic police

### 4. Ethical Business Framework

- Develop a **Gig Economy Ethics Code**
- Incentivise “**safe delivery badges**” over fastest delivery claims

### 5. Consumer Awareness

- Nudge consumers towards **ethical consumption choices**
- Mandatory in-app disclosure: “*Delivery time may vary to ensure rider safety*”

The demand to ban 10-minute delivery services reflects a **larger ethical and governance challenge** in balancing innovation with human dignity and public safety. A **blanket ban may stifle entrepreneurship and employment**, while **unregulated speed-centric models risk lives and livelihoods**. The prudent path lies in **robust regulation, ethical design of technology, and strengthening gig-worker protections**, ensuring that economic progress does not come at the cost of human values.

## 1.5 Improper Use of AI and Ethical Concerns

The recent incident involving AI tools (such as Grok) allegedly being used to morph images of a woman has brought to the fore serious concerns regarding **privacy, dignity, human values and women’s rights** in the age of artificial intelligence. Such misuse highlights how technological advancement, if not ethically governed, can deepen social harms rather than alleviate them.

### 1. Issues Brought to Light

#### 1. Right to Privacy

- a. Image morphing without consent amounts to non-consensual use of personal data, violating the right to privacy under Article 21 (as upheld in *Puttaswamy judgment*).
- b. AI enables easy replication, manipulation and viral spread, making privacy breaches irreversible.
  - Example: Deepfake pornography created using publicly available photos from social media.

#### 2. Human Dignity

- a. Morphing images often objectifies women, reducing them to visual commodities.

- b. It violates the intrinsic dignity of individuals by stripping them of control over their identity.

- **Example:** AI-generated obscene images used for blackmail or humiliation.

### 3. Women-Centric Concerns

- a. Disproportionate targeting of women reflects **gendered misuse of technology**.
- b. Reinforces patriarchal norms, misogyny and online gender-based violence.

- **Example:** Deepfake videos of women journalists, politicians or students circulated to silence or intimidate them.

### 4. Erosion of Human Values

- a. Normalisation of such misuse desensitises society to harassment and abuse.
- b. Undermines trust in digital ecosystems and ethical innovation.
- c. Raises moral questions about **responsibility, empathy and respect** in AI design and use.

### 5. Legal and Accountability Gaps

- a. Rapid evolution of generative AI has outpaced legal frameworks.
- b. Difficulty in fixing liability—developer, platform or end-user.

- **Example:** Ambiguity in applying IT Act provisions to AI-generated synthetic media.

### Broader Implications

- **Chilling effect on women's digital participation**, impacting freedom of expression.
- Potential misuse in **politics, education, employment and personal relationships**.
- Threat to democratic values due to misinformation and character assassination.

### Way Forward

#### 1. Strengthening Legal Frameworks

- a. Enact and enforce robust **data protection laws** with explicit provisions on AI misuse.
- b. Criminalise **non-consensual deepfakes and image morphing**, with stringent penalties.
- c. Fast-track cybercrime grievance redressal mechanisms.

#### 2. Ethical AI Governance

- a. Mandatory **ethical-by-design** principles for AI developers.
- b. AI tools to include **watermarking, traceability and misuse detection**.
- c. Clear accountability across the AI value chain.

#### 3. Platform Responsibility

- a. Social media and AI platforms to ensure:
  - i. Rapid takedown mechanisms
  - ii. Proactive content moderation
  - iii. User-friendly reporting systems

#### 4. Gender-Sensitive Digital Policies

- a. Recognise AI misuse as a form of **gender-based violence**.
- b. Integrate AI risks into women safety policies and cyber laws.

#### 5. Awareness and Digital Literacy

- a. Public campaigns on **digital consent, cyber ethics and legal remedies**.

- b. Capacity building of law enforcement and judiciary in AI-related crimes.
- 6. Global Cooperation**
- a. International norms and cooperation to tackle cross-border AI abuse.
  - b. Learning from frameworks like the **EU AI Act**.

The misuse of AI to morph images is not merely a technological issue but a profound **ethical, social and gender justice challenge**. Ensuring that AI remains a tool for empowerment rather than exploitation requires a **human-centric, rights-based and gender-sensitive governance framework**, balancing innovation with accountability.

## **1.6 Land Acquisition a Major Hurdle to Development in India**

Nearly **35% of large infrastructure and industrial projects in India face delays due to land acquisition issues**, underscoring it as one of the most persistent structural bottlenecks to development. In a land-scarce, densely populated country with complex tenure systems, acquiring land for public purposes often becomes a flashpoint of legal, political, social and economic contestation.

### **Hurdles to land acquisition**

#### **1. Legal and Procedural Challenges**

- a. The **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (LARR) Act, 2013** mandates consent, Social Impact Assessment (SIA) and rehabilitation, making the process **time-consuming and litigation-prone**.
- b. **Multiplicity of laws** (central, state, forest, tribal, environmental laws) creates regulatory overlap.
- c. Poor land records and unclear titles increase disputes.

#### **2. Political Economy Factors**

- a. Land is an emotionally and politically sensitive issue, often mobilised by opposition parties.
- b. Populist politics discourages governments from pursuing acquisition aggressively.
- c. Federal structure: Divergence between Centre and States on land reforms and implementation.

#### **3. Social Resistance**

- a. Land is not just an economic asset but a **source of livelihood, identity and social security**, especially for farmers and tribal communities.
- b. Inadequate trust in the state due to past experiences of displacement without proper rehabilitation.
- c. Fear of loss of community networks and cultural ties.

#### **4. Economic Constraints**

- a. High compensation costs inflate project budgets and affect financial viability.

- b. Speculation and rent-seeking raise land prices near project sites.
- c. Delays escalate costs, deterring private investment and PPPs.

#### 5. Administrative and Governance Issues

- a. Outdated land records, slow digitisation and weak capacity at district level.
- b. Poor coordination among revenue, forest and line departments.
- c. Lack of professional land acquisition agencies.

### What Can Be Changed: Multi-Dimensional Reforms

#### 1. Policy-Level Reforms

- a. **Simplify procedures:** Time-bound clearances and streamlined SIA processes for strategic infrastructure.
- b. **Differentiated approach:** Separate frameworks for linear projects (roads, railways, pipelines) and industrial townships.
- c. **Land pooling and land leasing models** instead of outright acquisition.
- d. Strengthen **rehabilitation-as-development**, linking resettlement to jobs, skills and equity stakes.

#### 2. Political Reforms

- a. Build **political consensus** on land as a development enabler, not merely an electoral issue.
- b. Greater role for **States** to innovate within a broad national framework.
- c. Transparent communication to counter misinformation and politicisation.

#### 3. Social Measures

- a. Shift from “acquisition” to **participatory negotiation**.
- b. Ensure **prior informed consent**, especially in Scheduled Areas (PESA compliance).
- c. Community benefit-sharing models (annuities, equity, local infrastructure).
- d. Trust-building through credible grievance redressal mechanisms.

#### 4. Economic Instruments

- a. **Annuity-based compensation** rather than one-time payouts.
- b. Use of **Transferable Development Rights (TDRs)** in urban and peri-urban areas.
- c. Incentivise voluntary land assembly through higher returns and social security coverage.
- d. Reduce speculation via transparent land markets.

#### 5. Administrative and Technological Reforms

- a. Complete **Digital India Land Records Modernization Programme (DILRMP)** with conclusive titles.
- b. GIS-based land mapping and real-time dashboards for acquisition status.
- c. Dedicated, professional land acquisition cells at state and district levels.
- d. Capacity building of officials in negotiation and conflict resolution.

Land acquisition in India is not merely a legal process but a **complex socio-political challenge** rooted in history, livelihood concerns and governance deficits. Progress lies not in diluting rights or stalling development, but in adopting a **human-centric, participatory and market-friendly approach** that balances growth with justice. Transforming land from a source of conflict into a shared asset for development is essential for India’s infrastructure-led growth trajectory.

## **1.7 USA's Intervention in Venezuela and its Spill Over Effects**

Recent developments in U.S.–Venezuela relations—marked by **renewed sanctions, criminal indictments, seizure of assets, coercive diplomacy and arrest of President Nicolás Maduro**,—have reignited debates on sovereignty, regime change, and the evolving world order.

### **Why the USA Has Recently Intensified Action Against Venezuela**

#### **1. Criminal Indictments & Law Enforcement Action**

- a. The U.S. has charged Maduro with **narco-terrorism, drug trafficking and money laundering**.
- b. Arrest warrants are part of **extraterritorial legal strategy, not direct military action**.

#### **2. Democracy & Human Rights Narrative**

- a. Allegations of: Electoral manipulation, Suppression of opposition, Curtailment of civil liberties
- b. Used to justify **sanctions and diplomatic isolation**.

#### **3. Geopolitical Competition**

- a. Venezuela is a close partner of **Russia, China and Iran**.
- b. U.S. aims to prevent consolidation of **anti-U.S. axis** in Latin America.

#### **4. Energy & Strategic Interests**

- a. Venezuela has the **largest proven oil reserves globally**.
- b. Sanctions calibrated based on: Global oil shortages, U.S. domestic fuel prices

#### **5. Domestic Politics in the U.S.**

- a. Venezuelan diaspora influence.
- b. Bipartisan consensus against the Maduro regime.

### **How This Could Reorder the Global System**

#### **1. Weakening of Sovereignty Norms**

- a. Use of **unilateral sanctions and indictments** against a sitting head of state
- b. Sets precedent for **legalized regime pressure**

#### **2. Fragmentation of Global Order**

- a. Accelerates shift from **rules-based multilateralism** to **power-based enforcement**
- b. Encourages formation of rival blocs

#### **3. Rise of Alternative Financial & Political Systems**

- a. Countries seek: De-dollarisation, Non-Western trade mechanisms
- b. Weakens Western economic dominance over time.

### **Global Spillovers**

1. **Energy price volatility**
2. Increased **Great Power rivalry**
3. Refugee pressures in Latin America
4. Normalisation of **economic coercion as foreign policy tool**

### **Implications for India**

1. Loss of **stable crude oil supply** from Venezuela
2. Indian investments affected by secondary sanctions
3. Threat of sanctions being used against **strategically independent states**
4. Erosion of multilateral dispute-resolution mechanisms

### How India Should Respond: Reaffirming Strategic Autonomy

1. **Uphold Non-Intervention & Sovereignty**
  - a. Oppose **unilateral coercive measures** outside UN framework.
  - b. Reinforce respect for **international law**
2. **Practice Issue-Based Alignment**
  - a. Engage with U.S. where interests converge
  - b. Retain diplomatic channels with Venezuela and Global South
3. **Secure Energy Interests**
  - a. Diversify oil imports
  - b. Strengthen strategic petroleum reserves
  - c. Invest in renewables to reduce geopolitical vulnerability
4. **Support Multilateralism**
  - a. Push for: UN-led mediation, Dialogue-based conflict resolution
  - b. Resist precedent of **extraterritorial arrests**
5. **Strengthen Global South Leadership**
  - a. Position India as voice against:
    - i. Neo-imperial interventions
    - ii. Selective application of international norms

The U.S. approach towards Venezuela reflects a **power-centric global order in transition**, where law, sanctions and geopolitics increasingly intersect. For India, the episode underlines the necessity of **strategic autonomy, principled pragmatism and multilateral engagement** to safeguard national interests while contributing to a stable world order.

## 1.8 Adult Skill Assessment Survey

**What it is:** India's **first nationwide survey** to assess **skills and competencies of adults**.

- **Year:** 2026 (reference year; fieldwork initiated in mid-2020s)
- **Conducting Body:** The Ministry of Statistics and Programme Implementation (MoSPI) will conduct the survey using the Comprehensive Modular Survey (CMS) framework, at the request of the Ministry of Skill Development and Entrepreneurship (MSDE).
- Anchored in Skill India Mission.

### Target Group

- **Adults aged 18–59 years**
  - **Covers both:** Formally skilled, Informally skilled / unskilled workforce

### Stats:

- **Skill–Employability Mismatch:** Nearly **three-fourths of the employed population possess only basic education. Employability among graduates is just 54.8%**,

highlighting a serious mismatch between education outcomes and labour market needs.

- **Trends in Vocational Training:** The share of those aged 15–59 receiving vocational/technical training rose to 34.7% in 2023–24, up from 27.4% in 2022–23.

## Why is There a Skill Mismatch in India?

### 1. Education–Employment Disconnect

- Curriculum remains theoretical, with limited industry relevance.
- Weak emphasis on vocational and practical skills.
- Slow curriculum updates in response to technological change.

### 2. Informal Nature of Workforce

- Over **80% employment in the informal sector.**
- Skills acquired informally remain **uncertified and unrecognised.**

### 3. Regional & Sectoral Imbalances

- High concentration of skilled jobs in **urban and service sectors.**
- Rural and traditional sectors lack access to modern skilling facilities.

### 4. Poor Labour Market Signalling

- Limited real-time data on:
  - Emerging skills
  - Industry demand
- Results in misaligned training investments.

### 5. Social & Cultural Factors

- Bias against **vocational education.**
- Preference for degrees over skills.

### 6. Rapid Technological Change

- Automation, AI and digitalisation outpace reskilling efforts.
- Creates **future-ready skill gaps.**

## Government Initiatives to Bridge Skill Mismatch

### 1. Skill India Mission

- Umbrella framework for skilling, upskilling and reskilling.
- Focus on employability and entrepreneurship.

### 2. Pradhan Mantri Kaushal Vikas Yojana (PMKVY)

- Short-term, industry-relevant training.
- Recognition of Prior Learning (RPL) for informal workers.

### 3. National Education Policy (NEP) 2020

- Integration of **vocational education from school level.**
- Multiple entry–exit options and lifelong learning.

### 4. National Skills Qualification Framework (NSQF)

- Standardises skill levels across sectors.
- Enables mobility between vocational and academic pathways.

## What More Should Be Done?

1. **Industry-Led Skilling-** Stronger role for industry in: Curriculum design, Certification, Assessment.
2. **Strengthen Labour Market Intelligence**
  - Real-time skill demand forecasting using **AI and big data.**
  - Link skilling programs with **employment outcomes.**
3. **Focus on Emerging & Future Skills**

- AI, green skills, semiconductors, robotics, cybersecurity.
- Continuous reskilling rather than one-time training.
- 4. Improve Quality of Training**
  - Upgrade ITIs and trainers.
  - Outcome-based funding for training providers.
- 5. Enhance Social Acceptance of Vocational Skills**
  - Career progression pathways for skilled workers.
  - Parity of esteem between vocational and academic education.
- 6. Promote Regional Skill Ecosystems**
  - Localised skilling aligned with: Regional industries, MSMEs, Traditional crafts + modern technology

India's skill mismatch is a **structural challenge** rooted in education, labour markets and societal perceptions. While government initiatives have created a strong skilling architecture, **industry integration, future-oriented skills and quality assurance** are crucial to fully harness India's demographic advantage.

## 1.9 Financial Position of the States

Under the **FRBM framework**, States are expected to limit their **fiscal deficit to 3% of GSDP**. Recently, several States have exceeded this limit, reflecting **structural stress in sub-national public finance**.

### Issues with the Finances of States

- 1. Structural Revenue Constraints**
  - a. **Low own tax buoyancy**: Heavy dependence on indirect taxes with limited flexibility.
  - b. **GST-related issues**:
    - i. Loss of fiscal autonomy post-GST.
    - ii. **Delayed compensation** and uneven GST collections.
  - c. **Shrinking share of non-tax revenue** (user charges, dividends).
- 2. Rising Committed Expenditure**
  - a. **Salaries, pensions, and interest payments** consume a large portion of revenue receipts.
  - b. Implementation of **pay commission recommendations** increases revenue expenditure rigidity.
  - c. Leaves limited fiscal space for capital expenditure.
- 3. Populist and Freebie Politics**
  - a. Expansion of **non-merit subsidies** (free electricity, transport, cash transfers).
  - b. Electoral pressures crowd out productive spending.
  - c. Long-term liabilities without commensurate revenue streams.
- 4. Off-Budget Borrowings**
  - a. Use of **State PSUs and special purpose vehicles** to raise debt outside budget.
  - b. Masks the true fiscal deficit and raises **contingent liabilities**.

## 5. High Debt Burden

- a. Rising **interest payments** due to accumulated debt.
- b. Vulnerability to **interest rate hikes** by RBI.
- c. Debt-to-GSDP ratios remain elevated for many States.

## 6. Weak Urban Local Body and Panchayat Finances

- a. States forced to shoulder responsibilities due to **poor devolution** to local governments.
- b. Inefficient property tax and user charge collection at local levels.

## 7. Uneven Post-COVID Recovery

- a. Health spending and welfare commitments increased.
- b. Slower recovery in consumption-intensive States affects revenue mobilisation.

- States with fiscal deficit above 3% of GSDP include: Himachal Pradesh (~4.7%), Madhya Pradesh (~4.1%), etc.
- States' combined fiscal deficit has widened from ~2.8% (FY22) to ~3.2% (FY25) of GSDP

## How Can the Issue Be Resolved?

### 1. Strengthening State Revenue Base

- a. Improve **GST compliance** using data analytics and e-invoicing.
- b. Rationalise **GST rate structure** to reduce exemptions.
- c. Enhance **non-tax revenue** via realistic user charges (water, transport, power).

### 2. Expenditure Rationalisation

- a. Shift from **blanket subsidies** to **targeted Direct Benefit Transfers (DBTs)**.
- b. Outcome-based budgeting and periodic **subsidy audits**.
- c. Control growth of committed expenditure.

### 3. Reforming Freebie Culture

- a. Introduce **fiscal impact statements** for welfare promises.
- b. Link welfare schemes with **human capital outcomes**.
- c. Strengthen role of **Finance Commissions and RBI** in fiscal oversight.

### 4. Improving Quality of Spending

- a. Prioritise **capital expenditure** (infrastructure, logistics, urban development).
- b. Capex-led growth improves medium-term revenue buoyancy.
- c. Incentivise States through **performance-linked grants**.

### 5. Transparent Borrowing Practices

- a. Bring **off-budget borrowings** fully onto budget.
- b. Strengthen disclosure norms and adopt **medium-term debt strategies**.

### 6. Centre-State Fiscal Coordination

- a. Predictable and timely **tax devolution**.
- b. Greater flexibility during shocks via **escape clauses**.
- c. Cooperative federalism in GST Council decision-making.

### 7. Empowering Local Governments

- a. Effective implementation of **15th Finance Commission recommendations**.
- b. Strengthen municipal finance through property tax reforms.
- c. Reduce fiscal burden on States.

Breaching the 3% fiscal deficit norm is a **symptom of deeper structural issues** in State finances. The solution lies not in ad hoc borrowing limits but in **revenue augmentation, expenditure quality, transparency, and cooperative fiscal federalism**. Sustainable fiscal consolidation at the State level is crucial for **India's macroeconomic stability and long-term growth**.

## 1.10 India's Waste Opportunity

### Key Statistics

India generates vast quantities of waste across multiple streams:

- **Municipal Solid Waste (MSW):** ~170,000+ tonnes per day (TPD) — projected to reach ~436,000 TPD by 2047.
- **Plastic Waste:** ~3.4 million tonnes annually (2021-22).
  - Only ~60% is recycled; significant leakage into oceans.
- **E-Waste:** ~1.18 million tonnes in 2022 — 3rd largest e-waste producer globally.
- **Biomedical Waste:** ~775 tonnes per day (2023).
- **Construction & Demolition (C&D) Waste:** ~530 million tonnes per year.
- **Industrial Hazardous Waste:** ~7.1 million tonnes (2019-20).
- **Food Waste:** ~6–8 million tonnes per year.

*(Estimates from CPCB, MoEFCC, NITI Aayog, ASSOCHAM, World Bank projections.)*

### How Waste Threatens India's Goals

#### 1. Social

- **Unsafe disposal** (open dumping, burning) affects marginalised communities near landfills.
- Poor segregation and collection disproportionately impact waste pickers, women, and informal workers.

#### 2. Economic

- **Lost value:** Waste contains recoverable materials worth billions (plastics, metals).
  - High disposal costs strain municipal budgets.
  - Tourism, real estate values decline near polluted sites.
  - E-waste and hazardous waste impose cleanup liabilities.

#### 3. Climate

- **Methane emissions** from organic waste are potent GHGs — contributing to climate forcing.
- **Burning of waste** (open or in incinerators without pollution control) emits CO<sub>2</sub>, particulates, and toxins.
- **Leakage of landfill** gases worsens climate targets under NDCs.

#### 4. Health

- **Vector-borne diseases** (mosquitoes, rodents) near unmanaged dumps.
- **Respiratory issues** from burning plastics and mixed waste.
- **Toxic exposure** (lead, mercury) from e-waste and biomedical waste.

## Opportunities for India through Waste Management

### 1. Circular Economy

- **Waste as a resource stream** — recycling, remanufacturing, recovery.
- **Extended Producer Responsibility (EPR)** for plastics and e-waste promotes product lifecycle accountability.

### 2. Job Creation

- Formalisation and integration of the informal recycling workforce.
- Green jobs in segregation, recycling facilities, composting, material recovery.

### 3. Renewable Energy

- **Organic waste → biogas/biomethane through anaerobic digestion.**
- Energy recovery from industrial and agricultural waste.

### 4. Innovation & Entrepreneurship

- Waste-to-value startups in material recycling, eco-products, software platforms linking segregators and recyclers.

### 5. Fiscal Savings

- Reduced landfill use cuts municipal costs.
- Selling recovered materials and energy generation adds revenue streams.

## Way Forward

**1. Strengthen Source Segregation-** Enforce 3-bin segregation (wet, dry, sanitary).

**2. Modernise Collection & Infrastructure-** Material Recovery Facilities (MRFs), decentralized composting, and transfer stations.

**3. Expand Recycling & Circularity**

- Strengthen EPR frameworks (plastics, e-waste, batteries).
- Incentivise eco-design and reuse models.
- Promote market access for recyclates.

**4. Integrate Informal Sector**

- Provide PPE, formal contracts, skill training.
- Social security and inclusion within waste value chains.

**5. Climate Action Integration**

- Measure and reduce methane from MSW (aligned with Global Methane Pledge).
- Promote biogas infrastructure under SATAT/other schemes.

**6. Regulatory & Enforcement Mechanisms-** Strict compliance with Solid Waste Management Rules, Plastic Waste Rules, E-Waste Rules, Bio-Medical Waste Rules.

**7. Fiscal Instruments & Incentives-** Green Cess, tipping fees, landfill taxes disincentivise disposal.

**8. Data & Monitoring-** Performance benchmarking under Swachh Bharat Mission 2.0.

Waste in India is both a crisis and an opportunity. Without systemic reforms, waste threatens public health, environmental quality, and climate commitments. However, with policy clarity, circular economy strategies, and citizen participation, waste can be transformed into a resource base for sustainable growth — aligning economic, environmental, and social objectives.

## 1.11 India as a Global Leader in Food Security

India has emerged as the world's largest producer of several agricultural commodities—including **milk, pulses, rice, wheat, sugarcane, spices and millets**—and is among the top producers of fruits and vegetables. This positions India uniquely to become a **pillar of global food security**, especially for the **Global South**, while contributing directly to the achievement of multiple **Sustainable Development Goals (SDGs)**.

### How India Can Become a Pillar of Global Food Security

#### 1. Ensuring Food Availability

- a) Large and diverse agro-climatic zones enable year-round production.
- b) Leadership in climate-resilient crops like millets, pulses and oilseeds supports food security in drought-prone regions.
- c) Capacity to act as a reliable food supplier during global crises (e.g., pandemic, conflicts).

#### 2. Promoting Affordable Nutrition

- a. Export of **nutritious staples** (rice, pulses, millets) helps address **hidden hunger**.
- b. Sharing India's experience in **fortified foods** (rice fortification, POSHAN Abhiyaan) supports **SDG-2 (Zero Hunger)** and **SDG-3 (Good Health)**.

#### 3. South–South Cooperation

- a. Technical assistance through: **Seed banks, Agri-technology transfer, Capacity building** in irrigation, extension services, digital agriculture
- b. Strengthens **food sovereignty** of African and Asian nations.

#### 4. Global Governance & Diplomacy- Leadership in forums like **G20, BRICS, FAO, IBSA** to advocate: Fair agricultural trade, Climate finance for farmers, Reform of global food systems

#### 5. Sustainable Food Systems

- a. Promotion of **millets (International Year of Millets 2023)** aligns with: Climate adaptation, Biodiversity conservation, Low water and input use.
- b. Advances **SDG-12 (Responsible Consumption)** and **SDG-13 (Climate Action)**.

### Contribution to SDGs of the Global South

SDG	India's Role
<b>SDG-2 (Zero Hunger)</b>	Stable supply of cereals, pulses, fortified foods
<b>SDG-1 (No Poverty)</b>	Farmer income through inclusive agri-value chains
<b>SDG-3 (Good Health)</b>	Nutrition-rich food exports
<b>SDG-13 (Climate Action)</b>	Climate-resilient crops & practices
<b>SDG-17 (Partnerships)</b>	South–South cooperation in agriculture

### Major Challenges

#### 1. Domestic Food Security Pressures

- a. Persistent **malnutrition and anaemia**
- b. Regional disparities in productivity

2. **Climate Change & Resource Stress**-Heatwaves, erratic monsoons, floods, Over-exploitation of groundwater, Soil degradation.
3. **Low Agricultural Productivity**
  - a. Small and fragmented landholdings.
  - b. Limited mechanisation in many regions
4. **Supply Chain & Infrastructure Gaps**- High post-harvest losses, Inadequate cold storage and logistics.
5. **Trade & Geopolitical Constraints**- Export bans during domestic shortages, WTO rules, protectionism by developed countries
6. **Sustainability Concerns**- Overuse of chemical fertilisers, Greenhouse gas emissions from agriculture

## Way Forward

1. **Strengthen Domestic Foundations**
  - a. Nutrition-centric agriculture (diversification beyond cereals)
  - b. Reform PDS with **technology + nutrition focus**
2. **Climate-Smart Agriculture**- Promote: Millets, pulses, oilseeds, Precision irrigation, Carbon-neutral farming practices
3. **Boost Productivity & Farmer Incomes**- Agri-tech, AI-based advisories, Farmer Producer Organisations (FPOs), Value addition & food processing
4. **Build Global Food Partnerships**
  - a. Long-term food supply agreements with Global South nations
  - b. Emergency food corridors for crisis-hit regions
5. **Trade Policy Stability**
  - a. Predictable export policies
  - b. Balance domestic needs with global responsibility
6. **Institutional Leadership**
  - a. Champion reform of global food systems
  - b. Push for climate finance and technology access for developing nations

India's emergence as a leading global food producer is not merely an economic milestone but a **civilisational opportunity**. By aligning **food production with nutrition, sustainability and solidarity**, India can transform from a food-secure nation into a **global food security leader**, advancing the **SDGs of the Global South** while reinforcing its role as a **responsible global power**.

## 1.12 The era of Neocolonialism

**Neo-colonialism** refers to a system in which **powerful countries exercise control over weaker nations indirectly**, despite the latter being **politically independent**. The term was popularised by **Kwame Nkrumah**, who described it as "*the last stage of imperialism*". Unlike classical colonialism (direct territorial rule), neo-colonialism operates through:

- **Economic dependence**
- **Political influence**

- **Military pressure**
- **Cultural dominance**
- **Control over global institutions**

### **Evolution of Neo-Colonialism**

#### **1. Post-World War II Decolonisation (1940s–60s)**

- Former colonies gained independence but remained **economically dependent**.
- Example:
  - African nations exporting raw materials to former colonial powers.

#### **2. Cold War Phase (1950s–90s)**

- Superpowers intervened in domestic politics of developing nations.
- Examples:
  - US interventions in **Latin America** (Chile, Cuba, Nicaragua).
  - Soviet influence in Eastern Europe and parts of Africa.

#### **3. Economic Neo-Colonialism (1990s onwards)**

- Influence via:
  - IMF–World Bank conditionalities
  - Trade rules favouring developed nations
- Example:
  - Structural Adjustment Programs reducing welfare spending in Africa.

#### **4. 21st Century Neo-Colonialism**

- Manifested through:
  - Sanctions
  - Regime-change narratives
  - Control over global finance, technology, narratives
- Example:
  - Unilateral sanctions on Iran, Venezuela.

### **USA's Actions Against Venezuela and the Neo-Colonialism Debate**

- The United States has:
  - Imposed **economic sanctions** on Venezuela.
  - Issued indictments and international arrest of Venezuelan **President Nicolás Maduro**.
  - Supported opposition leadership abroad.

### **Critics See It as Neo-Colonialism due to**

- **Violation of Sovereignty:**
- **Economic Coercion**
- **Regime Change Approach**
- **Selective Application of International Law**

From a neo-colonial lens, this reflects **control through law, finance and coercive diplomacy rather than direct occupation**.

### **Implications for the Global Order**

- Weakening of **Westphalian sovereignty**
- Growing distrust in **rules-based international order**
- Polarisation between **Global North and Global South**
- Encourages alternative power blocs (BRICS, SCO)

## Way Forward

### 1. Strengthening Multilateralism

- UN-led mechanisms instead of unilateral actions.
- Reform of UNSC, IMF, World Bank to reflect Global South realities.

### 2. South–South Cooperation

- Trade, technology and finance among developing nations.
  - Example: BRICS Development Bank, IBSA.

### 3. Economic Self-Reliance

- Diversification of trade and energy sources.
- Reduce over-dependence on dominant economies.

### 4. International Legal Norms

- Clear limits on **extra-territorial jurisdiction**.
- Strengthening International Court of Justice (ICJ).

### 5. Normative Leadership

- Countries like India promoting:
  - **Strategic autonomy**
  - **Dialogue-based conflict resolution**
  - **Development-centric diplomacy**

Neo-colonialism represents a **subtle but powerful continuation of dominance** in global affairs. While framed today in the language of **human rights, democracy and security**, its impact often reproduces **dependency, instability and inequality**. Addressing it requires a **fairer global governance architecture**, respect for sovereignty, and empowerment of the **Global South**—not through coercion, but through cooperation.

## 1.13 Census in India

The **Census** is the most comprehensive source of **demographic, social, economic and cultural data** of a country. In India, it forms the **backbone of evidence-based governance**.

### Key Importance

- 1. Policy Formulation & Planning-** Data on population size, age, sex, literacy, occupation, migration, housing, disability etc. Guides flagship schemes like NFSA, PMAY, Jal Jeevan Mission.
- 2. Fiscal Federalism**
  - Basis for resource allocation between Centre and States.
  - Helps design Finance Commission devolution formulas.
- 3. Electoral Democracy-** Essential for **delimitation of constituencies**. Ensures *one person, one vote, one value*.
- 4. Social Justice & Inclusion-** Identifies **marginalised groups**, migrants, urban poor. Crucial for **affirmative action and targeted welfare**.
- 5. Urbanisation & Infrastructure-**Inputs for **Smart Cities, AMRUT, transport, housing**.

- 6. Global Commitments-** Monitoring progress on **SDGs**, climate vulnerability, gender equality.

### Brief History of Census in India (Prelims Perspective)

#### Pre-Independence

1. **1872** – First non-synchronous census (Lord Mayo)
2. **1881** – First synchronous census (Lord Ripon)
3. Census conducted **every 10 years** thereafter

#### Post-Independence

1. **1951** – First Census of Independent India
2. Conducted decennially: **1961, 1971, 1981, 1991, 2001, 2011**
3. **Census 2021** – Delayed

#### Constitutional & Legal Basis

1. **Census Act, 1948**
2. Conducted by **Office of the Registrar General & Census Commissioner**, under Ministry of Home Affairs

**Issues India is Facing Due to Pending Census-***(India's last census was conducted in 2011; Census 2021 has been delayed)*

1. **Policy Blindness-** Welfare schemes rely on **outdated population figures**. Underestimation of beneficiaries (e.g., food security coverage).
2. **Distorted Federal Balance-** States with higher population growth feel **under-represented**.
3. **Urban Governance Crisis-** Rapid urbanisation without updated city-level data. Growth of **informal settlements** goes unrecorded.
4. **Electoral & Democratic Concerns-** Delayed **delimitation** affects representativeness. Malapportionment between constituencies.
5. **Ineffective Targeting of Schemes-** Leakages and exclusion errors increase.
6. **Weak Disaster & Health Preparedness**

#### How the Upcoming Census Will Help India Attain Its Goals

1. **Viksit Bharat @2047--** Realistic population projections for long-term growth planning. Helps harness **demographic dividend**.
2. **Better Welfare Delivery-** Accurate beneficiary identification. Supports **DBT reforms and Aadhaar-based targeting**.
3. **Inclusive Growth-** Updated data on **women, elderly, disabled, migrants**.
4. **Urban & Infrastructure Push-** Data-driven expansion of cities and services.
5. Helps manage **urban poverty and slum rehabilitation**.
6. **Electoral & Governance Reforms-** Facilitates **fair delimitation**.
7. Strengthens democratic legitimacy.

8. **Digital & Green Transitions-** Inputs for climate resilience planning.
9. Supports SDGs on health, education, inequality, sustainability.

The Census is not merely a statistical exercise but a **democratic, developmental and constitutional necessity**. Delays weaken governance, equity, and planning. A timely and technology-enabled Census will be pivotal for India to achieve **inclusive growth, social justice, and global commitments**, reinforcing the foundations of a **Viksit Bharat**.

### 1.14 Brutality of Acid Attacks

An **acid attack** refers to the intentional act of **throwing acid or corrosive substances** on a person with the intent to **disfigure, maim, torture, or kill**. It is a form of **gender-based violence**, predominantly affecting **women**, often driven by **rejection, jealousy, patriarchy, and control over women's autonomy**.

#### **How Acid Attacks Ruin the Life of the Victim**

##### **1. Physical Consequences**

- Severe **burns**, permanent **disfigurement**
- Loss of eyesight, hearing, facial features
- Multiple reconstructive surgeries and lifelong medical care

##### **2. Psychological Trauma**

- **Post-Traumatic Stress Disorder, depression, anxiety**
- Loss of self-esteem and social withdrawal
- Fear of public spaces

##### **3. Social Impact**

- Stigma and discrimination
- Breakdown of family and marital relationships
- Reduced chances of marriage and social acceptance

##### **4. Economic Impact**

- Loss of livelihood due to disability
- High cost of medical treatment
- Long-term dependency and poverty

##### **5. Violation of Fundamental Rights**

- Right to **life and dignity (Article 21)**
- Right to **equality and non-discrimination (Article 14 & 15)**

#### **Judicial Cases that Shaped Acid Attack Laws in India**

##### **1. Laxmi vs Union of India (2014)**

- Directed:
  - Regulation of acid sale
  - Minimum compensation of ₹3 lakh
  - Free medical treatment for victims
- Led to legal recognition of acid attacks as a distinct crime

##### **2. Criminal Law (Amendment) Act, 2013**

- Inserted:

- **Section 326A IPC** – Punishment for acid attack (minimum 10 years to life imprisonment)
  - **Section 326B IPC** – Punishment for attempt to acid attack
  - Recognised acid attack as **heinous offence**
- 3. Parivartan Kendra vs Union of India (2016)**
- Supreme Court directed:
    - Strict implementation of acid sale rules
    - Uniform compensation schemes across states

### **Regulation of Sale of Acid in India**

#### **Legal Framework**

- Governed by **Poison Rules, 1919** (amended following SC directions)

#### **Key Regulations**

- Over-the-counter sale **prohibited**
- Mandatory:
  - **ID proof** of buyer
  - **Purpose of purchase**
  - **Register maintenance** by sellers
- Sale to:
  - **Minors prohibited**
- Unused acid to be declared
- District Magistrates empowered to:
  - Monitor compliance
  - Impose penalties on violators

### **Successful Global Models**

#### **1. Bangladesh**

- **Acid Control Act & Acid Crime Prevention Act (2002)**
- Strict licensing for acid sale
- Special tribunals for speedy trials
- Result: **Sharp decline in acid attacks**

#### **2. United Kingdom**

- Regulation of corrosive substances under **Offensive Weapons Act**
- Age restrictions and licensing
- Strong victim support mechanisms

#### **3. Cambodia**

- Acid Violence Law (2012)
  - Integrated approach: Prevention, Medical treatment, Legal aid and rehabilitation

### **Way Forward**

#### **1. Legal & Enforcement Measures**

- Strict enforcement of **acid sale regulations**
- Fast-track courts for acid attack cases

#### **2. Victim-Centric Rehabilitation**

- Free and lifelong medical care
- Psychological counselling
- Skill training and employment opportunities
- Social reintegration support

#### **3. Preventive Measures**

- Gender sensitisation and education
- Addressing root causes like patriarchy and toxic masculinity

#### 4. Institutional Strengthening

- Dedicated **Acid Attack Survivor Cells**
- Monitoring by District Magistrates
- NGO-government collaboration

#### 5. Ethical & Societal Dimension

- Promote respect for **dignity, autonomy, and consent**
- Shift from victim-blaming to survivor-centric narratives

Acid attacks represent a **grave assault on human dignity, gender justice, and constitutional morality**. While India has made significant legal strides, the real challenge lies in **effective implementation, societal transformation, and comprehensive rehabilitation**. A multi-dimensional approach combining **law, empathy, prevention, and empowerment** is essential to eradicate this brutal crime and uphold the values of a just and humane society.

### 1.15 India-EU ties

India–European Union (EU) relations have acquired renewed strategic salience amid **geopolitical fragmentation, supply-chain disruptions, and erosion of multilateralism**. From a primarily economic partnership, ties are now evolving into a **strategic, normative and geopolitical engagement**, guided by the **India–EU Strategic Partnership (2004)** and reinforced through summits and sectoral dialogues.

#### Growing India–EU Engagement: Key Indicators (with Statistics)

##### 1. Trade

- EU is **India's largest trading partner**.
- Bilateral merchandise trade stood at ~€120 billion (2022), accounting for nearly 14% of India's total trade.
- India is the EU's **9th largest trading partner**.

##### 2. Investment

- EU is the **largest source of FDI in India**, accounting for ~17–18% of cumulative **FDI inflows** since 2000.
- EU companies generate ~6 **million direct and indirect jobs** in India.

##### 3. Institutional Mechanisms

- Over **50 sectoral dialogues** (trade, digital, climate, space, security).
- Revival of **India–EU FTA negotiations (2022)** after a gap of nearly a decade.
- Launch of **Trade and Technology Council (TTC)** in 2023 — only the EU's second such council after the US.

#### Points of Convergence between India and EU

##### 1. Strategic & Geopolitical Convergence

- a. Commitment to a **rules-based international order, UN-centered multilateralism, and strategic autonomy.**
  - b. Shared concerns over:
    - i. Rise of **authoritarianism**
    - ii. Weaponisation of interdependence
    - iii. Instability in **Indo-Pacific**
  - 2. Indo-Pacific & Maritime Security**
    - a. EU's **Indo-Pacific Strategy (2021)** aligns with India's **SAGAR vision.**
    - b. Cooperation on: Freedom of navigation, Anti-piracy operations, Maritime domain awareness
  - 3. Climate Action & Sustainability**
    - a. Shared commitment to: **Paris Agreement**, Net-zero goals (India: 2070; EU: 2050)
    - b. Collaboration on: Green hydrogen, Renewable energy, Circular economy
  - 4. Technology, Digital & Supply Chains**
    - a. Convergence on: Resilient supply chains, Trusted and ethical AI, Semiconductor ecosystems.
- **Shared Democratic Values-** Pluralism, rule of law, human rights (though with differing interpretations).

#### **Potential of the ties to shape the world order:**

- i. **Impact on global stability:** Enhances **multipolar balance**, reduces overdependence on any single power, and promotes cooperative security.
- ii. **Stabilising role:** Ensures secure sea lanes for global trade and checks unilateral dominance in the Indo-Pacific.
- iii. **Global relevance:** Provides leadership in climate governance amid North–South trust deficit.
- iv. **Stabilising effect:** Reduces vulnerabilities from techno-nationalism and supply-chain coercion.

#### **Challenges in India–EU Relations**

- 1. Trade & Regulatory Frictions**
  - a. EU concerns: Market access, Tariffs, Intellectual property protection
  - b. India's concerns: **Carbon Border Adjustment Mechanism (CBAM)** perceived as “green protectionism”. Stringent **labour and environmental standards.**
- 2. Divergence on Strategic Issues-** EU's alignment with **NATO and US** vs India's **non-aligned strategic autonomy.** Differing approaches to: Russia–Ukraine conflict, Sanctions regimes
- 3. Normative Differences-** EU's criticism on: Human rights, Data protection, Environmental norms
- 4. Limited Defence Cooperation-** Despite shared security interests: Defence trade and joint R&D remain modest, Absence of strong institutionalised defence framework.

#### **Way Forward**

- 1. Pragmatic and Balanced FTA-** Fast-track a **mutually beneficial, phased FTA.**
- 2. Strengthening Strategic Autonomy Partnership**

- a. Recognise India–EU ties as a “**third pole**” in global geopolitics.
- b. Move beyond US–China binaries.
3. **Climate Justice & Green Cooperation-** Align CBAM with **CBDR principle**.
4. **Defence & Security Cooperation**
5. **People-to-People and Knowledge Ties**

India–EU relations are uniquely positioned to **stabilise a volatile world order** by promoting **strategic autonomy, sustainable development, and multilateral cooperation**. By addressing trust deficits and regulatory rigidities through dialogue and mutual accommodation, the partnership can evolve into a **pillar of a resilient, rules-based and multipolar global system**.

### 1.16 Issues with Devolution Criteria

The Finance Commission, constituted under **Article 280 of the Constitution**, is the cornerstone of India’s fiscal federalism. While successive Finance Commissions have refined tax devolution formulas to balance **equity and efficiency**, the criteria used—especially population, income distance, and performance-based indicators—have generated **contention among states**, raising concerns about fairness, predictability, and development incentives.

#### Major Devolution Criteria Used by 15<sup>th</sup> Finance Commission

Criterion	Weight (%)
Income Distance	45
Population (2011)	15
Population (1971)	15
Area	15
Forest & Ecology	10

#### Key Issues with Devolution Criteria

##### 1. Population-Based Criteria: Demographic Penalty

- a. Continued use of **population (2011 Census)** is seen as penalising states that:
  - Successfully implemented **population control measures**.
  - Achieved early demographic transition (e.g., Southern states).
  - **Issue:** Creates a **moral hazard**, where demographic discipline appears to reduce fiscal rewards.

##### 2. Excessive Weight to Income Distance

- a. Income distance favours poorer states by measuring gap from the richest state.
- b. However: Does not capture **intra-state poverty or regional inequality**.
  - Over-rewards states with **persistent low fiscal capacity**.
  - **Issue:** May **disincentivise governance reforms** and economic efficiency.

##### 3. Static vs Dynamic Needs

- a. Criteria are largely **static** and backward-looking.
- b. Do not adequately reflect: Urbanisation pressures, Migrant inflows, Disaster vulnerability, Ageing populations

- **Issue:** Fails to capture **contemporary and future expenditure needs**.
- 4. Forest & Ecology Criterion Controversy**
  - a. Forest cover rewarded to compensate opportunity costs.
  - b. Critics argue: Does not assess **quality of conservation**.
    - Ignores states with high population density and low forest potential.
    - **Issue:** Uniform ecological metrics overlook **differential ecological burdens**.
- 5. Reduced Share of Performance-Based Incentives**
  - a. Limited weight to: Tax effort, Ease of doing business, Governance outcomes
  - b. Earlier FCs had stronger fiscal discipline incentives.
    - **Issue:** Weakens **competitive federalism** and reform orientation.
- 6. Vertical Devolution Tensions-** Although vertical devolution rose to **41% (15th FC)**, states argue:
  - Effective fiscal autonomy is reduced due to:
    - Cesses and surcharges (not shareable with states).
    - Conditional tied grants.
  - **Issue:** De facto centralisation despite higher devolution figures.

### Expert and State-Level Criticisms

#### Key Points Raised by Experts

1. **N.K. Singh (Chairman, 15th FC):** Need to balance *equity with incentives* without fiscal populism.
2. **RBI & FRBM Review Committee:** Over-reliance on transfers may weaken fiscal discipline.
3. **Southern States Forum:** Devolution formula undermines demographic responsibility.
4. **Economic Survey Observations:** Transfers must not substitute **own-revenue mobilisation**.

#### What Can Be Done:

- 1. Adopt a “Needs-Based + Performance” Hybrid Formula**
  - Introduce indicators such as: Urbanisation ratio, Health and education deficits, Disaster risk index, Age dependency ratio
- 2. Rationalise Population Criteria**
  - Gradually **reduce weight of population (2011)**.
  - Introduce **demographic performance index** instead of absolute population.
- 3. Strengthen Performance Incentives**
  - Increase weight for: Tax effort, Governance reforms, Fiscal responsibility
  - Link part of devolution to **outcome-based indicators**.
- 4. Address Centralisation via Cesses**
  - Bring major cesses under divisible pool or: Impose constitutional or statutory caps on non-shareable levies.
- 5. Regional Equity Within States**
  - Introduce **intra-state inequality index**.
  - Encourage states to decentralise further to local bodies.
- 6. Dynamic and Periodic Revision**
  - Use **real-time data platforms** (GSTN, PFMS).
  - Allow mid-cycle reviews for major structural changes.

While Finance Commission devolution has strengthened equity, **overemphasis on redistribution without adequate performance incentives risks weakening fiscal federalism**. A more **dynamic**,

**needs-sensitive and incentive-compatible devolution framework** is essential to ensure that states are not merely compensated for backwardness but are **empowered and encouraged to grow sustainably**, in line with the spirit of cooperative and competitive federalism.

### **1.17 Taliban to take charge of Afghan Embassy**

With the Taliban gradually assuming control over Afghan diplomatic missions abroad, including indications of taking charge of the Afghan Embassy in India, a **new phase of pragmatic engagement** is emerging in Indo-Afghan relations. While India has not formally recognised the Taliban regime, this development reflects a **shift from normative idealism to strategic realism** in foreign policy.

#### **How This Can Become a “New Dawn” in Indo-Afghan Relations**

1. **Restoration of Official Communication Channels**
  - **Embassy functioning allows structured diplomatic engagement instead of ad-hoc backchannels.**
  - **Facilitates consular services, trade facilitation, and humanitarian coordination.**
2. **Safeguarding India’s Strategic Interests**
  - a. India was a major development partner ( $\approx$  **USD 3 billion** invested).
  - b. Diplomatic presence helps protect past investments in: Salma Dam, Afghan Parliament building, Zaranj–Delaram Highway
3. **Humanitarian & Development Outreach**
  - a. Embassy can act as a conduit for **food aid, medicines, and development assistance.**
  - b. Reinforces India’s image as a **people-centric partner**, not a regime-centric one.
4. **Countering Strategic Vacuum**
  - a. Engagement prevents **exclusive Taliban dependence on Pakistan or China.**
  - b. Helps India remain relevant in Afghanistan’s future political architecture.
5. **Regional Stability & Connectivity**- Opens scope for long-term projects like: Chabahar–Afghanistan connectivity and Central Asia outreach.

#### **Why India Had to Change Its Approach and Engage the Taliban**

1. **Geopolitical Realism**
  - Taliban is the **de facto authority** controlling Afghan territory.
  - Non-engagement would mean strategic irrelevance.
2. **Security Concerns**
  - Risks of Afghanistan becoming a hub for: Anti-India terrorist groups, Drug trafficking and radicalisation
  - Engagement allows intelligence and security signalling.
3. **Changing Regional Dynamics**- China, Russia, Iran, Central Asian states have already engaged the Taliban.

4. **Humanitarian Responsibility-** Afghanistan faces economic collapse and humanitarian crisis.
  - India's wheat aid, vaccines, and relief material required **working arrangements**.
5. **Doctrine of Strategic Autonomy-** India's independent engagement aligns with its **multi-alignment policy**, not Western pressure politics.

### Friction Points That Still Remain in Indo-Afghan Relations

1. **Terrorism & Security-** Taliban's ties with: Haqqani Network, Lashkar-e-Taiba (LeT) and Jaish-e-Mohammed (JeM).
  - Concerns over Afghan soil being used for **anti-India terror activities**.
2. **Pakistan Factor-** Pakistan's influence over Taliban leadership remains substantial.
3. **Women's Rights & Human Rights-** Taliban's policies on: Girls' education, Women's employment.
4. **Lack of Formal Recognition-** Limits the scope of: Formal treaties, High-level political engagement
5. **Internal Instability in Afghanistan**
  - Factionalism within Taliban
  - Threat from ISIS-K
  - Fragile economy and governance deficits

### Way Forward: A Balanced and Pragmatic Strategy

1. **Calibrated Engagement**
  - a. Continue **functional diplomacy without formal recognition**.
  - b. Maintain focus on people-to-people ties.
2. **Security Red Lines-** Clearly communicate zero tolerance for: Terror groups targeting India, Use of Afghan soil for cross-border terrorism
3. **Humanitarian-First Approach-** Expand aid in: Food security, Health and education
4. **Regional Multilateralism-** Engage via platforms like: SCO, Moscow Format, Heart of Asia Process.
5. **Soft Power & Capacity Building-** Scholarships, medical visas, technical training.
6. Preserve India's long-standing goodwill among Afghan citizens.

India's evolving engagement with the Taliban-controlled Afghan diplomatic setup reflects **strategic pragmatism rooted in national interest**. While deep trust deficits persist, calibrated diplomacy, humanitarian outreach, and firm security red lines can transform this engagement into a **measured but meaningful reset** of Indo-Afghan relations—without compromising India's core values or strategic autonomy.

## **1.18 USA's exit from International Institutions**

The reported decision of the United States to withdraw from a large number of international bodies reflects a renewed phase of **unilateralism and inward-looking foreign policy**. Given the centrality of the US in global governance, such disengagement risks creating **institutional voids**, particularly in **climate change mitigation, finance, and norm-setting**, thereby weakening the liberal international order.

### **Voids Created in the International Order**

#### **1. Leadership Vacuum in Multilateralism**

- a. The US has historically been a rule-maker and agenda-setter in global institutions.
- b. **Withdrawal weakens:** Consensus-building, Norm enforcement, Institutional legitimacy.
- c. Encourages other powers to pick and choose commitments, leading to fragmentation.

#### **2. Climate Change Resistance: Major Voids**

##### **a. Emissions Leadership Deficit**

- i. US is among the **largest historical and current emitters**.
- ii. Reduced participation undermines: Global mitigation ambition, Collective pressure on other major emitters

- b. Risks a **“race to the bottom”** in climate commitments.

#### **3. Climate Finance Gap**

- a. US contributions are critical for: Green Climate Fund (GCF), Adaptation and Loss & Damage mechanisms
- b. Withdrawal may: Reduce funding flows to vulnerable countries, Delay adaptation projects in the Global South

#### **4. Technology & Innovation Slowdown**

- a. US leadership in: Clean energy R&D, Climate modelling, Early-warning systems.
- b. Exit weakens global sharing of: Climate technologies, Best practices and standards

#### **5. Weakening of Climate Governance Architecture**

- a. Multilateral platforms provide: Transparency Monitoring, reporting, and verification (MRV)
- b. US disengagement erodes trust in **rules-based climate action**.

### **Broader Systemic Implications**

#### **a. Rise of Minilateralism**

- Shift from inclusive multilateral forums to selective clubs.
- Marginalises least developed countries (LDCs) and small island states.

#### **b. Strategic Vacuum Filled by Others**

- China and other powers may:
  - Shape norms aligned with their interests
  - Increase influence in global institutions
- Risk of **norm divergence** rather than convergence.

#### **c. Reduced Crisis-Response Capacity**

- Global challenges like pandemics, climate disasters, and migration require collective action.
- Institutional withdrawal reduces **predictability and coordination**.

## Implications for Developing Countries (Including India)

- Reduced access to:
  - Climate finance
  - Technology transfer
  - Capacity-building support
- Higher burden on domestic resources to meet climate goals.
- Greater uncertainty in global environmental negotiations.

## Way Forward

1. **Strengthening Multilateralism without the US-** Other major economies (EU, China, India, Japan) must: Step up financial and leadership roles, Protect institutional credibility.
2. **Empowering Global South Coalitions**
  - a. Platforms like: G77 + China, BASIC, ISA (International Solar Alliance)
  - b. Can sustain momentum on climate action and equity.
3. **Expanding Minilateral Climate Initiatives**
  - a. Issue-based coalitions on: Renewable energy, Methane reduction, Climate-resilient infrastructure
  - b. Should complement, not replace, multilateralism.
4. **Enhancing Non-State Actor Participation** - Cities, corporations, civil society, and philanthropies can: Bridge funding gaps, Drive innovation and accountability
5. **India's Role**
  - a. Act as a **bridge-builder** between Global North and South.
  - b. Lead through: Climate diplomacy, Scalable solutions (solar, green hydrogen), Normative leadership rooted in climate justice.

The US withdrawal from multiple international bodies risks **weakening the architecture of global governance**, especially in the fight against climate change—an inherently transboundary challenge. However, this moment also offers an opportunity for **collective leadership, institutional reform, and Global South assertion**. A resilient international order will depend not on a single hegemon, but on **shared responsibility, inclusive institutions, and cooperative action**.

## 1.19 Age of Consent

The **age of consent** is the legally defined minimum age at which an individual is considered competent to give **valid consent for sexual activity**. Sexual acts involving persons below this age are treated as offences, irrespective of apparent consent.

- It is rooted in the principles of **child protection, bodily autonomy, and criminal justice**.
- Closely linked with laws on **sexual offences, child rights, and human development**.

### Age of Consent: Comparative Perspective

Country	Age of Consent
<b>India</b>	<b>18 years</b> (POCSO Act, 2012)
<b>UK</b>	16 years
<b>France</b>	15 years
<b>Japan</b>	16–18 years (varies by prefecture)

USA	16–18 years (varies by state)
China	14 years

— **India has one of the highest ages of consent globally**, aligned with its child-centric legal framework.

## The Debate on Lowering the Age of Consent (India)

### Background

- Increasing criminalisation of consensual romantic relationships among adolescents (16–18 years).
- Courts have repeatedly observed misuse of POCSO in cases of elopement or consensual relationships.
- Debate revolves around **child protection vs adolescent autonomy**.

### Arguments in Favour of Lowering the Age of Consent

#### 1. Recognition of Evolving Capacities

- a. Adolescents today attain **biological and emotional maturity earlier**.
- b. UN Convention on the Rights of the Child (CRC) supports the concept of “**evolving capacities**”.

#### 2. Preventing Over-Criminalisation

- a. Large number of POCSO cases involve **consensual teenage relationships**, burdening judiciary.
- b. Criminal law becomes **disproportionate and counterproductive**.

3. **Gender Justice**- In practice, young men are criminalised while adolescent girls are portrayed only as victims, reinforcing **patriarchal assumptions**.

4. **Alignment with Global Practices**- Many democracies maintain age of consent between **14–16 years**, coupled with safeguards.

### Arguments Against Lowering the Age of Consent

#### 1. Child Protection Concerns

- a. Adolescents are vulnerable to **coercion, grooming, and abuse**, especially in unequal power relations.
- b. Lowering the age may legitimise exploitation.

#### 2. Social Reality of India

- a. Context of **early marriage, trafficking, and sexual violence**.
- b. Lower age may worsen outcomes for girls from marginalised communities.

3. **Health and Psychological Risks**- Early sexual activity linked to **teen pregnancies, school dropouts**, and mental health challenges.

4. **Difficulty in Determining “Consent”**- Consent can be **manufactured or forced**, making enforcement complex.

### Way Forward: Reducing Friction & Balancing Interests

1. **Close-in-Age Exemption (Romeo–Juliet Clause)**- Decriminalise consensual sexual activity between adolescents close in age (e.g., 16–18).

#### 2. Differentiated Legal Approach

- a. Maintain **18 years** for adults engaging with minors.
- b. Treat adolescent consensual cases as **civil or rehabilitative**, not criminal.

3. **Judicial Discretion**- Allow courts to distinguish between **exploitative abuse and consensual relationships**.

4. **Comprehensive Sex Education-** Promote informed decision-making, consent awareness, and bodily autonomy.
5. **Child Protection Systems-** Strengthen counselling, child welfare committees, and community support instead of punitive policing.
6. **Periodic Review of Laws-** Establish expert committees including psychologists, sociologists, and jurists to assess evolving realities.

The debate on age of consent reflects a **larger tension between autonomy and protection**. While safeguarding children remains paramount, the law must avoid becoming an instrument of **moral policing and social control**. A **nuanced, context-sensitive, and rights-based approach**, rather than a binary legal threshold, is essential for justice in a diverse society like India.

## 1.20 Inclusion of Transgenders

Transgender persons in India are legally recognised as a **third gender** following the Supreme Court's *NALSA v. Union of India (2014)* verdict. The **Transgender Persons (Protection of Rights) Act, 2019** aims to secure their rights and dignity. However, despite progressive legal frameworks, the community continues to face multi-dimensional marginalisation.

### Current Conditions: Key Statistics

#### 1. Education

- The **literacy rate** among transgender persons is about **56.1%**, significantly lower than India's national average of ~74%.
- Nearly **half never attended school**, with high dropout rates due to bullying and harassment.

#### 2. Employment & Economic Exclusion

- Up to **92% face economic exclusion**, denied participation in formal employment.
- Only about **6% are employed in formal sectors**; the majority are pushed into informal, precarious, or stigmatized work.
- Income is typically low—with only ~1% earning above ₹25,000 per month.

#### 3. Healthcare

- Around **27% report being denied medical care** because of their gender identity.
- Gender-affirming treatments cost ₹2–5 lakh and are often uncovered by insurance, limiting access.

#### 4. Social & Mental Health

- A **high suicide burden**: about **31% die by suicide** and **50% attempt it before age 20**, reflecting severe stigma and mental distress.

#### 5. Data & Visibility

- National data collection often omits or poorly captures transgender identities, undermining policy targeting.

### Welfare Gaps & Underlying Reasons

1. **Social Stigma & Cultural Exclusion-** Deep-seated societal prejudices lead to family rejection, schooling discrimination, and public harassment. Social exclusion early in life contributes to low educational attainment and poor self-worth.

## 2. Institutional Barriers

- a. **Education systems** lack gender-inclusive infrastructure and policies.
- b. **Healthcare and insurance** schemes like Ayushman Bharat TG Plus exist on paper, but **awareness and access remain low**, and gender-affirming care is largely inaccessible.

3. **Economic Discrimination-** High hiring biases, workplace hostility, absence of gender-neutral facilities, and lack of affirmative recruitment contribute to economic exclusion.

## 4. Implementation Gaps

- a. The process of issuing identity documentation is bureaucratic and slow, deterring access to welfare.
- b. Budgetary allocations for transgender welfare are low; even allocated funds often remain unutilised.

5. **Political & Civic Under-Representation-** Transgender individuals have minimal representation in legislatures and governance, weakening their political voice and advocacy for rights.

## Corrective Measures

### 1. Strengthen Legal & Policy Framework

- a. **Enforce anti-discrimination provisions** with strict penalties and independent grievance mechanisms.
- b. **Simplify self-identification** processes without onerous medical or bureaucratic hurdles.

### 2. Educational Inclusion

- a. Introduce **gender-sensitive curricula** and anti-bullying policies in schools.
- b. Ensure **gender-inclusive infrastructure** (toilets, hostels, counselling) and affirmative admissions support.

### 3. Economic Empowerment

- a. Implement **quota/reservation** in education and public employment similar to other backward groups.
- b. Incentivise **inclusive hiring** through tax benefits and gender-sensitivity training in workplaces.

4. **Healthcare Accessibility-** Expand **gender-affirming care** under national schemes, and train healthcare workers in transgender health needs.

5. **Data & Research-** Include transgender markers in all major national surveys (NFHS, NSS, PLFS) to generate **robust, disaggregated data** for evidence-based policymaking.

### 6. Social Inclusion & Awareness

- a. Large-scale **public sensitisation campaigns** to reduce stigma and foster dignity.
- b. Support for **community-led initiatives** and safe shelters.

7. **Political Representation-** Ensure **reservation or nomination** of transgender persons in local bodies and consultative policy bodies like State Commissions.

While India has established progressive legal recognition and institutional commitments on paper, **structural discrimination, social exclusion, and implementation gaps** continue to marginalise transgender persons. Achieving substantive inclusion requires **holistic reforms**—spanning education, employment, healthcare, legal enforcement, and societal attitudes. Such multi-pronged strategies align with **SDG goals**, particularly SDG 4 (inclusive education), SDG 8 (decent work), SDG 10 (reduced inequalities), and SDG 16 (inclusive institutions).

## Steps for Inclusion of Transgender Persons in India

### 1. Central Government Initiatives

- a. **Legal Recognition- NALSA v. UOI (2014):** Recognised transgender persons as a **third gender** and upheld the right to self-identification.
- b. **Transgender Persons (Protection of Rights) Act, 2019:** Prohibits discrimination in education, employment, healthcare, public services.

### 2. Institutional Mechanisms- National Council for Transgender Persons (NCTP):

Advises government on policies, monitors implementation, addresses grievances.

### 3. Social Security & Welfare

- a. **SMILE Scheme (Sub-scheme for Transgender Persons):** Provides education support, skill development, livelihood assistance.
- b. **Garima Greh:** Shelter homes offering food, medical care, counselling, and skill training.

### 4. Healthcare- Inclusion under Ayushman Bharat – TG Plus for health insurance coverage.

### 5. State Government Initiatives (Illustrative Examples)

- **Tamil Nadu-** First state to set up a **Transgender Welfare Board.**
- **Kerala- State Transgender Policy (2015):** Comprehensive policy covering education, health, housing, and employment.
- **Odisha- Madhu Babu Pension Yojana** extended to transgender persons.

## 1.21 India Germany Ties

India and Germany share a **long-standing partnership** encompassing **diplomatic, economic, technological, scientific, cultural and strategic dimensions**. Their ties have evolved from trade and development cooperation in early decades to a **strategic partnership** formalised in 2000 and deepened over 25 years since then.

### Convergence Points Between India and Germany

#### 1. Strategic and Global Order Alignment

- a. Both nations advocate a rules-based international order, peaceful resolution of disputes, and stable global governance.
- b. Germany increasingly views India as a key partner in the Indo-Pacific for security and stability, aligning with India's strategic priorities.

#### 2. Economic and Trade Linkages

- a. Germany is India's **largest trading partner in the EU**, with bilateral trade crossing significant thresholds in recent years.
- b. Germany has emerged as a top destination for Indian investments, while Indian companies also operate extensively in Germany.

#### 3. Technology and Research Collaboration

- a. The two countries collaborate in **advanced technology, R&D, and scientific exchanges**, including joint research programmes in multiple disciplines.
- b. Collaboration extends to high-end sectors like **AI, semiconductors, critical minerals, and digital innovation.**

4. **Green and Sustainable Development-** Shared priorities on **climate action, renewable energy, and sustainable urbanisation** form a core area of cooperation.
5. **People-to-People and Mobility-** Long-standing educational exchange, migration cooperation, and mobility agreements enhance cultural and human connectivity between the societies.

### Recent Initiatives

1. **High-level Political Engagement-** The visit of German Chancellor **Friedrich Merz to India (January 2026)** marked a significant milestone, with **19 bilateral agreements** signed across defence, technology, trade and people-to-people ties.
2. **Economic & Trade Initiatives**
  - a. Germany has eased **visa facilitation for Indian professionals** and introduced new partnerships such as the **India-Germany Semiconductor Ecosystem Partnership**.
  - b. Discussions on the **India-EU Free Trade Agreement (FTA)** continue, with pushes from Germany to accelerate completion by early 2026.
3. **Defence and Security Cooperation**
  - a. A landmark initiative is the **defence industrial collaboration**, including co-development and production opportunities, and progress on submarine deals.
  - b. Germany's **liaison officer at the Information Fusion Centre-Indian Ocean Region (IFC-IOR)** and joint Track 1.5 security dialogue point to deeper security synergy.
4. **Social & Human Capital Exchanges-** Agreements facilitating **Indian healthcare workers and skilled professionals** working in Germany reflect broadening social cooperation.

### Constraints in India–Germany Relations

1. **Strategic Divergences and External Alignments-** Germany's traditional emphasis on multilateralism sometimes contrasts with India's non-aligned and multi-vector foreign policy; differences emerge on issues like Russia policy and defence sourcing priorities.
2. **Trade and Market Access Barriers**
  - a. Lack of an overarching **India-EU FTA** limits tariff reductions and full realisation of bilateral trade potential.
  - b. Regulatory, certification and market access challenges remain for several sectors, affecting export diversification.
3. **Economic Headwinds-** Germany's **slow economic growth and structural challenges** may constrain the pace of investment and corporate engagement.
4. **Differing Diplomatic Priorities-**Germany's cautious approach in defence exports historically limited cooperation, although recent shifts are addressing this.

### Way Forward

1. **Finalising the India-EU Free Trade Agreement-** An early conclusion of the FTA will unlock deeper economic integration and enhance commerce across sectors, benefiting bilateral and regional tie-ups.
2. **Strengthening Strategic & Defence Cooperation**
  - a. Institutionalising regular **Track 1.5 dialogues, joint exercises and co-production** can consolidate the strategic dimension.
  - b. Enhancing interoperability in **Indo-Pacific security frameworks** further aligns mutual interests.
3. **Deepening Technology and Innovation Partnerships-** Joint innovation hubs, start-up networks and cross-border R&D initiatives in **AI, semiconductors, clean tech and digital**

**infrastructure** can accelerate co-growth.

4. **Expanding People-to-People Ties-** Broader mobility frameworks, educational partnerships, and vocational exchanges can deepen cultural understanding and talent flows.
5. **Leveraging Multilateral Platforms-** Collaboration in **G20, G7 outreach, UN reforms, climate forums, and global supply chain initiatives** will reinforce shared global governance objectives.

India–Germany relations have transcended traditional diplomatic contours, evolving into a **comprehensive strategic partnership** marked by convergent interests in economic dynamism, sustainable development, technological innovation and global peace. Recent initiatives, especially in defence, semiconductors and mobility, reaffirm mutual commitment, while the way forward lies in transforming these into tangible outcomes through pragmatic cooperation and accelerating institutional frameworks.

## 1.22 POCSO Act

The **Protection of Children from Sexual Offences (POCSO) Act, 2012** is a **gender-neutral, special law** enacted to protect children **below 18 years** from sexual assault, sexual harassment and pornography. It recognises the **vulnerability of children** and seeks to provide a **child-friendly legal framework** for prevention, reporting, investigation and trial of sexual offences.

### **Key Provisions of the POCSO Act (Brief)**

1. **Definition of Offences like Penetrative Sexual Assault** (Section 3), **Aggravated Penetrative Sexual Assault** (Section 5) – includes assault by persons in authority (police, teachers, relatives, etc.), **Sexual Assault** (Section 7), **Sexual Harassment** (Section 11) and **Use of child for pornographic purposes** (Section 13)
2. **Child-Friendly Procedures**
  - a. Statement of the child to be recorded at **home or a place of choice**
  - b. **Female police officer** to record statement, as far as possible
  - c. No detention of child in police station at night
  - d. Identity of the child to be kept **confidential**
3. **Mandatory Reporting**
  - a. **Any person** who has knowledge of an offence **must report it**
  - b. Failure to report is punishable (Section 21)
4. **Special Courts**
  - a. Establishment of **Special POCSO Courts** for **speedy trial**
  - b. Trial to be completed **within one year**, as far as possible
5. **Burden of Proof- Presumption of guilt** on the accused in certain circumstances (Sections 29 & 30).
6. **Stringent Punishments**
  - a. Enhanced penalties through **2019 amendments**.
  - b. **Death penalty** introduced for aggravated penetrative sexual assault in extreme cases.

### **How POCSO Has Helped in Reducing Child Exploitation**

1. **Legal Recognition of Child Sexual Abuse-** Clearly defined offences removed ambiguity and societal silence around child sexual abuse.

2. **Increased Reporting and Awareness-** Mandatory reporting and awareness campaigns have led to **higher reporting**, breaking the culture of under-reporting.
3. **Child-Centric Justice Delivery-** In-camera trials, child-friendly procedures, and support persons have reduced **secondary victimisation**.
4. **Deterrence Through Stringent Punishment-** Enhanced punishments, including life imprisonment, have **strengthened deterrence**.
5. **Focus on Online Exploitation-** Addressed emerging threats such as **child pornography and cyber abuse**, especially relevant in the digital age.

### Issues and Challenges in Implementation

1. **Rising Pendency of Cases-** Large backlog in POCSO courts undermines the objective of speedy justice.
2. **Misuse and Over-Criminalisation**
  - a. Consensual adolescent relationships criminalised due to **blanket age of consent at 18**.
  - b. Families sometimes use the Act to settle personal disputes.
3. **Lack of Child-Friendly Infrastructure**
  - a. Inadequate number of **trained judges, prosecutors, counsellors and support persons**.
  - b. Poor coordination between police, Child Welfare Committees (CWCs) and courts.
4. **Mandatory Reporting Concerns**
  - a. Discourages children from seeking medical or psychological help.
  - b. Can lead to breach of trust, especially in familial abuse cases.
5. **Overemphasis on Punishment-** Death penalty may deter reporting by family members and shift focus away from **rehabilitation**.

### Way Forward

1. **Strengthen Institutional Capacity**
  - a. Increase number of **exclusive POCSO courts**
  - b. Regular training of police, judiciary and medical professionals in child psychology
2. **Revisit Age-of-Consent Provisions-** Introduce **close-in-age exemptions** for consensual adolescent relationships, as recommended by experts.
3. **Improve Victim Support Mechanisms-** Expand access to counsellors, legal aid, compensation and long-term rehabilitation.
4. **Use Technology for Faster Trials-** E-courts, video testimony and digital case management to reduce pendency.
5. **Preventive and Community-Based Measures-** School-based sex education, parental awareness and digital safety literacy.

The POCSO Act represents a **progressive and rights-based approach** to child protection by recognising the gravity of sexual crimes against children and ensuring a child-friendly justice system. However, its true success lies not merely in stringent punishment but in **effective implementation, sensitivity, and preventive social measures**. A balanced approach combining **legal reform, awareness, institutional strengthening and child welfare** is essential to make POCSO both just and humane.

## 1.23 Importance of Early Childhood Care

### Status of Health of Children in India (According to NFHS-5)

- Around **35.5%** of children under five years are stunted, indicating chronic undernutrition.
- **19.3%** are wasted (acute undernutrition) and **32.1%** are underweight.
- Only about **11.3%** of children aged 6-23 months receive a minimum acceptable diet, reflecting poor complementary feeding practices.
- **Anaemia is alarmingly high** — **67.1%** of children aged 6-59 months are anaemic, higher than in NFHS-4.
- Coverage has improved: **Full immunization among children aged 12-23 months increased to around 77%**, up from NFHS-4.

### Early Childhood Care: A Key to Reap India's Demographic Dividend

India is poised to have one of the largest working-age populations globally over the next **two decades**. Realising this potential depends critically on the **health and capabilities of today's children**, who will be tomorrow's workforce.

#### Why Early Childhood Care Matters?

1. **Brain and physical growth:** The first 1,000 days of life are crucial for neuronal development and physical growth. Undernutrition in this window leads to irreversible cognitive impairment and poor educational outcomes.
2. **Human capital formation:** Healthy children are more likely to perform better in school, develop skills, and contribute productively as adults, enhancing economic growth.
3. **Reduced disease burden:** Adequate early care — nutrition, immunisation, hygiene — prevents disease, reducing healthcare costs and improving productivity.
4. **Macro Linkages-** Evidence suggests that **malnutrition reduces adult productivity and economic output** significantly — for instance, a 1% loss in adult height (linked to childhood stunting) is associated with a 1.4% reduction in economic productivity.

Hence, investing in early childhood health is not just welfare but **economic policy**.

#### Challenges in Current Early Childhood Care in India

1. **Nutrition and Feeding Practices**
  - a. Poor **complementary feeding** and sub-optimal exclusive breastfeeding.
  - b. Low dietary diversity and micronutrient intake.
2. **High Burden of Anaemia-** Despite supplementation programs, anaemia prevalence remains high, reflecting **ineffective implementation** and poor dietary intake.
3. **Inequities in Access**
  - a. Rural-urban, wealth, caste and regional disparities in nutrition and health service coverage.
  - b. Children from poorer households and less educated mothers fare worse.
4. **Quality of Public Services**

- a. Anganwadi and health worker capacity constraints.
  - b. Supply-side issues in nutrition supplementation and immunisation logistics.
- 5. Environmental & Sanitation Factors**
- a. Inadequate **water, sanitation, and hygiene (WASH)** contributes to infections and malabsorption of nutrients.
  - b. Diarrhoeal diseases, respiratory infections and environmental enteropathy undermine nutrition gains.
- 6. Behavioural and Awareness Barriers-** Limited awareness among caregivers about appropriate feeding, hygiene, and preventive care.
- 7. Integration and Accountability Issues**
- a. Siloed service delivery between health, nutrition and early education sectors.
  - b. Weak monitoring of outcomes and community feedback mechanisms.

### How can Early Childhood Care be Improved?

1. **Strengthen ICDS and Anganwadi Services**
  - a) Ensure regular, fresh and nutritious food rather than just caloric supplements.
  - b) Capacity building of workers, timely reimbursements, supervision improvements.
2. **Enhance Nutrition Education**
  - a) Behaviour change communication campaigns on feeding practices, dietary diversity, and micronutrient-rich foods.
  - b) Involvement of community based organisations and health volunteers.
3. **Micronutrient Intervention Scale Up-** Expand coverage and quality of **Vitamin A, iron-folic acid, deworming**, and other micronutrient supplementation.
4. **Universal & Equitable Immunisation-** Use technology (e.g., digital tracking) and outreach strategies to reach zero-dose and under-served populations.
5. **Integrate with WASH and Early Stimulation-** Link child health with sanitation programs, clean water initiatives, and early cognitive stimulation programs.
6. **Targeted Support for Vulnerable Groups-** Prioritise tribal, rural, and economically backward regions with tailored interventions.
7. **Community Engagement & Monitoring-** Establish local health committees, mother support groups and community scorecards for accountability.

### Holistic Development Approach

- Expand early childhood development (ECD) policies to include **nutrition, health, education, and social protection** (such as maternity leave, cash transfers linked to health check-ups).
- Use **data analytics and district-level monitoring** to tailor interventions.

Despite improvements in some child health and survival indicators in NFHS-5, **nutritional outcomes and early care practices remain suboptimal**. Early childhood care is foundational for **human capital and demographic dividend**. Addressing entrenched challenges, enhancing implementation, and adopting **holistic, equity-focused strategies** will be critical to transform India's demographic promise into a **sustainable socio-economic reality**.

## 1.24 The Next Phase of Urbanization

India is witnessing a gradual shift in its urban growth trajectory. While **Tier-1 metropolitan cities** such as Delhi, Mumbai, Bengaluru and Chennai remain economic engines, **Tier-2 and Tier-3 cities** are emerging as new centres of growth due to lower costs, policy support and digital connectivity. This transition offers an opportunity to **decongest Tier-1 cities** and promote **balanced urbanisation**.

**Stats: By 2030, about 40% of India's total population** (around 600 million) is expected to live in urban areas, up from about 31.2% in 2011.

According to UN agencies, India alone **expects its urban population to nearly double, reaching over 800 million by 2050.**

### Issues Faced by Tier-1 Cities in India

#### 1. Overpopulation and Urban Congestion

- a. Excessive rural-urban migration has led to **overcrowding**, traffic congestion and strain on civic amenities.
- b. Urban carrying capacity has been exceeded in cities like Delhi and Mumbai.

#### 2. Infrastructure Stress

- a. Inadequate housing, transport, water supply and sanitation systems.
- b. Proliferation of **slums and informal settlements** due to housing shortages.

#### 3. Environmental Degradation

- a. Severe **air and water pollution**, urban heat islands, shrinking green spaces.
- b. High waste generation beyond municipal handling capacity.

#### 4. Rising Cost of Living

- a. Escalating real estate prices, rentals and commuting costs.
- b. Reduced quality of life, especially for informal and lower-income workers.

#### 5. Governance and Planning Deficits

- a. Fragmented urban governance with weak coordination.
- b. Outdated master plans and slow project execution.

#### 6. Employment Saturation

- a. Job market congestion in formal and informal sectors.
- b. Increasing underemployment and informalisation of labour.

### How Tier-2 and Tier-3 Cities Can Provide Relief

#### 1. Deconcentration of Population

- a. Emerging cities can absorb **migration pressure**, reducing overcrowding in metros.
- b. Better scope for planned urban expansion.

#### 2. New Economic Growth Centres

- a. Lower land and labour costs attract **manufacturing, IT services, startups and MSMEs**.
- b. Cities like Indore, Coimbatore, Surat, Bhubaneswar, Ranchi and Udaipur show this trend.

#### 3. Balanced Regional Development

- a. Growth of smaller cities curbs regional inequalities and reduces distress migration.
- b. Supports the constitutional vision of **inclusive development**.

#### 4. Improved Quality of Life

- a. Less congestion, shorter commutes, cleaner environment.

- b. Greater scope for affordable housing and livable neighbourhoods.
- 5. Administrative and Service Hub Potential**
  - a. Tier-2/3 cities can host **education hubs, health clusters, logistics parks and government offices.**
  - b. Strengthens hinterland economies.
- 6. Digital & Remote Work Opportunities**
  - a. Expansion of broadband and remote work enables decentralised employment.
  - b. Reduces compulsion to migrate to metros for white-collar jobs.

### Challenges in Leveraging Tier-2 and Tier-3 Cities

1. Inadequate urban infrastructure and public transport.
2. Limited institutional capacity of Urban Local Bodies (ULBs).
3. Skill gaps and absence of diversified employment ecosystems.
4. Poor integration with regional and national supply chains.

### Way Forward

- 1. Planned Urbanisation**
  - a. Develop **city-specific master plans** based on carrying capacity.
  - b. Promote compact, transit-oriented and mixed-use development.
- 2. Strengthening Urban Governance**
  - a. Empower ULBs through **financial devolution and capacity building.**
  - b. Professionalise urban management and use data-driven planning.
- 3. Invest in affordable housing, sanitation, water supply, waste management and mass transit.**  
Leverage schemes like **AMRUT, Smart Cities Mission, PMAY-Urban.**
- 4. Economic Decentralisation**
  - a. Incentivise industries and services to locate in Tier-2/3 cities.
  - b. Promote **industrial corridors, logistics hubs and startup ecosystems.**
- 5. Skill and Human Capital Development-** Establish higher education institutions, skill centres and incubation hubs.
- 6. Digital and Physical Connectivity-** Improve last-mile rail, road and air connectivity.
- 7. Environmental Sustainability-** Integrate green spaces, climate-resilient infrastructure and renewable energy.

The rise of Tier-2 and Tier-3 cities offers India a historic opportunity to **correct the distortions of metro-centric urbanisation.** By acting as economic and demographic buffers, these cities can relieve pressure on Tier-1 metros while enabling **balanced, sustainable and inclusive urban growth.** Strategic planning, empowered governance and targeted investments will be key to realising this potential and shaping India's urban future.

## 1.25 Protest in Iran

Iran has witnessed **recurrent waves of mass protests over the past decade, most notably in 2017–18, 2019, and 2022 onwards, reflecting deep-seated structural discontent with the Islamic Republic’s political, economic, and social order.**

### **Key Reasons for Protests**

#### **1. Authoritarian Political System**

- a) Iran is a theocratic state where ultimate power rests with the Supreme Leader and unelected bodies like the Guardian Council.
- b) Limited political freedoms, rigged candidate vetting, and suppression of dissent undermine popular sovereignty.

#### **2. Women’s Rights and Social Restrictions**

- a. Protests intensified after the death of Mahsa Amini (2022) in morality police custody.
- b. Mandatory hijab laws, gender discrimination, and control over personal freedoms triggered a women-led movement with slogans like “*Women, Life, Freedom.*”

#### **3. Economic Distress**

- a. High inflation, unemployment, currency devaluation, and rising inequality.
- b. Impact of US sanctions, compounded by corruption and mismanagement.

#### **4. Ethnic and Minority Grievances**

- a. Kurdish, Baluchi, Arab, and Azeri minorities face economic neglect and political repression.
- b. Protests often strongest in peripheral regions.

#### **5. Generational Aspirations-** A young, globally connected population demanding modernity, dignity, and choice, clashing with conservative clerical control.

### **How and up to What Extent Is the USA Influencing the Protestors?**

#### **Nature of US Involvement (Indirect)**

##### **1. Normative and Diplomatic Support**

- US leaders publicly support Iranian protestors and condemn crackdowns.
- Issue raised in international forums like the UN Human Rights Council.

##### **2. Sanctions and Pressure Strategy**

- Sanctions aimed at regime elites, IRGC, and morality police.
- Intended to weaken coercive capacity of the state.

##### **3. Information and Digital Support**

- Facilitation of internet access tools, VPNs, and anti-censorship technologies.
- Persian-language media outlets (e.g., Voice of America Persian).

##### **4. Civil Society Signalling**

- Moral encouragement rather than direct funding or leadership.

### **Iranian Regime’s Claim**

- Tehran alleges foreign conspiracy and regime-change agenda, using it to justify repression.
- However, protests are largely indigenous, leaderless, and decentralized, driven by domestic grievances.

## Human Rights Dimensions of the Crackdown

### Key Human Rights Violations

#### 1. Right to Life

- Use of live ammunition and excessive force against protestors.
- Custodial deaths and enforced disappearances.

#### 2. Freedom of Expression and Assembly

- Internet shutdowns, censorship, arrest of journalists.
- Criminalization of peaceful protests.

#### 3. Due Process and Fair Trial

- Summary trials, forced confessions, denial of legal counsel.
- Death sentences under vague charges like “enmity against God.”

#### 4. Women and Minority Rights

- Gender-based violence and disproportionate targeting of ethnic minorities.

### International Legal Context

- Violations of ICCPR and UDHR, to which Iran is a party.
- UN has mandated fact-finding missions to investigate abuses.

### Global Implications

#### 1. Regional Instability

- Protests weaken regime legitimacy amid tensions in West Asia.
- Potential spillover effects on oil markets and maritime security (Strait of Hormuz).

#### 2. Geopolitical Polarisation

- West vs Iran-Russia-China axis.
- Human rights increasingly used as a diplomatic tool.

#### 3. Norms of Sovereignty vs Human Rights-Renewed debate over Responsibility to Protect (R2P) vs non-interference.

### Implications for India

#### 1. Energy Security

- Instability affects global oil prices.
- India has strategic interest in resuming oil imports from Iran if sanctions ease.

#### 2. Connectivity Projects- Uncertainty impacts Chabahar Port, critical for India’s access to Afghanistan and Central Asia.

#### 3. Diaspora and Safety- Concerns for Indian nationals and students in Iran.

#### 4. Diplomatic Balancing- India maintains a principled but cautious stance: Supports dialogue, stability and avoids overt criticism to preserve strategic autonomy.

### Way Forward

- **For Iran:** Inclusive governance, social reforms, and respect for civil liberties are essential for long-term stability.
- **For the International Community:**
  - Shift from coercive regime-change narratives to people-centric engagement.
  - Use multilateral human rights mechanisms credibly.
- **For India:**
  - Continue strategic engagement while advocating peaceful resolution and rule of law.
  - Uphold human rights through quiet diplomacy, consistent with non-intervention principles.

## 1.26 India's Maritime Strategy

India, with a **7,500 km coastline**, strategic island territories, and location astride major Sea Lines of Communication (SLOCs), has progressively evolved its maritime strategy from **coastal defence to a net security provider in the Indian Ocean Region (IOR)**.

### Phases of Evolution

1. **Post-Independence Phase (1947–1991): Coastal Defence Orientation**
  - a. Maritime focus remained **secondary** to continental threats from Pakistan and China.
  - b. Navy tasked mainly with **sea denial and coastal protection**.
  - c. Limited blue-water capability; budgetary and doctrinal neglect.
2. **Economic Liberalisation Phase (1991–2007): Trade-Security Linkage**
  - a. Liberalisation increased dependence on **maritime trade and energy imports**.
  - b. Recognition of vulnerability of SLOCs.
  - c. Gradual shift toward **blue-water aspirations**.
  - d. Modernisation of fleet and naval diplomacy (joint exercises, port calls).
3. **Post-26/11 Phase (2008–2013): Maritime Security Focus**
  - a. 26/11 Mumbai attacks exposed **coastal security gaps**.
  - b. Creation of:
    - **Coastal Security Scheme**
    - **National Committee for Strengthening Maritime and Coastal Security**
    - **Indian Navy designated as overall maritime security authority**.
4. **Indo-Pacific Phase (2014–Present): Strategic Outreach**
  - a. Recasting of IOR as part of the **Indo-Pacific**.
  - b. Doctrinal clarity:
    - *Ensuring Secure Seas* (2015)
    - *Indian Maritime Security Strategy* (2015)
  - c. Strategic concepts:
    - **SAGAR** (Security and Growth for All in the Region)
    - **Act East and Indo-Pacific Oceans Initiative (IPOI)**.
  - d. India emerges as **net security provider** (HADR missions, anti-piracy patrols).

### Key Features of Contemporary Maritime Strategy

1. **Sea Control + Sea Denial** capabilities.
2. Expansion of **Andaman & Nicobar Command**.
3. Naval partnerships (QUAD, IONS).
4. Emphasis on **maritime domain awareness (MDA)**.
5. Indigenous shipbuilding under **Atmanirbhar Bharat**.

### Challenges to India's Maritime Strategy

1. **Geostrategic Challenges**
  - a. Expanding **Chinese naval presence** (String of Pearls, dual-use ports).
  - b. Militarisation of IOR and grey-zone tactics.
2. **Capability Gaps**

- a. Delay in **submarine induction** and aircraft carrier programs.
  - b. Dependence on imports for critical naval technologies.
3. **Non-Traditional Security Threats**
    - a. Piracy, maritime terrorism, illegal fishing, trafficking.
    - b. Climate-induced threats to coastal infrastructure and islands.
  4. **Institutional & Coordination Issues**
    - a. Overlapping roles of Navy, Coast Guard, marine police.
    - b. Fragmented maritime governance.
  5. **Economic and Infrastructure Constraints**
    - a. Underdeveloped port-led growth.
    - b. Inadequate shipbuilding and repair ecosystems.

### What Should a New Maritime Policy Address?

1. **Strategic Dimension**
  - Clear articulation of **India's Indo-Pacific vision**.
  - Balance between strategic autonomy and partnerships.
2. **Military Dimension**
  - Accelerated **submarine and ISR capability**.
  - Network-centric warfare and cyber-maritime security.
3. **Economic Dimension**
  - Strengthening **Blue Economy** (fisheries, seabed mining, offshore energy).
  - Port modernisation and logistics efficiency.
4. **Diplomatic Dimension**
  - Institutionalise **minilateral maritime cooperation**.
  - Capacity-building of IOR littoral states.
5. **Governance Dimension**
  - Unified **National Maritime Authority**.
  - Better coastal and offshore security coordination.
6. **Environmental Dimension**
  - Climate-resilient ports.
  - Marine biodiversity protection.

India's maritime strategy has matured from **defensive continental thinking to proactive maritime leadership**. A new policy must integrate **hard security, economic resilience, ecological sustainability, and regional cooperation**, enabling India to shape — not merely respond to — the evolving Indo-Pacific order.

## 1.27 Pax Silica

**Pax Silica** is a **US-led strategic coalition** focused on building a **secure, resilient silicon and semiconductor supply chain** — from **critical minerals** and energy inputs to **advanced manufacturing**, semiconductors, AI infrastructure, and logistics. It is part of a broader effort by democratic economies to reduce dependence on concentrated sources such as China and to ensure technology security and economic competitiveness in the AI era.

## Implications of India Joining Pax Silica

### 1. Strategic & Geopolitical

- a) Recognition as a trusted partner in critical technology and supply chains.
- b) Signals deeper India-US cooperation in semiconductor, AI, and tech value chains.
- c) Strengthens India's role in the emerging tech order and counters over-dependence on China.

### 2. Economic & Technological

- **Better access to coordinated investments, joint ventures, and advanced technology networks** across members.
- **Improved integration of Indian companies** into global supply chains (e.g., design, back-end packaging, testing).
- **Boost for domestic semiconductor ecosystem** through technology partnerships, co-investment, and shared innovation initiatives.

### 3. Security & Supply Chain Stability

- Reduced **vulnerability to geopolitical coercion** by diversifying sources of critical minerals and materials.
- Strengthens energy, semiconductor and AI infrastructure resilience through trusted partnerships.

## Why India's Entry Was Delayed — Key Issues

- a) **Capability Gaps-** India's **initial exclusion** was largely due to structural limitations in the areas that Pax Silica emphasises:
  - **Limited advanced semiconductor manufacturing, fabs and packaging capability**
  - **Insufficient high-purity processing of critical minerals (e.g., silicon, rare earths)**
  - India has design talent and quartz reserves but lacks key value-chain nodes compared to founding members like Japan, Korea, the Netherlands, and others. This made India **less immediately valuable to the founding coalition** compared with countries that already contribute advanced capabilities.
- b) **Trade & Diplomatic Context-** The delay in India's inclusion also coincided with **unresolved trade negotiations and broader bilateral frictions** with the US, although U.S. officials have said these were **separate processes**.
- c) **Timing and Global Strategy-** Pax Silica was designed as a **small, capability-focused coalition** from the outset — a pragmatic approach by the US to start with a limited core group of actors capable of delivering on specific high-end tech supply-chain tasks. India's full membership was envisioned **later**, as capabilities matured.

## The Issues That Persist Despite Entry

- 1) **Technology & Manufacturing Gaps-** India still needs stronger capabilities in:
  - **Commercial semiconductor fabrication (fabs)**
  - **Advanced packaging and lithography**
  - **High-purity mineral processing**
- 2) **Supply Chain Depth-** India is still developing its ecosystem across the tech stack compared to peers. That means:
  - Fewer anchor investments in high-end tech manufacturing
  - HC investment and infrastructure gaps relative to coalition partners

These issues affect how deeply India can influence global supply chain norms.

- 3) **Strategic Autonomy Considerations-** India must ensure that deeper integration into Western-led supply-chain networks doesn't undermine its strategic autonomy or force unwanted geopolitical alignment — a balancing act given China's importance to India's economy and regional strategy.

## Way Forward

### 1. Build Domestic Capabilities

- Scale up **semiconductor fabs, packaging, and advanced manufacturing** faster.
- Expand **mineral processing** infrastructure for high-purity inputs.
- Promote R&D investments and public-private acceleration of advanced tech.

This strengthens India's bargaining position within Pax Silica and similar coalitions.

### 2. Strategic Targeting- Develop **specialized niches** where India can be indispensable — e.g.:

- *Advanced packaging/OSAT*
- *Mineral processing & recycling*
- *Cloud & AI data infrastructure*
- *Talent and design ecosystems*

### 3. Policy & Regulatory Alignment

- Deepen industrial policy alignment with global **supply chain security standards**
- Accelerate resolution of **trade barriers and regulatory hurdles**
- Improve investment facilitation frameworks to attract global partners

These steps help India leverage Pax Silica partners more effectively.

### 4. **Balanced Diplomacy-** Manage relations with key partners (US, EU, ASEAN) while preserving strategic autonomy and diversified global engagement — ensuring that tech collaboration doesn't mean geopolitical one-sidedness.

India's participation in Pax Silica is **important but not transformative by itself** — it's part of a **broader push** to bolster India's role in global tech supply chains and to ensure it plays a **competitive and strategic role** in the AI and semiconductor age.

## 1.28 Implications of ISRO's Setbacks

India's space programme, led by ISRO, has earned global credibility through cost-effective and reliable missions. However, **a couple of mission failures/setbacks within a short span** have drawn attention to the evolving challenges faced by India as it moves from routine launches to **complex, frontier technologies**.

### Implications of the Recent Failures

#### 1. Technological and Programmatic Impact

- Temporary delays in critical missions such as human spaceflight, reusable launch vehicles or advanced Earth-observation systems.
- Need for mission redesigns and revalidation, affecting timelines and budgets.

#### 2. Reputational Concerns (Limited but Real)

- ISRO's reputation for near-perfect reliability may face **short-term scrutiny**, especially in the commercial launch market.
- However, failures in advanced missions are globally recognised as part of innovation cycles (e.g., NASA, SpaceX).

### 3. Learning Curve in Transition Phase

- These setbacks reflect India's transition from **proven technologies** to **high-risk, high-precision systems** such as:
  - Human-rating of launch vehicles
  - Semi-cryogenic engines
  - Reusable launch systems
- Hence, they indicate **ambition, not decline**.

### 4. Opportunity for Institutional Learning

- Failures provide **critical flight data** that simulations cannot fully replicate.
- They strengthen long-term reliability through design corrections and procedural reforms.

## How ISRO Can Improve from These Failures

### 1. Strengthening Failure Analysis & Feedback Loops

- Deeper root-cause analysis using **AI-based modelling and digital twins**.
- Faster incorporation of lessons into future missions without excessive risk aversion.

### 2. Incremental Testing Approach- More **sub-orbital, abort, and stage-wise validation missions**, especially for human spaceflight.

### 3. Enhancing Quality Assurance- Multi-layered redundancy checks for propulsion, avionics and software systems.

### 4. Independent mission readiness reviews involving academia and industry experts.

### 5. Global Collaboration- Learning from global best practices in **human-rating, safety protocols and mission assurance** through selective international cooperation.

## Structural Issues Faced by ISRO

### 1. Resource and Capacity Constraints

- Budget remains modest compared to ambitions and global peers.
- Human resource overstretching due to simultaneous execution of scientific, commercial and strategic missions.

### 2. Technology Complexity

- Increasing reliance on **cutting-edge propulsion, materials, electronics and software**, raising failure probability.
- Limited domestic ecosystem for some high-end components.

### 3. Organisational Rigidity

- Historically a **closed, vertically integrated model**, which slows innovation compared to agile private players.
- Limited tolerance for experimentation at subsystem levels.

### 4. Rising Competition- Global NewSpace players are moving rapidly, increasing pressure on ISRO to balance **speed, safety and cost**.

## Way Forward

### 1. Ecosystem-Driven Space Programme

- Accelerate **ISRO–industry–startup partnerships** under IN-SPACe.
- Let private players handle routine launches, freeing ISRO for frontier R&D.

### 2. Focus on Core Strengths- ISRO should increasingly act as:

- System architect

- Technology demonstrator
  - Mission integrator rather than sole executor.
- 3. Mission-Specific Risk Framework-** Differentiate between:
- Scientific/experimental missions (higher risk tolerance)
  - Strategic/human missions (zero-tolerance zones)
- 4. Long-Term Investment in R&D**
- Sustained funding for propulsion, materials science, AI-driven navigation and fault detection.
  - Stronger university-ISRO research pipelines.
- 5. Cultural Shift**
- Institutionalise the idea that **failure is a stage of innovation**, not an exception.
  - Encourage transparency and public communication to maintain trust.

Recent ISRO mission failures should be seen **not as a setback but as a stress test** of India's space ambitions. As ISRO moves into **human spaceflight, reusable launch systems and deep-space exploration**, occasional failures are inevitable. The true measure of a mature space agency lies not in avoiding failure altogether, but in **learning faster, adapting better, and emerging stronger**. India's space programme remains structurally sound; the task ahead is to **align ambition with capacity, openness with reliability, and speed with safety**.

## 1.29 Importance of Startups

A **startup** is a newly established business venture founded by one or more entrepreneurs to **develop a scalable, innovative business model** that addresses a market need. Startups are typically characterized by **innovation, high growth potential, technology orientation, and scalability**. They differ from small businesses in their ambition and focus on rapid expansion and disruption of traditional sectors.

### **Recent Growth of Startups in India- Key Facts**

India's startup ecosystem has witnessed **explosive growth over the past decade**:

- As of late **2025, India has around 1.97 lakh DPIIT-recognised startups**, marking one of the **largest startup ecosystems globally**.
- The count of recognised startups has surged from a few hundred in 2016 to nearly **two lakh in 2025**, demonstrating significant entrepreneurial momentum.
- Startups have **generated over 17 lakh direct jobs**, supporting employment across sectors such as IT services, healthcare, life sciences and professional services.
- The ecosystem now hosts **100+ unicorns** (startups valued at over \$1 billion), placing India among the **top countries** for startup valuations.
- **Highest annual spike** saw 44,000 start-ups added last year: Modi

### **Potential to Transform the Economy**

Startups are catalysts for **economic transformation** in multiple ways:

- 1. Innovation and Productivity-** Startups drive **innovation** by introducing new technologies (AI, fintech, edtech, healthtech) and **efficient business models**, raising overall productivity and global competitiveness.

2. **Employment Generation-** Startups have **created millions of direct jobs**, absorbing skilled youth and reducing dependency on traditional employment sectors.
3. **Contribution to GDP and Exports-** Growth in digital services, SaaS, and technology exports through startup activity contributes to **economic output and foreign exchange earnings**.
4. **Market Competition and Consumer Choice-** Startups introduce **competitive products and services** that drive down costs, improve quality, and diversify choices for consumers.

## Social Impact

### 1. Women Empowerment

- a. A significant number of Indian startups (>70,000) have at least one-woman director, reflecting increasing female entrepreneurship.
- b. Growth in women-led ventures supports **gender inclusion** in the economy and inspires broader participation in higher value entrepreneurship.

### 2. Rural & Tier II–III Development

- a. More than **half of startups now originate from Tier II and III cities**, spreading entrepreneurial activity beyond traditional urban hubs.
- b. Startups addressing **agritech, rural e-commerce, and local services** help integrate rural India into the formal economy.

3. **Social Innovation-** Startups are developing solutions for **education access, healthcare delivery, financial inclusion**, and sustainable technologies that address **grassroots challenges**.

## Bottlenecks / Challenges Faced by Startups

Despite rapid growth, Indian startups face several **structural constraints**:

1. **Funding Constraints & Market Conditions-** Funding can be uneven, with downturns & tightening capital markets affecting seed & late-stage investment cycles.
2. **Regulatory and Compliance Hurdles-** Though reforms exist, **complex compliance and tax issues** can still be barriers for scaling up, especially for early-stage startups.
3. **Skill Gaps and Talent Retention-** Startups often struggle to recruit and retain **specialised talent**, particularly in deep-tech and niche sectors.
4. **Infrastructure and Digital Divide-** **Inadequate infrastructure** in non-urban areas limits growth potential and equal access to markets and services.
5. **High Failure Rates-** Globally, a significant proportion of startups do not scale or fail due to **unsustainable business models** or execution challenges — an ecosystem-wide concern.

## Way Forward

1. **Strengthening Funding Ecosystem-** Expand **venture capital, seed funds, blended finance instruments**, and public–private partnerships to ensure early-stage and scale-up capital availability.
2. **Deepening Innovation Infrastructure-** Support **incubators, accelerators, innovation labs**, and industry-academia linkages, especially in **deep-tech domains** like AI, biotech, and climate tech.
3. **Policy Simplification & Ease of Scaling-** Continuously refine **regulatory frameworks**, reduce compliance burdens, and offer **tax incentives** and benefits tailored to startups' growth phases.

4. **Skill Development & Talent Platforms-** Foster **entrepreneurship education**, mentorship programs, and talent marketplaces that facilitate mobility between startups and other organisations.
5. **Inclusive Innovation-** Promote **women-led ventures, rural startups, and underserved communities** through targeted funds, capacity building, and digital inclusion programs.
6. **Global Market Access-** Encourage startups to access **international markets** via trade support, export incentives, and global accelerators.

Startups have steadily emerged as **transformative drivers of India's economic and social landscape**, marked by exponential growth in numbers, jobs, and innovation. While challenges remain, coherent policies, robust funding ecosystems, and inclusive approaches can propel startups to be **sustainable engines of growth, employment, and societal progress**, especially in the emerging digital and knowledge economy.

### **1.30 Canada-China Trade Deal**

The global order is undergoing visible **distortions amid strategic rivalry between the United States and China**, weakening of multilateral institutions, and rising protectionism. In this context, **China's recent trade accommodation with Canada involving tariff easing**—despite Canada being a close US ally—assumes strategic significance. It signals evolving trade pragmatism even as geopolitical alignments harden.

#### **Implications of the China–Canada Tariff Deal on the Global Order**

1. **Pragmatic Economics over Ideological Alignment**
  - a) The deal underlines that economic interdependence continues to temper geopolitical rivalry.
  - b) Even US allies are seeking issue-based engagement with China to safeguard domestic economic interests.
2. **Stress on US-led Bloc Discipline**
  - a. Canada's move suggests limits to US influence over allies' trade decisions, especially when domestic inflation, supply chain resilience, or export competitiveness is at stake.
  - b. It reflects **selective decoupling**, not complete economic disengagement from China.
3. **Reinforcement of Multipolar Economic Behaviour**
  - a. Countries are increasingly pursuing **multi-alignment strategies**, balancing security ties with the US and economic ties with China.
  - b. This contributes to a **fragmented but multipolar global economic order**, rather than rigid blocs.
4. **Weakening of Rule-based Multilateralism-** Bilateral tariff arrangements outside WTO frameworks further dilute the **credibility of multilateral trade institutions**, already weakened by dispute settlement paralysis.

## Implications for the United States

### 1. Erosion of Economic Hegemony

- a. The deal indicates **diminishing US leverage** in shaping allied economic policies.
- b. It challenges the US narrative of a unified front against China's economic practices.

### 2. Strategic Dilemma for the US

- a. Pushing allies too hard risks **alienation**, while leniency may **undermine containment strategies**.
- b. Highlights the contradiction between **security alliances and economic nationalism**.

### 3. Pressure on US Trade Strategy

- a. Such developments may force the US to **rethink tariff-centric and coercive trade policies**.
- b. Could accelerate US interest in **minilateral trade frameworks** rather than broad decoupling.

## Not a collapse, but a relative diffusion of USA's influence.

- The US remains dominant in **security, technology, finance, and institutions**.
- However, its ability to **dictate economic choices of partners is narrowing**.
- The emerging order reflects:
  - **Relative decline, not absolute retreat**
  - Shift from **unipolarity to negotiated multipolarity**
  - Rise of **economic sovereignty over alliance conformity**

Thus, the episode signals **adaptation in global order**, not replacement of US leadership.

## Lessons for India to Boost Its Trade

### 1. Strategic Autonomy in Trade

- a. India should continue pursuing **issue-based economic engagement** without being locked into rigid geopolitical binaries.
- b. Balance relations with **US, EU, China, and Global South**.

### 2. Trade Pragmatism over Ideology

- a. Like Canada, India must prioritise **domestic economic interests**, supply chain stability, and export competitiveness.
- b. Avoid excessive tariff protection that harms integration into global value chains.

### 3. Leveraging Multipolarity- Use the fragmented global order to:

- Secure **favourable bilateral trade deals**
- Attract **China-plus-one supply chain investments**
- Expand presence in **Africa, Latin America, and ASEAN**

### 4. Strengthening Manufacturing & Trade Infrastructure

- a. Boost competitiveness through:
  - i. **PLI schemes**
  - ii. Logistics reforms
  - iii. Standards harmonisation
- b. This enables India to negotiate from a position of strength.

### 5. Championing Reformed Multilateralism- India can emerge as a **bridge power**, advocating WTO reforms, digital trade norms, and inclusive globalisation.

China's tariff accommodation with Canada reflects a **global order in flux**, where economic pragmatism increasingly overrides alliance rigidity. While US influence is not disappearing, it is being **contested and negotiated**. For India, this moment offers a strategic opening—to **assert trade autonomy, deepen economic diplomacy, and position itself as a credible pole in a**

**multipolar world economy.** The challenge lies in converting geopolitical churn into sustainable economic gains.

### 1.31 Digital Currencies

The rapid digitisation of the global economy has led to the emergence of **digital currency** as a new form of money. With initiatives like **Central Bank Digital Currency (CBDC)**—for instance, India’s **Digital Rupee (e₹)**—digital currency is increasingly being seen as a transformative instrument for future monetary systems.

#### What is Digital Currency?

Digital currency refers to **money that exists purely in electronic form**, without a physical counterpart like notes or coins. It can be broadly classified into:

1. **Central Bank Digital Currency (CBDC)**
  - Issued and regulated by a country’s central bank
  - Legal tender (e.g., e₹ in India, e-CNY in China)
2. **Private Digital Currencies / Cryptocurrencies**
  - Decentralised and privately issued
  - Examples: Bitcoin, Ethereum (not legal tender in India)
3. **Virtual Currencies / Stablecoins**
  - Often pegged to fiat currencies or assets
  - Used mainly in digital ecosystems

#### How Does Digital Currency Function?

1. **Issuance:** Issued by the central bank (RBI in India), similar to paper currency.
2. **Distribution:** Through banks or authorised intermediaries to users’ digital wallets.
3. **Transaction Mechanism:** Peer-to-peer transfers using smartphones or digital devices.
  - Can function **online and offline** (important for financial inclusion).
4. **Settlement:** Instant settlement with finality, unlike UPI which settles through banks.
5. **Technology Backbone:** May use Distributed Ledger Technology (DLT) or centralised databases.

#### Significance of Digital Currency in the Economy

1. **Strengthening Monetary Sovereignty**
  - Provides a **sovereign alternative** to private cryptocurrencies.
  - Prevents currency substitution and protects central bank authority.
2. **Enhancing Financial Inclusion**
  - Enables access to digital money without the need for a traditional bank account.
  - Useful for last-mile delivery in rural and remote areas.
3. **Reducing Cost of Currency Management**
  - Cuts costs related to printing, transporting, and storing cash.
  - Improves efficiency in public finance and subsidy delivery.
4. **Improving Payment Efficiency**
  - Faster, cheaper, and more secure transactions.
  - Reduces settlement risks and intermediaries.

## 5. Better Policy Transmission

- Enables **direct transfer of benefits**, targeted stimulus, and programmable money.
- Improves effectiveness of monetary and fiscal policies.

## 6. Curbing Illicit Activities

- Enhances traceability, reducing money laundering, tax evasion, and counterfeit currency.

## Challenges Associated with Digital Currency

### 1. Cybersecurity and Data Privacy Risks

- Vulnerability to hacking, data breaches, and system failures.
- Concerns over surveillance and misuse of transaction data.

### 2. Digital Divide

- Limited smartphone access, internet connectivity, and digital literacy.
- Risk of excluding elderly, rural, and marginalised populations.

### 3. Impact on Banking System

- Excessive shift to CBDC may lead to **bank disintermediation**.
- Could affect credit creation and financial stability.

### 4. Operational and Technical Challenges

- Scalability, interoperability with existing payment systems.
- Ensuring offline functionality at scale.

### 5. Legal and Regulatory Uncertainty

- Need for clarity on liability, consumer protection, and cross-border use.
- Absence of global standards for CBDCs.

## Way Forward

### 1. Phased and Calibrated Implementation

- Gradual rollout with pilots, as adopted by RBI.
- Avoid sudden disruption to banking and payment ecosystems.

### 2. Robust Cybersecurity Framework

- Strong encryption, regular audits, and real-time monitoring.
- Data protection aligned with privacy-by-design principles.

### 3. Bridging the Digital Divide

- Investment in digital infrastructure and literacy.
- Offline CBDC solutions and assisted modes of access.

### 4. Complement, Not Replace, Existing Systems

- CBDC should coexist with cash, UPI, and banking channels.
- Maintain public trust and choice.

### 5. Legal and Institutional Reforms

- Amendments to RBI Act and payment laws.
- Clear regulatory framework for digital assets.

### 6. Global Cooperation

- Collaboration through BIS, IMF, and G20 for interoperability and standards.
- Facilitate efficient cross-border payments.

Digital currency represents a **paradigm shift in the evolution of money**, offering efficiency, inclusion, and policy effectiveness. However, its success depends on **balancing innovation with stability, privacy, and inclusion**. A cautious, people-centric, and institutionally robust approach can enable digital currency to become a cornerstone of a modern and resilient economy.

## 1.32 Board of Peace

U.S. President **Donald Trump** announced an international initiative called the “**Board of Peace**”, framed as a mechanism to promote peace and reconstruction in conflict zones, starting with **Gaza** following the protracted Israel– Hamas war. This initiative has attracted both interest and caution from global leaders, including an invitation extended to **India** to join the board.

### What is Trump’s “Board of Peace”?

The “Board of Peace” is a **U.S.–led international body**, proposed by Trump as part of a broader **20-point peace plan** for resolving the Gaza conflict and potentially addressing global conflicts more broadly. It is touted as a platform for:

- Providing **strategic oversight** in post-conflict governance and reconstruction,
- Mobilising **international resources** for rebuilding efforts,
- Ensuring **accountability and stability** as conflict zones transition to peace.

The initiative is envisioned to supersede or complement existing mechanisms by giving participating nations a structured role in peacebuilding, with Trump as its chair. Membership involves either a **three-year term** or a **permanent seat (for a reported USD 1 billion contribution)**—a controversial element that has drawn scrutiny.

### Aims of the Initiative

1. **Conflict Resolution and Ceasefire Implementation:** The board is part of a ceasefire and post-conflict roadmap for Gaza following the prolonged Israel– Hamas hostilities beginning in 2023. It aims to **stabilise the region**, oversee disarmament efforts (e.g., of Hamas), and build governance structures.
2. **Post-War Reconstruction and Governance:** It would coordinate international reconstruction activities, restore public services, and support the establishment of a **transitional Palestinian technocratic administration** in Gaza.
3. **Broader Peace Architecture:** Beyond Gaza, proponents suggest the board could evolve into a broader global peace mechanism, potentially offering an alternative or parallel to existing multilateral institutions like the **United Nations**—a notion that has raised concern among allies.

**India’s Invitation to the Board-** India has received an official invitation from the United States to join the Board of Peace, reflecting its evolving diplomatic profile and strategic interests in the Middle East. New Delhi has **not yet publicly confirmed its decision**.

### Implications for India if It Joins

1. **Enhancing India’s Global Profile:** Participation could solidify India’s role as a **responsible global stakeholder** in conflict resolution and peacebuilding, augmenting its voice in international affairs.
2. **Strengthening West Asia Engagement:** India’s balanced relations with both **Israel and Arab states** could help mediate broader regional engagement and support stability in a sensitive geopolitical environment—a core Indian foreign policy objective.
3. **Economic and Security Interests:** Being inside an international peace architecture might facilitate India’s economic and security interests in the Middle East and beyond by positioning it as a partner in reconstruction and development initiatives.

## Challenges and Risks

1. **Perception of Bias and Legitimacy:** Critics argue the board is **U.S.–centric**, potentially marginalising multilateral frameworks like the UN. India has historically upheld **UN-centred solutions** and a rules-based order; association with a parallel mechanism might raise questions about this commitment.
2. **Reputational Costs:** Involvement in politically sensitive peace processes carries risks of **alienating stakeholders** or being perceived as endorsing unilateral approaches. This could affect India’s image as a neutral actor, especially vis-à-vis the Palestinian cause.
3. **Operational and Governance Concerns:** Questions remain about the **mandate, authority, and future trajectory** of the Board of Peace, including how its decisions would align with international law and sovereign state interests—a matter India must carefully weigh.

## Implications if India Does Not Join

### Advantages

1. **Maintaining Strategic Autonomy:** Choosing not to participate allows India to maintain **neutrality and flexibility** in foreign policy, avoiding alignment with initiatives perceived as aligned with any single power.
2. **Preserving Multilateral Commitment:** By refraining from joining, India reinforces its **commitment to multilateral institutions** like the UN and the international legal order.
3. **Avoiding Entanglement in Controversies:** Non-participation can help steer clear of the political and financial complexities of new peace architectures whose long-term legitimacy and utility are untested.

### Disadvantages

1. **Perceived Diplomatic Slack:** Abstaining might be interpreted by some partners, especially the United States, as lack of ambition or engagement, potentially affecting bilateral cooperation on other strategic fronts (e.g., trade, defence).
2. **Opportunity Costs:** India may miss a chance to directly influence outcomes in a strategically significant region and to shape the norms of emerging international peace frameworks.

## Way Forward for India

1. **Strategic Assessment:** India should undertake a **comprehensive strategic review** that balances its principles of multilateralism with pragmatic interests in global peace initiatives.
2. **Conditional Engagement:** If deciding to engage, India could seek clarity on governance structures, **transparency, legitimacy, and alignment with international law**, ensuring the board complements, rather than undermines, existing multilateral frameworks.
3. **Diplomatic Consultation:** New Delhi should consult key stakeholders, including Middle Eastern partners, global powers, and international institutions, to gauge the broader implications of its decision.
4. **Alternative Contributions:** India could **support humanitarian and reconstruction efforts** through established multilateral channels even without formal membership, preserving its image while contributing to peace on the ground.

The Trump-led “Board of Peace” represents an ambitious bid to reshape peace governance, starting with Gaza. India’s decision to join or abstain will reflect a complex calculus of **principled multilateralism, geopolitical strategy, and global leadership aspirations**. Given the initiative’s evolving narrative and implications for international norms, **careful deliberation, conditional engagement, and alignment with India’s core foreign policy principles** form the prudent path forward.

### **1.33 India-UAE Partnership**

India and the United Arab Emirates (UAE) have recently elevated their bilateral relationship by signing a *Letter of Intent (LoI)* to work towards a **Strategic Defence Partnership Framework** alongside agreements in trade, energy, space and technology during the January 2026 visit of the UAE President to New Delhi. This marks a transition from transactional cooperation to a deeper strategic convergence, reflective of evolving regional geopolitics in West Asia and India's expanding security outreach.

#### **Points of Convergence**

##### **1. Strategic Defence & Security Cooperation**

- a. Both nations have signed an LoI to develop a Strategic Defence Partnership Framework, signalling enhanced military and security engagement.
- b. Focus areas include **defence industrial collaboration, training, joint exercises, interoperability, special operations, cyber-security, doctrine development and counter-terrorism cooperation.**
- c. Maritime security collaboration — including information sharing, anti-piracy, search and rescue, and pollution response securing sea lines of communication in the Indian Ocean Region (IOR).

##### **2. Shared Security Concerns**

- a. Both countries condemn **terrorism in all forms and manifestations** and have reiterated cooperation under international mechanisms like the **FATF.**
- b. Respect for **sovereignty, territorial integrity and strategic autonomy** is emphasised, aligning with India's long-standing foreign policy principles.

##### **3. Economic and Strategic Synergy**

- a. Bilateral trade has crossed **\$100 billion** and both countries have set an ambitious target to **double it to \$200 billion by 2032.**
- b. Defence cooperation is embedded within broader **Comprehensive Strategic Partnership**, linking economic, technological and security dimensions.

##### **4. Technology & Innovation Linkages-** Collaboration is expanding into **emerging technologies** such as **AI, super-computing, space cooperation, and digital infrastructure.**

##### **5. Energy Security Nexus-** India and the UAE signed a **\$3 billion LNG deal**, and the UAE has become a top supplier of LNG to India, underpinning India's energy security.

#### **Friction Points**

##### **1. Regional Geopolitical Complexities**

- a. India's neutral stance on Middle East conflicts and its relationships with countries like Saudi Arabia, Iran and Israel might occasionally diverge from UAE positions.
- b. Perceptions in the region about India's emerging defence posture could be viewed with suspicion by rival actors (e.g., Iran or certain groupings opposed to the UAE's strategic orientation), risking diplomatic strain.

##### **2. Balancing Non-Alignment and Strategic Partnerships**

- a. India's traditional non-alignment and strategic autonomy sometimes constrain how far defence cooperation can extend, particularly if it is perceived as aligning with exclusive security blocs.
- b. Clarification by Indian officials that the defence partnership *does not imply involvement in regional conflicts* underscores this balance challenge.

### 3. Economic Imbalances & Dependency Concerns

- a. The UAE's leverage as a large energy supplier and investor creates asymmetries that India must manage to prevent over-dependence in key sectors like energy and infrastructure.
- b. Institutionalising mutual technological collaboration, particularly in sensitive defence innovation areas, may face regulatory and trust barriers.

## Way Forward

### 1. Institutionalising Strategic Dialogue

- a. Establishing a **formal Strategic Defence Partnership Agreement**, with clear frameworks for cooperation in defence manufacturing, technology transfer, joint R&D and joint exercises would solidify ties.
- b. Regular **Service Chief dialogues** and enlarged participation in multilateral exercises can enhance interoperability.

### 2. Enhancing Maritime Security Cooperation- Deepening collaboration in the **Indian Ocean Region**, possibly including joint patrols and information fusion centres, would reinforce shared interests in maritime stability.

### 3. **Balanced Regional Diplomacy-** India must continue its **independent foreign policy**, ensuring its growing defence ties with the UAE do not preclude meaningful engagement with other Gulf actors, including Iran and Saudi Arabia.

### 4. **Technology & Industrial Collaboration**

- a. Promoting **joint defence production** (e.g., co-development of UAVs, small arms, naval systems) through public-private partnerships can build domestic defence ecosystems in both countries.
- b. Shared research in **cyber-security, AI and space technologies** can create strategic complementarities beyond traditional military domains.

### 5. **People-to-People & Cultural Bridges-** Leveraging the large Indian diaspora in the UAE to build socio-cultural trust and long-term strategic affinity will underpin substantive cooperation.

India-UAE relations have evolved into a comprehensive strategic partnership with defence cooperation now emerging as a central pillar. Convergence in security objectives, economic synergies, and technology collaboration have brought the two countries closer. Managing regional frictions and institutionalising cooperation frameworks, while preserving India's strategic autonomy, will be crucial for sustained, mutually beneficial engagement.

## 1.34 State-Governor Frictions

### Recent Instances of Governor–State Administration Controversy

#### A. Tamil Nadu – Governor’s Walkout and Assembly Clash (January 2026)

- Tamil Nadu Governor **R.N. Ravi** walked out of the state assembly during its inaugural session, **refusing to deliver the customary Governor’s address**, citing disrespect to the national anthem and other procedural concerns.
- Chief Minister **M.K. Stalin** condemned the move, demanding the removal of the Governor’s address from protocol, reflecting escalating tensions between Raj Bhavan and the state administration.

#### B. Kerala – Dispute Over Governor’s Address (January 2026)

- In the **Kerala Legislative Assembly**, controversy erupted after Governor **Rajendra Vishwanath Arlekar’s** address, which reportedly sparked debate over the content and conduct of proceedings, indicating a breakdown in expected coordination between Governor and state government.

#### C. Supreme Court Intervention (2025)

- In a landmark instance involving the **Governor of Tamil Nadu**, the **Supreme Court** ruled that the Governor’s prolonged inaction on multiple state bills was “erroneous and illegal”, emphasizing that constitutional heads cannot indefinitely stall legislation passed by elected assemblies.

#### D. West Bengal – Governor’s Public Criticism (2023)

- Former **West Bengal Governor Jagdeep Dhankhar** was repeatedly at odds with the state government, **publicly criticising law and order and administrative matters**, escalating tensions and raising questions about the constitutional boundaries of the Governor’s office.

These examples illustrate how friction between Governors and elected state governments has emerged across different regions and contexts, becoming a recurring feature of Centre–state interaction.

### Reasons for Friction Between State Governments and Governors

1. **Political Affiliations & Perceived Partisanship-** Governors are **appointed by the President on the advice of the Union government**, often reflecting the political priorities of the Centre.
2. **Discretionary Powers & Constitutional Ambiguity**
  - a. Governors possess **discretionary powers** (e.g., withholding assent to Bills, reserving Bills for Presidential consideration or decisions in hung assemblies), but the Constitution lacks **clear timelines and procedural clarity**, resulting in **interpretative conflicts**.
  - b. Excessive **delays in assenting to state legislation** can stall democratic will, as seen in multiple states.
3. **Chancellor Role & University Administration-** As **ex-officio Chancellor of state universities**, Governors have clashed with state governments over **Vice-Chancellor appointments** and institutional autonomy, prompting legal challenges and administrative standoffs.
4. **Centre–State Power Dynamics-** The Governor’s role as a **nominal head vis-à-vis an elected government** creates structural tension. Their obligation to act on **ministerial advice** coexists with **reserved powers**, producing frequent misalignment with state priorities.
5. **Lack of Accountability Mechanisms-** Governors are **removable at the President’s pleasure**, with no impeachment procedure. Their actions are often insulated from direct

political accountability, which can encourage unilateral and controversial decisions.

### **How the Governor Can Become a Guide for a Smooth Relationship**

1. **Adherence to Constitutional Conventions-** Governors should respect the **aid and advice of the state Council of Ministers** wherever mandated, especially in routine governance and legislative processes, limiting the use of discretionary powers to *bona fide* constitutional circumstances.
2. **Transparency in Actions-** Prompt and transparent decision-making, particularly with **legislative Bills under Article 200**, with clearly communicated reasons for any deviation, can reduce mistrust and litigation.
3. Implementing reasonable **timelines for assent or reservation of Bills** based on judicial guidance would reduce ambiguities and delays.
4. **Bridge Building Role-** A Governor can act as a **bridge between the Centre and the state**, facilitating dialogue during disputes and preventing escalations, rather than becoming a **mouthpiece for the Centre** in state politics.
5. **Restrained Public Commentary-** Avoiding public criticism of state officials or policies not only upholds constitutional propriety but also preserves institutional dignity and fosters cooperative federalism.
6. **Institutional Reform and Best Practices-** Governors should champion **institutional protocols** (e.g., regular consultations with the state cabinet, documented advice channels) to build mutual respect and clarity on roles and expectations.

The Governor–State Administration interface is a critical component of India’s federal architecture. While the Constitution equips Governors with certain discretionary powers, the **recurring controversies in states like Tamil Nadu, Kerala and West Bengal** reveal structural tensions rooted in political affiliations, constitutional ambiguities and unclear procedural norms. A Governor committed to constitutional propriety, transparent decision-making and harmonious engagement with state councils can facilitate smooth working relations, strengthen cooperative federalism, and uphold democratic mandates. Supreme Court interventions and calls for reform underscore the need for clearer guidelines, accountability mechanisms and respect for the federal balance enshrined in the Constitution.

## **1.35 Implications of Tumbling Rupees**

The Indian Rupee has recently breached record levels, crossing the **₹91 per USD** mark (as of January 2026). This phenomenon, known as **Currency Depreciation**, occurs in a floating exchange rate system where the value of the rupee falls due to market forces of demand and supply.

### **Reasons for the Continuous Fall**

**The recent decline is a result of a "perfect storm" of global and domestic factors:**

1. **Foreign Portfolio Investor (FPI) Outflows: Persistent selling by foreign investors in the Indian equity and debt markets (over \$3 billion in January 2026 alone) has led to a massive exodus of dollars.**

1. **Monetary Policy Divergence:** While the US Federal Reserve has maintained a "higher-for-longer" interest rate stance to curb inflation, the RBI faces domestic pressure to manage growth, making dollar-denominated assets more attractive than rupee assets.
2. **Geopolitical Uncertainties:** New global tensions (such as the US stance on Greenland and potential tariffs on Europe) have triggered a "risk-off" sentiment. Investors are moving capital to "safe-haven" assets like the US Dollar and Gold.
3. **Widening Trade Deficit:** India's merchandise trade deficit reached record highs (approx. \$25 billion monthly) due to surging imports of gold and crude oil, coupled with slowing export growth.
4. **Trade Deal Speculations:** Uncertainty regarding the finalization of the **US-India Trade Deal** and potential fresh tariffs from the US has made markets skeptical, increasing the currency risk premium.

### Impact of Rupee Depreciation

Feature	Advantages (Pros)	Disadvantages (Cons)
<b>Trade &amp; Exports</b>	<b>Boosts Export Competitiveness:</b> Indian goods (textiles, tea, rice) become cheaper for foreign buyers, potentially increasing volume.	<b>Rising Import Costs:</b> Essential imports like crude oil, gold, and electronics become more expensive, widening the trade deficit.
<b>Corporate Earnings</b>	<b>Gain for Exporters:</b> Sectors like IT/Software services and Pharma see higher margins as they earn in Dollars and spend in Rupees.	<b>Margin Squeeze for Importers:</b> Industries like Aviation, Automobiles, and Electronics face higher input costs, hurting profitability.
<b>Inflation</b>	<b>Import Substitution:</b> Higher cost of foreign goods may encourage consumers to buy "Made in India" alternatives.	<b>Imported Inflation:</b> As the cost of crude oil rises, transportation and logistics costs increase, leading to higher prices for everyday goods.
<b>Remittances</b>	<b>Beneficial for NRIs:</b> Families of Indians working abroad receive more Rupees for every Dollar sent home, boosting domestic consumption.	<b>Costly Foreign Education:</b> Students studying abroad face a direct increase in their tuition fees and living expenses in Rupee terms.
<b>Investment</b>	<b>Cheaper for Foreign Investors:</b> A weaker Rupee can make Indian assets (stocks, real estate) more attractive to long-term Foreign Direct Investment (FDI).	<b>FPI Outflows:</b> Short-term foreign portfolio investors often pull money out of the stock market to avoid currency-related losses, leading to market volatility.
<b>Debt &amp; Tourism</b>	<b>Boosts Inbound Tourism:</b> Foreign tourists find India more affordable, helping the hospitality and travel sectors.	<b>Foreign Debt Burden:</b> Indian companies that have borrowed in Dollars (External Commercial Borrowings) find it harder to repay their loans.

### Corrective Measures

To manage the "orderly" depreciation and prevent a free fall, the Government and RBI can take the following steps:

#### Monetary Measures (RBI)

1. **Forex Intervention:** The RBI can sell dollars from its "war chest" of foreign exchange reserves to increase dollar supply and curb volatility.
2. **Interest Rate Adjustments:** Raising the **Repo Rate** can make Indian bonds more attractive,

encouraging foreign capital to stay.

3. **MSF and Liquidity Management:** Using the Marginal Standing Facility (MSF) or Open Market Operations (OMOs) to manage rupee liquidity in the banking system.

#### **Fiscal and Administrative Measures (Government)**

1. **Reducing Import Dependence:** Discouraging non-essential imports (like gold) through higher customs duties or Gold Monetization Schemes.
2. **Promoting Rupee Internationalization:** Encouraging trade settlement in INR with partners (e.g., UAE, Russia) to reduce the demand for dollars.
3. **Attracting Stable FDI:** Implementing structural reforms to move away from volatile "hot money" (FPI) toward long-term Foreign Direct Investment (FDI).
4. **Export Incentives:** Strengthening schemes like **RoDTEP** (Remission of Duties and Taxes on Exported Products) to help exporters capitalize on the weaker currency.

A falling rupee is a double-edged sword. While it fuels **imported inflation** (especially in fuel and electronics), it also provides a window of opportunity for India's export engine. The policy goal, as per the RBI's "managed float" regime, is not to defend a specific level (like 90 or 92) but to ensure that the transition is smooth and does not disrupt macroeconomic stability.

### **1.36 Evaluating the Security of Tenure of the Judges**

In a constitutional democracy, the judiciary acts as the "final arbiter" of the law. For judges to perform this role without "fear or favor," they must be insulated from the pressures of the executive and the legislature.

#### **Constitutional Security of Tenure in India**

Under the Indian Constitution, judges of the Supreme Court (SC) and High Courts (HC) enjoy a "Security of Tenure" which is far more robust than that of any civil servant.

1. **Fixed Age of Retirement:** Unlike the "pleasure doctrine" applicable to civil servants, SC judges hold office until 65 years (Article 124) and HC judges until 62 years (Article 217).
2. **Difficult Removal Process:** A judge can only be removed by the President following an address by Parliament. This requires a Special Majority (majority of total membership and two-thirds of those present and voting) in both Houses in the same session.
3. **Limited Grounds for Removal:** Removal is permissible only on two strictly defined grounds: "**Proved misbehaviour**" or "**Incapacity**."
4. **Charged Expenditure:** The salaries, allowances, and pensions of judges are **charged** on the Consolidated Fund (India for SC, State for HC), meaning they are not subject to a vote in the legislature.
5. **Ban on Practice after Retirement:** SC judges are barred from pleading or acting in any court or before any authority in India (Article 124(7)) to prevent future bias.

#### **Why Security is Needed: Balancing the Democracy**

The security of tenure is the bedrock of **Judicial Independence**, which is a "Basic Structure" of the Constitution.<sup>7</sup>

1. **Check on Executive High-handedness:** It allows judges to strike down unconstitutional executive orders without fearing loss of livelihood or demotion.
2. **Upholding Fundamental Rights:** An independent judge can protect a minority citizen against the "tyranny of the majority" represented by the legislature.
3. **Rule of Law:** It ensures that "the law is king" rather than "the king is law." Without tenure security, the judiciary would become a "committed judiciary" subservient to the ruling party.

### III Effects Seen in Recent Times

While essential, the absolute nature of this security has led to concerns regarding **Judicial Accountability**:

1. **Judicial Overreach:** Since judges cannot be easily removed, some have been accused of stepping into the domain of the Executive (Policy-making).
  - *Example:* The **Liquor Ban on Highways (2016)** was criticized as a policy decision taken by the court rather than the administration.
2. **The "Impeachment" Paradox:** The removal process is so difficult that not a single judge of the higher judiciary has been successfully impeached in India's history.
  - *Example:* In the case of **Justice V. Ramaswami (1993)**, even after "proved misbehaviour" was found by an inquiry committee, the motion failed in Parliament due to political abstention.
3. **Post-Retirement Appointments:** The "security" of tenure ends at retirement, creating a "pre-retirement bias" where judges might favor the government in hopes of securing governorships or tribunal chairmanships.
  - *Example:* The appointment of former **CJIs to the Rajya Sabha** or as **Governors** shortly after retirement has raised questions about the sanctity of their preceding judgments.
4. **Opaque Accountability:** The "In-house procedure" for investigating misconduct is conducted by peers (other judges), leading to accusations of the "judges-judging-judges" syndrome.

### Corrective Measures & Global Best Practices

1. **Judicial Standards and Accountability Bill:** Reviving a formal legislative framework to define "misbehaviour" and provide a mechanism for minor punishments (like censures) that do not require full impeachment.
2. **Cooling-off Period:** Implementing a mandatory 2-year cooling-off period before a retired judge can accept any government-appointed post.
3. **Performance Evaluation:** Utilizing data (like the National Judicial Data Grid) to track disposal rates and quality of judgments as a neutral metric for accountability.

### Global Best Practices

Country	Practice	Learning for India
UK	<b>Judicial Appointments Commission (JAC)</b>	An independent body that includes laypeople (non-lawyers) to ensure diversity and merit in appointments.
USA	<b>Life Tenure (Federal)</b>	Federal judges serve for life, eliminating the need for post-retirement jobs, but are subject to rigorous public confirmation hearings.
Germany	<b>Constitutional Court Term Limits</b>	Judges serve a single, non-renewable term of 12 years. This prevents both executive influence and "judicial

		dynasties."
<b>Brazil</b>	<b>National Council of Justice</b>	An external oversight body that handles administrative and disciplinary matters without interfering with the "legal" content of judgments.

The security of tenure is a shield meant to protect the law, not a cloak to hide individual misconduct. The way forward for India lies in transitioning from "**Judicial Independence**" as an isolated island to "**Independent Accountability**," where the process of oversight is as transparent and robust as the process of adjudication.

### **1.37 Double Taxation Avoidance Agreement (DTAA)**

A **Double Taxation Avoidance Agreement (DTAA)** is a bilateral treaty signed between two countries to ensure that a taxpayer—residing in one country but earning income in another—is not taxed twice on the same income.

The primary objective is to make a country an attractive investment destination by providing clarity on taxing rights and preventing the "double whammy" of taxation that can discourage cross-border trade.

#### **How DTAA Functions**

DTAAs generally follow two models: the **OECD Model** (favors residence-based taxation, preferred by developed nations) and the **UN Model** (favors source-based taxation, preferred by developing nations like India).

They operate through two main methods:

- **Exemption Method:** One country cedes its right to tax a particular income entirely.
- **Tax Credit Method:** The taxpayer pays tax in the country of source, and the country of residence provides a credit for the taxes paid abroad against the home-country tax liability.

#### **Implications:**

##### **Positive Implications**

1. **Promotes FDI:** Lower withholding tax rates (on interest, royalties, and dividends) encourage foreign capital.
2. **Predictability:** Provides a stable legal framework for multinational corporations (MNCs) regarding their tax liabilities.
3. **Prevention of Evasion:** Includes "Exchange of Information" clauses that help tax authorities track illicit wealth.
4. **Technological Exchange:** Favorable rates on "Fees for Technical Services" facilitate the transfer of technology to India.

##### **Negative Implications**

1. **Tax Base Erosion:** MNCs often use "Treaty Shopping"—routing investments through

- a third country (like Mauritius or Singapore in the past) just to avail DTAA benefits.
2. **Revenue Loss:** Lower tax rates mean the host government collects less revenue from foreign entities.
  3. **Round Tripping:** Domestic money is sent abroad and brought back as foreign investment to benefit from tax exemptions.

### Quick Stats (India Context)

- India has signed DTAAAs with **85+ countries**.
- Historically, **Mauritius** and **Singapore** accounted for nearly **50% of India's FDI inflows** primarily due to favorable DTAA clauses, leading to the 2016-17 amendments to these treaties.

### Way Forward

To maximize the benefits of DTAAAs while minimizing revenue leakage, the following steps are essential:

1. **Implementation of MLI:** Countries should adopt the **Multilateral Instrument (MLI)** under the OECD's BEPS (Base Erosion and Profit Shifting) project to prevent treaty abuse.
2. **GAAR Enforcement:** Robust application of **General Anti-Avoidance Rules (GAAR)** to scrutinize transactions that lack commercial substance.
3. **Digitization:** Strengthening the "Automatic Exchange of Information" (AEOI) to prevent tax evasion in real-time.
4. **Standardization:** Moving toward a global minimum corporate tax (Pillar Two of the OECD/G20 inclusive framework) to reduce the incentive for profit shifting.

### "DTAA is not just a fiscal tool but a diplomatic bridge."

While DTAAAs are vital for integrating India into the global value chain, they have historically been a double-edged sword. The transition from "**Production-based taxation**" to "**Consumption-based taxation**" in the digital era requires India to renegotiate older treaties. The focus must shift from merely attracting capital to ensuring **Tax Equity**, where the "Source" country receives its fair share of revenue generated within its borders.

## 1.38 Water Stress and Management

A recent report titled "**Global Water Bankruptcy**" published by the **United Nations University – Institute for Water, Environment and Health (UNU-INWEH)** warns that the world has entered a new, irreversible phase of "**water bankruptcy**" — where humanity is withdrawing and polluting freshwater beyond the planet's capacity to regenerate and store it. The report argues that the world is no longer facing a temporary **water crisis**, but a structural and long-term collapse of water systems.

### Key Facts and Figures Highlighted by the Report

- **75% of global population lives in water-insecure or critically water-insecure countries.**

- **4 billion people** face **severe water scarcity** for at least **one month every year**.
- **More than 50% of large global lakes** have shrunk since the early 1990s.
- **70% of major global aquifers** show **long-term declining trends**.
- **Groundwater supplies:**
  - ~50% of domestic water use
  - 40% of global irrigation water
- **Over 170 million hectares** of irrigated cropland under **high or very high water stress**.
- **410 million hectares of wetlands** lost over the past 5 decades ( $\approx$  size of EU).
- **Economic losses:**
  - Over **USD 300 billion annually** due to drought, land degradation, and groundwater depletion.
- **Salinisation:**
  - More than **100 million hectares of cropland** degraded.
- **Glacier loss:**
  - Over **30% of global glacier mass** lost since **1970**.
- **Land subsidence:**
  - Affecting over **6 million sq km**, with some cities sinking **up to 25 cm/year**.

### What is “Water Bankruptcy”?

The report introduces water bankruptcy as a **post-crisis condition**, defined by:

#### 1. Insolvency

- Water withdrawals + pollution **exceed renewable inflows**.
- Over-extraction of groundwater, rivers, lakes, and wetlands.

#### 2. Irreversibility

- Damage to natural water storage systems (wetlands, aquifers, glaciers) is **permanent or extremely slow to recover**.

Thus, many regions are now living **beyond their hydrological means**, similar to financial bankruptcy.

### Global Water Stress: Major Issues

#### 1. Groundwater Depletion- Excessive pumping for agriculture and cities.

- Causes: Falling water tables, Land subsidence, Reduced future storage capacity.
- Examples: Mexico City, Jakarta, parts of China, India, and US Southwest.

#### 2. Shrinking Surface Water

- Rivers failing to reach the sea (e.g., Indus, Colorado, Yellow River).
- Decline in lakes and reservoirs.

#### 3. Loss of Natural Buffers- Massive wetland loss reduces: Flood control, Drought buffering, Water purification, Groundwater recharge

#### 4. Climate Change

- Altered rainfall patterns.
- Increased evaporation.
- Glacier retreat affecting seasonal river flows.
- More frequent and intense droughts and floods.

#### 5. Pollution & Salinisation

- Agricultural runoff, untreated sewage, industrial effluents.
- Salinity intrusion in coastal aquifers.

#### 6. Agriculture-Driven Stress

- Agriculture consumes **~70% of global freshwater**.
- Water-intensive crops in arid regions.

- Inefficient irrigation practices.

### Reasons Behind Global Water Stress

1. Unsustainable extraction of groundwater and rivers.
2. Climate change-induced hydrological variability.
3. Deforestation and land degradation.
4. Poor water governance and outdated water rights.
5. Rapid urbanisation and population growth.
6. Water-intensive agricultural models.
7. Pollution reducing usable freshwater stock.

### Implications

1. **Food insecurity** (over 50% of food production in stressed regions).
2. **Urban water crises** (“Day Zero” situations).
3. **Economic instability.**
4. **Increased migration and conflict risks.**
5. **Public health challenges.**
6. **Energy insecurity** (hydropower disruptions).

### Way Forward

#### 1. Shift from Crisis Management to Bankruptcy Management

- Accept irreversible losses.
- Plan for **restructuring water use**, not restoring past norms.

#### 2. Reform Agricultural Water Use- Promote: Micro-irrigation, Crop diversification, Water-efficient cropping patterns, reduce water subsidies that encourage overuse.

#### 3. Protect & Restore Natural Water Capital

- Wetlands restoration.
- Aquifer recharge zones.
- Forest and watershed protection.

#### 4. Integrated Water Resources Management (IWRM)

- Basin-level planning.
- Align water rights with hydrological reality.

#### 5. Climate-Resilient Water Planning

- Storage diversification.
- Urban rainwater harvesting.
- Drought-proofing infrastructure.

#### 6. Governance & Pricing Reforms

- Rational water pricing.
- Regulating groundwater extraction.
- Strengthening water data and monitoring.

#### 7. Global Cooperation

- Treat water as a **security and peace issue.**
- Integrate water into: Climate action, Biodiversity frameworks, Food security planning

The Global Water Bankruptcy Report marks a paradigm shift by declaring that much of the world has moved beyond temporary water stress into a **structural, irreversible water deficit regime**. It calls for urgent transformation in how societies value, allocate and govern freshwater — making water central to sustainable development, climate resilience, and global stability.

## **1.39 EU and India, Towards a New Global Order**

On the historic occasion of India's **77th Republic Day (2026)**, the presence of **Ursula von der Leyen** (President of the European Commission) and **António Costa** (President of the European Council) as Chief Guests signals a "tectonic shift" in India-EU relations. This partnership is no longer just about trade; it is about providing a "**third pole**" of stability in a fractured global order.

### **India-EU Strategic Partnership: Architecting a New Global Order**

#### **Factors Making the Tie Suitable to Reshape the Global Order**

1. **Democratic Synergy in a Multipolar World:** Together, India and the EU represent the world's largest democratic spaces. Their convergence provides a "Middle Path" between the US-China bipolarity, advocating for a multipolar order that respects strategic autonomy.
2. **Economic Stabilization through the FTA:** The conclusion of the India-EU Free Trade Agreement (FTA) creates a market of 2 billion people. By prioritizing "trade over tariffs," they offer a counter-narrative to rising global protectionism.
3. **Security & Defense Integration:** The shift from a "buyer-seller" model to **co-development and co-production** (notably with Germany and France) allows India to diversify its defense needs while the EU finds a reliable strategic anchor in the Indo-Pacific.
4. **Pioneering "Green & Digital" Governance:** Through the **Trade and Technology Council (TTC)** and the **India-Middle East-Europe Economic Corridor (IMEC)**, the two are setting global standards for "human-centric" AI, resilient supply chains, and Green Hydrogen, challenging the dominance of closed or opaque economic models.
5. **Maritime Security:** Joint naval operations (like *Operation Aspides* and *Atalanta*) in the Red Sea and Mediterranean demonstrate a shared commitment to keeping global "sea lines of communication" (SLOCs) open and rules-based.

#### **Significant Challenges**

1. **Regulatory Frictions:** The EU's **Carbon Border Adjustment Mechanism (CBAM)** is perceived by India as a "green trade barrier" that could hurt Indian exports like steel and aluminum.
2. **Geopolitical Divergences:** While converging on the Indo-Pacific, differences persist regarding the **Russia-Ukraine conflict**. India's reliance on Russian energy and defense remains a point of "normative discomfort" for Brussels.
3. **Market Access & Standards:** Sticking points remain in agriculture, dairy, and "Geographical Indications" (GIs), alongside India's stringent **data localization** norms which clash with the EU's GDPR-centric framework.
4. **Migration and Mobility:** India seeks easier "Mode-4" (services) access and visa regimes for its professionals, while the EU faces internal domestic political pressure regarding migration.

#### **The Way Forward**

1. **Pragmatic Compromise on Green Energy:** The EU should support India's transition through **concessional green finance and technology transfer** rather than trade penalties,

- turning CBAM from a barrier into a bridge.
2. **Operationalizing IMEC:** To provide a credible alternative to the Belt and Road Initiative (BRI), the **IMEC** must be fast-tracked from a "conceptual corridor" to a "physical reality" involving multi-modal logistics.
  3. **Defense Industrial Roadmap:** Expanding the Roadmap for Defense Industrial Cooperation to include **underwater domain awareness** and **space-based assets** will cement long-term strategic trust.
  4. **Strengthening Multilateralism:** Both should lead the reform of the **WTO and UN Security Council** to reflect 21st-century realities, ensuring the "Global South" has a voice in the new order.

The 2026 Republic Day marks the transition of the India-EU tie from a "transactional relationship" to a "**transformational alliance.**" In a world of systemic turbulence, this partnership acts as a "stabilizer," proving that strategic autonomy and international cooperation can coexist to safeguard a rules-based order.

### **1.40 Generative AI- A Double-Edged Sword**

As India hosts the **India-AI Impact Summit 2026** in New Delhi, the global discourse has shifted from mere fascination with Generative AI to a critical evaluation of its socio-economic impact. Generative AI (GenAI) is no longer a futuristic concept but a foundational technology reshaping the "Digital Public Infrastructure" (DPI) of the 21st century.

#### **Generative AI: A Brief Overview**

Generative AI refers to a subset of Artificial Intelligence that utilizes **Foundation Models** (like Large Language Models) to create entirely new content—including text, high-fidelity images, audio, and synthetic data—rather than simply analyzing existing information.

- **Mechanism:** It operates on the "Predictive Principle," where neural networks learn the underlying patterns and structures of massive datasets to generate novel outputs that mimic human creativity.
- **Key Drivers:** Technologies such as **Transformers** and **Generative Adversarial Networks (GANs)** have enabled machines to transcend task-specific roles and move toward "General Purpose AI" (GPAI).

#### **The Dual-Edged Sword: Opportunities vs. Perils**

GenAI is viewed as a "force multiplier" for development, yet it presents systemic risks to democratic and social fabric.

##### **The Bright Edge (Opportunities)**

1. **Democratic Growth:** In India, GenAI is being used to bridge the linguistic divide by providing real-time translation of judicial papers and government schemes into regional languages (e.g. the Bhashini project).
2. **Economic Productivity:** It acts as a "co-pilot" in sectors like agriculture (precision farming

advice), healthcare (early disease diagnosis), and education (personalized learning).

**1. Scientific Breakthrough:** GenAI accelerates drug discovery and material science by simulating molecular structures, significantly reducing R&D timelines.

- **In early 2025, researchers used Generative AI models (similar to AlphaFold) to design a novel molecule for a drug targeting a specific, "undruggable" protein linked to liver fibrosis.**
- **India's Bhashini platform and similar AI tools in the Global South are using "Text-to-Speech" and "Real-time Translation" GenAI.**

### The Dark Edge (Risks)

- 1. Information Integrity:** The proliferation of **Deepfakes** and AI-generated disinformation poses an existential threat to electoral integrity and social harmony.
- 2. Job Polarization:** While it creates new roles, it threatens "cognitive" and "creative" jobs, potentially widening the wealth gap.
- 3. Algorithmic Bias:** If trained on biased data, GenAI can institutionalize discrimination in hiring, lending, or law enforcement.
- 4. Security Threats:** It lowers the barrier for cyber-terrorism, allowing for the creation of sophisticated malware and automated phishing at scale.

### Hyper-Realistic Financial Fraud (Deepfakes)

- A high-profile case recently involved a multinational firm in **Hong Kong** (similar to the 2024 incident but evolving in 2025/26), where a finance clerk was tricked into attending a video call where the **CFO and several colleagues were all deepfakes.**
- The rise of "**Nudify**" apps and AI-generated "Non-Consensual Intimate Imagery" (NCII) targeting students, celebrities, and private individuals.

### Regulating for Fair Usage and Outcomes

The global consensus, including the **New Delhi Declaration (2026)**, suggests a "Middle Path"—avoiding the rigid over-regulation of the EU while rejecting the *laissez-faire* approach of the past.

- 1. Risk-Based Graduated Regulation:** Following a "graded liability system," regulation should be light-touch for low-risk applications (e.g., weather updates) but stringent for high-risk domains like biometric identification or judicial decision-making.
- 2. The "Seven Sutras" Framework:** India's 2026 Governance Guidelines advocate for AI to be:
  - a. **Understandable by Design:** Ensuring "Explainability" of how an AI reached a conclusion.
  - b. **Accountable:** Clear legal liability for developers and deployers in case of harm.
  - c. **People-First:** Prioritizing human rights and agency over algorithmic efficiency.
- 3. Techno-Legal Solutions:** Mandatory **Watermarking** or digital signatures for AI-generated content to help citizens distinguish between "real" and "synthetic" media.
- 4. International Cooperation:** Since AI is borderless, bodies like the **GPAI** (Global Partnership on AI) must harmonize standards to prevent "regulatory arbitrage" where firms move to countries with weak oversight.
- 5. Sovereign AI & Data Commons:** To ensure fairness, the state must build **Sovereign AI** capacity, ensuring that the benefits of AI are not monopolized by a few "Big Tech" firms, but are treated as a "Digital Public Good."

Generative AI is the "electricity" of the fourth industrial revolution. The challenge for policymakers lies in "**Innovation over Restraint**"—harnessing its transformative potential to solve the Global

South's developmental challenges while building a robust "guardrail" of ethics and accountability to prevent its misuse.

## **1.41 The Debate Over New UGC Guidelines**

In January 2026, the University Grants Commission (UGC) notified the **Promotion of Equity in Higher Education Institutions Regulations, 2026**. The regulations aim to strengthen institutional mechanisms to prevent **caste-based discrimination** and promote **equity and inclusion** in Indian higher education. However, the guidelines have triggered **nationwide protests** and political controversy, highlighting deep social and administrative fault lines in campus governance.

### **Key Features of the New UGC Guidelines**

- 1. Equal Opportunity Centres (EOC)**
  - Mandatory establishment in **all Higher Education Institutions (HEIs)**
  - Functions: Handle discrimination complaints, Conduct awareness programmes, Provide counselling & support, Monitor equity policies
- 2. Equity Committees-** Campus-level statutory bodies
  - Mandatory representation of: **SC, ST, OBC**, Women, Persons with Disabilities
  - Responsible for: Inquiry into discrimination complaints and Recommending disciplinary action.
- 3. 24×7 Equity Helpline-** Multiple modes of complaint: Online, Email, Written, Telephone
- 4. Equity Squads & Ambassadors-** To: Monitor “vulnerable areas” (hostels, common spaces), Identify early signs of discrimination
  - Proactive surveillance-oriented approach
- 5. Time-bound Redressal-** Complaint review within **24 hours**
  - Inquiry report within **15 working days**
  - Head of institution to act within **7 working days**
- 6. Linkage with Funding & Compliance-** Non-compliance may affect: UGC grants, Accreditation, Institutional recognition

### **Rationale Behind the Guidelines**

- Sharp rise in reported caste discrimination cases:
  - From ~173 (2016–17) to **350+ (2023–24)**
- Judicial and Parliamentary scrutiny on campus discrimination
- Constitutional mandate under:
  - Article 15 (Non-discrimination)
  - Article 46 (Promotion of SC/ST interests)
- Aim to institutionalise **preventive and remedial mechanisms**

### **Why Are the Guidelines Facing Protests?**

- 1. Perceived One-Sidedness-**Protests by **General Category / Savarna groups**
  - Allegation:
    - Regulations focus only on SC/ST/OBC
    - No explicit mechanism for General Category students to file complaints

## 2. Fear of Misuse & False Complaints

- Final rules **removed penalty clause for false/malicious complaints**
- Concern about: Frivolous or vindictive complaints, Damage to academic careers & reputations

## 3. Committee Composition Concerns- No mandatory General Category representation

## 4. Broad & Vague Definitions- Terms like: “Implicit discrimination”, “Impact-based offence”

## 5. Surveillance & Campus Climate- Equity Squads seen as: Over-policing, Creating fear culture, Undermining trust-based campus life

## 6. Autonomy & Federal Concerns- States & opposition parties argue: Over-centralisation, Erosion of university autonomy, Education is a Concurrent List subject

## 7. Legal & Political Pushback- PIL filed in Supreme Court

### Way Forward

#### 1. Inclusive Grievance Architecture

- Allow **all students**, regardless of category, to file discrimination complaints
- Ensure **universal access to justice**

#### 2. Safeguards Against Misuse- Reintroduce: Penalty for **malicious or false complaints**.

- Clear due process norms

#### 3. Balanced Committee Representation- Include: Independent members, Legal/ombudsman-type experts, Broader social representation

#### 4. Clear Definitions & SOPs- Narrow and precise definitions of discrimination

- Standard Operating Procedures for: Evidence, Burden of proof, Natural justice

#### 5. Capacity Building Over Surveillance- Focus on: Sensitisation programmes, Mediation mechanisms

- Reduce excessive reliance on monitoring squads

#### 6. Cooperative Federalism- Consult: State governments, Universities, Student bodies

The UGC’s new equity regulations reflect a legitimate constitutional goal of addressing caste-based discrimination. However, the current framework has raised serious concerns regarding **fairness, due process, institutional autonomy, and social trust**. A recalibrated approach — combining **equity with procedural safeguards** — is essential to ensure that inclusion does not come at the cost of justice, academic freedom, and campus harmony.

## 1.42 Urban Issues and Transformation

In the context of India’s rapid urbanization, where cities are projected to house nearly 50% of the population by 2050, the urban landscape is defined by deep structural contradictions.

### **The Paradoxes of Indian Urban Spaces**

Indian cities often exhibit "**simultaneous growth and decay**," characterized by the following paradoxes:

1. **Economic vs. Living Paradox:** Cities contribute over **60% of India's GDP**, yet a significant portion of the urban population lives in informal settlements (slums) with sub-human conditions.
2. **Infrastructure vs. Exclusion Paradox:** While "Smart Cities" boast high-tech command

centers, basic services like piped water and sewerage remain inaccessible to the urban poor.

3. **Climate Paradox:** Cities are centers of innovation for the "Green Transition," but they are also the most vulnerable to **Urban Heat Islands** and frequent **Urban Flooding** (e.g., Bengaluru and Chennai).
4. **Mobility Paradox:** Increased investment in Metro rails coexists with deteriorating "last-mile connectivity" and a decline in pedestrian-friendly spaces.

### Pillars for Transformation of Urban Governance

To resolve these paradoxes, the NITI Aayog and the Ministry of Housing and Urban Affairs (MoHUA) emphasize these pillars:

1. **Empowerment of ULBs:** Implementing the **74th Constitutional Amendment Act** in letter and spirit to ensure functional and financial autonomy for Urban Local Bodies.
2. **Data-Driven Governance:** Utilizing GIS mapping, Digital Twins, and the **Urban Learning Internship Program (TULIP)** to make evidence-based decisions.
3. **Financial Sustainability:** Moving beyond government grants toward self-reliance through **Municipal Bonds**, Value Capture Finance (VCF), and property tax reforms.
4. **Citizen-Centric Planning:** Shifting from "top-down" master plans to participatory budgeting and "Living Lab" concepts where citizens co-create urban solutions.

### Challenges Obstructing Urban Transformation

1. **The "Powerless" Mayor:** Unlike global cities (London/New York), Indian Mayors often have short tenures and lack executive powers, with real authority resting with state-appointed commissioners.
2. **Fragmented Institutions:** Multiplicity of agencies (Development Authorities, Water Boards, Municipal Corporations) leads to a "siloe" approach and lack of accountability.
3. **Financing Gap:** ULBs suffer from a weak revenue base. The share of municipal revenue in India's GDP is less than **1%**, compared to 6% in Brazil and 7% in South Africa.
4. **Planning Lag:** Most Indian cities still operate on outdated **Master Plans** that do not account for climate change or the burgeoning informal economy.

### Way Forward: A Roadmap for Transformation

For Indian cities to become "engines of sustainable growth," a multi-pronged strategy is required:

1. **Political Reforms:** Adopt the **"Directly Elected Mayor"** model with a fixed 5-year tenure to provide stable leadership and political accountability.
2. **Financial Innovation:** Establish a **Green Urban Infrastructure Fund** and encourage cities to get credit-rated to tap into the capital markets via Municipal Bonds (as seen in Indore and Pune).
3. **Integrated Planning:** Adopt the **"Transit-Oriented Development" (TOD)** model to densify cities along transport corridors, reducing carbon footprints and sprawl.
4. **Social Inclusion:** Formalize the informal sector by integrating street vendors and waste pickers into the urban economy, as envisioned under **PM SVANidhi**.
5. **Climate Resilience:** Mandate **"Blue-Green Infrastructure"**—preserving water bodies (Blue) and increasing urban forests (Green) to mitigate floods and heat.

Urban transformation in India is not merely about building "smart" infrastructure but about

creating **inclusive, resilient, and financially viable** ecosystems. The shift must be from "cities as administrative units" to "cities as living, breathing economic engines.

### **1.43 INDIA-EU FTA**

After nearly **18 years of negotiations**, India and the European Union (EU) signed a **landmark Free Trade Agreement (FTA)** in January 2026. The agreement covers **97% of tariff lines**, providing India preferential access to the world's largest single market of over **450 million high-income consumers**. The deal is being described as the **“mother of all trade deals”** due to its scale and strategic significance.

#### **Sector-Wise Benefits of the India–EU FTA**

##### **1. Labour-Intensive Manufacturing (Major Gainers)**

- a. Textiles & Apparel- Zero-duty access to EU market (earlier tariffs: 12–16%)
- b. Leather & Footwear- Tariffs up to 17% eliminated
- c. Gems & Jewellery- 100% trade value gets zero-duty access
- d. Marine Products- Tariffs up to 26% removed

##### **2. Agriculture & Processed Food (Selective Gains)**

- a. Preferential access for: Tea, coffee, spices, Grapes, gherkins, cucumbers, Processed foods
- b. Boost to farm exports & value-added agri-trade
  - i. Example: Indian spices get zero-duty access (earlier up to 8%)

##### **3. Engineering Goods & MSMEs**

- a. Preferential access for: Auto components, Electrical machinery, Industrial equipment
- b. Integration into EU-centric global value chains

##### **4. Services Sector (Strategic Long-Term Gains)**

- a. Market access in **144 services sub-sectors**- IT, business services, telecom, professional services
- b. Mobility framework for: Skilled professionals, Students

##### **5. Imports Benefiting Indian Industry & Consumers**

- a. Cheaper EU imports of: Machinery, Chemicals, Medical equipment, Auto components
- b. Lower input costs → manufacturing competitiveness

#### **Strategic & Geopolitical Benefits**

1. De-risking from US-centric trade dependence
2. Strengthens India's position in global supply chains
3. Supports “China+1” diversification
4. Deepens India-EU strategic partnership (trade + security + tech)

#### **Key Challenges & Concerns**

##### **1. Carbon Border Adjustment Mechanism (CBAM)**

- a. EU carbon tax on: Steel, Aluminium, Cement
- b. Risk of **green protectionism**
2. **Stringent Non-Tariff Barriers (NTBs)**
  - a. SPS & TBT standards: Food safety, Pesticide residues, Traceability norms
  - b. Compliance burden for MSMEs
3. **Intellectual Property Rights (IPR)**- EU demands stronger IPR & data exclusivity
4. **Sensitive Sectors in India**
  - a. Pressure to open: Automobiles, Wines & spirits, Dairy
  - b. Risk to: Domestic MSMEs, Farmers
5. **Low Utilisation of FTA Preferences**- Complex rules of origin, Certification hurdles etc.

### Way Forward

1. **Negotiate CBAM Safeguards**- Seek: Transitional relief, Mutual recognition of carbon standards.
2. **Strengthen Export Compliance Capacity**- Upgrade: Testing labs, Certification bodies, SPS infrastructure.
3. **Domestic Reforms for Competitiveness**- Labour reforms, Logistics cost reduction, Power & input cost rationalisation.
4. **Green Industrial Transition**- Invest in: Green steel, Renewable energy, Low-carbon manufacturing
5. **Maximise Services & Mobility Gains**- Fast-track mutual recognition of qualifications
  - Skill upgrading for EU-oriented services

The India–EU FTA is a **transformational trade agreement** that can significantly boost India’s exports, employment and integration into global value chains. However, its success will depend on India’s ability to **manage carbon barriers, upgrade standards compliance, protect sensitive sectors, and ensure effective utilisation**. If implemented strategically, the FTA can become a key pillar of India’s long-term export-led growth and strategic autonomy.

## 1.44 Cryospheric Hazards

India’s Himalayan region is witnessing a **sharp rise in extreme cryospheric hazards** such as **avalanches and GLOFs**. Rapid glacier retreat, formation of unstable glacial lakes, erratic snowfall and unplanned infrastructure expansion have made the Himalayas one of the **most disaster-prone mountain systems globally**.

### Why India Is Facing Rising Avalanches & GLOFs

1. **Climate Change & Glacier Retreat**
  - a. Himalayan glaciers are retreating at **accelerated rates**
  - b. Rising temperatures → increased: Meltwater accumulation
  - c. Weak **moraine dams** (natural debris barriers) become unstable
2. **Erratic Precipitation & Snowfall**
  - a. Increased frequency of: Heavy snowfall events, Cloudbursts
  - b. Freeze-thaw cycles destabilise snowpacks → avalanches

3. **Seismic & Geomorphological Fragility-** Himalayas are a **young fold mountain system**. Frequent landslides, earthquakes & slope failures are common feature.
4. **Infrastructure in High-Risk Zones-**Roads, tunnels, hydropower projects in: Avalanche paths, Glacial lake downstream zones.
5. **Blasting & slope cutting increases instability**
6. **Deforestation & Land-use Change**
  - a. Loss of vegetation cover reduces slope stability
  - b. Increases runoff & sediment load

#### Recent Examples (2023–2025)

##### 1. Uttarkashi Flash Flood, Uttarakhand (Aug 2025)

- Cause: Suspected **GLOF or glacier collapse**
- Over **50–100 missing**. Village of **Dharali** devastated

##### 2. 2025 Uttarakhand Avalanche (Feb 2025)

- Location: **Mana, Chamoli**
- Avalanche buried **BRO workers**

##### 3. Sikkim GLOF (Oct 2023)

- South Lhonak Lake breach
- Destroyed **Teesta-III dam**

##### 4. Kishtwar (J&K) GLOF Risk & Floods (2025)

- District has **~197 glacial lakes**
- Multiple lakes classified **high-risk**

#### What Structures India Lacks (Institutional & Technical Gaps)

##### 1. Comprehensive GLOF Early Warning Systems

- a. No **pan-Himalayan real-time lake monitoring**
- b. Limited use of:
  - i. Automatic lake level sensors
  - ii. Siren-based downstream alerts

##### 2. Avalanche Zonation & Forecasting-

DGRE issues advisories, but it is not integrated into local governance.

##### 3. Limited micro-zonation mapping

##### 4. Cryosphere-Focused Disaster Authority-

NDMA lacks a **dedicated Cryosphere Risk Division**

##### 5. Fragmented roles among: GSI, IMD, NRSC, State DMAs

##### 6. Weak Land-use Regulation-

Construction allowed in: Avalanche tracks, GLOF flood plains.

##### 7. Hydropower Safety Protocols-

No mandatory **GLOF stress-testing**

#### Way Forward (India-Specific)

##### 1. National Himalayan Cryosphere Mission-

Dedicated mission for Glacier monitoring, Glacial lake mapping, Permafrost studies

##### 2. GLOF Early Warning Systems (EWS)-

Install: Lake level sensors, Automatic weather stations, Downstream sirens

3. **Avalanche Micro-Zonation-** High-resolution hazard maps for: Roads, Border areas, Tourist zones
4. Integrate into BRO & state PWD planning
5. **Regulate High-Altitude Infrastructure-** Mandatory:
  - a. Cryosphere impact assessments
  - b. GLOF risk audits for hydropower & highways
6. **Community-Based Preparedness-** Training for: Early evacuation, Local monitoring
7. Village disaster volunteers.

### Global Best Practices

#### Switzerland

- **Real-time glacier & lake monitoring**
- Automatic evacuation alerts
- Strict land-use zoning in avalanche corridors

#### Nepal & Bhutan

- Community-based GLOF EWS
- Lake lowering & moraine strengthening
- Cross-border hydrological data sharing

#### Canada & Norway

- Advanced **avalanche forecasting models**
- Infrastructure designed with avalanche galleries & snow sheds

India's rising avalanches and GLOFs are a **climate-driven, development-amplified disaster risk**. Without a dedicated cryosphere governance framework, early warning infrastructure, and strict land-use controls, these hazards will increasingly threaten lives, hydropower assets, and border connectivity. Learning from Alpine countries and Himalayan neighbours is critical to building **resilient mountain governance**.

## 1.45 Looking into Cash Transfers by the Governments

The **Economic Survey 2025-26** has sparked a vital debate on the "quality of expenditure" by red-flagging the rapid proliferation of **Unconditional Cash Transfers (UCTs)** at the State level. While acknowledging their immediate welfare benefits, the Survey warns of a growing "fiscal tilt" that could undermine long-term growth.

**Significance of Cash Transfers: Proponents and the Survey itself recognize that cash in the hands of the poor is not merely "populism" but a tool for immediate relief:**

1. **Income Security:** They act as a vital safety net for the informal sector. For female casual laborers, UCTs can account for 11–24% of their monthly income, providing a buffer against price shocks.
2. **Empowerment of Women:** Direct transfers to women's bank accounts (e.g., *Ladli Behna*, *Lakshmir Bhandar*) enhance their financial autonomy and decision-making power within the household.

3. **Consumption Multiplier:** By increasing the purchasing power of the bottom deciles, these transfers stimulate local demand for essential goods, supporting the rural economy.
4. **Efficiency and Leakage Reduction:** Leveraging the **JAM Trinity** (Jan Dhan-Aadhaar-Mobile), cash transfers bypass bureaucratic intermediaries, significantly reducing the leakages seen in traditional in-kind distribution.

### Issues with Unconditional Cash Transfers (UCTs)

The Survey highlights that the "unconditional" nature and the scale of these transfers pose structural risks:

1. **Crowding Out Capital Expenditure:** Aggregate spending on UCTs is estimated at **₹1.7 lakh crore for FY26**. As these "committed" revenue expenditures rise, States are forced to cut spending on roads, bridges, and power—investments with much higher growth multipliers.
2. **Fiscal Rigidity:** Unlike capital projects, which end once built, UCTs lack "**sunset clauses**." Once started, they are politically difficult to withdraw, creating a permanent burden on State exchequers, many of which are already in revenue deficit.
3. **Absence of Human Capital Gains:** Global evidence (cited by the Survey) suggests that while UCTs improve short-term consumption, they do not consistently lead to better health, nutrition, or education outcomes unless specifically linked to those behaviors.
4. **Impact on Labor Supply:** There are emerging concerns that open-ended transfers might adversely affect **Female Labour Force Participation (FLFP)** by reducing the necessity of seeking work in low-paying or strenuous conditions without providing skill-upgradation.

### Measures to Rectify the Imbalance

To balance welfare with fiscal prudence, the Survey and experts suggest a transition toward "**Smart Welfarism**":

1. **Shift to Conditionality:** Move from Unconditional to **Conditional Cash Transfers (CCTs)**. Link payments to verifiable outcomes like school attendance, immunization, or skill training (similar to Mexico's *Progresa* or Brazil's *Bolsa Família*).
2. **Outcome-Based Budgeting:** Introduce periodic reviews and **sunset clauses** for welfare schemes. Schemes should be evaluated on whether they have successfully "graduated" households out of poverty.
3. **The "Complementary" Approach:** Cash should supplement, not substitute, public services. Investing in affordable healthcare and quality education is more sustainable than providing cash to buy these services from an expensive private market.
4. **Fiscal Discipline:** States should adhere to the **FRBM targets**. The Survey notes that state-level debt now affects the cost of sovereign borrowing for the entire country; hence, "fiscal populism" in one state has a national cost.

While Unconditional Cash Transfers are an effective tool for **distributional justice**, they cannot be a substitute for **structural reforms**. The path to "Viksit Bharat" requires a judicious mix where cash transfers provide a "floor" for the vulnerable, but capital expenditure creates the "ladder" for upward mobility. As the Economic Survey 2025-26 suggests, the focus must shift from "**outlays**" to "**outcomes**" to ensure that short-term relief does not compromise long-term prosperity.

## 1.46 Data Privacy

Data Privacy Day, observed annually on **January 28**, serves as a global reminder of the fundamental importance of protecting personal information in the digital age. In 2026, the theme "**Privacy by Design**" highlights the need to embed privacy safeguards into the very architecture of technology rather than treating them as an afterthought.

For the UPSC, the evolution of data privacy in India—from a contested concept to a fundamental right and a statutory reality—is a critical topic.

### Significance of Data Privacy

1. **Individual Autonomy:** At its core, data privacy is about the "right to be left alone" and the power of an individual to control their digital footprint.
2. **Economic Value:** In a data-driven economy, privacy maturity is a proxy for management quality, directly influencing investor confidence and enterprise valuation.
3. **National Security:** Protecting the data of 1.4 billion citizens is vital to prevent foreign surveillance, cyber-warfare, and the manipulation of democratic processes.
4. **Democratic Integrity:** Unregulated data harvesting can lead to behavioral profiling, impacting electoral outcomes and suppressing dissent.

### Framework in India: Evolution and Structure

India's journey toward a robust privacy regime has followed a distinct four-tier evolution:

#### A. Constitutional Evolution

1. **Article 21:** The bedrock of privacy in India. While not explicitly mentioned in the text, the Justice K.S. Puttaswamy v. Union of India (2017) judgment declared the Right to Privacy as an intrinsic part of the Right to Life and Personal Liberty.
2. **Article 19:** Privacy is also linked to the freedom of speech and expression, as surveillance can have a "chilling effect" on free thought.

#### B. Judicial Evolution (Milestone Cases)

1. **M.P. Sharma Case (1954) & Kharak Singh (1962):** Early judgments that initially denied privacy as a fundamental right.
2. **Puttaswamy Judgment (2017):** Overruled earlier stands; established the "**Triple Test**" for any state interference: Legality, Need/Proportionality, and Legitimacy of Aim.
3. **Aadhaar Case (2018):** Upheld the constitutional validity of Aadhaar but struck down Section 57 which allowed private entities to use Aadhaar data.

#### C. Legal Framework

1. **DPDP Act, 2023:** The primary legislation governing digital personal data. It introduces concepts of **Data Principals** (individuals) and **Data Fiduciaries** (entities processing data).
2. **Information Technology Act, 2000 (Sec 43A):** Previously the main tool for data protection; now largely superseded by the DPDP Act.
3. **Sectoral Laws:** RBI guidelines for financial data and National Health Stack guidelines for medical data.

#### D. Administrative Framework

1. **Data Protection Board of India (DPBI):** The nodal body created to monitor compliance,

hear grievances, and impose penalties (up to ₹250 crore).

2. **Ministry of Electronics and Information Technology (MeitY):** Oversees the rulemaking process (including the **DPDP Rules, 2025**).

### Current Data Privacy Issues in India

1. **The State Exemption Dilemma:** The DPDP Act grants broad exemptions to government agencies in the interest of "sovereignty" and "public order," raising concerns about state surveillance.
2. **Consent Fatigue:** The complexity of "notice and consent" mechanisms often leads users to click "I agree" without understanding the implications (Dark Patterns).
3. **AI & Algorithmic Bias:** With the rise of Generative AI, personal data is often used for training models without explicit secondary consent, leading to potential profiling.
4. **Operationalizing 72-Hour Reporting:** Many Indian firms struggle with the strict requirement to report data breaches to the DPBI within 72 hours.

### Way Forward: Toward "Smart Privacy"

1. **Privacy by Design:** Encouraging startups and big tech to build "data minimization" and "anonymization" into their code from day one.
2. **Digital Literacy (Data Suraksha):** Launching nationwide campaigns, similar to "RBI Kehta Hai," to educate citizens on their rights to access, correct, and erase their data.
3. **Independence of DPBI:** Ensuring the Data Protection Board operates with functional and financial autonomy to hold both private and state actors accountable.
4. **Global Harmony:** Aligning Indian standards with global frameworks like the **GDPR** and the **Global Biofuel Alliance's** data standards to facilitate secure cross-border data flows.

Data privacy is no longer a luxury but a "**Digital Public Good.**" As India transitions into a \$5 trillion economy, its success will depend not just on how much data it generates, but on how securely it protects that data. A balanced approach—where innovation is not stifled by over-regulation, and individual rights are not sacrificed for corporate or state interests—is the only way forward for a resilient **Viksit Bharat**.

## 1.47 The Manufacturing Shift

### The "Manufacturing Void" in India: Root Causes

Despite being the 5th largest economy, India's manufacturing share in GDP has historically stagnated around 14-17%.

1. **Premature De-industrialization:** India skipped the traditional "Agricultural → Manufacturing → Services" transition, moving directly to Services. This created a "missing middle" where low-skilled workers remained trapped in agriculture rather than moving to factories.
2. **The "Hard Constraints":** Unlike services, manufacturing is encumbered by high costs in **Land, Labor, and Logistics (3Ls)**.
  - a. **Logistics:** Logistics costs in India are ~13-14% of GDP, compared to 8% in developed nations.

- b. **Labor Paradox:** Rigid labor laws historically prevented scaling (though the **New Labor Codes** being operationalized in 2026 aim to fix this).
3. **Dutch Disease (Strategic Paradox):** As noted in the 2026 Survey, high wages in the public sector and services drew talent and capital away from manufacturing, making domestic production less competitive against cheap imports.
4. **Missing Middle in MSMEs:** 95% of Indian manufacturing units are "dwarfs" (small and old) that refuse to grow for fear of losing government exemptions.

### Success of "Make in India" & PLI (Critical Analysis)

#### The Stats (FY 2025-26):

1. **GVA Growth:** Manufacturing GVA grew by **9.13%** in Q2 of FY26 (Economic Survey 2026).
2. **Export Shift:** Electronics moved from the 7th largest to the **3rd largest** export category (FY22-25).
3. **FDI Inflow:** Manufacturing FDI hit **\$19.04 billion** in FY25, an 18% YoY increase.

#### Critical Analysis:

1. **Assembly vs. Value Addition:** While smartphone exports have surged (under PLI), much of it is still "Screwdriver Industrialization"—assembling imported components rather than deep manufacturing.
2. **Import Dependency:** India still imports over **\$100 billion** in intermediate electronics and capital goods annually, largely from China.
3. **Employment Elasticity:** While output has grown, job creation has not kept pace. Manufacturing employs only **~11-12%** of the workforce despite high GDP contribution.

#### Drivers of Growth (2026-2030)

1. **The National Manufacturing Mission (NMM):** Launched in Budget 2025-26, it aims to double manufacturing's GDP share to **25% by 2035**.
2. **China + 1 Strategy:** Global firms (Apple, Tesla, Samsung) are diversifying supply chains to India to de-risk from China.
3. **Sunrise Sectors:**
  - **Semiconductors:** The India Semiconductor Mission (ISM) with fabs in Gujarat/Karnataka is moving India from "design-only" to "chip-making."
  - **Green Tech:** PLI schemes for Advanced Chemistry Cells (ACC) and Green Hydrogen are positioning India as a global hub for the Energy Transition.
4. **Infrastructure Multiplier:** **PM GatiShakti** and the **National Industrial Corridor** (11 corridors) are finally reducing the "Time-Cost" of logistics.

#### Corrective Measures & The Way Forward

The Economic Survey 2025-26 suggests a **Five-Pillar Strategy**:

1. **Input Tariff Neutrality:** Calibrate import duties on intermediate goods to ensure domestic manufacturers aren't penalized by "Inverted Duty Structures."
2. **Systematic Deregulation:** Move from "Ease of Doing Business" to "**Cost of Doing Business.**" This includes lowering power tariffs and reducing compliance burdens for MSMEs.
3. **Mittelstand for India:** Scaling MSMEs through the "**TReDS**" platform (for liquidity) and increasing credit guarantee limits to ₹10 crore.
4. **Skilling for Industry 4.0:** Bridging the gap between the "unemployed educated" and "unskilled labor" through AI-integrated vocational training.

5. **Direct FDI Engagement:** Creating a Task Force to directly resolve issues for the top 100 global manufacturing giants to ensure "predictability" in policy.

"India's manufacturing journey is at a 'turning point.' While 'Make in India' provided the initial momentum, the 'National Manufacturing Mission' of 2026 must now focus on **Structural Depth** over **Surface Assembly**. By addressing the 'Hard Constraints' of land and logistics and integrating into Global Value Chains (GVCs), India can finally transition from a 'Consumer Giant' to a 'Producer Powerhouse'."

### 1.48 The Digital-Mental Health Nexus

The transition from a "Digital Dividend" to a "Digital Distraction" has profound psychological impacts:

1. **Dopamine Hijacking:** Social media algorithms are designed for "Variable Reward Reinforcement." Constant notifications create a dopamine loop, leading to irritability and anxiety when away from devices (Nomophobia).
2. **The "Comparison Trap":** Exposure to curated perfection leads to "Relative Deprivation," fueling body dysmorphia and clinical depression among Gen Z and Alpha.
3. **Sleep Deprivation:** Blue light exposure inhibits melatonin, leading to chronic insomnia. This "Sleep Poverty" is directly linked to cognitive decline and emotional instability.
4. **The "Loneliness Paradox":** While digitally connected, users experience increased social isolation and a thinning of real-world "social capital."

#### **The Regulatory Challenge: Why is it difficult?**

Regulating digital consumption is not as simple as regulating tobacco or alcohol:

1. **The "Dual-Use" Nature:** The same device used for education and digital payments is used for addictive scrolling. Banning usage risks "Digital Exclusion."
2. **Algorithmic Opacity:** Tech giants treat their recommendation engines as "Trade Secrets," making it difficult for regulators to audit "dark patterns" designed to maximize screen time.
3. **Jurisdictional Issues:** Platforms are often headquartered in the US or Ireland, while users are in India, complicating the enforcement of local digital "curfews."
4. **Enforcement Gap:** Verifying a user's age without infringing on **Right to Privacy (Puttaswamy Judgment)** remains a technical and ethical bottleneck.

#### **Critical Analysis: Should the Government Regulate Under-Aged Consumption?**

##### **Arguments for Regulation:**

1. **Parens Patriae:** The State has a duty to protect those who cannot protect themselves. Under-aged brains (pre-frontal cortex) are not fully developed to resist addictive design.
2. **Health as a Public Good:** Rising mental health costs and "digital myopia" are becoming a burden on the national healthcare system.

### Arguments against Regulation:

1. **State Paternalism:** Excessive intervention can lead to a "Nanny State," encroaching on parental rights and individual liberty.
2. **The "Forbidden Fruit" Effect:** Draconian bans often push children toward VPNs and the Dark Web, where they face even greater risks (cyber-bullying, grooming).

### Global Best Practices

1. **China's "Anti-Indulgence" System:** Limits minors to 3 hours of online gaming per week (Fri-Sun) and uses facial recognition to enforce age limits.
2. **UK's Age-Appropriate Design Code:** Forces platforms to turn off "Auto-play" and "Likes" by default for children.
3. **France's "Right to Disconnect":** While primarily for employees, it has fostered a national culture of "Digital Detox" during school hours.
4. **South Korea's "Cinderella Law":** (Historically) banned gaming for minors after midnight (though now moving toward parental-controlled "Permit Systems").

### The Way Forward

A "Digital Prohibition" is unlikely to work in a democratic setup. Instead, India should adopt a "**Co-Regulatory Framework**":

1. **Digital Literacy in Schools:** Move beyond teaching "how to use" computers to "how to live" with them. Emotional intelligence and digital hygiene should be part of the curriculum.
2. **Mandatory Screen-Time Tools:** Policy should mandate that apps include "Ethical Nudges"—standardized warnings when a user exceeds a healthy limit (similar to health warnings on cigarette packs).
3. **Data Protection & Age Verification:** Implementing the **Digital Personal Data Protection (DPDP) Act** with robust age-gating mechanisms that respect privacy (Zero-Knowledge Proofs).
4. **The 3-P Pillar:** A partnership between **Parents** (supervision), **Platforms** (ethical design), and **Policymakers** (enforcement) rather than a top-down government ban.

As India moves toward a \$10 trillion economy, the quality of its human capital will depend on "Digital Resilience." The goal must be to move from **Mindless Scrolling to Mindful Usage**, ensuring that the digital revolution does not come at the cost of the nation's mental well-being.

## **2. PRELIMS BOOSTER**

### **2.1 Thorium as Nuclear Fuel**

- Thorium is a **fertile (not fissile)** nuclear material
- Main isotope: **Thorium-232 (Th-232)**
- **Fuel cycle:**
  - Th-232 absorbs a neutron → converts to **Uranium-233 (U-233)**
  - **U-233 is fissile** and can sustain a nuclear chain reaction
- **Key advantage:**
  - **Abundant** compared to uranium
  - Produces **less long-lived radioactive waste**
  - Lower risk of **nuclear proliferation** (harder weaponisation)
- **Safety aspects:**
  - Lower probability of **meltdown** in certain reactor designs
  - Generates fewer transuranic elements (like plutonium)
- **Forms of use:**
  - Can be used in **solid fuel** or **molten salt reactors (MSR)**
  - Suitable for **Advanced Heavy Water Reactors (AHWRs)**
- **India & Thorium:**
  - India possesses about **25% of global thorium reserves**
  - Found mainly in **monazite sands** (Kerala, Tamil Nadu, Odisha, Andhra Pradesh)
  - Central to India's **three-stage nuclear power programme** (Stage-3)
- **Limitations:**
  - Requires an **external neutron source** initially
  - **Reprocessing and technology complexity**
  - Limited commercial-scale reactors worldwide

### **2.2 National Technology Readiness Assessment Framework (NTRAF)**

- **Nodal Ministry: Ministry of Science & Technology**
- **Developed in collaboration with the Confederation of Indian Industry (CII)**
- **Implemented through: Department of Science & Technology (DST)**
- **Core concept:**
  - Based on Technology Readiness Levels (TRLs)
  - TRL scale generally ranges from TRL 1 (basic research) to TRL 9 (commercial deployment)
- **Objective:**
  - Establish a common language between researchers, investors and policymakers

- Enable evidence-based funding decisions under national R&D and mission-mode programmes
- Reduce the “Valley of Death” between TRL 4 and TRL 7 by de-risking promising deep-tech innovations
- **Coverage:**
  - Applicable to **public-funded R&D institutions**, startups, MSMEs, and industry
  - Used in **strategic, civilian and dual-use technologies**
- **Key features:**
  - **Uniform national framework** for technology evaluation
  - Provides **objective benchmarks** for funding, scale-up and induction
  - Facilitates **industry adoption** of indigenous technologies
  - **Sector-specific annexures:** Tailored assessment pathways for domains such as Healthcare & Pharmaceuticals and Software, recognising sectoral differences.
  - **Self-assessment tool:** Enables researchers and startups to identify technical gaps before applying for funding.

### 2.3 Sydney Harbour Bridge

- **Location:** Sydney, New South Wales, Australia
- **Across:** Sydney Harbour (Port Jackson)
- **Connects:** Sydney Central Business District (CBD) with the North Shore
- **Type:** Steel through-arch bridge
- **Nickname:** “The Coathanger” (due to its arch-based design)
- Famous for fireworks to dazzling displays over Darling Harbour during New Year eve.

### 2.4 National Drug Use Survey (NDS)

- **Official name:** National Survey on Extent and Pattern of Substance Use in India
- **Conducted by:** Ministry of Social Justice & Empowerment (MoSJ&E)
- **Implementing agency:** National Drug Dependence Treatment Centre (NDDTC), AIIMS Delhi
- **First nationwide survey:** 2019
- **Coverage:** All States and Union Territories of India
  - Population aged 10–75 years
- **Objective:** Assess the extent, pattern and magnitude of substance use
  - Provide evidence-based inputs for drug demand reduction policies
- **Substances covered:** Alcohol, Cannabis, Opioids (heroin, opium, pharmaceutical opioids), Sedatives & inhalants, Cocaine, amphetamines (limited prevalence)
- **Policy relevance:** Supports National Action Plan for Drug Demand Reduction (NAPDDR)
  - Inputs for NDPS Act implementation and de-addiction programmes
- **Nature of survey:** Household-based, cross-sectional
  - Uses internationally accepted survey tools

## **2.5 Justice Mission 2025**

- **China conducted large-scale live-fire military drills named “Justice Mission 2025”** around Taiwan, including missile launches, fighter jet sorties, and naval deployments.
- Justice Mission 2025 is a high-intensity, two-day PLA (People’s Liberation Army) military exercise involving live-fire missile launches, air and naval manoeuvres.
- It is designed to simulate blockade operations and precision strikes against Taiwan’s ports and maritime targets.
- **Location:** Conducted around Taiwan, including waters to the north and south of the island.
  - Missile launches observed from Pingtan Island, the closest Chinese territory to Taiwan.
- **Key features:**
  - Live-fire missile launches targeting surrounding waters.
  - Naval deployments simulating maritime blockades and anti-submarine warfare.
  - Joint operations integrating air, sea, missile, and ground forces.
  - One of the largest drills near Taiwan in recent years, indicating escalation.

## **2.6 Candida Auris**

- A **fungal pathogen (yeast)** causing invasive infections in humans
- **First identified:2009**, from the ear canal of a patient in **Japan**
- It is a **multidrug-resistant fungal pathogen**
- **Vector / Reservoir:** Primarily healthcare settings such as hospitals and long-term care facilities.
  - Persists on human skin, medical devices, and inanimate surfaces for prolonged periods.
- **Symptoms:** Symptoms vary by site of infection and often resemble bacterial sepsis, making detection difficult.
  - Common signs include fever, chills, low blood pressure, tachycardia, and in severe cases bloodstream infections (candidemia).
- **High-risk groups:** ICU patients, Immunocompromised individuals, Patients with catheters or ventilators
- Mortality often exceeds 50%, even with therapy.
- **Morphological flexibility:** Can switch from yeast form to filamentous growth, aiding invasion.
- **Immune evasion:** Adapts rapidly to host immune responses and environmental stress.
- **Transmission:** Spreads through **contact in healthcare settings**
  - Person-to-person and via contaminated surfaces/equipment
- Listed by **WHO** as a **priority fungal pathogen**
- **Treatment:** **Echinocandins** are first-line drugs (resistance emerging)

## 2.7 'Dance of Dawn'

- *Dance of Dawn* is a **thematic cultural performance** showcased by Arunachal Pradesh to highlight its **indigenous heritage and spiritual traditions**.
- **State association: Arunachal Pradesh** – India's easternmost state, often called the “**Land of the Rising Sun**”.
- **Theme & symbolism:**
  - Celebrates the arrival of dawn, symbolising hope, renewal, and harmony with nature
  - Reflects the tribal worldview where nature, sun, mountains, and rivers are sacred
- Recently people of Arunachal celebrated the first sunrise of 2026 with Dance of dawn.
- **Cultural roots:** Draws inspiration from **multiple tribes** of Arunachal Pradesh such as **Adi, Nyishi, Apatani, Galo, Mishmi**, etc.
- Incorporates **ritualistic movements, traditional music, and folk narratives**
- **Occasions performed:** New year, National cultural festivals, Statehood celebrations, Tourism and cultural promotion events at national/international platforms
- **Artistic elements:** Traditional **tribal costumes and headgear**
  - Use of **folk instruments** like drums and gongs
  - Slow, rhythmic movements depicting **sunrise and human–nature coexistence**

## 2.8 Sudarshan Chakra Defence System

- The Sudarshan Chakra defense system is **India's ambitious, AI-enabled, multi-layered national security shield, aiming to integrate indigenous air defense, cyber protection, and surveillance to safeguard critical assets and population**.
- **Target year:** 2035
- **Developing agency:** DRDO
- **Nature of system:**
  - High-energy laser–based air defence system
  - Uses directed energy instead of conventional missiles or guns
  - Cyber protection capabilities
- **Primary role:** Neutralisation of aerial threats such as- Drones (UAVs), Swarm drones, Small aerial targets at short to medium ranges
- **Key features:**
  - Speed-of-light engagement (instantaneous strike)
  - High precision & accuracy
  - Low cost per shot compared to missiles
- **Key Components:**
  - **Indigenous Quick Reaction Surface to Air Missiles (QRSAM):** Developed by DRDO for short range (5-30 km).

- **Advanced Very Short Range Air Defence System (VSHORADS) missiles**
- **It is a Man Portable Air Defence System (MANPADS)** designed to neutralize low-altitude aerial threats at short ranges.
- **A high-power laser-based Directed Energy Weapon (DEW):** Developed by Centre for High Energy Systems and Sciences can engage targets at the speed of light and use an intense **laser beam to cut through the target.**
- **Command Centre:** Integrated operation of all the weapon system components is controlled by a Centralised Command and Control Centre.

## 2.9 UNRWA

- United Nations Relief and Works Agency for Palestine Refugees in the Near East
- **Established:** 1949 by UN General Assembly Resolution 302 (IV)
- **Operational since: 1950**
- **Mandate:** To provide humanitarian assistance, protection, and development services to Palestine refugees
- **Who are Palestine refugees (as per UNRWA)?**
- Persons whose normal place of residence was Palestine between June 1946 and May 1948 and who lost both home and livelihood due to the 1948 Arab–Israeli conflict, and their descendants.
- **Areas of operation (5 fields):** Gaza Strip, West Bank (including East Jerusalem), Jordan, Lebanon, Syria
- **Key services provided: Education (schools), Primary healthcare, Relief & social services, Emergency humanitarian aid etc.**
- **Funding:** Voluntary contributions from UN member states
  - Not funded through the UN's regular budget
- **Headquarters: Amman (Jordan) and Gaza**
- **Legal status:** A temporary UN agency, mandate renewed periodically by the UN General Assembly

## 2.10 Pralay Missile

- **Indigenously developed short-range quasi ballistic missile (SRBM)**
- **Developed by: DRDO** (Defence Research and Development Organisation)
- **Range: 150–500 km** (variable depending on payload) **Propulsion: Solid-fuel**, quasi-ballistic trajectory
- **Guidance system: Inertial Navigation System (INS) with GPS/NavIC augmentation**
- **Payload capability:** Conventional warheads only.

## 2.11 PathGennie Software

- **PathGennie is an AI-driven software platform developed to fast-track drug discovery and development.**

- Developed by Scientists at **S. N. Bose National Centre for Basic Sciences, Kolkata.**
- It is an **open-source** computational framework designed to efficiently simulate rare molecular events, especially drug unbinding from protein targets, without introducing artificial distortions.
- It helps predict drug residence time, a key factor in drug efficacy and safety.
- **Primary purpose:**
  - Rapid identification of drug targets
  - Prediction of disease pathways
  - Shortening the drug discovery timeline
- **Working Principle:**
  - Instead of forcing molecules to move, the software lets them move naturally.
  - It runs many tiny, short simulations.
  - Only the useful paths are continued, while the rest are stopped.
  - This works like natural selection — the best paths survive without artificial pressure or heat.
  - It can handle complex patterns making it very adaptable.
- **Applications:**
  - Predicts accurate drug unbinding pathways and residence times (e.g., imatinib–Abl kinase).
  - Understanding protein–ligand kinetics for better drug design.
  - Applicable to chemical reactions, catalysis, phase transitions and self-assembly processes.

### **2.12 Market Access Support (MAS) Intervention (PIB)**

- **MAS Intervention** is a government initiative under the Export Promotion Mission to strengthen global market access for Indian exporters, especially MSMEs and first-time exporters.
- **Jointly implemented by:** The Department of Commerce, Ministry of MSME, and Ministry of Finance.
- Implemented under the NIRYAT DISHA sub-scheme
- **Aim:**
  - Strengthen global market access for Indian exporters
  - Support MSMEs, first-time exporters and priority sectors
  - Promote export diversification into new and emerging markets
  - Enable predictable and outcome-driven export promotion
- **Key features:**
  - **Market access activities:** Support for Buyer-Seller Meets (BSMs), Mega Reverse BSMs, international trade fairs, exhibitions and trade delegations.
  - **Advance planning:** A 3–5 year rolling calendar of approved market access
  - **MSME focus:** Mandatory minimum 35% MSME participation.
  - **Financial rationalisation:** Revised cost-sharing norms, event-wise financial ceilings and partial airfare support for exporters with turnover up to ₹75 lakh.
  - **Digital governance:** End-to-end online processes.
  - **Outcome tracking:** Mandatory online feedback on buyer quality, leads generated and market relevance, with data-driven refinement of guidelines.

### 2.13 Amazon's Stingless Bees

- Stingless bees are a group of bees that either lack stingers or have non-functional stingers, making them harmless to humans. They are crucial pollinators in tropical ecosystems.
- Defend themselves by **biting** or using **resin**
- **Geographical distribution: Amazon Basin (South America)**
- Also found in tropical forest of **Africa, Southeast Asia, and Australia**
- **Ecological importance:**
  - Primary rainforest pollinators, responsible for pollinating over 80% of Amazonian flora.
  - Crucial for **Amazon biodiversity and forest regeneration**
  - Pollinate crops like **coffee, cocoa, fruits, and nuts**
- **Honey production:** Produce **small quantities of honey**
  - Honey is **more liquid, less sweet, and highly medicinal**
- **Amazonian stingless bees have become the first insects in the world to be granted legal rights** after Peruvian municipalities passed a landmark ordinance recognising their right to exist and flourish.
  - Strengthens conservation: Provides legal tools to challenge deforestation, pollution and habitat destruction



### 2.14 'Galaxy Frog (Melanobatrachus indicus) 🐸

- **Endemic to India:** Found only in the **Western Ghats** (Kerala & Tamil Nadu).
- **Family: Microhylidae** (narrow-mouthed frogs).
- **Common name origin:** Distinctive **black body with bluish/whitish speckles**, resembling a galaxy/starry sky.
- **Habitat:**
  - Shola forests and **montane evergreen forests**
  - Leaf litter, forest floor; breeding near ephemeral streams.
  - **Altitude range:** ~700–2000 m above sea level.
- **Lifestyle:**
  - **Fossorial/cryptic** (burrowing, rarely seen)
  - Emerges mainly during **monsoon** for breeding
- **Breeding behaviour:** Explosive breeder, Tadpoles develop in **fast-flowing streams**
- **Conservation status (IUCN): Vulnerable (VU)**
- **Threats:**
  - Habitat loss due to deforestation & plantation expansion
  - Climate change affecting montane ecosystems
- **Ecological significance:** Indicator of **Western Ghats ecosystem health**

### 2.15 Electronics Component Manufacturing Scheme (ECMS).

- Under the **Ministry of Electronics and Information Technology (MeitY)**.
- Launched to boost domestic manufacturing of electronic components and sub-assemblies,

and reduce import dependence.

- Part of India's broader strategy to become a global hub for electronics production and strengthen Global Value Chain (GVC) linkages.
-  **Objectives**
  - Develop a robust electronics component manufacturing ecosystem within India.
  - Attract large domestic and foreign investments across the electronics value chain.
  - Increase Domestic Value Addition (DVA) and integrate Indian firms into global supply chains.
  - Create employment opportunities and enhance technological capabilities.
- **Key Features**
  - **Incentive Types:** Turnover-linked incentives
  - **Capital expenditure (capex) incentives**
  - **Hybrid incentives (combination of turnover + capex)**
  - Incentives differ by product type to address segment-specific challenges.
-  **Target Segments Covered**
  - Sub-assemblies – e.g., display and camera module sub-assemblies.
  - Bare components – e.g., multi-layer PCBs, non-SMD passive components, Li-ion cells for digital use, enclosures.
  - Selected bare components – e.g., HDI/MSAP/flexible PCBs, SMD passive components.
  - Supply chain ecosystem and capital equipment – components and machinery used in electronics manufacturing.
  - Telecom sub-assembly segment (e.g., optical transceivers). [ecms.meity.gov.in](http://ecms.meity.gov.in)

## 2.16 Nimesulide

- **Type:** Non-steroidal anti-inflammatory drug (NSAID)
- **Uses:** Treatment of **acute pain, inflammation, and fever**
  - Short-term management of pain and fever.
- **Key Concern:** Associated with **hepatotoxicity (liver damage)**
- **Mechanism of action:** Inhibits prostaglandin synthesis by blocking inflammatory chemical messengers.
- **Common side effects:** Nausea, vomiting, diarrhoea, elevated liver enzymes.
- **Regulatory status in India:** Union Government has banned the manufacture, sale and distribution of oral formulations of Nimesulide above 100 mg with immediate effect under Section 26A of the Drugs and Cosmetics Act, 1940.
- **Reason for the ban:** Oral formulations above **100 mg pose a risk to human health**, particularly liver-related adverse effects.
- The ban was imposed under **Section 26A of the Drugs and Cosmetics Act, 1940**, which empowers the government to prohibit drugs harmful to public health.
- **Global status:** **Banned or restricted** in several countries (e.g., parts of Europe) due to liver toxicity
- **Veterinary angle-** Veterinary use of Nimesulide led to **mass decline of vulture population in India.**

- Vultures feeding on carcasses treated with Nimesulide suffered **acute renal failure**
- **Conservation linkage:** Following the ban on **Diclofenac**, Nimesulide emerged as an alternative but also proved harmful
- **Safer alternative: Meloxicam** – proven to be **vulture-safe NSAID**

### 2.17 Bulgaria

- **Bulgaria** officially adopted the **euro**, becoming the **21st member of the Eurozone**, nearly **20 years after joining the European Union**, a move with major **economic, political, and geopolitical implications**.
- **Rationale:** Euro adoption aims to boost trade, improve market transparency, and attract investment in Bulgaria (EU's poorest member state).
- It will deepen Bulgaria's integration with the European Union, reinforcing its Western alignment and reducing Russian economic influence.
- **Eurozone:** The **Maastricht Treaty (1992)** (also known as the Treaty on European Union) laid the foundation for the European Union by paving the way for a common Economic and Monetary Union, the adoption of the euro as a single legal tender, the creation of a unified central banking system through the European Central Bank (ECB), and the establishment of a common economic region (Eurozone).
- The Eurozone comprises European Union Member States that have adopted the euro as their common currency.
- The eurozone was established with the official launch of the euro on 1st January 1999, in 11 countries. With Croatia joining in 2023 and Bulgaria's adoption, the euro is now used by over 350 million people across Europe.

### 2.18 Bomb Cyclone (Explosive Cyclogenesis) 🌪️ 🌪️

- **Definition:** A mid-latitude cyclone that **intensifies extremely rapidly**.
- **Key Criterion:** Central pressure drops by **≥24 millibars in 24 hours**.
- **Region of occurrence:** Mainly in **mid-latitudes (30°–60°)**
  - Common over **North Atlantic and North Pacific Oceans**.
- **Formation conditions:** Strong **temperature contrast** between cold continental air and warm ocean air

- Interaction of **polar jet stream** and surface low-pressure system
- **Weather impacts:**
  - **Hurricane-force winds**
  - Heavy **rainfall or snowfall (blizzards)**
  - **Coastal flooding** and high waves
- **Difference from tropical cyclone:**
  - Energy source: **baroclinic (temperature gradients)** vs **latent heat** in tropical cyclones
- **Climate change link:** Warming oceans may **increase intensity and frequency** of bomb cyclones.

### **2.19 Salal Dam**

- On Chenab River
- **Location:** Near Reasi district, Jammu & Kashmir
- **Type:** Run-of-the-river hydroelectric project
- Installed Capacity: 690 MW (6 × 115 MW)
- **Developer/Operator:** NHPC Limited
- River System: Indus Basin
- Strategic & Treaty Significance
  - First major hydropower project on Chenab in India
  - Constructed under Indus Waters Treaty (1960) provisions
  - Design approved after negotiations with Pakistan
- **Technical Features**
  - Concrete gravity dam
  - High silt load due to young Himalayan geology
  - Features underwater inspection and sediment management mechanisms

### **2.20 Notifiable Diseases**

- Diseases that are **mandatorily required to be reported** to government authorities when diagnosed are notifiable disease.
- **Purpose:**
  - Early **disease surveillance**
  - **Prevention of outbreaks/epidemics**
  - Public health planning and response
- **Legal Framework (India)-** Governed mainly under:
  - **Epidemic Diseases Act, 1897**
  - **State Public Health Acts** (health is a **State Subject** – Entry 6, List II)
  - **No single national list** → States notify diseases independently.
- **Who Reports?**
  - **Doctors, hospitals, laboratories** (both public & private)
  - Reporting to **local health authorities / IDSP**
- **Key Institutional Mechanism**
  - **Integrated Disease Surveillance Programme (IDSP)** under **National Health**

### **Mission**

- Uses **real-time data** for outbreak detection
- **Examples (Commonly Notified)- Tuberculosis, Cholera, Malaria, Dengue, COVID-19, Measles, Plague etc.**
- *List varies from state to state*

### **2.21 Superbugs**

- **Definition:** Microorganisms (mainly bacteria) that have developed resistance to multiple antibiotics.
- **Cause:** Overuse, misuse and incomplete courses of antibiotics in humans, animals and agriculture.
- **Common Superbugs**
  - **MRSA (Methicillin-Resistant *Staphylococcus aureus*), XDR-TB (Extensively Drug-Resistant Tuberculosis)**
- **Mechanism of Resistance**
  - Gene mutation
  - Horizontal gene transfer (plasmids)
  - Biofilm formation
- **Indian Context**
  - India is among the highest antibiotic consumers globally.
  - Rising cases of drug- resistant TB.
  - AMR recognised as a public health emergency.
- **Global & National Initiatives**
  - WHO Global Action Plan on Antimicrobial Resistance
  - National Action Plan on AMR (2017–2021) (India)
  - Red Line Campaign – prescription-only antibiotics
  - One Health Approach (human–animal–environment link)

### **2.22 Cetacean Morbillivirus**

- A **highly contagious viral disease** affecting **cetaceans** (marine mammals).
- **Virus Family: Paramyxoviridae**
- **Genus: Morbillivirus**(*same genus as measles virus, rinderpest virus*)
- **Affected Species- Dolphins, Whales, Porpoises**
- **Transmission**
  - **Direct contact** between animals
  - Via **respiratory secretions**
  - More severe during **mass strandings**

- First identified in 1987, the virus likely evolved from terrestrial morbilliviruses and adapted to marine mammals, spreading through close contact and respiratory droplets.
- Key features:
- **Clinical Effects**
  - Severe **pneumonia**
  - **Encephalitis** (brain inflammation)
  - **Immunosuppression**
  - Leads to **mass mortality events**
- It has been widely reported in the North Atlantic, Mediterranean Sea, and Pacific regions, and has now been detected circulating in Arctic waters, particularly among humpback and sperm whales.
- **Context:** Scientists have detected cetacean morbillivirus in Arctic waters for the first time by using drones to collect whale breath (blow) samples, a non-invasive technique.

### 2.23 Red Sea

- Narrow, elongated sea (part of the Indian Ocean system)
- **Location:** Between Africa (west) and Asia (Arabian Peninsula, east)
- **Boundaries & Connections**
  - North:
    - Gulf of Suez → connects to Mediterranean Sea via Suez Canal
    - Gulf of Aqaba
  - **South:** Connected to Gulf of Aden via Bab-el-Mandeb Strait
  - **Links** Indian Ocean ↔ Mediterranean Sea
- **Countries Along the Red Sea**
  - Africa: Egypt, Sudan, Eritrea, Djibouti
  - Asia: Saudi Arabia, Yemen, Israel, Jordan
- One of the saltiest seas (high evaporation, low freshwater inflow)
- No major rivers drain into it
- Rich coral reefs (among the most heat-resilient globally)
- Lies over a rift valley → tectonically active (Arabian plate moving away from African plate)
- **Strategic Importance**
  - One of the world's busiest maritime trade routes
  - Crucial for oil & gas transport
  - Vital for Europe–Asia trade
  - Frequent focus in geopolitics & maritime security

### 2.24 NATGRID

- **National Intelligence Grid**
- **Ministry: Ministry of Home Affairs (MHA)**

- **Purpose:** To integrate and analyse data from multiple databases for counter-terrorism and national security.
- **Conceptualised after 26/11** Mumbai terror attacks (2008).
- **Aimed at improving intelligence coordination among agencies.**
- **Nature & Structure**
  - Secure, centralized database (not an intelligence agency)
  - Enables real-time access to information for authorised agencies
  - Data is accessed only for specific cases
- **Key Databases Integrated-** Immigration & Visa, Airline and Railway travel data, Banking & financial transactions, Telecom records etc.
- **Agencies with Access-** IB, RAW, CBI, NIA etc.
- **Context-** NATGRID has been linked to the National Population Register (NPR), allowing authorised agencies real-time access to family-level demographic data of nearly 119 crore residents, significantly expanding India's intelligence and investigation architecture.

### 2.25 RAH-VEER Scheme

- **RAH-VEER** stands for “Road Accident Heroes – Value, Empower, and Recognise”.
- **Launched by:** Ministry of Road Transport and Highways (MoRTH).
- **Objective:** To encourage, recognise and reward **Good Samaritans** who help road accident victims during the **golden hour**.
- **Key Features:** Applies to **citizens who provide immediate assistance to road accident victims.**
- **Assistance may include:**
  - Calling emergency services
  - Transporting victims to hospitals
  - Providing first aid or lifesaving help
  - Emphasises **timely medical intervention** to reduce fatalities.
- **Incentives:** ₹25,000 reward and Certificate of Appreciation, up to five times a year for repeat acts.
- **Legal Safeguards:** Aligned with **Good Samaritan Guidelines** (SC-backed).
- **Protects helpers from:** Legal harassment, Police questioning, Civil or criminal liability.

### 2.26 Monroe Doctrine

- **By:** U.S. President James Monroe
- **Context:** European colonial powers' attempts to reassert influence in Latin America.
- **Core Principle:** “America for the Americans”
  - Western Hemisphere closed to **future European colonisation.**
- **Key Provisions:**
  - **No new European colonisation:** European powers should not establish new colonies

in North or South America.

- **Non-interference warning:** Any European intervention in the Americas would be viewed as a threat to U.S. security.
- **Reciprocal restraint:** The U.S. promised not to interfere in existing European colonies or in European internal affairs.
- **Separate spheres:** The political systems of Europe and the Americas were to remain distinct.
- **Nature:**
  - Initially a **unilateral foreign policy statement**, not international law.
  - Became a foundation of **U.S. hemispheric dominance**.
- **Later Interpretations / Extensions:**
- **Roosevelt Corollary (1904):**
  - U.S. claimed the right to intervene in Latin American countries to maintain order.
  - Used to justify U.S. interventions during the **Cold War** to counter communism.

### 2.27 Rani Velu Nachiyar (PIB)

- Rani Velu Nachiyar, also known as '*Veeramangai*', was born on 3rd January 1730.
- Pioneer of Anti-Colonial Resistance: She is revered as the first Indian queen to launch an organised armed resistance against the British East India Company.
- Region: Sivaganga, present-day Tamil Nadu
- First Indian queen to wage war against the British East India Company.
- Her revolt represents the earliest phase of organised anti-colonial assertion in South India.
- **Ruler of Sivaganga:** After the death of her husband Muthuvaduganathaperiya Udaiyathevar, she ascended the throne of Sivaganga.
- She deployed the **first recorded human bomb** in Indian military history as a tactical weapon against colonial forces.
- She also organised the **first trained women's military unit**, institutionalising women's participation in warfare in the late eighteenth century.

### 2.28 Suryastra Rocket Launcher

- Suryastra is India's first **Made-in-India, multi-calibre, long-range rocket launcher system developed by Pune-based NIBE Limited** in collaboration with Israel's Elbit Systems.
- **Key features:**
  - **Range:** 150 km and 300 km (tactical deep-strike capability).
  - **Universal launcher:** Can fire multiple calibres (122 mm, 160 mm, 306 mm) and compatible tactical missiles.
  - **High precision:** Circular Error Probable (CEP) of < 5 metres in trials.
  - **Multi-target engagement:** Simultaneous strikes at different ranges.
  - **Mobility:** Adaptable to 4×4, 6×6, and 8×8 wheeled chassis.

## **2.29 Olive Ridley Sea Turtles**

- **IUCN Status: Vulnerable**
- **CITES: Appendix I** (highest level of protection)
- Wildlife Protection Act, 1972 (India): **Schedule I Known for “Arribada” — mass nesting phenomenon where thousands of turtles come ashore simultaneously.**
- **Major Nesting Sites in India:**
  - **Gahirmatha Beach** – Odisha (largest rookery in the world)
  - **Rushikulya River mouth** – Odisha
  - **Devi River mouth** – Odisha
  - Also found along **Andhra Pradesh, Tamil Nadu, Kerala, and West Bengal** coasts.
- **Habitat: Warm tropical waters of the Pacific, Atlantic, and Indian Oceans.**
- Nesting on **sandy beaches.**
- **Migration:** Long-distance **migratory species.**
  - Follow **ocean currents** for movement and feeding.
- **Diet: Omnivorous** — feeds on jellyfish, crabs, shrimp, algae, and fish.
- **Operation Olivia-** an annual initiative by the Indian Coast Guard (ICG) to protect Olive Ridley turtles during their breeding and nesting season (November to May) along Odisha's coast.

## **2.30 Aditya-L1**

- **Launched by:** ISRO (Indian Space Research Organisation)
- **Launch date:** 2 September 2023
- **Mission type:** India's **first dedicated solar observatory.**
- Makes India the 4th country (after USA, Russia, Japan/ESA) with a solar observatory at L1
- **Orbit & Location**
  - Placed in a **Halo orbit around Lagrange Point-1 (L1)** of the **Sun–Earth system**
  - **Distance from Earth:** ~1.5 million km

**Lagrange points** are special positions in space where the **gravitational forces of two large orbiting bodies**, such as the **Sun and the Earth**, balance each other out.

- This means that a small object, such as a **spacecraft**, can stay at these points without using much fuel to maintain its orbit.

- **Mission Objectives**
  - Study the **solar atmosphere** (photosphere, chromosphere & corona)
  - Understand **coronal heating** and **solar wind acceleration**
  - Observe **solar flares** and **Coronal Mass Ejections (CMEs)**
  - Improve **space weather forecasting**
- Enhances India's **space weather prediction capability**
- Supports protection of **satellites, power grids & communication systems**

- Strengthens India's role in **heliophysics research**
- **Context: ISRO calls for proposals from Indian scientists to analyse data from Aditya-L1.**

### **2.31 Biomaterials**

- Biomaterials are **natural or synthetic materials** designed to **interact with biological systems** for **medical, dental, or diagnostic etc. applications**.
- Unlike traditional petroleum-based materials, biomaterials are designed to reduce environmental impact while supporting sustainable production systems.
- They are increasingly used in sectors such as packaging, textile s, construction, and healthcare.
- Broadly, biomaterials are **classified into three categories**.
  - **Drop-in biomaterials** are chemically identical to petroleum-based materials and can be used in existing manufacturing systems without major modifications. Examples include bio-PET used in packaging.
  - **Drop-out biomaterials** are chemically different and require new processing or end-of-life systems, such as polylactic acid (PLA), which needs industrial composting.
  - **Novel biomaterials** go a step further by offering entirely new properties, including self-healing materials, bioactive implants, and advanced composites with enhanced performance characteristics.

### **2.32 National Environmental Standard Laboratory (NESL) (PIB)**

- India has inaugurated the world's second National Environmental Standard Laboratory (NESL) and the world's fifth National Primary Standard Facility for Solar Cell Calibration at CSIR–NPL, New Delhi.
- It is an apex national facility for testing, calibration, and certification of air pollution monitoring equipment under Indian climatic and environmental conditions.
- **Aim:**
  - To establish India-specific standards for air pollution monitoring instruments.
  - To support effective implementation of pollution control policies such as National Clean Air Programme (NCAP).
- **Key features:**
  - Calibration and testing under Indian climatic conditions (temperature, humidity, dust load).
  - Ensures traceable, accurate, and standardised environmental data.
  - Supports domestic manufacturing, startups, MSMEs, and regulators.
  - Only the UK and India currently have such national-level facilities.

### **2.33 National Primary Standard Facility for Solar Cell Calibration:**

- The National Primary Standard Facility for Solar Cell Calibration is an advanced metrology facility for high-precision calibration of solar cells, ensuring global-standard

photovoltaic (PV) measurements.

- **Located in:** CSIR–National Physical Laboratory (NPL), New Delhi.
- **Key features:** Uses laser-based Differential Spectral Responsivity (L-DSR) system.
  - Achieves world-leading calibration uncertainty of 0.35% (k=2).
  - Developed in collaboration with Physikalisch-Technische Bundesanstalt (PTB), Germany.
- Part of an elite global group (only the fifth such facility worldwide).

### **2.34 Somnath Swabhiman Parv**

- A national-level commemorative festival celebrating the restoration, resilience and cultural pride (Swabhiman) associated with the Somnath Temple.
- **Venue:** Somnath Temple, Gir Somnath district, Gujarat
- **Organised by:** Government of Gujarat in association with Shri Somnath Trust and cultural bodies.
- Somnath Temple is **one of the 12 Jyotirlingas of Lord Shiva**.
- According to tradition, it was built in phases—first in gold by Somraj (Moon God), then in silver by Ravana, later in wood by Lord Krishna.
- **King Bhimdev I** (or Bhima I) of the Solanki dynasty rebuilt the temple in stone after its destruction by Mahmud of Ghazni in 1026 CE.
- **Geographical Significance:** Situated at **the confluence of Kapila, Hiran, and Saraswati rivers with the Arabian Sea**.
- **Abadhit Samudra Marg (Tirth Stambh)** indicates an uninterrupted sea route to the South Pole, with the nearest landmass ~9,936 km away, reflecting ancient Indian geographical knowledge.
- **Cycles of Destruction & Rebuilding:** First major attack in 1026 AD by Mahmud of Ghazni; documented by Persian scholar Al-Biruni.
- The temple was looted and destroyed multiple times, including in 1026, 1297, 1394, and 1706 CE (Aurangzeb). 2026 marks 1,000 years since the first attack, a significant civilisational milestone.
- The **7th existing temple was rebuilt post-independence as a symbol of national resurgence. Sardar Vallabhbhai Patel initiated the reconstruction in 1947.**
- **The Pran-Pratistha was performed by President Dr. Rajendra Prasad on 11th May, 1951.** Reconstruction was supported by KM Munshi, author of “**Somanatha: The Shrine Eternal**”.

### **2.35 India's First Urban Night Safari at Kukrail Forest Area**

- India's first urban night safari is being developed in the Kukrail Reserve Forest, Lucknow (Uttar Pradesh) — a nighttime wildlife experience where visitors can observe animals in their natural-like settings after dusk.
- Kukrail Forest Area, along the Kukrail River on the northern outskirts of the city.
- **Key features of the Kukrail project:**
  - Nocturnal safari routes with restricted movement and low-impact lighting to minimise animal disturbance.
  - Existing conservation hubs for crocodiles, gharials, and turtles upgraded rather than replaced.

- Eco-friendly infrastructure: bamboo huts, nature walk trails, interpretation centres.
- Guided educational programmes: night ecology walks, bird-watching, and school outreach.
- **Purpose & Significance**
  - Boost eco-tourism and make urban wildlife accessible for education, recreation, and wildlife appreciation.
  - Encourages conservation awareness and supports nature-based sustainable tourism. Outlook Traveller
  - Adds a unique tourist attraction to Lucknow's offerings and enhances urban biodiversity initiatives.

### **2.36 Battery Pack Aadhaar Number (BPAN)**

- **BPAN** stands for **Battery Pack Aadhaar Number** — a **unique, Aadhaar-like digital identity** assigned to individual battery packs, especially those used in **electric vehicles (EVs)** and larger battery systems.
- The Ministry of Road Transport and Highways has proposed an Aadhaar-like unique ID for electric vehicle batteries to ensure lifecycle traceability and efficient recycling.
- Each BPAN is a **21-character alphanumeric code** (with QR code) that uniquely identifies a battery across its entire **life cycle**.
- Designed to enable **end-to-end traceability** of batteries — from **raw material sourcing** → **production** → **use** → **recycling/disposal**.
- Helps curb **counterfeit batteries**, boost **consumer trust**, and improve **safety and performance monitoring**.
- Supports **efficient recycling, second-life applications** (repurposing old EV batteries), and **regulatory compliance** in the electric mobility ecosystem.
- Battery **manufacturers or importers must assign** a unique BPAN to each battery they introduce in the Indian market (including those used in-house).
- The BPAN must be displayed prominently on the battery pack and recorded in a **central BPAN portal**.
- If a battery is **recycled or repurposed**, a **new BPAN** must be issued reflecting the change.
- Priority to EV batteries: EV batteries (80–90% of India's Li-ion demand) to be covered first; industrial batteries above 2 kWh also recommended.

### **2.37 Design Linked Incentive (DLI) Scheme (PIB)**

- **Nodal Ministry**: Ministry of Electronics & Information Technology (MeitY)
- Under **Semicon India Programme** to promote **indigenous semiconductor chip design** by providing **financial incentives and advanced design infrastructure** to domestic startups and MSMEs.
- **Objective**
  - Promote **indigenous design and innovation in semiconductors and electronics**
  - Encourage **IP creation** and reduce import dependence

- Strengthen India's **chip & system design ecosystem**
- **Target Beneficiaries: Startups, MSMEs, Domestic companies, Fabless chip design firms & electronics design houses.**
- **Key Components**
  - **Product Design Linked Incentive**
  - Financial support for **design, development & prototyping**
  - **Market Deployment Linked Incentive**
  - Incentives based on **commercialisation and sales**
- **Incentive Structure**
  - **Up to 50%** of eligible design expenditure
  - **Cap: ₹15 crore** per application (design stage)
  - **The Deployment Linked Incentive provides 4–6% of net sales turnover for five years, capped at Rs 30 crore**, subject to minimum sales and successful product deployment.

### **2.38 Payments Regulatory Board**

- The Payments Regulatory Board (PRB) is the statutory body through which the Reserve Bank of India exercises regulatory and supervisory powers over payment and settlement systems in India, ensuring safety, efficiency, and stability of digital and non-cash payments.
- Rapid growth of digital payments (UPI, wallets, fintechs) created the need for a specialised regulatory body
- Established under Section 3 of the Payment and Settlement Systems Act, 2007.
- Replaced the earlier Board for Regulation and Supervision of Payment and Settlement Systems (BPSS).
- **Composition**
  - **Chairperson: RBI Governor**
  - **Members: Deputy Governor (RBI), One RBI nominee,**
  - **Three Central Government nominees**
  - **RBI retains overall control**
- **Functions**
  - Regulation of **payment systems** (UPI, wallets, prepaid instruments, etc.)
  - Authorization of **payment system operators**
  - Policy formulation for **digital payments**
  - Supervision of **fintech payment entities**
  - **Risk management:** Addresses systemic risk, settlement finality, and consumer protection.

### **2.39 Popocatepetl Volcano**

- A National Autonomous University of Mexico (UNAM) has produced the first 3D seismic image of the internal structure of Mexico's Popocatepetl volcano, improving understanding of magma movement and eruption behaviour in a high-risk volcanic zone.
- **Location: Central Mexico, near Mexico City**

- **Type:** Active stratovolcano
- **Elevation:** ~5,426 m (second-highest peak in Mexico)
- **Part of:** Trans-Mexican Volcanic Belt
- **Nickname:** *El Popo*
- Forming part of the **Pacific Ring of Fire**
- Also known as “**Smoking Mountain**”, it is a **steep-sided stratovolcano in central Mexico**, located on the **border of the states of México and Puebla**.

#### **2.40 Mpemba Effect**

- **Definition:** Phenomenon where **hot water freezes faster than cold water** under certain conditions
- **Named after:** Erasto Mpemba, a Tanzanian student (1963)
- **Functioning**
  - **Evaporation:** Hot water loses some mass as vapour, so less water remains to freeze, speeding up the process.
  - **Dissolved gases:** Heating drives out dissolved gases, subtly changing the water’s freezing characteristics.
  - **Convection currents:** Temperature gradients in hot water create internal circulation that enhances heat loss.
  - **Supercooling:** Hot water may begin freezing at a higher temperature than cold water, allowing it to solidify sooner.
  - **Environmental effects:** Hot containers can alter their surroundings, improving overall cooling efficiency.
- **Conditions**
  - Observed under **specific experimental conditions**
  - Not a universal rule
  - Depends on container, environment, and initial temperatures
- **Context:** Indian scientists have developed the first supercomputer-powered simulation that successfully captures the Mpemba effect, resolving a long-standing scientific paradox of hot water freezing faster than cold.

#### **2.41 Electrification of Indian Railways**

- **Mission 100% Railway Electrification**
- **Launched in:** The electrification drive began historically in 1925, but Mission-mode acceleration was undertaken post-2014.
- **Aim:**
  - Eliminate diesel traction and shift to cleaner electric traction.
  - Reduce carbon emissions, fuel import dependence, and operating costs.
  - Improve speed, reliability, and efficiency of train operations.
- **Key features:** **99.2% electrification** of ~70,000 route km broad-gauge network (as of Nov 2025).

- Electrification pace increased from **1.42 km/day (2004–14)** to **15+ km/day (2019–25)**.
- **25 States/UTs fully electrified**; only ~0.8% network pending.
- **Significance:**
  - Major reduction in greenhouse gas emissions and air pollution.
  - Electric traction is **~70% cheaper than diesel**, lowering operating costs.
  - Reduced dependence on imported fossil fuels; increased use of renewables.
- **Context:** Indian Railways becomes the **biggest electrified rail system globally**.

## 2.42 Wolf Supermoon

- A **Supermoon** occurring during the **Full Moon of January**
- **Name origin:** From **Native American tradition**—wolves were heard howling during winter.
- **Supermoon – Key Concept**
  - Occurs when the **Full Moon coincides with perigee**
  - **Perigee:** Point where the Moon is **closest to Earth**
  - Appears **larger and brighter** than an average full moon
- Other traditional names: *Cold Moon, Frost Exploding Moon*
- It is associated with mid-winter beliefs of wolves being heard howling more frequently, though the Moon itself undergoes **no physical change**.

## 2.43 United Nations Framework Convention on Climate Change (UNFCCC)

- **Adopted:** 1992 at **Rio Earth Summit**, **Entered into force:** 1994
- **Secretariat:** Bonn, Germany
- **Nature:** Framework convention (**non-binding** emission targets)
- **Objective:** Stabilize greenhouse gas (GHG) concentrations to prevent dangerous anthropogenic interference with the climate system (Article 2)
- **Key Principles**
  - Common But Differentiated Responsibilities and Respective Capabilities (CBDR-RC)
  - **Equity**
  - **Precautionary principle**
  - **Sustainable development**
  - **Polluter Pays Principle** (implicit)
- **Parties:** **197 Parties** (near-universal membership)
- **Major Agreements under UNFCCC**
  - **Kyoto Protocol (1997):** Binding targets for Annex I countries
    - Mechanisms: **CDM, JI, Emissions Trading**
  - **Paris Agreement (2015):**
    - Limit warming to **well below 2°C**, pursue **1.5°C**
  - **NDCs** (Nationally Determined Contributions)
    - Applies to all parties
    - Legally binding procedures, not targets
  - **Finance, Technology & Capacity Building**
  - **Green Climate Fund (GCF)**
  - **Adaptation Fund**

- **Global Environment Facility (GEF)**
- UNFCCC itself does **not** impose binding emission reduction targets
- Paris Agreement is under UNFCCC, not a replacement
- **Context:** Recently USA has pulled out of UNFCCC.

#### **2.44 Process of Inclusion in ST**

- **Constitutional Basis**
  - **Article 342(1):** President specifies Scheduled Tribes for each **State/UT** in consultation with the **Governor**
  - **Article 342(2): Parliament alone** can include or exclude a tribe from the ST list by law
- **Step-by-Step Process**
  - **Initiation at State Level**
  - Proposal originates from **State Government / UT Administration**
  - Examined by the **State Tribal Welfare Department**
  - **State Scrutiny**
  - Evaluation based on ethnographic & socio-economic factors
  - Recommendation sent to the **Union Ministry of Tribal Affairs (MoTA)**
  - **Examination by Registrar General of India (RGI)**
  - **Examination by National Commission for Scheduled Tribes (NCST)**
  - NCST gives its opinion/recommendation- Advisory in nature but considered important
  - **Union Government Approval**
  - **Ministry of Tribal Affairs** finalizes proposal
  - Placed before the **Cabinet** for approval
- **Parliamentary Process**
  - **Constitution (Scheduled Tribes) Order Amendment Bill** introduced
  - Must be passed by **both Houses of Parliament**
  - Upon enactment → ST list is amended
- **Key Criteria Used (Lokur Committee-like indicators)-** Primitive traits, Distinct culture, Geographical isolation, Shyness of contact with community at large, Backwardness. (*Note: Not explicitly in Constitution but used administratively*)

#### **2.45 ONDC (Open Network for Digital Commerce)**

- **Nature: Non-profit company**
- **Parent Ministry: Ministry of Commerce & Industry**
- **Model:** Open, interoperable digital network (not a platform)
- **Objective**
  - Democratise digital commerce
  - Break platform monopolies
  - Enable **MSMEs, kirana stores & small sellers** to participate in e-commerce
  - Reduce high commissions charged by dominant platforms
- **Key Features**
  - **Open protocol-based network** (similar philosophy to UPI)
  - **Interoperability:** Buyer and seller apps can be different

- **Governance & Structure**
  - Incorporated as **Section 8 company**
  - **Advisory Council & Board of Directors**
  - **Backed by:** DPIIT, Public & private stakeholders (banks, tech firms, logistics)
- **Context:** Online ticket booking for 170+ centrally protected monuments and museums has been enabled by the Archaeological Survey of India (ASI) on the Open Network for Digital Commerce (ONDC) platform.

#### **2.46 AYUSHEPC (Ayush Export Promotion Council) (PIB)**

- **Type: Non-profit organization** (registered under Societies Registration Act)
- **Administrative Ministry: Ministry of AYUSH**
- **Objective**
- Promote **exports** of AYUSH products & services: Ayurveda, Yoga, Naturopathy, Unani, Siddha, Homoeopathy
  - Position India as a **global hub of traditional medicine**
- **Functions**
  - Facilitate **market access** for Indian AYUSH products abroad
  - Organise: International trade fairs & exhibitions, Buyer–seller meets, Support exporters in:
    - Regulatory compliance of importing countries
    - Quality certification & standards
    - Branding of “**AYUSH products of India**”
- **Coverage-** AYUSH medicines, Herbal & plant-based products, Wellness services (Ayurveda hospitals, yoga therapy, etc.)
- **Role in Export Ecosystem-** Works in coordination with: **Ministry of Commerce & Industry, DGFT, Export Promotion Councils**
  - Supports **MSMEs & startups** in AYUSH sector

#### **2.47 White dwarf system**

- **White dwarf:** A white dwarf system typically consists of a white dwarf—the dense, Earth-sized remnant of a Sun-like star—often paired with a companion star in a binary arrangement.
- Forms as a star like the Sun exhausts its nuclear fuel, sheds its outer layers as a planetary nebula, and leaves behind a hot, compact core—the white dwarf.
- In a binary system, the white dwarf’s gravity pulls gas from its companion star.
- In systems like EX Hydrae, known as intermediate polars, the white dwarf’s moderate

magnetic field partially disrupts the accretion disc and channels gas along magnetic field lines onto its surface.

- **Key Physical Features**
  - **Mass:** ~0.17–1.4 solar masses
  - **Size:** Comparable to **Earth**
  - **Density:** Extremely high ( $\approx 10^6$ – $10^9$  g/cm<sup>3</sup>)
  - **Upper mass limit: Chandrasekhar Limit = 1.4 solar masses**

### 2.48 Bio-bitumen

- **Bio-based alternative** to conventional petroleum bitumen
- Derived from **renewable biological sources** instead of crude oil
- Used mainly in **road construction** and **waterproofing**
- **Raw Materials / Sources**
  - Lignin (from paper & pulp industry)
  - Vegetable oils (soybean, rapeseed, etc.)
  - Waste cooking oil
  - Algae biomass
  - Agricultural & forestry residues
- **Key Characteristics**
  - **Lower carbon footprint** than petroleum bitumen
  - Comparable **binding and adhesive properties**
  - Better **temperature flexibility** (less cracking)
  - Partial or full replacement of fossil bitumen possible
- **Context:** India has become the first country to commercially produce bio-bitumen for road construction, marking a global milestone in green infrastructure.
- **Key features of bio-bitumen:**
  - Partial fossil replacement.
  - Environment-friendly
  - Cost-efficient
- **Manufacturing process (Bio-bitumen via pyrolysis):**
  - Collection of farm residue
  - Pyrolysis
  - Bio-oil extraction
  - Blending
  - Quality validation

### 2.49 Scramjet

- **Type:** Air-breathing hypersonic propulsion engine
- **Full Form:** Supersonic Combustion Ramjet
- **Key Features**
  - Operates at **hypersonic speeds (Mach 5 to Mach 15)**
  - **No rotating parts** (unlike turbojet/turbofan engines)
  - **Combustion occurs at supersonic speed** inside the engine
  - Uses **atmospheric oxygen** → no onboard oxidizer required
  - Highly **fuel-efficient** for long-range hypersonic flight

- **Working Principle**
  - Incoming air is compressed due to **high forward speed of the vehicle**
  - Air enters the combustor **without being slowed to subsonic speed**
  - Fuel (usually **hydrogen**) is injected and ignited
  - High-velocity exhaust produces thrust
- **Launch Requirement**
  - **Cannot operate from rest-** Requires initial acceleration to **Mach 4–5** using: Rocket boosters or Other jet engines
- **Advantages**
  - Enables **sustained hypersonic flight**
  - **Reduced launch weight** due to absence of oxidizer
  - Suitable for **space access vehicles and missiles**

### 2.50 International Solar Alliance

- Intergovernmental treaty-based international organization
- **Launch:** 2015 (Paris Climate Conference – COP21)
- **Founded by: India and France**
- **Legal Status:** Became a treaty-based organization in **2017**
- **Objective**
  - Promote **solar energy deployment** globally
  - Reduce dependence on **fossil fuels**
  - Mobilise finance, technology, and capacity building for solar projects
  - Support **climate action and SDGs**, especially for Global South
- **Membership:** Open to **all UN member countries** (after 2018 amendment)
- **Headquarters- Gurugram, Haryana, India**
- **Key Initiatives / Programs**
  - **One Sun One World One Grid (OSOWOG)** – global solar grid vision
  - **Solar Risk Mitigation Initiative (SRMI)**
  - **Solar Mini-Grids & Rooftop Solar Programs**
  - **STAR-C** (Solar Technology and Application Resource Centres)
  - **SolarX Challenge**
- **Governance Structure**
  - **Assembly:** Supreme decision-making body (all members)
  - **Secretariat:** Located in Gurugram
  - **Director General:** Head of Secretariat
  - **Standing Committees:** Finance, Program, Partnership
- **Funding**
  - Voluntary contributions from member countries
  - Multilateral development banks (World Bank, ADB, etc.)
  - Private sector participation encouraged
- **Recently, USA has pulled out of the ISA**

### **2.51 Exchange Traded Fund (ETF)**

- **Type:** Marketable investment fund / security
- **Traded on:** Stock exchanges (like shares)
- **Introduced in India:** Nifty BeES (2001) – first ETF
- **Key Features**
  - Represents a basket of securities (stocks, bonds, commodities, etc.)
  - Price fluctuates throughout the trading day
  - Generally passively managed (tracks an index)
  - Low expense ratio compared to mutual funds
  - High liquidity and transparency
- **ETF vs Mutual Fund (Prelims Focus)**

Feature	ETF	Mutual Fund
<b>Trading</b>	Real-time on exchange	End-of-day NAV
<b>Management</b>	Mostly passive	Mostly active
<b>Expense</b>	Lower	Higher
<b>Demat Account</b>	Required	Not mandatory

- **Regulator in India-** SEBI

### **2.52 EOS-N1 (Anvesha)**

- **Full Name:** Earth Observation Satellite – N1, **Nickname:** Anvesha
- **Agency:** ISRO
- **Category:** Earth Observation / Surveillance satellite
- **Purpose**
  - To enhance space-based surveillance and reconnaissance capabilities while supporting civil applications such as agriculture, urban planning, and environmental monitoring.
- **Key Features**
  - Equipped with **advanced imaging sensors**
  - Capable of **high-resolution imaging at night**
  - Can operate in **low-light and adverse weather conditions**
  - Enhances **real-time situational awareness**
- **Orbit:** Low Earth Orbit (LEO)
- **Key functions:** Hyperspectral imaging, Strategic surveillance, Agriculture support, Urban and infrastructure mapping, Environmental monitoring etc.
- It was launched with the help of PSLV-C62 along with 18 co-passenger payloads.

### **2.53 PANKHUDI Portal**

- *Platform for Partnerships, Knowledge, and Holistic Development Initiatives* (official branded name) — PANKHUDI portal.
- **Launched On:** 8 January 2026 by the **Ministry of Women and Child Development.**

- A **single-window integrated digital platform** to facilitate **voluntary and institutional contributions** towards women and child development initiatives.
- It serves as a **CSR (Corporate Social Responsibility)** and partnership facilitation portal bringing together multiple stakeholders.
- **Who Can Use It?**
  - Individuals & citizens, NRIs, NGOs, Corporate entities & CSR contributors, Government agencies
- **Key Objectives**
- Promote transparency, accountability & traceability in contributions.
- Ease collaboration between government and stakeholders.
- Strengthen implementation and monitoring of welfare programs.
- **Focus Areas**
- **The portal covers initiatives related to:** Nutrition & health, Early Childhood Care & Education (ECCE), Child welfare, protection & rehabilitation, Women's safety and empowerment.
- **Associated Flagship Missions**
- **It supports flagship programmes such as:** Mission Saksham Anganwadi & Poshan 2.0, Mission Vatsalya, Mission Shakti

### **2.54 Spina Bifida**

- **Type:** Congenital birth defect
- **Category:** **Neural Tube Defect (NTD)**
- **Occurs due to:** Incomplete closure of neural tube during early pregnancy
- **Critical period:** First 28 days of pregnancy
- **What Happens?**
  - The spinal cord, nerves, or meninges do not develop properly
  - May cause exposed spinal cord or vertebral defects
- **Nature of condition:**
  - Non-communicable, non-infectious birth defect
  - Occurs due to abnormal closure of the neural tube in the first 28 days after conception
  - Strongly linked to maternal folate deficiency
- **Causes:**
  - Inadequate folic acid intake before and during early pregnancy (primary cause)
  - Poor maternal nutrition and anaemia
  - Unplanned pregnancies without micronutrient supplementation
  - Possible genetic susceptibility combined with environmental factors
- **Key features of Spina Bifida:**
- **Visible swelling/lump on the back**
- **Paralysis or weakness of lower limbs**
- **Hydrocephalus:** Abnormal accumulation of cerebrospinal fluid in the brain occurs due to impaired drainage.

- **Urinary and bowel incontinence.**
- **Orthopaedic deformities (club foot):** Muscle imbalance and nerve dysfunction result in skeletal abnormalities such as club foot and joint contractures.
- **Treatment of Spina Bifida:**
  - Early surgical repair
  - **Hydrocephalus management:** Placement of a ventriculo-peritoneal (VP) shunt to drain excess fluid from the brain.
  - **Rehabilitation care.**
  - Orthopaedic interventions.

### 2.55 Source Code

- Source code is the **human-readable set of instructions** written by programmers to create software, applications, or operating systems.
- **Languages used:** Written in **high-level programming languages** such as C, C++, Java, Python, JavaScript, etc.
- **Conversion:** It must be **compiled or interpreted** into machine code (binary) for execution by computers.
- **Types:**
  - **Open-source code:** Source code is publicly accessible and can be **used, modified, and redistributed** (e.g., Linux, Apache, Mozilla Firefox).
  - **Proprietary/Closed source code:** Source code is **restricted** and owned by an individual or company (e.g., Windows, macOS).
- **Licensing:** Governed by licenses like **GPL, MIT, Apache License**, etc.
  - Determines rights related to use, modification, and distribution.
- **Importance:**
  - Ensures **transparency, security, and auditability** of software.
  - Enables **innovation and collaboration**, especially in open-source ecosystems.
- **Governance relevance:** Many governments promote **open-source software (OSS)** for **digital sovereignty, cost reduction, and data security.**
  - India encourages OSS through **Digital Public Infrastructure (DPI)** and **MeitY policies.**
- **Cybersecurity angle:** Access to source code helps in **vulnerability detection** but also risks misuse if exposed improperly.

### 2.56 Bhairav Battalion

- A newly-raised **elite light combat/commando battalion of the Indian Army** designed for **rapid, high-impact tactical operations.**
- Named “**Bhairav**” after the fierce symbolic form associated with strength and aggression.
- Evolved to meet **modern warfare demands** (fast strikes, deep reconnaissance, hybrid threats like drones and electronic warfare).
- Fills the capability gap **between regular infantry and elite Para-Special Forces.**

- Each battalion has roughly **200–250 specially trained soldiers**.
- Personnel are drawn from infantry and **support arms** (artillery, signals, air defence) for **multi-domain operation ability**.
- Training includes **rapid maneuver, deep strikes, surveillance, drone usage, tactical flexibility**.
- Operates as a **lean, mobile force** capable of independent action on short notice.
- Intended for **quick reaction and limited offensive/defensive tasks** along sensitive borders (China, Pakistan sectors).
- Helps **relieve Para SF** from some tactical missions so they can focus on strategic tasks.
- Around **15 battalions already raised** with plans to expand to **upwards of ~25 battalions** by mid-2026.

### **2.57 Zehanpora stupas**

- **Zehanpora** is a village in **Baramulla district, Jammu & Kashmir** (on the Jhelum River) where ancient Buddhist remains have been found.
- The site contains **2,000-year-old Buddhist structures** dating mainly to the **Kushan period** (1st–3rd century CE).
- **Stupas:** Several stupa mounds (Buddhist shrine bases).
- **Monastic structures:** Foundations indicating **viharas (monasteries)** and **chaityas (prayer halls)**.
- **Artefacts:** Pottery shards, copper objects, and stone walls from the Kushan era.
- **Significance**
  - **Rewrites history of Kashmir's past:** Demonstrates that Kashmir was a centre of Buddhist activity and learning.
  - **Gandhara links:** Architectural features and location along ancient Silk Road routes suggest connections with the **Gandhara Buddhist cultural sphere**.
  - **Cultural continuity:** Confirms Buddhism's deep roots in the region alongside other traditions.

### **2.58 Kashmir Markhor**

- A wild mountain goat.
- The name “markhor” comes from Persian meaning “snake-killer”, based on ancient folklore.
- **Distribution:** Found in **Jammu & Kashmir** and parts of **northern Pakistan**.
  - In India, mainly in **Pir Panjal range** and **Kashmir Himalayas**
  - **High-altitude mountainous terrain** (2,000–4,000 m)
  - Rocky slopes, alpine scrub forests
- **Distinctive feature:** Large, **spiral corkscrew-shaped horns** (more prominent in males)
- **Conservation status:**
  - **IUCN Red List:** *Near Threatened*
  - **Wildlife (Protection) Act, 1972: Schedule I**

- **CITES:** Appendix I (highest protection against international trade)
- **State symbol:** Declared the **State Animal of Jammu & Kashmir** (after reorganisation)
- **Ecological role:**
  - Keystone herbivore in mountain ecosystems
  - Indicator of healthy high-altitude habitats

### 2.59 Dust EXperiment (DEX)

- **Dust EXperiment (DEX)** is **India's first indigenous space dust detector/instrument** developed to measure tiny particles from space known as **Interplanetary Dust Particles (IDPs)**.
- Designed and built by the **Physical Research Laboratory (PRL), Ahmedabad** for the **Indian Space Research Organisation (ISRO)**.
- **Aim:** To detect and measure **microscopic high-speed dust particles (IDPs)** originating from **comets, asteroids and meteoroids** that constantly bombard Earth's atmosphere.
  - Helps understand the **space dust environment**, which is important for **spacecraft safety, space weather studies** and future **manned deep space missions**.
- **Key features:**
  - **Hypervelocity principle:** Detects dust impacts travelling at  $>4$  km/s, capable of melting or disintegrating on impact.
  - **Compact & efficient:** 3 kg payload with ultra-low 4.5 W power consumption.
  - **Wide field of view:**  $140^\circ$  detector for enhanced hit probability.
  - **Low-Earth orbit testing.**
  - **High detection rate:** Logged impacts at a rate of  $\sim 1$  particle per 1,000 seconds.
  - **Measured dust flux:**  $\sim 6.5 \times 10^{-*}$  particles  $m^{-2} s^{-1}$ , validating global dust models.
- DEX was flown on **PSLV-C58** as part of the **XPoSat mission** (on POEM) launched on **1 January 2024**.
- **Significance**
- **Space environment research:** Improves understanding of the near-Earth space dust environment.
- **Satellite & mission safety:** Helps assess hazards to satellites and future human missions (e.g., **Gaganyaan**, Moon/Mars) due to dust impacts.
- **Planetary science:** Blueprint for similar instruments to study dust around **Venus, Mars, Moon** and other bodies.

### 2.60 Weimar Triangle

- A **trilateral cooperation forum** in Europe.
- **Members:** **Germany, France, Poland**
- **Established:** **1991**, in **Weimar, Germany** (after the end of the Cold War).
- **Primary objective:** To build a united and secure Europe by strengthening political, security and economic cooperation among Western and Central European powers, particularly in response to Russia and regional conflicts.
- **Nature:** **Informal consultative mechanism** (not a treaty-based organisation).
- No permanent secretariat.
- **Key areas of cooperation:** European security and defence, EU foreign policy coordination,

Democracy and rule of law, Regional stability in Central and Eastern Europe

- **Strategic relevance (recent):**
  - Acts as a bridge between Western Europe and Central/Eastern Europe.
  - Shapes the EU's collective stance on Russia, Ukraine and security.

## **2.61 PSLV**

- **Polar Satellite Launch Vehicle**
- **Developed by:** ISRO
- **First successful launch: PSLV-D2 (1994)**
- **Purpose & Orbits**
  - Primarily designed to place satellites into Polar Sun-Synchronous Orbit (SSO)
  - Also capable of launching satellites into Low Earth Orbit (LEO), Medium Earth Orbit (MEO) and Geosynchronous Transfer Orbit (GTO)
- **Technical Features**
  - **Four-stage launch vehicle**
    - **1st stage:** Solid propulsion (largest solid booster used by ISRO)
    - **2nd stage:** Liquid propulsion (Vikas engine)
    - **3rd stage:** Solid propulsion
    - **4th stage:** Liquid propulsion (twin engines for precise orbital injection)
    - **Strap-on boosters:** Up to **6 solid strap-ons** for enhanced thrust
- **Payload Capacity:** ~1,750 kg to Sun-Synchronous Orbit (SSO)
- **Key Achievements**
  - Launched **Chandrayaan-1, Mars Orbiter Mission (Mangalyaan)**
  - Launched **104 satellites** in a single mission (PSLV-C37)
- One of the **most reliable launch vehicles globally**
- Failures: Four outright failures and one partial failure. Last 2 failures occurred in less than a span of one year.

## **2.62 Nipah Virus (NiV)**

- **Type of pathogen:** Virus
- **Family:** Paramyxoviridae
- **Nature:** Zoonotic (animal to human transmission)
- **Natural reservoir:** Fruit bats (**Pteropus species**) – also called *flying foxes*
- **Name derived from:** Sungai Nipah village, Malaysia
- **Transmission**
  - **Animal to human:** Contact with infected bats or pigs
  - **Human to human:** Through bodily fluids, respiratory droplets
  - **Food-borne:** Consumption of **contaminated fruits or raw date palm sap**
- Causes **acute encephalitis and severe respiratory illness**

- **Incubation period: 5–14 days** (can extend up to 45 days)
- **Case Fatality Rate (CFR): 40–75%** (very high)
- **Symptoms**
  - Fever, headache, dizziness
  - Acute respiratory distress
  - Encephalitis → coma, death in severe cases
- **Treatment & Prevention**
  - **No specific antiviral drug or licensed vaccine** (as of now)
  - Supportive care is the mainstay
  - Strict **infection control** and **contact tracing**
- First outbreak in India: **2001 (West Bengal)**
- Recurrent outbreaks: **Kerala** (2018, 2021, 2023)
- **Declared a priority pathogen** by WHO
- Included in **WHO Blueprint priority diseases**

### **2.63 Bhoomi Project**

- **Launched by: Government of Karnataka**
- **Department:** Department of Revenue, Karnataka
- **Nature: Land Records Digitisation & e-Governance Project**
- **Objectives**
  - Computerisation of **Record of Rights, Tenancy and Crops (RTC)**
  - Ensure **transparency, accuracy, and easy access** to land records
  - Reduce **corruption, litigation, and discretion of officials**
- **Key Features**
  - Digitised **ownership, tenancy, and crop details**
  - **Online issuance** of RTCs through **Bhoomi kiosks / online portals**
  - Biometric authentication for land record updates
  - Integration with **mutation (phodi)** process
- **Significance**
  - Facilitates **crop loans, insurance claims, and land transactions**
  - Enhances **ease of doing business** in agriculture
  - Serves as a **model for Digital India & land governance reforms**
- Integrated with **National Land Records Modernization Programme (NLRMP)**
- Supports **SVAMITVA** scheme (for rural property ownership clarity)
- Basis for **Digital India Land Records Modernization Programme (DILRMP)**
- The initiative has completed 25 years recently.

### **2.64 Kathputli Puppetry**

- **Art form: Traditional string puppetry**
- **Region: Rajasthan** (especially Jaipur, Nagaur, Churu)
- **Etymology:** *Kath* = wood, *Putli* = doll
- **Historical Background**
  - One of **India's oldest forms** of puppetry
  - Roots trace back to **medieval Rajasthan**
  - Patronised by **Rajput rulers**

- **Key Features**
  - Puppets made of **wood**, with **cotton stuffing**
  - **Single string or multiple strings** tied to the head
  - No legs – long flowing skirts give illusion of movement
  - **Bright costumes**, heavy jewellery, stylised makeup
- Narrates **folk tales, ballads**, heroic stories of **Rajput warriors**
- Use of **high-pitched voice**, rhythmic dialogues
- **Music & Instruments**- Live music accompaniment
- **Prelims Comparison Point**
  - **Kathputli** → String puppetry (Rajasthan)
  - **Bommalattam** → String puppetry (Tamil Nadu)
  - **Tholu Bommalata** → Shadow puppetry (Andhra Pradesh)
  - **Putul Nach** → Rod puppetry (West Bengal)

### 2.65 Operation Hawkeye

- Operation Hawkeye is a US-led military counter-terrorism operation involving air and precision strikes against Islamic State (ISIS) targets across Syria.
- **Launched by:** The operation was launched by the United States under President Donald Trump and executed through US Central Command (CENTCOM) in December 2025.
- **Aim:**
  - To avenge and respond to the Palmyra ISIS ambush that killed American personnel.
  - To degrade ISIS networks, prevent regrouping, and protect US and coalition forces operating in Syria.
  - To reinforce the message that attacks on US personnel will invite direct military retaliation.
- Syria is a sovereign Middle Eastern country that has emerged from a 13-year civil war (2011–2024) and is currently governed by an interim government led by President Ahmed al-Sharaa.
- **Located in:** Syria lies in south-western Asia on the eastern coast of the Mediterranean Sea, forming a strategic land bridge between West Asia, the Levant and Mesopotamia.
- **Capital:** Damascus, one of the oldest continuously inhabited cities in the world.
- **Neighbouring nations:** Turkey, Iraq, Jordan, Lebanon and Israel.

### **2.66 Orobanche aegyptiaca**

- **Common name: Egyptian broomrape**
- **Type: Parasitic flowering plant**
- **Key Biological Features**
  - **Obligate root parasite** → cannot survive without a host
  - **Non-photosynthetic** (lacks chlorophyll)
  - Attaches to host roots using **haustoria** to extract water and nutrients
- **Host Crops- Tobacco, Tomato, Potato, Brinjal, Mustard etc.**
- **Agricultural Impact**
  - Causes **severe yield losses** (up to 50–70% in heavy infestation)
  - Difficult to control due to: **Tiny seeds, Long seed dormancy** (can survive in soil for many years)
- India's largest oilseed crop, mustard, is facing a major yield threat due to the rapid spread of the parasitic weed *Orobanche aegyptiaca* in Rajasthan and Haryana.

### **2.67 Inflation Targeting**

- Inflation Targeting (IT) is a **monetary policy framework** where the central bank commits to achieving a **pre-announced inflation rate** as the primary objective.
- **Adopted in India:** Formally adopted in **2016** through an amendment to the **RBI Act, 1934**.
- Based on recommendations of the **Urjit R. Patel Committee (2014)**.
- **Target Set: CPI inflation target: 4%**
- **Tolerance band: ±2% (i.e., 2%–6%)**
- Target decided by the **Central Government** in consultation with RBI (every 5 years).
- **Failure Clause:** RBI is deemed to have failed if inflation exceeds 6% or falls below 2% for **3 consecutive quarters**.
- RBI must submit a report to the Government explaining reasons, remedial actions, and timeline.
- **Why CPI (not WPI):** CPI reflects **retail inflation** and includes **food & services**, directly impacting households.
- **Objectives:**
  - Ensure **price stability**
  - Anchor **inflation expectations**
  - Support **medium-term growth** and macroeconomic stability

### **2.68 Valley of Flowers**

- **Valley of Flowers** is a famous **alpine valley and national park** located in **Chamoli district, Uttarakhand** in the **Garhwal Himalayas** (not literally in Dehradun, but Dehradun is the nearest major city reference point).
- It lies at a high altitude of around **3,600 m (≈12,000 ft) AMSL**.
- **Declared a National Park in 1982.**

- Part of the **Nanda Devi and UNESCO World Heritage Site**, known for **outstanding natural beauty and biodiversity**.
- Valley hosts **over 600 species of flowering plants**, including **rare/endemic species** like **Brahma Kamal (Saussurea obvallata)**, **Blue Poppy**, **Cobra Lily** and many medicinal species.
- Rich fauna includes **snow leopard, musk deer, Himalayan black bear, blue sheep, red fox**, and various birds (Himalayan monal etc.).
- **Open for tourists roughly June to October; best bloom time is July–September** (peak flowering).

## **2.69 Greenland**

- **World's largest island** (not a continent).
- **Autonomous territory of Denmark (not an independent country)**.
- **Location:** Lies between Arctic Ocean and North Atlantic Ocean.
- Situated north-east of North America.
- Separated from Canada by Davis Strait and Baffin Bay.
- Extends within the Arctic Circle; experiences Midnight Sun and Polar Night.
- About **80%** covered by Greenland Ice Sheet (second largest after Antarctica).
- Ice sheet is a major contributor to global sea-level rise due to melting.
- Predominantly polar climate.
- Interior extremely cold; coastal areas slightly milder due to ocean currents.
- Very sparsely populated; majority are Inuit (Kalaallit).
- Part of Kingdom of Denmark but left the European Economic Community (EEC) in 1985.
- **Strategic Importance:** Location crucial for Arctic geopolitics, shipping routes, and military presence.
- Hosts US Thule Air Base (now Pituffik Space Base).
- Rich in rare earth elements, uranium, zinc, iron ore.
- Resource exploitation limited due to environmental concerns.

## **2.70 Man Portable Anti-Tank Guided Missile (MPATGM)**

- Developed by **DRDO** in collaboration with **Indian industry**.
- **3rd Generation** Anti-Tank Guided Missile (ATGM).
- **Fire-and-Forget** system (no post-launch guidance required).
- **Man-portable**; can be carried and fired by infantry soldiers.
- Designed to replace older imported short-range ATGMs.
- **Guidance System:** Uses **Imaging Infra-Red (IIR) seeker** for target lock-on before launch.
  - High accuracy even in **low visibility / night conditions**.
- **Range:** Effective range of about 4000 metres

### 2.71 Petro-Dollar System

- The **petro-dollar system** refers to the practice of **pricing and trading crude oil in US dollars** in global markets.
- **Origin:** Emerged in the **early 1970s** after the **Bretton Woods system collapsed (1971)**.
- Formalised through **US–Saudi Arabia agreement (1974)**.
- **Key Mechanism:** Oil-exporting countries sell oil in **USD**.
- Excess dollars earned are reinvested in **US assets** (US Treasury bonds, banks) → called **petro-dollar recycling**.
- **Major Actors:** **OPEC countries**, especially Saudi Arabia.
- **United States** as issuer of reserve currency.
- **Why Important for the US:**
- Sustains **global demand for US dollars**.
- Enables US to run **large trade and fiscal deficits**.
- Lowers **borrowing costs** for the US government.
- **Impact on Global Economy:**
- Strengthens USD as **global reserve currency**.
- Links **energy markets with global finance**.
- Increases vulnerability of oil-importing nations to **USD volatility**.
- **Impact on India:**
- Oil imports require **USD**, increasing pressure on **forex reserves**.
- Contributes to **imported inflation** when the dollar strengthens.
- Affects **current account deficit (CAD)**.

### 2.72 Greenwald Limit

- The Greenwald limit is a **theoretical density ceiling for plasma in a tokamak (fusion reactor), beyond which the plasma becomes unstable and collapses**.
- It links the maximum safe plasma density to the plasma current and size of the reactor.
- **Importance:**
  - Fusion reactions require very high plasma density, temperature, and confinement time.
  - The Greenwald limit has long been a major bottleneck, preventing reactors from packing enough fuel to reach self-sustaining fusion (ignition).
- **Key features:**
  - **Tokamak-specific limit:** The Greenwald limit applies to donut-shaped magnetic fusion reactors, where plasma is confined using strong magnetic fields.
  - **Stability threshold:** Exceeding this limit normally causes plasma to become unstable and collapse, risking damage to the reactor.
  - **Density–energy link:** Higher plasma density leads to more atomic collisions, which increases the rate of fusion and energy output.
  - **Design barrier:** For decades, it was treated as a fixed ceiling, forcing engineers to limit fuel density in fusion reactors.
- China's EAST fusion reactor has achieved stable plasma densities up to 65% beyond the Greenwald limit, a long-standing barrier in nuclear fusion research.

- **Achievement & Significance:**
- China's EAST reactor achieved 1.3–1.65 times the Greenwald limit while maintaining stability.
- Done by cooling the divertor and reducing tungsten impurities, allowing cleaner, denser plasma.
- Confirms Plasma–Wall Self-Organisation (PWSO) theory, proving a new “density-free” operating regime.

### 2.73 Passive Euthanasia

- Withdrawal or withholding of life-sustaining treatment (e.g., ventilator, feeding tube) to allow a terminally ill patient to die naturally.
- **Nature:** Involves **omission**, not an active act to cause death.
- **Legal Status in India: Permitted under strict guidelines.**
- **Key Supreme Court Case:**  
**Common Cause vs Union of India (2018): Recognised Right to Die with Dignity as part of Article 21.**
  - Legalised passive euthanasia nationwide.
  - Validated **Living Will / Advance Medical Directive.**
- **Living Will (Advance Directive):** Written statement by a person specifying refusal of life-prolonging treatment if terminally ill or in permanent vegetative state.
  - Must be executed when the person is of **sound mind.**
- **Medical Procedure:** Decision by treating doctor + confirmation by hospital medical board.
  - Consent of patient or family mandatory.
- **Difference from Active Euthanasia:**
  - **Passive:** Withdrawal of treatment (legal).
  - **Active:** Administering lethal substance (illegal in India).
- Passive euthanasia is permitted in many countries; active euthanasia is allowed only in a few (e.g., Netherlands, Belgium).

### 2.74 Bandhgala

- Traditional **Indian formal menswear.**
- **Also Known As: Jodhpuri suit.**
- **Origin: Jodhpur, Rajasthan.**
- Developed during the **British colonial period.**
- **Historical Background:** Fusion of **Indian royal attire** and **British tailoring.**
  - Popularised by **Rajput royalty** and Indian princes.
- **Key Features: High closed-neck collar** (bandh/closed → “Bandhgala”).
  - Buttoned-up front.
  - Worn with **matching trousers.**
- **Fabric:** Wool, silk, linen, or blended fabrics.
  - Often includes **embroidered or metal buttons.**
- **Context:** Centre begins drive to end colonial-era dress codes & practices, **railways discontinues bandhgala coats.**

### **2.75 Havana Syndrome**

- A set of **unexplained neurological symptoms** reported by diplomats, intelligence officials, and their families.
- **First Reported: 2016**, among **US and Canadian diplomats in Havana, Cuba**
- **Reported Symptoms:** Headache, dizziness, Nausea, fatigue, Hearing loss, tinnitus (ringing in ears), Cognitive difficulties, memory issues, Balance problems
- **Suspected Causes (Not Conclusively Proven): Directed energy weapons (e.g., microwave or radiofrequency waves) – most discussed theory.**
  - Acoustic attacks (largely ruled out). Environmental factors or stress-related causes (mass psychogenic illness).
- **Key Features:**
  - **Global spread:** Cases reported in Cuba, China, Europe, Russia, and the US.
  - **No visible injuries:** Many affected showed brain-like trauma without physical impact.
  - **Uncertain attribution:** US intelligence says a foreign attack is unlikely in most cases, though not fully ruled out.

### **2.76 Responsible Nations Index (RNI)**

- The **World Intellectual Foundation (WIF)** (a global, non-partisan and sector-agnostic think tank) will launch the **Responsible Nations Index (RNI)**, **India's first globally anchored index** that evaluates countries on **responsible governance, sustainability, and global responsibility**.
- **Responsible Nations Index (RNI):** It assess countries on the basis of **responsible governance rather than conventional power or GDP-centric metrics**.
- It aims to **shift the focus from traditional power metrics to ethical governance, sustainability, and cooperation**.
- **Coverage & Data-** Covers **154 countries** worldwide.
- **Core Assessment Dimensions- Three broad dimensions:**
  - **Internal Responsibility** — Citizen dignity, justice, welfare, inclusivity, well-being.
  - **Environmental Responsibility** — Stewardship of natural resources, climate action, sustainability.
  - **External Responsibility** — Contribution to **peace, international cooperation, and global stability**.

### **2.77 BRICS India 2026 Logo**

- The BRICS India 2026 logo is the official visual identity of India's BRICS Chairship, representing the country's vision, values and priorities for leading the grouping in 2026.
- **Chairship period:** Calendar year 2026

- **Milestone year:** 20th anniversary of BRICS (2006–2026)
- **Logo Theme:** The logo is inspired by India’s national flower – the Lotus, symbolising: Resilience and renewal, Unity in diversity, Spiritual and cultural harmony.
  - At its core, the logo conveys “togetherness for global welfare”, aligning with India’s vision of Vasudhaiva Kutumbakam (One Earth, One Family).
- **Key Features of the Logo:**
  - **Lotus shape:** Represents India’s civilisational identity and growth from adversity.
  - **Namaste hands at the centre:** Symbolise respect, dialogue and cooperation.
  - **Five coloured petals:** Represent the founding BRICS nations – Brazil, Russia, India, China and South Africa.
  - **Balanced design:** Reflects unity among diverse cultures, economies and political systems.
  - **Digital platform:** The accompanying BRICS India website will act as a hub for meetings, initiatives, outcomes and public engagement during India’s chairship.

### 2.78 Shaksgam Valley

- Lies **north of the Karakoram Range**.
- Forms part of the **Trans-Karakoram Tract**. Between the Karakoram and Kunlun mountain ranges.
- **Political Status: Claimed by India** as part of the **Union Territory of Ladakh (Jammu & Kashmir)**.
  - **Illegally ceded by Pakistan to China** under the **Sino-Pakistan Boundary Agreement, 1963**.
- **Also Known As: Trans-Karakoram Tract**
- Part of **Gilgit-Baltistan region** under Pakistan’s control before 1963.
- **Bordering Regions: Borders Xinjiang (China)**.
  - Lies close to **Aksai Chin** (another India-claimed but China-controlled area).
- **Strategic Importance:**
  - Strengthens **China–Pakistan strategic nexus**.
  - Close to **China–Pakistan Economic Corridor (CPEC)** region.
  - Important for **military logistics and surveillance** in the Karakoram.

### **2.79 Dark Fibre**

- Dark fibre refers to **unused or unlit optical fibre cables** that have been laid but are **not currently in operation** (no data transmission).
- **Why “Dark”**: Term comes from the fibre being **unconnected to electronic equipment**, hence no light signals pass through it.
- **Activation**: Can be “lit” later by installing **optical transceivers and networking equipment**, enabling high-speed data transfer.
- **Advantages**:
  - Extremely **high bandwidth capacity**
  - **Low latency** and high reliability
  - Enhanced **data security** (dedicated network)
  - Scalable and **future-proof**
- **Uses**:
  - Backbone of **5G networks**
  - Data centres and cloud services
  - **Smart cities**, defence communication
  - Internet Service Providers (ISPs)
- **Difference from Lit Fibre**: *Lit fibre*: active fibre providing bandwidth as a service

### **2.80 Kuki-Zo**

- Kuki-Zo refers to a **group of closely related tribal communities** sharing common ethnic, cultural and linguistic roots.
- **Ethno-linguistic Group**: Belong to the **Tibeto-Burman language family**.
- **Geographical Distribution**: Primarily in **Manipur** (hill districts like Churachandpur, Kangpokpi, Tengnoupal)
  - Also found in **Mizoram, Assam, Nagaland**
  - Extend across international borders into **Myanmar and Bangladesh**
- **Social Structure**:
  - Traditionally **clan-based** society
  - Village chief (chiefdom system) historically important
- **Religion**: Predominantly **Christian** (due to missionary influence during colonial period)
- **Livelihood**: Traditionally dependent on **shifting cultivation (jhum)**
  - Increasing shift towards settled agriculture, education and services
- Recognised as **Scheduled Tribes (STs)** under the Indian Constitution (various sub-groups notified separately)
- Rich traditions of **folk songs, dances and festivals**
- Emphasis on community solidarity and customary laws

### **2.81 Deepfakes**

- Deepfakes are **synthetic media (audio, video, images)** created using **Artificial Intelligence (AI)**, especially **deep learning**, to manipulate or generate realistic-looking content.
- **Technology Used**: **Generative Adversarial Networks (GANs)**

- **Key Feature:** Ability to swap faces, clone voices, or alter actions/speech in a highly convincing manner.
- **Uses (Legitimate):**
  - Film and entertainment industry
  - Dubbing and language translation
  - Education and accessibility (voice recreation)
- **Threats & Concerns:**
  - **Misinformation and fake news**
  - **Election interference** and political propaganda
  - **Cybercrime**, fraud and identity theft
  - **Privacy violation** and harassment (especially of women)
  - Can be used for **disinformation campaigns**
- **Indian Legal Framework:**
  - **Information Technology Act, 2000** (Sections 66D, 67, 67A)
  - **IPC provisions** on cheating, defamation and forgery
  - No deepfake-specific law yet

### 2.82 Makar Sankranti Across India



### **2.83 Similipal National Park**

- **Location:** Mayurbhanj district, Odisha
- **Part of:** Eastern Ghats (not Western Ghats)
- **Declared National Park in 1980**
- **Notified as Tiger Reserve under Project Tiger (1973)**
- **Included in UNESCO World Network of Biosphere Reserves (2009)**
- **Landscape:** Undulating terrain, plateaus and hills
- Dense sal and moist deciduous forests
- **Rivers:** Origin of major rivers like Budhabalanga, Baitarani and Subarnarekha
- **Flora:** Dominated by Sal (*Shorea robusta*)
- **Rich medicinal plants and orchids**
- **Fauna:** Famous for melanistic (black) tigers  
Asian elephant, leopard, gaur, sambar, chital

<b>Pillar</b>	<b>Focus</b>
<b>Export Infrastructure (20%)</b>	Utilities, logistics, connectivity, industrial infrastructure
<b>Business Ecosystem (40%)</b>	Macroeconomy, cost competitiveness, human capital, finance, MSMEs, innovation
<b>Policy &amp; Governance (20%)</b>	State export policies, institutions, regulatory environment
<b>Export Performance (20%)</b>	Export outcomes, diversification, market access, facilitation

- **Tribal Presence:** Inhabited by **Santhal, Ho, Munda and Bathudi** tribes
- Acts as a **major biodiversity hotspot** in eastern India
- Important **watershed** for north Odisha

### **2.84 Export Preparedness Index**

- **Released by:** NITI Aayog
- **First Launched:** 2020
- **Purpose:** To assess the **export readiness and performance of Indian States & UTs**
  - Encourages **competitive and cooperative federalism**
- UTs evaluated separately due to structural differences
- **Key Objective:** Identify **strengths, weaknesses and gaps** in export ecosystem
  - Help states formulate **data-driven export policies**
- **Major Pillars (4):**
- **Key Features of EPI 2024:**
  - Introduces new dimensions such as macroeconomic stability, cost competitiveness, MSME ecosystem, and financial access.
  - Uses official data from Central Ministries, State Governments and public institutions.
  - States and UTs are classified as Leaders, Challengers, and Aspirers.
  - Strong focus on districts as the real units of export competitiveness.
  - Helps in cluster-based, place-based and value-chain driven export strategies.

- **Top Performing States & UTs (EPI 2024):**
- **Large States:** Maharashtra, Tamil Nadu, Gujarat etc.
- **Small States / North-East / UTs:** Uttarakhand, Jammu & Kashmir, Nagaland etc.

### 2.85 Tirukkural

- **Author:** Thiruvalluvar (Tamil poet–philosopher)
- **Period:** Traditionally dated around **300 BCE – 1st century CE** (Sangam age context)
- **Language:** Classical Tamil
- **Nature of text:** Didactic work on ethics, morality, polity and personal life
- **Structure**
- Comprises **1,330 couplets (kural)**
- Each kural has **2 lines** (7 words in total – 4 + 3)
- Divided into **3 Books (Iyal):**
- **Aram** – Virtue/Dharma (380 couplets)
- **Porul** – Wealth/Polity/Statecraft (700 couplets)
- **Inbam (Kamam)** – Love (250 couplets)
- **Key Features**
  - Secular in nature; does **not promote any single religion**
  - Emphasizes **ethical governance, justice, compassion, and self-discipline**
  - Advocates ideals like **non-violence (Ahimsa)**, truth, and righteous conduct
  - Applicable to **both rulers and common people**
- **Polity & Governance**
  - Highlights duties of **king**, ministers, army, treasury and diplomacy
  - Stresses **just rule, welfare of subjects, and moral leadership**
  - Condemns tyranny and unjust taxation
- Considered the **“Tamil Veda”**

### 2.86 Kruger National Park

- **Location:** Northeastern **South Africa** (provinces of **Limpopo** and **Mpumalanga**)
- **Named after:** **Paul Kruger**, former President of Transvaal
- **Ecological Significance**
  - **Part of the Great Limpopo Transfrontier Park** (with **Mozambique** and **Zimbabwe**)
  - **Represents savanna ecosystem** (grasslands, woodlands, riverine forests)
- **Flora & Fauna**
  - **Famous for the “Big Five”:** **Lion, Leopard, Elephant, Rhinoceros, Buffalo**
  - Hosts **500+ bird species**, ~150 mammals, ~110 reptiles
  - Important populations of **African elephant** and **white & black rhinos**
- Major rivers flowing through/along the park: **Limpopo, Sabie, Olifants, Crocodile**

- Forms part of the Kruger-to-Canyons Biosphere Reserve, recognised by UNESCO.

### **2.87 Polymetallic Nodules**

- Rock-like **concretions rich in metals** found on the **deep ocean floor**.
- **Also known as manganese nodules**
- **Depth:** Found at 4,000–6,000 metres below sea level
- **Shape & Size:** Potato-shaped; few mm to ~20 cm in diameter
- **Metal Content:** Manganese (Mn) – major component, Nickel (Ni), Cobalt (Co), Copper (Cu), Trace amounts of rare earth elements
- **Major Locations**
  - **Clarion–Clipperton Zone (CCZ)** – Pacific Ocean (largest reserve)
  - **Central Indian Ocean Basin (CIOB)**
  - Parts of **Atlantic** and **Indian Oceans**
- **Formation**
  - Formed by **very slow precipitation** of metals from seawater
  - Growth rate: **a few millimetres per million years**
- **India & Polymetallic Nodules**
  - India is a “**Pioneer Investor**” recognized by the **International Seabed Authority (ISA)**
  - India has been allocated **75,000 sq km** in the **Central Indian Ocean Basin**
  - Implemented by **Ministry of Earth Sciences** through **NIOT**
- **International Legal Framework**
  - Governed by **UNCLOS (1982)**
  - Regulated by **International Seabed Authority (ISA)**.

### **2.88 Unified Pension Scheme**

- **Unified Pension Scheme (UPS)** is a new pension framework introduced by the **Government of India** for **central government employees**. It offers **assured pension benefits** and addresses concerns with the earlier **National Pension System (NPS)** by incorporating guaranteed payouts.
- UPS is designed to provide predictability, assured pensions, minimum pension guarantees, and family pension benefits while retaining a contributory structure. It blends desirable features of the old and new pension systems.
- **Key Features**
  - **Assured Pension-** Employees completing **25 years of service** receive a pension equal to **50% of average basic pay** drawn in the **last 12 months** before retirement.
  - **Proportionate Payout-** Employees with **10–25 years of service** get a **proportionate pension** based on service length.
  - **Minimum Guaranteed Pension-** A **minimum pension of ₹10,000/month** is guaranteed after **10 years of qualifying service**.
  - **Family Pension-** Upon the employee’s death, the **legally wedded spouse** receives

- **60%** of the pension the employee was drawing.
- **Inflation-linked-** Pension (including family pension) is subject to **dearness relief** based on inflation indices, protecting retirees from rising costs.
- **Lump-Sum Benefits on Retirement-** Lump-sum payment at superannuation: **1/10 of last monthly emoluments (basic + DA)** for every **six months of service** completed.
- **Implementation & Eligibility**
  - UPS is operational **from 1 April 2025**.
  - Available to: Central Govt employees under NPS as of 1 Apr 2025.
  - New recruits joining on/after **1 Apr 2025**.
  - Certain retirees who retired on/before 31 Mar 2025 (subject to conditions).
- Eligible employees must **opt into UPS** within a specified timeframe; **once chosen, it is final and irrevocable**.
- **Comparison with NPS & OPS**
  - NPS pensions are **market-linked** and not guaranteed.
  - UPS provides **assured fixed pension** and minimum pension guarantees.
- **UPS vs OPS (Old Pension Scheme):**
  - OPS was unfunded, offering defined benefits but fiscally unsustainable.
  - UPS retains defined benefits but with a **contributory, sustainable model**.

## 2.89 Army Day

- **Observed on: 15 January** every year
- **Significance:** Commemorates the day **Field Marshal K. M. Cariappa** took over as the **first Indian Commander-in-Chief of the Indian Army** in 1949.
- **Historical Background**
- **Before 1949, the Indian Army was headed by British officers**
- **Army Day marks complete Indianisation of Army leadership**
- **Historic Venue:** This was the 4th Army Day Parade held outside Delhi, following events in Bengaluru (2023), Lucknow (2024), and Pune (2025), Jaipur (2026) and marked the first instance it was organised outside a cantonment.
- **Celebrations**
- **Parades and military displays showcasing weapons, drills and operational readiness**
- **Main parade venue rotates annually among different cities**
- **Strategic Displays:** The parade featured the debut of
- **Bhairav Battalion contingents, representing new lean, agile formations for rapid response.**
- 
- **Indian Army – Key Facts**
  - **Largest component** of the Indian Armed Forces
  - Supreme Commander: **President of India**
  - Administrative control: **Ministry of Defence**
  - Professional head: **Chief of the Army Staff (COAS)**
- **Navy Day:** 4 December
- **Air Force Day:** 8 October

## **2.90 High Seas Treaty (BBNJ Agreement)**

- **Also known as:** *Biodiversity Beyond National Jurisdiction (BBNJ) Agreement*
- **Adopted:** March 2023 by the United Nations
- **Opened for Signature:** September 2023 at the UN General Assembly
- **Came into Force:** *Recently came into force as 60 nations have ratified this.*
- **What are High Seas?**
  - Areas of the ocean beyond 200 nautical miles from coastal states
  - Constitute ~64% of ocean surface and ~95% of ocean volume
  - Not under the jurisdiction of any single country
- **Legal Basis**
  - Implementing agreement under **UNCLOS (1982)**
  - Third implementing agreement after:
    - Part XI Agreement (Deep Seabed Mining)
    - Fish Stocks Agreement (1995)
- **Key Objectives**
  - Conservation and sustainable use of **marine biodiversity** in high seas
  - Address governance gaps in areas beyond national jurisdiction
- **Core Pillars of the Treaty**
  - **Marine Genetic Resources (MGRs)**- Equitable sharing of benefits (monetary & non-monetary)
    - Applies to genetic material from high seas organisms
  - **Area-Based Management Tools (ABMTs)**- Includes **Marine Protected Areas (MPAs)**
    - First global framework to create MPAs in high seas
  - **Environmental Impact Assessment (EIA)**- Mandatory EIAs for activities with potential harm
  - Applies to fishing, deep-sea mining, bioprospecting, etc.
  - **Capacity Building & Technology Transfer**
    - For developing and least-developed countries
    - Voluntary, fair, and inclusive mechanisms
- **Institutional Mechanism- Conference of Parties (COP)** – decision-making body
- India **signed** the High Seas Treaty

## **2.91 Chips to Start-up (C2S) Programme**

- **Ministry of Electronics & Information Technology (MeitY)**, Government of India
- **Year: 2022**
- **Nature:** *National programme for semiconductor design & innovation*
- **Objective**
  - Create an ecosystem for **semiconductor chip design** in India
  - Enable **start-ups, MSMEs, students and academia** to design chips
  - Reduce India's dependence on imported semiconductor IP

- **Key Components**
  - **Design Infrastructure Support**
  - Foundry support for fabrication
  - Packaging, testing & validation facilities

**Key features:**

- **Outlay:** ₹250 crore (5 years) **Human resource targets:**
  - **200 PhDs, 7,000 M.Tech (VLSI), 8,800 M.Tech (related streams with VLSI), 69,000 B.Tech students.**
- **Infrastructure access:** Shared EDA tools, HPC, FPGA boards, and SMART labs.
- **Hands-on fabrication:** Shared wafer runs via Semi-Conductor Laboratory (SCL), Mohali.
- **Chip design enablement:** National ChipIN Centre operated by Centre for Development of Advanced Computing (C-DAC), Bengaluru.
- **Innovation outcomes:** Start-up incubation, patents, IP cores, ASICs and SoCs.

### **2.92 BRICS Plus naval exercise**

- A **multinational naval exercise** held under the wider *BRICS Plus* format, involving selected BRICS members and partner countries to conduct joint maritime drills focused on **security of key sea routes and maritime cooperation**.
- **Name of the 2026 edition:** “**Will for Peace 2026**” (week-long exercise off South African waters).
- **Hosted by:** South Africa (conducted off **Simon’s Town**, near Cape Town).
- **Format:** Part of **BRICS Plus** cooperation (BRICS expanded outreach beyond core members).
- **Objective:**
  - Enhance **maritime security, interoperability, and joint operations**
  - Ensure **safety of shipping lanes** and support **maritime economic activities**.
- **Activities include:** Joint manoeuvres, communications drills, search & rescue, maritime safety and coordination exercises.
- **Participants**
- **Active participants:** China, Russia, Iran, United Arab Emirates, South Africa (among others).
  - **Observers / invited partners:** Brazil, Egypt, Ethiopia, Indonesia.
  - **Not participated:** India (opted out) — cited reasons related to *non-institutional nature* of the drill.

### **2.93 Indiaphonte bijoyi**

- A microscopic crustacean discovered in the Kavaratti lagoon, Lakshadweep, has been formally established as a new genus and species, named *Indiaphonte bijoyi*.
- Belonging to the family Laophontidae under the order Harpacticoida. It is part of meiofauna—tiny invertebrates (less than 1 mm) that live within aquatic sediments and are visible only under a microscope.

- The genus name *Indiaphonte* honours India; the species name *bijoyi* honours S. Bijoy Nandan, a noted Indian marine scientist.
- Recognised as a new genus due to a unique combination of morphological traits not seen in any known Laophontidae genus.
- Key characteristics:
  - Size: ~518–772 micrometres; females slightly larger than males.
  - Body: Semi-cylindrical, dorsoventrally depressed, widest at mid-body and tapering posteriorly.
  - Appendages: Antennae-like structures at the front; specialised limbs adapted for sediment life.
- **Significance:**
  - **Ecosystem health:** Meiofaunal copepods recycle nutrients, graze on microalgae, and form the base of aquatic food webs.
  - **Biodiversity science:** Adds a new genus to global taxonomy, underscoring India's role in marine discovery.
- **Key crustacean group:**
  - **Some of Macroscopic crustaceans:** Crab, Lobster, Shrimp / Prawn, Krill, and Barnacle.
  - **Some of Microscopic crustaceans:** Copepods, Cladocerans, Ostracods, and Amphipods etc.

### **2.94 Open-sea Marine Fish Farming Project in Andaman Sea**

- India has launched its first open-sea marine fish farming project in the Andaman Sea, marking a major step in advancing the Blue Economy through science-led, livelihood-oriented utilisation of ocean resources.
- **Implementing agencies-** Ministry of Earth Sciences (MoES) & National Institute of Ocean Technology (NIOT).
- **Implemented by:** ICAR–Central Marine Fisheries Research Institute (CMFRI) in collaboration with Andaman & Nicobar Administration
- **Located in**
  - **North Bay, near Sri Vijaya Puram, Andaman Sea.**
  - **Union Territory of Andaman & Nicobar Islands.**
- **Aim:** To unlock ocean-based economic potential, generate sustainable coastal livelihoods, and build technical feasibility for scaling open-sea aquaculture under India's Blue Economy vision.
- **Objective**
  - Promote **open-sea cage aquaculture** for high-value marine fish
  - Reduce pressure on **capture fisheries**
  - Enhance **fish production, fishermen income**, and export potential
- **Key Features**
  - Uses **offshore/open-sea cages** (deeper waters, strong currents)

- More sustainable than near-shore cage farming
- Climate-resilient aquaculture model

### **2.95 Darwin's Bark Spider**

- **Named after:** Charles Darwin
- **Habitat:** Madagascar (endemic species)
- **Key Distinction:** Produces the strongest natural silk known (tensile strength  $\approx$  10 times stronger than Kevlar of same thickness).
- **Web Characteristics:**
  - Spins the **largest orb webs** among spiders.
  - Webs can span **up to 25–30 metres** across rivers and streams.
  - Uses wind to carry silk threads across water bodies.
- **Silk Properties:** Extremely **elastic** – can stretch more than most other spider silks.
  - Resistant to breaking under dynamic loads (e.g., wind, prey impact).
- **IUCN Status:** **Not yet evaluated**

### **2.96 Chagos Islands**

- Archipelago in the **central Indian Ocean**
- Lies south of the Maldives, east of Seychelles
- **Political Status:** Previously it was administered by the **United Kingdom** as the **British Indian Ocean Territory (BIOT)**
  - Recently UK has transferred it to Mauritius but the UK maintains an initial 99-year lease of Diego Garcia with an option of extension.
- **Largest Island:** **Diego Garcia**
- Hosts a **major US–UK military base** (strategic importance in Indo-Pacific)

### **2.97 Gaza Peace Board**

- A **new international body** proposed to oversee **post-war transition in Gaza** after the 2025 Israel-Hamas ceasefire.
- Aimed at **governance, reconstruction, ceasefire monitoring, security transition and investment** in the Gaza Strip.
- **About:** It is a US-led intergovernmental body, established under UN Security Council (UNSC) Resolution 2803 (2025), to enact a comprehensive US peace plan for the reconstruction of Gaza.
  - The initiative is **not under UN command**, but the "Comprehensive Plan to End the Gaza Conflict" it supports has UNSC endorsement, providing it international legitimacy.
- Part of a **20-point Gaza peace plan** introduced by **U.S. President Donald Trump** (2025–26).
- **Chaired by: Donald Trump, as inaugural Chairman, with veto powers under the draft charter— independent of his tenure as US President.**
- Invitations extended to countries including India, Egypt, Jordan, Türkiye, Canada, Argentina, among ~60 nations.
- **Functions:**
  - Supervising post-war governance through a technocratic Palestinian administration (NCAG).
  - Coordinating reconstruction, investments, and capital mobilisation.
  - Monitoring ceasefire compliance and transition from Hamas rule.
  - Supporting delivery of public services and economic revival.
  - Acting as a high-level political and financial decision-making body for Gaza.

### **2.98 Polar Silk Road**

- A proposed **Arctic shipping route and cooperation framework** under China's **Belt and Road Initiative (BRI)**.
- **Origin & Objective:** It was jointly announced by China and Russia in 2017. China's 2018 Arctic Policy labelled China a "**near-Arctic state**" and promoted cooperation on Arctic shipping, resources, and science.
  - China's 2030 goal is to be a "**polar great power**", recognizing the Arctic's rising strategic and economic value.
- **Route:** Primarily along the **Northern Sea Route (NSR)** through the Arctic Ocean.
- Connects **East Asia–Europe** via the Arctic, reducing travel distance and time.
- **Key Objective:** Develop **Arctic shipping lanes**, infrastructure, energy cooperation, and scientific research.
  - Promote **trade connectivity** between Asia, Europe and North America.
- **Strategic Significance:** Offering significantly shorter Asia–Europe distance (**upto 40%**), with the **Northwest Passage** (along Canada's coast) as a secondary option.
- China calls itself a "**Near-Arctic State**" (not legally recognised category).

- It is an observer in the **Arctic Council** since 2013.

### **2.99 Indian Skimmer**

- **Lower mandible longer than upper mandible** (unique feeding adaptation).
- Skims water surface to catch fish.
- **Habitat: Large rivers, estuaries, lakes, coastal lagoons.**
  - Nests on **sandbars and river islands**.
- **Geographical Distribution:** Indian subcontinent: **India, Bangladesh, Pakistan, Nepal.**
  - Also found in parts of **Southeast Asia**.
- **Conservation Status: IUCN Red List: Endangered**
- **Major Threats: River regulation** (dams, barrages), **Sand mining** on riverbeds, **Disturbance during breeding**, Water pollution and declining fish availability.
- Breeds mainly in **dry season**.
- Ground nester; lays eggs on open sandbanks.
- Listed under **Schedule I of the Wildlife (Protection) Act, 1972**.
- Indicator of **healthy riverine ecosystems**.

### **2.100 Environmental Protection Fund (EPF)**

- The Environmental (Protection) Fund is a statutory fund of the Government of India created to utilise penalties imposed for violations of environmental laws for pollution control, environmental restoration, monitoring, research, and capacity building.
- It is a **dedicated fund for environmental restoration and protection** in India.
- Used mainly for **remediation of environmental damage** caused due to pollution or violations.
- **Nodal authority:** Administered by the Ministry of Environment, Forest and Climate Change (MoEFCC) or anybody notified by the Central Government.

#### **Key features:**

- **Source of funds:** Penalties under the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, interest from investments, and other prescribed sources.
- **Permitted uses (11 activities):** Pollution prevention and mitigation, remediation of contaminated sites, environmental monitoring equipment, clean technology research, IT-enabled systems, laboratory infrastructure, and capacity building of regulatory bodies.
- **Revenue sharing:** 75% of penalty proceeds transferred to the Consolidated Fund of the State/UT, 25% retained by the Centre.
- **Governance mechanism:** Creation of dedicated Project Management Units at Central and State levels.
- **Oversight & transparency:**
  - Comptroller and Auditor General of India (CAG) to audit the Fund
  - Central Pollution Control Board (CPCB) to develop and maintain a centralised online portal for fund implementation.

### **2.101 Goldilocks Zone for Inflation**

- The *Goldilocks zone for inflation* refers to an **optimal inflation range** that is **neither too high nor too low**, considered ideal for **sustained economic growth**.
- **Why “Goldilocks”**: Borrowed from the *Goldilocks principle*—“*just right*” conditions for the economy.
- **In Indian Context: RBI’s inflation target**:  $4\% \pm 2\%$  (i.e., 2%–6%) under the Flexible Inflation Targeting (FIT) framework.
  - This range is considered India’s **Goldilocks zone**.
- **Rationale**:
  - **Too high inflation** → erodes purchasing power, discourages savings, macroeconomic instability.
  - **Too low inflation/deflation** → weak demand, investment slowdown, unemployment risks.
- **Benefits of staying in the Goldilocks zone**:
  - Encourages **investment and consumption**.
  - Supports **price stability with growth**.
  - Improves **policy credibility** of the central bank.
  - Helps maintain **real interest rates** at growth-supportive levels.
- **Policy Tools Used**: **Monetary policy** (repo rate, CRR, SLR, liquidity management), **Supply-side measures** (buffer stocks, import/export duties) and **Fiscal coordination** with government.

### **2.102 C-295 Aircraft**

- **Type**: Medium Tactical Transport Aircraft (C-295MW)
- **Manufacturer**: Airbus Defence and Space (Spain)
- **Indian Partner**: Tata Advanced Systems Ltd (TASL)
- **Role**: Replacing ageing Avro HS-748 fleet of IAF
- **Procurement & Make in India**
  - **Total ordered**: 56 aircraft (₹21,935 crore deal, 2021)
  - **16** delivered in fly-away condition from Spain
  - **40** to be manufactured in India (Vadodara, Gujarat)
  - First India-made C-295 to roll out: **September 2026**
  - Final deliveries by **August 2031**
- India’s **first private sector military aircraft manufacturing line**
- Payload: **5–10 tonnes**
- Speed: **~480 kmph**
- Range: **~3,000 km**
- **STOL** capability (Short Take-Off & Landing)
- Can operate from **semi-prepared/unpaved airstrips**

### **2.103 Internet Governance Internship & Capacity Building Scheme (IGICBS)**

- **Launched by**: National Internet Exchange of India (NIXI)

- **Under:** Ministry of Electronics & Information Technology (MeitY)
- **Year of launch:** January 2025
- **Nature:** Capacity building + Internship scheme in Internet Governance
- **Objectives**
  - Build **Indian expertise** in Internet Governance (IG)
  - Increase **India's participation** in global internet governance forums
  - Develop future **tech policy & cyber diplomacy leaders**
  - Promote **multistakeholder approach** (Govt, academia, civil society, private sector)
- **Key Features**
  - **Structured internships:** 6-month and 3-month terms combining research + practical outreach.
  - **Mentorship model:** Each intern mentored by senior experts from government, academia, or global IG bodies.
  - **Capacity building & outreach:** Mandatory awareness programmes in colleges, universities, NGOs, and local communities.
  - **Global exposure:** Engagement with international internet governance institutions and processes.
  - **Interdisciplinary focus:** Technology, law, public policy, cybersecurity, digital identity, and Universal Acceptance (UA).

### 2.104 Kumbhalgarh Wildlife Sanctuary

- **State:** Rajasthan
- Lies in the **Aravalli Range**
- **Surrounds the famous Kumbhalgarh Fort (UNESCO World Heritage Site)**
- **Forms part of the Mewar–Marwar eco-region**
- **Acts as an important buffer for forest ecosystems in southern Rajasthan**
- **Topography & Vegetation-** Falls under the Khathiar–Gir dry deciduous forest ecoregion, supporting scrub forests, grasslands, and woodland species.
  - **Hilly & rugged terrain**
  - **Dry deciduous forests**
  - Dominant species: Dhok (*Anogeissus pendula*), Khair, Salar, Bamboo
  - **Fauna:** Leopard, Sloth Bear, Wolf, Hyena, Jackal, Chinkara, Jungle Cat, Four-horned Antelope (*Chousingha*), Flying Fox (bat species)
- The Ministry of Environment, Forest and Climate Change has notified the Kumbhalgarh Wildlife Sanctuary as an Eco-Sensitive Zone (ESZ) to strengthen conservation in the Aravalli Range.
- **Cultural Link**
  - **Kumbhalgarh Fort** built by **Rana Kumbha**
  - Known for the **Great Wall of India** (second longest continuous wall)

### 2.105 UNESCO Media and Information Literacy (MIL) Alliance

- The UNESCO Media and Information Literacy Alliance have announced the election of its

first-ever Global Board, marking a major milestone in its institutional governance.

- **UNESCO launched a new digital platform/hub** for MIL Alliance (2025–26).
- **Alliance relaunched with Cartagena Declaration (Oct 2025)**
- Strengthened governance + expanded membership drive (Jan 2026 updates)
- **Place of launch:** Abuja, Nigeria
- **Lead Agency:** UNESCO
- **Nature:** Global multistakeholder network
- **Objectives**
  - Promote **Media and Information Literacy (MIL)** globally
  - Strengthen capacity to counter: Misinformation, Disinformation, Hate speech, Build **resilient, informed societies**, Support **evidence-based digital policies**
- **Key Functions**
  - Knowledge & best-practice sharing
  - Policy advocacy on MIL
  - Global research collaboration
  - Capacity building & training
  - Support to national & regional MIL strategies

### **2.106 Artemis II Mission (NASA)**

- Mission scheduled for **launch window starting 6 February 2026**
- First **crewed lunar mission in 53+ years** after Apollo era
- **Basic Facts**
  - **Agency:** NASA (USA), Canadian Space Agency (CSA) – International partner
  - **Mission Type:** Crewed lunar flyby (no landing)
- **Spacecraft:** Orion Crew Module
- **Aim:**
  - **Validate human-rated deep-space systems in real mission conditions.**
  - **Prepare for Artemis III lunar landing and future Mars missions.**
  - **Establish a sustained human presence beyond Earth orbit.**
- **Key features of the mission:**
  - **Crewed lunar flyby:** Four astronauts will orbit the Moon's far side without landing.
  - **Free-return trajectory:** Uses Earth–Moon gravity to return safely without major propulsion burns.
  - **Deep-space testing:** Full checkout of life support, navigation, communication, radiation protection, and manual piloting.
  - **Distance milestone:** Astronauts will travel over 230,000 miles from Earth, farther than any humans before.
  - **Mission duration:** Approximately 10 days, ending with Pacific Ocean splashdown.

### **2.107. Granth Kutir**

- Granth Kutir is a dedicated repository/library of India's classical language manuscripts and books, established at **Rashtrapati Bhavan**.
- **Inauguration:** Inaugurated by **President Droupadi Murmu** in January 2026.

- **Collection:** About **2,300 books and ~50 manuscripts** in **11 classical languages** — Tamil, Sanskrit, Kannada, Telugu, Malayalam, Odia, Marathi, Pali, Prakrit, Assamese, and Bengali.
- **Objective:** To preserve, showcase and promote India's **classical literary and cultural heritage** and move away from colonial-era archival dominance.
- **Supporting Institutions:** Backed by the **Ministry of Culture, Ministry of Education**, and technical expertise from **IGNCA (Indira Gandhi National Centre for the Arts)**.
- **Linked Initiative:** Supports the **Gyan Bharatam Mission** for preservation, digitisation and dissemination of India's manuscript heritage.
- **Access:** Selected works available to visitors on Rashtrapati Bhavan Circuit 1; digital access via an online portal for researchers.

### **2.108 Parakram Diwas**

- **Observed on:** **23 January** every year.
- **Significance:** Birth anniversary of **Netaji Subhas Chandra Bose (1897–1945)**.
- **Meaning:** *Parakram* means valour, courage and heroism — hence called the Day of Valour.
- **Objective:** To inspire citizens, especially youth, to emulate Netaji's courage, leadership and patriotism.
- **Associated Institutions:** Linked to remembrance of the Indian National Army (INA / Azad Hind Fauj).
- **Key Government Actions:**
  - Year-round commemorative programmes by Ministry of Culture.
  - Development of Kranti Mandir Museum at Red Fort.
  - Renaming of islands in Andaman & Nicobar (e.g., **Netaji Subhas Chandra Bose Dweep**).
- **Context:** Republic Day celebrations will now begin every year from January 23 instead of January 24 to include the birth anniversary of Netaji Subhas Chandra Bose.

### **2.109. Long-Range Anti-Ship Hypersonic Glide Missile (LRAShM)**

- **Developer:** Defence Research and Development Organisation (**DRDO**).
- **For:** Primarily for the Indian Navy to target high-value naval assets (aircraft carriers, destroyers, etc.).
- **Type:** Hypersonic Glide Weapon (HGV) — not a conventional cruise or ballistic missile
- **Key Technical Features**
  - **Range:** ~ **1,500 km**
  - **Speed:** Up to **Mach 10** (average glide speed ~Mach 5+).
- **Flight Profile:**
  - Two-stage solid booster + **unpowered hypersonic glide vehicle**.
  - **Quasi-ballistic + maneuvering glide**, making interception difficult.

- **Time to Target:** Can cover 1,500 km in about **15 minutes**.
- Places India alongside the US, Russia and China in hypersonic glide missile capability.

### **2.110 INS Sagardhwani and Sagar Maitri V**

- Sagar Maitri (SM) is a **joint programme of the Indian Navy and DRDO**, aligned with India's vision of MAHASAGAR – Mutual and Holistic Advancement for Security and Growth Across Regions.
- Its scientific component, **MAITRI (Marine & Allied Interdisciplinary Training and Research Initiative)**, focuses on long-term joint research and capacity building with partner countries.
- **Objectives:** The initiative aims at the collection of oceanographic and acoustic data along designated observational tracks and at strengthening scientific cooperation among Indian Ocean Rim (IOR) countries.
- It is central to DRDO's efforts to enhance Underwater Domain Awareness (UDA) for maritime security.
- **SM-5 Mission:** Under the SM-5 mission, INS Sagardhwani will retrace the historic routes of INS Kistna, which participated in the 1962–65 International Indian Ocean Expedition, thereby reviving collaborative ocean research.
- **INS Sagardhwani:** A marine acoustic research vessel designed by Naval Physical and Oceanographic Laboratory(NPOL), Kochi and built by Garden Reach Shipbuilders & Engineers(GRSE), Kolkata.
- Since its commissioning in July 1994, it has been India's primary platform for long-term oceanographic observation and maritime research.

### **2.111 Solar Radiation Storm**

- The Sun unleashed the largest solar radiation storm in over 20 years, ranked S4 (Severe) by the NOAA Space Weather Prediction Center, causing intense auroras across Europe and disruptions to aviation GPS systems.
- A Solar Radiation Storm is a surge of **high-energy charged particles** (mainly protons) emitted by the Sun, usually following a **solar flare** or **coronal mass ejection (CME)**.  
**Also called: Solar Proton Event (SPE).**
- **Particles involved:** Protons, electrons and heavy ions accelerated to **near-relativistic speeds**.
- **Cause:**
  - Powerful **solar flares**.
  - Shock waves driven by **fast CMEs**.
- **Speed of arrival:** Can reach Earth in **minutes to a few hours** (faster than CMEs).
- Classified by **NOAA Space Weather Scale** as **S1 to S5**:
- **S1 (Minor) → S5 (Extreme)** based on proton flux intensity.
- **Impacts**
- **Human health, Satellites, Aviation, Navigation, Space missions.**

- **Difference from Related Phenomena**
  - **Solar Flare:** Burst of electromagnetic radiation (X-rays, UV).
  - **Coronal Mass Ejection (CME):** Massive cloud of plasma + magnetic field.
  - **Solar Radiation Storm:** High-energy **particle storm** — distinct but often associated with flares/CMEs.

### **2.112 Operation Trashi-I**

- A major **counter-terrorism operation** launched by Indian security forces in **Jammu & Kashmir**.
- **Launched in: January 2026.**
- **Area of Operation:** Kishtwar district — especially Chatroo, Sonnar, Mandral-Singhpora forested and hilly belts.
- **Forces Involved:** Indian Army (White Knight Corps), Jammu & Kashmir Police and CRPF (in support)
- **Objective:** To **flush out Pakistan-based terrorists**, mainly linked to **Jaish-e-Mohammad (JeM)**, hiding in dense forests.
- **Key Features Terrain:** High-altitude, dense forest and mountainous region (traditional infiltration corridor).
- **Tactics Used:** Cordon-and-search operations, **Drones & aerial surveillance, Sniffer dogs**

### **2.113 Dugong**

- **Common name:** Sea Cow
- **IUCN Status:** Vulnerable
- **CITES:** Appendix I
- **Wildlife (Protection) Act, 1972: Schedule I**
- **Distribution in India-** Palk Bay & Gulf of Mannar, Gulf of Kutch, Andaman & Nicobar Islands
- 🌿 **Habitat & Ecology**
  - Lives in **shallow, warm coastal waters**
  - Feeds exclusively on **seagrass meadows**
  - Known as “**gardeners of the sea**” – maintain seagrass health
  - Consume **30–40 kg of seagrass/day**
  - Indicator species for **healthy coastal ecosystems**
- 🛡️ **Threats**
  - **Seagrass habitat loss** (dredging, coastal development, pollution)
  - **Accidental entanglement** in fishing nets
  - **Climate change & ocean warming**
  - **Low reproductive rate** (slow population recovery)
- **India’s First Dugong Conservation Reserve (2022):** Northern **Palk Bay, Tamil Nadu**

### **2.114 Carbon Credit Trading Scheme (CCTS)**

- India’s **domestic carbon market mechanism** to price greenhouse gas (GHG) emissions.
- Aims to incentivise **emission intensity reduction** and promote low-carbon growth.

- **Notified under: Energy Conservation (Amendment) Act, 2022 and Environment (Protection) Act, 1986**
- **Regulatory Framework:** Overseen by the Bureau of Energy Efficiency (BEE) and the National Steering Committee for Indian Carbon Market (NSCICM).
- **Two-Pillar Structure**
  - **Compliance Mechanism (Mandatory)- For energy-intensive industries**
    - **Beat target** → **Earn Carbon Credit Certificates (CCCs)**
    - **Miss target** → **Must buy CCCs**
    - **Failure to buy** → **Environmental compensation = 2× average CCC price**
  - **Voluntary Offset Mechanism- For non-obligated entities**
- **Evolution from PAT:** It transitions from the Perform, Achieve, and Trade (PAT) scheme (focused on energy efficiency via Energy Savings Certificates (ESCs)) to a focus on reducing GHG emission intensity per tonne of output

### 2.115 Asiatic Wild Dog (Dhole)

- **Common name:** Dhole / Whistling Dog / Red Dog
- Only truly social forest-dwelling canid in Asia
- **Conservation Status**
  - **IUCN Red List: Endangered (EN)**
  - **CITES: Appendix II**
  - **Wildlife (Protection) Act, 1972: Schedule II (Part II)**
- Native to **South, Central & Southeast Asia**
- Present in 11 countries (fragmented range)
- **India holds the largest remaining population**
- **Indian Strongholds: Western Ghats** (major stronghold), **Central Indian Highlands, Eastern Ghats, North-East India.**
- Recently confirmed in **Kaziranga–Karbi Anglong Landscape (Assam)**
- **Habitat-** Tropical & subtropical forests, Scrublands, Montane ecosystems
- **Key Biological Features**
  - Rusty-red coat
  - Bushy black-tipped tail
  - Communicates using **whistling calls**
  - **Pack hunters** (matriarchal packs)
  - Highly coordinated hunting strategy

### 2.116 Advanced Chemistry Cell (ACC)

- **Advanced Chemistry Cell (ACC)** refers to **next-generation battery cells** with: Higher **energy density**, Longer **life cycles**, Improved **safety**, Lower **cost per kWh**
- Used in: Electric Vehicles (EVs), Grid-scale energy storage, Consumer electronics, Renewable energy integration.

- **National Programme on ACC Battery Storage (PLI-ACC)**
- **Launched: 2021**
  - Nodal Ministry: **Ministry of Heavy Industries (MHI)**
  - Objective: Build **domestic giga-scale battery manufacturing**
  - Total Outlay: **₹18,100 crore**
  - Target Capacity: **50 GWh**
  - Additional: **5 GWh for Niche ACC Technologies**
  - Performance period: **2025–2029**
  - Gestation period: **2023–2024**
  - Objective: Build **domestic giga-scale battery manufacturing**
    - Reduce import dependence (mainly from China)
    - Promote **Atmanirbhar Bharat** in energy storage
- **Context:** India's Advanced Chemistry Cell–Production Linked Incentive (ACC-PLI) scheme has fallen behind schedule, with only 1.4 GWh battery capacity commissioned against a target of 50 GWh by 2026, as per a recent analytical report.

### **2.117 Muna Island**


- **Country:** Indonesia
- **Province:** Southeast Sulawesi (Sulawesi Tenggara)
- Lies in the **Flores Sea**
- Located: **South-east of Sulawesi, West of Buton Island**
- **Physical Features**
  - Dominated by **limestone karst landscapes**
  - Numerous **caves & rock shelters**
  - Presence of **speleothems (calcium carbonate deposits)**
- **Context:** **Rock art dated to at least 67,800 years ago has been identified on Muna Island, Indonesia, making it the oldest known cave art in the world.**

### **2.118 Jeevan Raksha Padak Awards**

- A series of **civil gallantry awards** of India
- Given for **meritorious acts of humane nature** in saving human life
- Instituted in **1961 as an Offshoot of the Ashoka Chakra series** of gallantry awards
- **Administering Authority-** **Ministry of Home Affairs (MHA)**

- Final approval by: **Prime Minister, President of India**
- **Three Categories**
  - Sarvottam Jeevan Raksha Padak: Conspicuous courage in saving life under very great danger to the rescuer.
  - Uttam Jeevan Raksha Padak: Courage and promptitude under great danger to the rescuer.
  - Jeevan Raksha Padak: Courage and promptitude involving grave bodily injury risk to the rescuer.
- **Nature of Awards**
  - Open to **all persons** (civilians, officials, uniformed personnel)
  - Can be **posthumous**
  - Acts include: Drowning rescues, Fire accidents, Road/rail accidents, Electrocution, Natural disasters, Mine rescue operations
- **Award Components- Medallion, Certificate**
  - **One-time monetary allowance-** Sarvottam: **₹2 lakh**, Uttam: **₹1.5 lakh**, Jeevan Raksha: **₹1 lakh**
- Announced **annually**

### 2.119 Doomsday Clock


- **What it is:** A **symbolic timepiece** representing the likelihood of a human-made global catastrophe. "Midnight" represents the point of total annihilation.
- **Managed by:** **Bulletin of the Atomic Scientists (BAS)**, a non-profit organization based in Chicago, founded in 1945 by Manhattan Project scientists (including Albert Einstein and J. Robert Oppenheimer).
- **Maintenance:** The time is set annually by the Bulletin's **Science and Security Board** in consultation with its Board of Sponsors (which includes several Nobel Laureates).
-  **Current Status (2026)**
- **Time: 85 seconds to midnight.**
- **Significance: This is the closest the clock has ever been to midnight in its history.**
- **Why it moved in 2026:**
  - **Nuclear Peril:** Expiration of the **New START Treaty** (set for Feb 2026), escalating war in Ukraine, and tensions between India-Pakistan and Iran-Israel.
  - **Climate Change:** Record-breaking global temperatures and inadequate international policy action.
  - **Disruptive Technologies:** The unregulated rise of **Generative AI** and its role in spreading misinformation ("Information Armageddon").
  - **Biological Threats:** Potential misuse of biotechnology and lapses in biosafety.

### 2.120 Kurdish Region

- It is a broadly defined geographic region **traditionally inhabited mainly by Kurds**.
- It consists of an extensive plateau and mountain area, spread over large parts of what are now eastern Turkey, northern Iraq, and western Iran and smaller parts of northern Syria and Armenia.

- **Capital:** Erbil
- **Geographical Features of Kurdistan Region**
  - Mountains: It includes the mountain systems of the Zagros and the eastern extension of the Taurus.
  - Rivers: Tigris and Greater Zab Rivers flows through this region.
- Kurds are spread across: **Turkey, Iran, Iraq, Syria etc. but only in Iraq** do they have constitutionally recognized autonomy.
- **Statelessness:** The Kurds are often described as the "**largest ethnic group without a state**" (approx. 30–45 million people).
- **Treaty of Sèvres (1920):** Promised an independent Kurdish state after WWI but was never implemented.
- **Treaty of Lausanne (1923):** Replaced Sèvres and partitioned Kurdish lands among the new borders of Turkey, Iraq, and Syria.
- **Peshmerga:** The formal military force of the Kurdistan Region in Iraq (played a key role in defeating ISIS).
- **Language:** Kurdish is an **Indo-European language** (Indo-Iranian branch), **distinct from Arabic (Semitic) and Turkish (Turkic).**
- Map Tip: On a map, look for the "**Four-Country Junction.**" Kurdistan sits exactly where the borders of Turkey, Syria, Iraq, and Iran converge.

### 2.121 Agarwood

- **Formation Process:** Agarwood is not a natural wood type. It is a **pathological product** formed when the tree is infected by a specific mold (*Phaeoacremonium parasitica*). In response, the tree produces a dark, aromatic resin to protect itself.
- **Habitat:** Native to the rainforests of South and Southeast Asia.
- **In India:** Found predominantly in Northeast India (Assam, Arunachal Pradesh, Manipur, and Nagaland).
-  **Conservation & Legal Status**

Authority	Status / Regulation
IUCN Red List	<b>Critically Endangered</b> (specifically <i>A. malaccensis</i> )
CITES	<b>Appendix II</b> (Regulates international trade to prevent extinction)
WPA (India)	Protected under the <b>Wildlife (Protection) Act, 1972</b>

<b>Assam State</b>	Recently declared as the " <b>State Tree of Assam</b> " (to promote legal cultivation)
--------------------	--

- Known as "**Liquid Gold**"- High-grade agarwood can fetch up to \$100,000 per kg
- **The "Infection" Logic:** A healthy *Aquilaria* tree is odorless and pale. Only a damaged or infected tree produces the valuable resin.
- While wild extraction is largely banned, the Indian government has recently eased norms for **cultivated** Agarwood to help farmers in the Northeast.

### 2.122 Sikkim Sundari

- **Common Names:** **Sikkim Rhubarb**, Noble Rhubarb, **Padamchal** (Nepali), or **Chuka**.
- **Classification:** A giant, perennial, **monocarpic** herb (it grows for years, blooms once, and then dies).
- 🏠 **Habitat & Distribution**
  - **Region:** Endemic to the **Eastern Himalayas**.
  - **Geographic Range:** Found in Sikkim, Arunachal Pradesh (India), Nepal, Bhutan, and Tibet.
  - **Altitude:** Thrives in the alpine zone at extreme elevations between 4,000 to 4,800 meters (above the tree line).
  - **Terrain:** Grows on scree slopes, rocky ledges, and alpine meadows.
- 🌿 **Key Adaptations (The "Glasshouse" Plant)**
  - The plant is a marvel of evolutionary engineering to survive the harsh Himalayan climate:
  - **Translucent Bracts:** The most striking feature is its tower of straw-colored, overlapping bracts (modified leaves).
  - **Greenhouse Effect:** These bracts allow visible light to pass through but block harmful **UV-B radiation** and trap heat. This creates a warm microclimate for the flowers inside, protecting them from freezing winds and night chills.
- 🏛️ **Conservation & Cultural Status**
  - **IUCN Status:** Generally considered **Vulnerable/Rare** due to its restricted range and long life cycle.
  - **Life Cycle:** It remains a low rosette for **7 to 30 years** storing energy before its single, dramatic bloom (usually in June-July).
  - **Traditional Use:** \* **Medicinal:** The bright yellow roots (rich in oxalic acid) are used in traditional **Tibetan medicine**.
  - **Edible:** The acidic stems are consumed locally.
  - **Dye:** Roots are used to dye wool for traditional blankets.

### 2.123 Aralam Butterfly Sanctuary

- Kerala government officially renamed the **Aralam Wildlife Sanctuary** to **Aralam Butterfly Sanctuary**.
- **Status:** It is the **first dedicated butterfly sanctuary** in Kerala and one of the first in India to focus specifically on lepidoptera (butterflies and moths) conservation.
- 🌿 **Geographical Profile**
  - **Location:** Situated on the western slopes of the **Western Ghats** in the **Kannur**

**district** of Kerala.

- **Northernmost Sanctuary:** It is the northernmost wildlife sanctuary in Kerala.
- **Contiguity:** It shares borders with:
  - **Brahmagiri Wildlife Sanctuary** (Karnataka) to the north.
  - **Kottiyoor Wildlife Sanctuary** (Kerala).
  - **North Wayanad Forest Division.**
- **River System:** Drained by the **Cheenkannipuzha River** (a tributary of the Valapattanam River), which is vital for "mud-puddling" activities of butterflies.
- **Highest Peak: Katti Betta** (1,145 meters).
- 🦋 **Butterfly Diversity & Migration**
  - **Species Count:** Home to over **266 species** of butterflies (approx. 80% of Kerala's total butterfly diversity).
- **Vegetation:** Mainly **West Coast Tropical Evergreen** and **Semi-Evergreen** forests. It is unique for being the only protected area featuring the *Dipterocarpus-Mesua-Palaquium* type of evergreen forest.
- **Key Fauna:** \* **Slender Loris:** A rare, nocturnal primate (Schedule I of WPA 1972).
- **Malabar Giant Squirrel**, Elephants, Tigers, and Leopards.
- **Birds:** Malabar Grey Hornbill and Ceylon Frogmouth.

### 2.124 Polar Vortex

- A large area of **low pressure** and **cold air** surrounding both of Earth's poles.
- **Rotation:** It always spins **counter-clockwise** at the North Pole (Cyclonic) and **clockwise** at the South Pole (following the Earth's rotation/Coriolis effect).
- **Behavior:** It is a permanent feature that **strengthens in winter** (due to a high-temperature gradient between the pole and the equator) and **weakens in summer**.
- 🏰 **The Two Types of Polar Vortex**

**The "Fence":** The Polar Front Jet Stream (in the troposphere) acts as a boundary or "fence" that keeps the cold Arctic air trapped inside the Polar Vortex.

- **Stable State (Positive Arctic Oscillation):** When the vortex is strong, the jet stream is a straight, fast-moving "wall" keeping cold air at the poles.
- **Unstable State (Negative Arctic Oscillation):** When the vortex weakens, the jet stream becomes wavy (Meandering). This allows lobes of frigid air to "spill" southward into mid-latitudes (USA, Europe, Asia).

Feature	Tropospheric Polar Vortex	Stratospheric Polar Vortex
<b>Altitude</b>	Lower atmosphere (Surface to ~10–15 km).	Higher atmosphere (~15 km to 50 km).
<b>Duration</b>	Exists <b>year-round</b> .	Disappears in summer; strongest in winter/autumn.
<b>Direct Impact</b>	Directly drives the daily weather we feel.	Usually separate, but can "reset" the weather below if disrupted.

- **📍 Sudden Stratospheric Warming (SSW)**

- This is a phenomenon where the **stratosphere warms up rapidly** (by 50°C+ in days).
- **Impact:** This disrupts the stratospheric vortex, causing it to **split or displace**. This is the primary trigger for the extreme "Arctic Blasts" felt in lower latitudes.
- **Current Context (2026):** In early 2026, a major SSW event led to a "split" in the vortex, causing severe cold snaps in Europe and North America and influencing **Western Disturbances** in India.

### **2.125 Wings India 2026**

- **Wings India** is Asia's largest civil aviation and aerospace exhibition & conference
- Flagship event of India's civil aviation sector
- **Theme:** "Indian Aviation: Paving the Future – From Design to Deployment, Manufacturing to Maintenance, Inclusivity to Innovation and Safety to Sustainability"
- **Venue:** Begumpet Airport, Hyderabad, Telangana
- **Organisers**
  - Ministry of Civil Aviation, Government of India
  - Airports Authority of India (AAI)
  - Federation of Indian Chambers of Commerce & Industry (FICCI)
- **Key Objectives-** Showcase India as one of the **world's fastest-growing civil aviation markets**
- Promote: Aircraft manufacturing, Maintenance, Repair & Overhaul (MRO), Aircraft leasing, Pilot training & skilling, Sustainable Aviation Fuel (SAF) etc.

### **2.126 Day Zero**

- **Day Zero** refers to the **day when a city/region's usable water supply falls below a critical threshold**.
- At this point: **Regular tap water supply is stopped**, Water is **rationed through emergency collection points**
- **Origin & Popularisation**
- Term became globally popular during **Cape Town (South Africa) water crisis, 2018**
- City narrowly avoided Day Zero through strict rationing & demand management
- **How is Day Zero Declared?**
- Based on: Reservoir storage levels, Groundwater availability, Surface water inflows, Declared when system becomes operationally unsustainable
- **Global Context (UN & Recent Studies)**
  - UN warns world is entering "global water bankruptcy"
  - Half of world's 100 largest cities are in high or extremely high water stress
  - Climate models suggest Day Zero droughts may hit some regions before 2030
  - Global freshwater availability per capita has declined >20% since 2000

### **2.127 SAMPANN (System for Accounting and Management of Pension)**

- **SAMPANN** stands for **System for Accounting and Management of Pension**
- **It is a Comprehensive Pension Management System (CPMS) of Government of India**
- **Key Objective:** The platform digitises the entire pension life cycle, including case processing, e-Pension Payment Order (PPO) issuance, payment disbursement, accounting, grievance redressal, and reporting.
  - Shift from bank-centric to department-led pension disbursement
- **Integrated with:**
- PFMS (Public Financial Management System) — for payments
  - Jeevan Pramaan — Digital Life Certificate
  - UMANG App — mobile access to pension services
  - DigiLocker — secure access to PPO & pension documents
- The SAMPANN (System for Accounting and Management of Pension) pension management system has been integrated with the UMANG (Unified Mobile Application for New-age Governance) platform to provide digital access to key pension services for telecom pensioners.

### **2.128 Buddhist Diamond Triangle**

- The Diamond Triangle refers to three major Buddhist monastic complexes located in the **Jajpur and Cuttack districts** of Odisha.

Site	Key Features & Prelims Pointers
Ratnagiri	Known as the "Hill of Jewels." It was a major center for <b>Vajrayana (Tantric) Buddhism</b> . Famous for its exquisitely carved <b>chlorite doorframe</b> and numerous monolithic stupas.
Lalitgiri	The <b>oldest</b> of the three sites (dating back to the 1st century CE). Notable for the discovery of <b>caskets containing charred bones</b> , believed to be the <b>relics of Gautama Buddha</b> .
Udayagiri	The largest complex. Known for its <b>stepped well</b> and inscriptions. It is distinct from the Udayagiri-Khandagiri caves (which are primarily Jain) located near Bhubaneswar.

#### **↳ Historical & Cultural Context**

- **Period:** These sites flourished between the **5th and 12th centuries CE**, under the patronage of the **Bhauama-Kara dynasty** and later the Somavamshis.
- **Vajrayana Buddhism:** This "Diamond Vehicle" (hence the name Diamond Triangle) emphasized tantric practices. The sites served as a bridge for Buddhism's spread to **Southeast Asia and Tibet**.
- **Hiuen Tsang's Visit:** The Chinese traveler Hiuen Tsang (Xuanzang) visited Odisha in the 7th century and described a flourishing Buddhist university called **Puspagiri**.
  - *Note:* Archaeologists believe the Diamond Triangle sites (specifically Lalitgiri/Langudi) likely constitute the remains of this lost university.
- **Architecture:** The sites feature **Stupas, Viharas (monasteries), and Chaityas (prayer halls)**. They are famous for Gandhara-influenced imagery but with distinct local "Odishan" sculptural finesse.
- The UNESCO World Heritage Centre has officially added Odisha's famed Buddhist

Diamond Triangle—comprising Lalitgiri, Udayagiri, and Ratnagiri—to India's Tentative List for World Heritage Sites.

### **2.129 Menopause Clinics**

- Maharashtra has launched **India's first dedicated Menopause Clinics** in government hospitals
- Aim: To provide **specialised, structured healthcare** for women during menopause
- **Clinics started across:** District hospitals, Sub-district hospitals, Municipal hospitals, Select rural hospitals. Statewide rollout (urban + rural)
- **Nature of Clinics-** Dedicated **weekly special OPDs**
- **Services Provided-** Expert gynaecology consultation, Mental health counselling
- Screening for: Bone health (osteoporosis), Cardiovascular health, Hormonal health, Medicines & supplements, Calcium & Vitamin D guidance etc.
- **Key Rationale**
- **Aim:**
  - To provide holistic, dignified, and accessible healthcare to women during menopause.
  - To address physical, hormonal, and mental health challenges associated with menopause.
  - To mainstream menopause-related care into public health policy.

### **2.130 Rojava Region**

- **Location:** Situated in **Northeastern Syria**.
- **Borders:**
  - **North:** Turkey (separated by a highly militarized border).
  - **East:** Iraq (specifically the Kurdistan Regional Government - KRG).
  - **West & South:** Areas controlled by the Syrian Transitional Government.
- **Key Rivers:** The **Euphrates** and its tributary, the **Khabur River**, flow through this region.
- **Major Cities:** **Qamishli** (de facto capital), **Kobane** (famous for the 2014-15 siege against ISIS), **Al-Hasakah**, **Raqqqa**, and **Deir ez-Zor**.
- **🏛 Political & Administrative Status**
  - **Official Name:** Known as **DAANES** (Democratic Autonomous Administration of North and East Syria).
  - **Recent Conflict (Jan 2026):** Following the fall of the old Syrian regime, the new transitional leader, **Ahmed al-Sharaa**, launched a major offensive to re-integrate Kurdish-held territories into the central state.
  - **Ideology:** It was governed under **Democratic Confederalism**—a model based on local councils, gender equality (**Jineology**), and ecological sustainability.
- **⚔ Security & Strategic Significance**
  - **SDF & ISIS:** The Syrian Democratic Forces (led by the Kurdish YPG) were the primary ground partners for the US-led coalition in the defeat of ISIS.
  - **Resources:** Rojava holds the majority of Syria's **oil and gas fields** (Deir ez-Zor region) and is the country's "breadbasket" due to its fertile wheat-producing lands.
  - **Turkey's Stance:** Turkey views the Kurdish leadership in Rojava as an extension of the **PKK** (a banned group in Turkey), leading to frequent cross-border military operations.

- **2026 Language Decree:** In a move to ease tensions, the new Syrian government officially recognized **Kurdish as a national language** (though not yet an "official" state language).

### **2.131 Ethanol Blending**

- **The E20 Target:** India has advanced its target of **20% ethanol blending** in petrol (E20) to **2025-26** (originally 2030).
- **Current Status:** As of 2025, India has achieved the **20% blending** milestone across most of the country, moving from just 1.5% in 2014.
- **Next Milestone:** Discussions are underway for **E30** (30% blend) by 2030 and the promotion of **Flex-Fuel Vehicles (FFVs)** which can run on 100% ethanol.
- **National Policy on Biofuels (2018) & 2022 Amendments-** The policy categorized biofuels to provide different financial incentives:
  - **1G (First Generation):** Bioethanol from food sources (sugarcane juice, sugar beet, corn, damaged food grains like broken rice/wheat).
  - **2G (Second Generation):** "Advanced Biofuels" from non-food sources (rice straw, wheat straw, corn stover, bamboo, woody biomass).
  - **3G (Third Generation):** Biofuels from **Algae**.
  - **4G (Fourth Generation):** Biofuels from genetically engineered crops or carbon capture processes.
- **PM JI-VAN Yojana:** Provides **Viability Gap Funding (VGF)** specifically for **2G Ethanol** projects to create a commercial ecosystem.
- **GST:** Reduced from 18% to **5%** on ethanol meant for the EBP (Ethanol Blended Petrol) program.

### 2.132 Lakkundi Excavations

- **Location: Lakkundi village**, Gadag district, **Karnataka**
- Part of the **Deccan heritage zone**
- **Known as:** “*Cradle of stone temple architecture*” and “*Paradise of temples and stepwells*”
- Lakkundi finds mention in 11th–12th century inscriptions and was once compared to Amaravati, the capital of Indra, for its prosperity.
- **Lakkundi was ruled by:** Rashtrakutas, Chalukyas, Hoysalas, Kalachuris etc.
- It had a **tankashale (mint)** and was ruled by the Chalukyas, Yadavas and Hoysalas.
- It served as the **capital of the Hoysala king Veeraballala** in 1192 AD.
- **Cultural and Religious Legacy:** The village was the Karmabhoomi of Queen Attimabbe, a Jain philanthropist renowned for building temples, Jain basadis, and wells.
- **Major architectural style: Kalyani Chalukya style**
  - Famous for: Over **50+ temples**
  - **Stepped wells (Kalyanis/Pushkarnis)**

### 2.133 Sela Pass (The Gateway) & Sela Lake (Paradise Lake)

- **Location:** Situated in the West Kameng and Tawang districts of Arunachal Pradesh. It connects Tawang to the rest of India.
- **Mountain Range:** It lies in the Eastern Himalayas.
- It is among the highest motorable passes in India and is maintained year-round by the Border Roads Organisation (BRO).
- **Strategic Importance:** It is a vital corridor for the Indian Army to access the Line of Actual Control (LAC). Historically, it was a major site during the 1962 Sino-Indian War.
- **Sela Lake (Paradise Lake)**
  - **Geography:** A high-altitude lake located right at the top of the Sela Pass.
  - **Type:** It is an **Oligotrophic lake** (low nutrient content, very clear water).
  - **Hydrology:** During winter, the lake freezes completely. It is considered sacred by local **Tibetan Buddhists**.
  - **Connectivity:** It feeds several small streams that eventually join the **Tawang Chu** or **Kameng River** systems.
  - It is known as “**Paradise Lake**” for its scenic beauty, is one of the sacred lakes in Tibetan Buddhism, and holds deep spiritual importance for the local Monpa communities.
- **The Sela Tunnel Project (High Priority)**
- **Objective:** To provide **all-weather connectivity** to Tawang. Previously, Sela Pass was often closed during winter due to heavy snowfall and landslides.
- **World Record:** It is the **world's longest bi-lane tunnel** at an altitude above 13,000 feet.
- **Executed by:** The **Border Roads Organization (BRO)** under *Project Vartak*.

### **2.134 V-BAT Autonomous Drones**

- **Type:** A **Group 3 Vertical Take-Off and Landing (VTOL)** drone.
- **Design:** Features a unique **ducted-fan** design. It takes off and lands vertically like a rocket but transitions to horizontal fixed-wing flight for long-range surveillance.
- **Logistics:** It is **runway-independent**. It can be launched and recovered from a tiny 4m x 4m area, making it ideal for ship decks, dense jungles, or high-altitude Himalayan outposts.
- **Endurance:** Capable of flying for over 12 hours with a range of approximately 130–180 km.
- **Fuel:** Uses a Heavy Fuel Engine (JP-5/JP-8), which is safer for storage on naval ships than volatile gasoline.
- **GPS-Denied Operations:** It can navigate and complete missions in GPS-denied and communications-contested environments (using visual odometry and edge AI), which is crucial against modern electronic warfare (EW) jamming.

### **2.135 PANCHAM**


- **Nodal Ministry:** Ministry of Panchayati Raj (MoPR).
- **Knowledge Partner:** Developed in technical collaboration with **UNICEF**.
- **Target Audience:** Over 30 lakh elected representatives (Sarpanches, Ward Members) and Panchayat functionaries across India.
- **Platform:** It is a **WhatsApp-based** AI tool.
- **Multilingual Support:** Integrated with the **BHASHINI** engine, it supports **22 official Indian languages**, allowing representatives to interact in their local dialects.
- **Voice-Based Assistance:** To bridge the literacy gap, it supports voice notes, allowing users to record questions and receive audio responses.
- **Authentication:** Access is linked to the user's mobile number registered on the e-GramSwaraj portal.
- **Aim & Objectives:**
  - **Direct Connectivity:** Linking the Government of India directly with village-level decision-makers.
  - **Information Saturation:** Ensuring 100% awareness of central and state welfare schemes.
  - **Feedback Loops:** Creating a real-time channel for field-level issues to reach senior policymakers.

### **2.136 WaSH Warriors**

- **Ministry:** Ministry of Jal Shakti.
- **National Event:** 58 selected "WaSH Warriors" from across India were invited as **Special Guests** for the **77th Republic Day (2026)** at Kartavya Path.
- **Core Philosophy:** It embodies **Jan Bhagidari** (People's Participation), shifting the focus from "government-built infrastructure" to "community-managed systems."
- **WaSH Warriors** are **grassroots champions**—village-level leaders, women functionaries, and members of Panchayati Raj Institutions (PRIs).

- **Selection Criteria:** Drawn from **Swachh Sujal Gaon** villages.
- **Note for Prelims:** A "Swachh Sujal Gaon" is a village that is both **Har Ghar Jal certified** (under Jal Jeevan Mission) and **ODF Plus Model verified** (under Swachh Bharat Mission-Grameen).
- **Aim**
  - To promote safe drinking water, sanitation, and hygiene through community ownership (Jan Bhagidari).
  - To ensure inclusive, equitable, and sustainable WaSH outcomes, particularly for women and vulnerable groups.
- **Functions:**
  - Mobilising communities for **water conservation** and **safe water practices**.
  - Supporting implementation and sustainability of **Har Ghar Jal** tap connections.
  - Promoting **ODF Plus** behaviours and hygiene awareness under **Swachh Bharat Mission (Grameen)**.
  - Encouraging local monitoring, maintenance, and long-term functionality of water assets.

### 2.137 Rafah Border Crossing

- **Location:** The southernmost exit point of the **Gaza Strip**, sharing a border with **Egypt's Sinai Peninsula**.
- **Unique Status:** It is the **only** crossing out of Gaza that does not lead directly into Israel.
- **Philadelphi Corridor:** A narrow 14km long buffer zone (strip of land) along the border between Egypt and Gaza, which includes the Rafah crossing.
- **Current Status (2026):** After periods of closure and Israeli military control (starting May 2024), the crossing is set to reopen (expected Feb 2026) under a complex arrangement involving the **Palestinian Authority** and **EUBAM**, but with significant **Israeli security vetting** for travelers.
-  **Strategic Importance**
  - **Humanitarian Lifeline:** It is the primary gateway for humanitarian aid (food, medicine, fuel) into Gaza, especially when the Israeli-controlled **Kerem Shalom** (commercial) and **Erez** (passenger) crossings are closed.
  - **Medical Evacuations:** Historically the only route for critically ill Palestinians to seek treatment in Egypt or abroad.
  - **The "Tri-Border" Concept:** Recent proposals have discussed moving or integrating the crossing near Kerem Shalom to create a tripartite point between Israel, Egypt, and Gaza for tighter security.

Crossing	Connects Gaza with...	Purpose	Controlled by
<b>Rafah</b>	Egypt (Sinai)	Passengers / Aid	Egypt / PA / EU (with Israeli vetting)
<b>Erez</b>	Israel (North)	Passengers	Israel
<b>Kerem Shalom</b>	Israel (South)	Commercial Goods	Israel

### **2.138 Economic Survey**

- An **annual flagship document** of the **Government of India**.
- Presents a **detailed review of the Indian economy** in the outgoing financial year.
- Serves as a **background document for the Union Budget**.
- **Not mandated by the Constitution** or any law.
- Conventionally tabled before the **Union Budget**.
- Prepared by the **Department of Economic Affairs (DEA)**, Ministry of Finance.
- Drafted under the guidance of the **Chief Economic Adviser (CEA)**.
- **Tabled in Parliament** by the **Union Finance Minister**.
- Presented **one day before the Union Budget** (generally in late January / early February).
- **Key Objectives**
  - Review **macro-economic performance**.
  - Analyze **sectoral trends** (agriculture, industry, services).
  - Identify **structural challenges**.
  - Suggest **policy directions** (not binding).
- **Nature of Recommendations- Advisory in nature**.
- **Data Sources-** MOSPI, RBI, IMF, World Bank, NSSO, CMIE, etc.

### **2.139 Power Gap Index**

- The **Power Gap Index** was cited for the first time in the **Economic Survey 2025-26** to describe India's "Strategic Paradox."
- The Survey highlights a critical Strategic Paradox: while India has officially entered the

Major Power category, it still registers a negative Power Gap score of -4.0, indicating that the nation is operating below its full strategic potential.

- **Power Gap Index** is a **secondary analytical measure** derived from the **Asia Power Index**, published annually by the **Lowy Institute** (an Australian think tank).
- **Positive Score:** An Overperformer or Smart Power.
- **Negative Score:** An Underperformer or a state with Unrealized Potential.
- **Aim & Objectives:**
  - To show that having a large economy or military doesn't automatically equate to geopolitical influence.
  - To help nations identify where their conversion of power is failing—whether in diplomacy, trade relationships, or defense networks.
- It uses 131 indicators across eight thematic measures.
- Top 3 ranker in Asia Power Index: USA (Rank 1st), China (Rank 2nd), and India (Rank 3rd).

### **2.140 The Living Root Bridges**

- **Local Name:** Known as **Jingkieng Jri** (in Khasi) or **Lyu Chrai** (in Jaintia).
- Unlike steel or concrete bridges, these structures are grown over decades and become stronger as the tree matures, embodying the ultimate form of sustainable bio-engineering.
- **State:** Meghalaya, India.
- **Region:** Southern slopes of the Shillong Plateau in Meghalaya. Primarily concentrated in the East Khasi Hills and West Jaintia Hills
- **History & Origin:**
  - **Ancient Tradition:** Due to lack of written scripts before the 19th century, their exact age is unknown but oral legends suggests some bridges are over 500 years old.
  - **Evolution:** The practice emerged as a survival strategy to cross monsoon-swollen rivers in the world's wettest region (Mawsynram/Cherrapunji), where wooden structures would simply rot away.
  - **Architects:** Exclusively created and nurtured by the indigenous **Khasi** and **Jaintia** tribal communities of Meghalaya.
- **Mechanism:** They are a form of "**tree shaping**" or "**bio-engineering.**" Young, pliable roots are guided through hollowed-out **Areca palm trunks** or bamboo across rivers until they take root on the opposite bank.
- **Nomination Status (2026):** India submitted the final dossier titled "*Jingkieng Jri / Lyu Chrai Cultural Landscape*" in January 2026.
- **Classification:** Nominated under the "**Cultural Landscape**" category.

### **2.141 Paathara (Khoni) Practice**

- **Paathara** (referred to as **Khoni** in Odia) is a traditional **underground grain storage** pit. It is a highly scientific, indigenous method used by farmers to preserve freshly harvested paddy

for long-term household consumption and rituals.

- **Geographical Hub:** Observed primarily in the **Uddanam region** of Srikakulam (Andhra Pradesh), along the banks of the Mahendratana River, near the Odisha border.
- **Terrain Specificity:** The tradition thrives in **inland, hilly terrains**. It is rarely found in coastal belts because high moisture levels in seaside soil can spoil the grain.
- **Key Features:**
  - **The Structure:** A rectangular or circular pit is dug into the earth, usually in front of the house or cattle shed.
  - **Insulation:** The pit is meticulously plastered with **straw and clay**. A base layer of hand-woven straw ropes is laid to prevent ground moisture from touching the grain.
  - **Sealing:** Once filled with paddy, the top is sealed with a thick layer of **clay and cow dung**, making it airtight and pest-proof.
  - **Ritualistic Start:** The storage process begins with a puja, where women draw a *bindi* on the pit and offer wildflowers and paddy grains to ensure prosperity.
  - **Superior flavour and health:** Paathara-stored rice is valued as aged rice, with enhanced taste and better nutrition, including a lower glycaemic index.
  - **Natural pest control and security:** Its airtight underground storage protects grain from insects and rodents without chemicals, while its location near homes reduces theft.
  - **Zero-waste sustainability:** At a time when India loses nearly 10% of food grains to poor storage, Paathara stands out as a low-cost, zero-carbon method using only local, biodegradable materials.