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A. Polity & Governance

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1. Should Convicted Persons Be Allowed to Contest Elections?

Background and Current Context

1. The criminalization of politics in India remains a major concern for democratic integrity. In **February 2025**, the **Supreme Court of India** began hearing a set of petitions demanding a **lifetime ban on individuals convicted of crimes from contesting elections**.
2. This legal challenge directly addresses the long-standing issue of **criminalization of politics in India**, questioning whether convicted persons should be allowed to hold public office at all.
3. This debate intensified after the **2024 (18th Lok Sabha) elections**, where two candidates **won seats while being in jail and facing serious criminal charges**:
   a. **Amritpal Singh**, leader of **Waris Punjab De**, won from **Khadoor Sahib** as an **independent candidate**, representing over **19 lakh people**.
   b. **Engineer Rashid**, a former MLA, won from the **Baramulla constituency**.
      - This is **not the first instance** of individuals winning elections while being incarcerated (imprisoned or confined).
      - In the **1977 Lok Sabha elections**, during the **Emergency period**, **George Fernandes**, a socialist leader, won the **Muzaffarpur seat** while in jail. He was later released before taking the oath.

Recent Examples of Incarcerated MPs

1. Amritpal Singh

a. Alleged links with **Khalistani separatist movement**.
b. Claims ideological lineage from **Jarnail Singh Bhindranwale**.
c. Arrested on **April 23, 2023**, under the **National Security Act (NSA)**.
d. Currently lodged in **Dibrugarh Jail, Assam**.
e. **NSA** allows detention up to **12 months without formal charges**.

2. Engineer Rashid (Abdul Rashid Sheikh)

a. Facing charges under **Unlawful Activities (Prevention) Act (UAPA)**.
b. Accused in a **2017 terror-funding case**.
c. In **Tihar Jail, Delhi**, since **2019**.

Taking Oath and Legal Provisions for MPs in Jail

1. The **Indian Constitution** does not clearly define the status of jailed MPs.
2. However, in practice, **temporary parole** is sometimes granted to allow MPs to **take oath** and attend parliamentary sessions.
3. As per **Article 101(4)** of the Constitution, an MP's seat can be vacated if they **remain absent for more than 60 days** without permission.
4. Jailed MPs must **inform the Lok Sabha Speaker** about their absence to avoid disqualification.

Parliament Attendance and Court Appeals by MPs

1. Engineer Rashid

a. Filed a petition in **Delhi High Court (January 2025)** to attend the **Budget Session**.
b. The **High Court sought a response from NIA**.
c. **NIA opposed** the bail plea.
d. Court granted **2-day custody parole** to attend Parliament on **Feb 11 and 13, 2025**.

2. Amritpal Singh

a. Filed a plea in **Punjab and Haryana High Court** for permission to attend Parliament.
b. Submitted a formal request to the **Lok Sabha Speaker on November 30, 2024**.
c. Informed Parliament about **46 days of absence**.
d. **Court hearing is still pending**.

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Parallel Petition in Supreme Court – Lifetime Ban on Convicted Politicians

Simultaneously, the Supreme Court is hearing a petition demanding a **lifetime ban on convicted individuals from contesting elections**, arguing that allowing such individuals to contest undermines public trust in democratic institutions.

Petitioners' Arguments

1. A person convicted of a serious criminal offense is **unfit to represent the public**.
2. Since **convicted individuals are barred from government jobs**, the same principle should apply to **legislative posts**.

Central Government's Stand

1. In its **2020 affidavit**, the government defended the **current 6-year disqualification period** post-release, stating that:

- **a. MPs and MLAs are not government employees** and don't follow the same service rules.
- **b.** The **existing disqualification period is adequate**.

Supreme Court's Action

1. The Court has directed both the **Central Government** and **Election Commission (EC)** to submit further responses.
2. A comprehensive **review is underway** to evaluate whether **permanent disqualification** should be introduced in cases involving serious crimes.

Legal Framework: Representation of the People Act, 1951

1. Section 8(3):

a. Disqualifies any person sentenced to **2 years or more in prison**.

b. Disqualification lasts for **6 years after release from prison**.

c. Applicable to both **Amritpal Singh and Engineer Rashid**, if convicted.

2. Section 8(1): Lifetime disqualification for specific **heinous crimes**, including: Rape, Corruption (under the Prevention of Corruption Act), Unlawful association (UAPA), Offenses under Protection of Civil Rights Act (PCR).

3. Section 11: Empowers the **Election Commission** to **remove or reduce disqualification period**.

- In **2019**, EC reduced **Prem Singh Tamang's disqualification** (CM of Sikkim) from **6 years to 13 months** after his corruption conviction.

Key Judicial Precedents

1. Association for Democratic Reforms (ADR), 2002

a. Supreme Court mandated **criminal record disclosure** for all election candidates.

b. Major milestone in enhancing **electoral transparency**.

2. CEC vs Jan Chaukidar, 2013

a. **Patna High Court** ruled that **undertrials can't contest elections** as they cannot vote.

b. **Supreme Court upheld the ruling**, but **Parliament later amended the RP Act** to allow undertrials to contest.

3. Lily Thomas Case, 2013

a. Supreme Court struck down **Section 8(4)** of the RP Act.

b. Ruling: **Convicted legislators must lose their seat immediately**, even if appeal is pending.

Criminalization of Politics – Electoral Data and Recommendations

1. ADR Report, 2024

a. 251 MPs (46%) out of **543** have **criminal cases**.

b. 171 MPs (31%) face **serious charges** (rape, murder, kidnapping).

c. Win Probability:

- Candidates with **criminal background**: **15.4%**
- Candidates without criminal records: **4.4%**

2. Law Commission Reports & EC Recommendations

a. Law Commission Reports (**1999, 2014**) recommended **banning candidates charged with crimes punishable by 5+ years**.

b. EC repeatedly pushed for **clean politics and electoral integrity**.

2. Supreme Court Directs Proactive Remission Consideration for Eligible Convicts

1. On February 18, 2025, the Supreme Court of India issued a landmark judgment directing state governments to proactively consider remission of eligible convicts—without requiring any application from the convict or their family members.
2. This directive, arising from the suo motu case titled 'In Re: Policy Strategy for Grant of Bail', emphasizes the state's role in ensuring fairness, justice, and rehabilitation.

Key Supreme Court Guidelines on Remission

1. **Automatic Evaluation for Remission**
   a. States with existing remission policies (under Section 432 of CrPC or Section 473 of the Bharatiya Nagarik Suraksha Sanhita, 2023) must automatically evaluate convicts for premature release upon eligibility.
   b. Convicts need not apply for remission.
2. **Time-Bound Policy Formulation**
   a. States without a remission policy must formulate one within two months of the judgment.
   b. Aim: Ensure uniformity across the country.
3. **Transparency and Communication of Remission Decisions**
   a. Authorities must provide brief reasons for grant or denial of remission.
   b. Decisions must be promptly communicated to the convict and also notified to the District Legal Services Authorities (DLSA).
4. Right to Challenge Denial of Remission: Convicts must be informed of their right to legally challenge any denial of remission—upholding the principles of natural justice.
5. **Prevention of Arbitrary Revocation**
   a. Once remission is granted, it cannot be withdrawn arbitrarily.
   b. If cancellation is proposed, the convict must be given a hearing.
6. **Conditions on Remission Must Be Fair**
   a. The court allowed imposing reasonable conditions, such as:
      - Ensuring rehabilitation of the convict.
      - Keeping criminal tendencies in check.
   b. Conditions must be realistic and not overly harsh or vague.

Legal Framework Governing Remission and Pardoning Powers

1. **Statutory Provisions**
   a. Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023
      - Section 473: Allows the government to suspend or remit sentences, with or without conditions.
      - Section 475: Mandates a minimum 14-year imprisonment for remission of life sentences in heinous crimes.
2. **Constitutional Provisions**
   a. Article 72: President of India can grant pardons, reprieves, respites or remissions in certain cases.
   b. Article 161: Governor can exercise similar powers for state offenses (except death sentence cases).

Significance of the Supreme Court's Directive

1. Ensures Uniformity Across States: Prevents arbitrary or politically motivated decisions regarding remission.
2. Reduces Prison Overcrowding
   - Facilitates timely release of convicts.
   - India's prisons have over 70% under-trials—this move alleviates pressure.
3. Protects Convicts' Rights: Fair, transparent remission decisions promote human dignity and rehabilitation.
4. Strengthens Legal Accountability: DLSAs to track remission decisions digitally, improving transparency and oversight.

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5. Safeguards Against Arbitrary Revocation: Ensures procedural fairness—remission can't be withdrawn without due process.

Recent Landmark Cases on Remission

1. Bilkis Bano Case (2022–2024)
   a. In 2022, 11 convicts in the case were granted remission by Gujarat Government.
   b. In January 2024, Supreme Court ruled Gujarat was not competent, as trial occurred in Maharashtra.
   c. Remission revoked, and convicts were ordered to surrender.
2. Perarivalan Case (Rajiv Gandhi Assassination)
   a. In 2022, A.G. Perarivalan received remission after 30 years in prison.
   b. The Court held that Governor's delay in deciding remission was unconstitutional.

Further Reforms Needed in Remission Policy

1. **Uniform Centre-State Remission Policy**
   - A collaborative national framework can eliminate inconsistencies across states.
   - Example: While Nirbhaya convicts faced a strict remission policy, others saw politically influenced decisions.
2. **Judicial Oversight Mechanism**
   - Involve High Courts or National Boards for remission review, to avoid misuse.
   - Example: Delay in Governor's decision in the Rajiv Gandhi case highlights this need.
3. **Link Remission to Rehabilitation Progress**
   - Assess remission based on:
     Behavioural improvements
     Educational and vocational achievements
   - A national database can track prisoners' progress.
   - Example: Kerala Prison Reforms Program trains convicts in skilled labour and entrepreneurship.
4. **Greater Transparency in Grants**
   - Publish remission criteria and individual decisions in the public domain.
   - Helps build trust and reduce political favouritism.
   - Over 70% of Indian prisoners are under-trials, many jailed longer than the sentence they face.
   - Focus should be on early release where 50% of sentence is already served.
   - Example: SC in 2022 ordered release of 3,000+ undertrials who had served over 50% of their term.

Global Practices in Remission and Pardoning

1. **United States**
   - The **President can grant clemency** for federal crimes, but **remission decisions are reviewed by the Department of Justice**.
   - Convicts must **demonstrate good behaviour and rehabilitation** before being considered.

2. United Kingdom

- The **Royal Prerogative of Mercy** allows for **pardons or sentence reductions**, usually **only in cases of wrongful convictions(advice of government ministers)**

3. Canada

- The **Governor General grants clemency** through the **National Parole Board**, which assesses **rehabilitation and public safety**.

India can adopt elements from these systems, such as requiring a professional board to review remission cases.

3. Hashimpura Massacre Convicts Challenge Delhi Prison Rule on Furlough

1. The convicts of the **1987 Hashimpura massacre** have moved the **Delhi High Court** challenging a **Delhi Prison Rule** that vests the power to grant furlough with the court where their appeal is pending.
   - On **May 22, 1987**, Provincial Armed Constabulary (PAC) personnel allegedly killed **around 38 Muslim men** in Hashimpura, Meerut **(Uttar Pradesh)** amid communal tensions.
2. The convicts argue that **furloughs, generally granted by the executive, should not be left to the appellate court handling their conviction appeal.**

Difference between Furlough, Parole, Bail

Aspect	Furlough	Parole	Bail
Definition	Short-term, temporary release from prison granted to **convicts** as part of a **reformative approach**, without a specific emergency reason.	Conditional release of a convict **before completion of sentence**, on the basis of **good conduct and specific emergency needs**.	Temporary release of an **accused person** (not yet convicted), to ensure their **presence during trial**, granted by **judicial authority**.
Nature of Sentence	Sentence **continues to run** during furlough. • For example, if a convict is serving a 10-year sentence and is released on furlough for 30 days, they still complete the sentence in **10 years**.	Sentence is **suspended** during parole. • For example, in a 10-year sentence, if parole is granted for 30 days, the sentence period gets **extended by 30 days**.	No sentence involved — person is **not yet convicted**. The person remains free while facing trial.
Purpose	• Break monotony of imprisonment. • Encourage discipline and good behavior. • Help prisoner maintain **family/ social ties**. • Psychological reform of long-term inmates.	• Relief in **exigencies** like death in family, illness, marriage, harvest season, or legal appeal. • **Rehabilitation** of prisoners.	• Ensure **accused attends court proceedings**. • Protect liberty of individuals during trial.
Granting Authority	• **Deputy Inspector General (DIG) of Prisons** under **Prison Rules**. • However, **Delhi Prison Rules, 2018**, Note 2 of Rule 1224: If appeal is pending before High Court, furlough must be sought from court, not executive.	• **Divisional Commissioner** or **Prison Authorities**, depending on jurisdiction.	• **Judicial Magistrate or Court**, under **Section 479–511 of Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** (replacing CrPC).
Eligibility	• **Long-term convicts** with good conduct. • Not available to those convicted under **serious crimes like UAPA, organized crime, terrorism, or repeat offenses**.	• **Convicts with good behavior**; Considered only in **emergent situations**. Not granted to convicts of **heinous crimes** like rape or murder.	• Available to most accused, except those charged under **BNS serious offences**, or if deemed **flight risk or threat to society**.

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Aspect	Furlough	Parole	Bail
Conditions	• Return to prison on time. • May be subject to **reporting to local police** or movement restrictions. • May be denied in **interest of society/public order**.	• Must follow rules of conduct during parole period. • Regular **police reporting**, movement restrictions. • Violations can lead to **cancellation and re-arrest**.	• Must comply with **court conditions**: surety bond, police reporting, restricted movement, surrendering passport, etc.
Duration & Frequency	• **Limited, short-term**, often **14–30 days**, extendable. • Can be granted **once or twice a year**, depending on jail manual.	• Generally **longer duration than furlough**, can be granted **multiple times**, depending on conduct and reason.	• **Duration lasts till trial ends** or bail is revoked. • Bail types: **interim, regular, anticipatory**.
Requirement of Reason	**No specific reason** required. • Granted as part of **reform policy**. • Can be denied for public safety.	• **Specific reason mandatory** (e.g., funeral, illness, sowing/harvesting, marriage, exam, SC appeal).	• Bail is granted **based on judicial discretion**, legal provisions, and nature of offence.
Legal Nature	• Administrative decision under **prison rules or Delhi Prison Rules 2018**.	• Mix of **administrative and legal discretion**.	• **Purely judicial process**, governed by **BNSS 2023 (Sections 479–511)**.
Relevant Constitutional Provisions	• Tested against **Article 14 (Right to Equality)** and **Article 21 (Right to Life and Liberty)**.	• Also tested on **Article 14 and 21**, especially in **cases of denial despite good conduct**.	• Protected under **Article 21** — liberty of individuals is fundamental unless proven guilty.

Delhi Prison Rules 2018 and the Legal Challenge

What Do the Rules Say?

1. **Chapter XIX of Delhi Prison Rules (2018)** deals with **parole and furlough**.
2. **Note 2 of Rule 1224** states that if an appeal against conviction is pending before the **High Court** or the time for filing such an appeal has not expired, **furlough will not be granted by the executive**.
3. The convict must seek **appropriate directions from the appellate court.**

What Is Being Challenged?

1. The **constitutional validity of Note 2 of Rule 1224** is under challenge before the **Delhi High Court (HC)**.
2. The petitioners argue that:
   a. The rule **violates Articles 14 (Right to Equality) and 21 (Right to Life and Liberty)**.
   b. It contradicts the **reformative approach** of imprisonment by **denying furlough despite good conduct**.
   c. The **jurisprudence of parole** should also apply to **furlough**, as furlough does not involve suspension of sentence.

How Has the Delhi High Court Interpreted the Rule So Far?

1. A **Single Judge Bench** of the **Delhi HC** ruled that the term **"High Court"** in the rule implies the **appellate court**, which includes both **Delhi HC and the Supreme Court (SC)**.
2. If a convict's appeal is pending before the **SC**, only the **Supreme Court** can grant furlough.
3. A **Division Bench of Delhi HC** is now examining whether:

a. An application seeking furlough can be made before the **High Court**, even if the appeal is before the **Supreme Court**.
b. The **constitutional validity** of the prison rule is justified.

Judicial Precedents on Suspension of Sentence

Landmark Case: K.M. Nanavati v. State of Maharashtra (1959):

1. **Kawas Manekshaw Nanavati**, a naval officer, was convicted of murder in 1959.
2. The then **Governor suspended his sentence under Article 161**, even before appeal was filed in the Supreme Court.
3. In **1960**, the **Supreme Court ruled** that **Governor cannot suspend sentence once the matter is sub judice before SC**, as it would **interfere with the Court's appellate powers**.
4. This precedent supports the idea that **only appellate courts can grant relief** when appeal is pending.

Is It Common to Deny Furlough During Appeal?

1. Yes, this is a common practice in many states.
2. In 2023, **National Legal Services Authority (NALSA)** submitted before the SC that:
   a. **Several states deny parole/furlough** if an appeal is pending.
   b. The logic is that **courts can grant necessary relief**, not the executive.
3. **Senior advocate Gaurav Agarwal**, representing NALSA, clarified that:
   a. **Parole and furlough** are distinct from **suspension of sentence or interim bail**.
   b. While courts can grant bail, **only the state executive grants parole/furlough** under prison rules.

The outcome of this case will have a broader impact on: **Prisoner rights, Scope of executive discretion and Reformative principles in Indian criminal justice.** The **Delhi High Court's final verdict** will shape how furloughs are interpreted and granted in the future — not just in Delhi but across other jurisdictions.

4. Status of Devolution to Panchayats in States 2024 Report

1. The Panchayati Raj system, institutionalized through the **73rd Constitutional Amendment Act, 1992**, stands as the cornerstone of decentralized governance in India.
2. To measure the extent of decentralization, the **Ministry of Panchayati Raj (MoPR)** has introduced the **Panchayat Devolution Index (PDI)** — a comprehensive tool to assess the actual empowerment of Panchayats across states.

What is the Panchayat Devolution Index (PDI)?

Developed by the **Indian Institute of Public Administration (IIPA)**, the **PDI is a quantitative index** designed to evaluate how effectively states have devolved the **3Fs — Functions, Finances, and Functionaries** to the Panchayati Raj Institutions (PRIs).

Key Dimensions of the Index:

The index scores states on a **scale of 0 to 100** based on six dimensions:

Dimension/ Weights)	Key Focus
Framework (10)	Constitutional compliance [elections (Article 243E), reservations (243D)]
Functions (15)	Actual assignment and execution of functions
Finances (30)	Fund flow efficiency and autonomy
Functionaries (15)	Staffing strength and deployment
Capacity Building (15)	Training and institutional development
Accountability (15)	Transparency, audits, Gram Sabha functioning
Total-100	

Why is the Devolution Index Needed?

1. **Strengthening Cooperative Federalism**: Encourages states to adopt best practices and secure **performance-based grants** (as per 15th Finance Commission recommendations).

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2. **Measuring Multidimensional Devolution:** Standardizes assessment of political, administrative, and financial devolution across diverse state contexts.
3. **Assessing Local Government Autonomy:** Helps gauge the independence of Panchayats in service delivery and decision-making.
4. **Fostering Competitive Governance:** Ranking and benchmarking stimulate states to improve performance, akin to **Ease of Living Index** for urban areas.
5. **Identifying Governance Gaps:** Pinpoints disparities and aids in targeted policy interventions (e.g., NITI Aayog's Aspirational Districts Programme).

Benefits of the Devolution Index

Stakeholder	Benefits
Citizens	Better transparency and service delivery (e.g., *MGNREGA Social Audits*)
Elected Representatives	Data-driven advocacy for stronger decentralization (e.g., *Himachal Pradesh's PESA advocacy*)
Government Officials	Policy roadmap for improving governance (e.g., *Chhattisgarh's Gram Mitra Initiative*)
Policymakers	Evidence-based insights to design effective policies

PDI 2024: Top three State/UTs

Rank	State	Score
General category State		
1	Karnataka	72.23
2	Kerala	70.59
3	Tamil Nadu	68.38
Northeastern/Hilly States		
1.	Tripura	57.58
2.	Himachal Pradesh	53.17
3.	Uttarakhand	49.11
Union territories		
1.	Jammu and Kashmir	27.85
2.	Andaman & Nicobar Islands	27.15
3.	Lakshadweep	18.32
National Average Score		**43.89**

Devolution Index Category-Wise Classification

Category	Score Range	States
Very High	>60	Karnataka, Kerala, Tamil Nadu, Maharashtra, Uttar Pradesh
High	55–60	Gujarat, Rajasthan, Chhattisgarh, Tripura, etc.
Medium	50–55	Andhra Pradesh, Odisha, HP
Low	44–50	Bihar, Assam, Uttarakhand, Sikkim
Very Low (Below national Average)	<43.89	Jharkhand, Puducherry, Haryana, Punjab, etc.

Key Highlights of PDI Report

1. **Overall Devolution:** Rose from **39.9% (2013-14)** to **43.9% (2021-22)**.
2. **Functionaries Index:** Increased by **28.5%**, from 39.6% to 50.9%.
3. **Capacity Building Index:** Improved by **24%**, supported by **RGSA 2018**.
4. **Financial Devolution:** Rose from **32.05 to 37.04** nationally.
5. **Top Performers:** Karnataka, Kerala, Tamil Nadu.
6. **Notable Reforms:**

State	Initiative	Outcome
Kerala	People's Plan Campaign	Bottom-up project execution
Karnataka	Decentralized Finances	Timely fund disbursement
Tamil Nadu	E-Governance	Transparency and monitoring
Maharashtra	GPDP	Community-based development
Rajasthan	50% Women Reservation	Enhanced female participation

Representation & Inclusiveness in Panchayats (2024)

1. **Total Panchayats: Increased from 2.48 lakh (2013) to 2.62 lakh (2024)**
2. **Average Population per Panchayat: 3,087 → 4,669 (indicating consolidation)**
3. **Women's Representation:**
   - Highest: **Odisha (61.5%)**, HP (57.5%), TN (57.32%)
   - Lowest: **UP (33.33%)**
   - States with 50%+ representation: Increased from 11 → 16
4. **SC/ST/OBC Representation:**

Group	Highest Representing State	National Avg.
SCs	Punjab (36.34%)	18.03%
STs	Chhattisgarh (41.04%)	16.22%
OBCs	Bihar (39.02%)	19.15%

Challenges in Effective Panchayat Empowerment

1. **Over-centralization & Fund Delays** (e.g., only 60% 15th FC grants utilized in Bihar & Jharkhand)
2. **Uneven Devolution & Political Interference**
3. **Inadequate Infrastructure & Staffing** (e.g., AP: 5% pucca buildings, Odisha: only 13% panchayats with computers)
4. **Digital Divide**: Haryana, Arunachal have <1% internet access in Panchayats
5. **Gender Gaps & Sarpanch-Pati Syndrome**
6. **Low Capacity & Illiteracy among Functionaries**
7. **Data Inaccuracies** (45% Gram Sabhas lack financial recordkeeping)

Milestones in the Evolution of Panchayati Raj in India

Year	Milestone / Event
1687	Royal Charter issued for the creation of **Madras Municipal Body**—considered the first step in formal local governance in India.
1842	**Act X of 1842** provided the **first formal legal measure** for municipal bodies in British India.
1857	Aftermath of the **Revolt of 1857** led to fiscal stress—**Fiscal decentralization** began to be explored as a solution.
1870	**Lord Mayo's Scheme** introduced **fiscal and administrative devolution**; also saw enactment of the **Bengal Chowkidari Act**.
1882	**Lord Ripon's Resolution on Local Self-Government**—considered the foundational step for democratic decentralization in India.
1907	**Royal Commission on Decentralisation** was constituted to examine decentralisation in governance.
1948	Intense **debates between Gandhi and Ambedkar** on the idea of **Gram Swaraj (village self-rule)**.
1957	**Balvantray Mehta Committee** recommended: • Three-tier Panchayati Raj structure at **district, block, and village levels** • **Elected bodies with a five-year term** • **Devolution of powers** to Panchayats • **Creation of Block Development Officer (BDO)** post
1963	**K. Santhanam Committee** recommended • Revenue raising powers to Panchayats • Establishment of State Panchayati Raj Finance Commissions
1978	**Ashok Mehta Committee** suggested: • Two-tier Panchayati Raj structure (district and block levels) • Making district the key administrative unit

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Year	Milestone / Event
1985	**G.V.K. Rao Committee** recommended strengthening of Block Development Offices (BDOs) to plan, implement, and monitor rural development programmes.
1986	**L.M. Singvi Committee** recommended: • Constitutional status to Panchayati Raj Institutions (PRIs) • Emphasized the Gram Sabha as the base of decentralized democracy
1993	**73rd Constitutional Amendment Act passed:** • Granted constitutional status to Panchayati Raj • Introduced Part IX in Constitution • Added 11th Schedule with 29 functional areas for Panchayats • Mandated three-tier structure—Village, Intermediate (Block), and District levels
1996	• **PESA** (Panchayats Extension to Scheduled Areas) Act enacted to extend Panchayati Raj provisions to Fifth Schedule tribal areas. o Ten States Covered under PESA: Andhra Pradesh, Chhattisgarh, Gujarat, Himachal Pradesh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan and Telangana
2004	Union Ministry of Panchayati Raj was created.
2013	Thirteenth Finance Commission recommended a share for Panchayats in the Union divisible pool.
2020	Prime Minister Narendra Modi launched the **'Vocal for Local'** initiative, further encouraging rural economic empowerment through local governance.

Mandatory Framework of Panchayats

Legal & Constitutional Framework of Panchayats

Key Articles of the Constitution under **Part IX**:

1. **243B**: Three-tier Panchayats (village, intermediate, district)
2. **243D**: Mandates **reservation of seats for SCs, STs, and women** (including SC/ST women)
3. **243E**: Regular elections every 5 years
4. **243F**: Disqualifications
5. **243I**: Mandates the constitution of State Finance Commission
6. **243K**: Provides for the constitution of **State Election Commission (SEC)** to oversee Panchayat elections
7. **243ZD**: Mandates the establishment of District Planning Committees

5. Supreme Court Recognizes Intellectual Property as 'Property' under SC/ST Act

1. In a landmark judgment, the **Supreme Court of India** has held that **intellectual property theft falls under the ambit of the Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989**.
2. This ruling significantly broadens the scope of protection offered to SC/ST communities, recognizing **intangible assets** like research data, digital files, and intellectual property rights as compensable "property" under the law.

Background of the Case

1. The petition was filed by a **Dalit couple**, **Dr. Shiv Shankar Das and Dr. Kshipra Kamlesh Uke**, both PhD holders from **Jawaharlal Nehru University (JNU)**.
2. The couple had undertaken a **self-funded research project in Nagpur in 2014**, collecting over **500 survey samples** for a socio-political awareness study among youth.
3. In **2019**, while they were away, their **research data, laptops, and process material were stolen** allegedly by the son of their landlord, aided by local police.
4. A criminal case was lodged and a complaint was also filed with the **National Commission for Scheduled Castes (NCSC)**.

Legal Journey

1. The couple sought compensation under **Section 15A(11)(d)** of the SC/ST Act, citing **damage to intellectual property**.

2. The **District Magistrate** and authorities initially refused additional relief, arguing that the **Act does not cover intangible property.**
3. The couple then approached the **Bombay High Court**, which ruled in their favor, **expanding the scope** of the word "property."
4. The **Maharashtra government appealed to the Supreme Court**, but the **apex court upheld the High Court's interpretation**, thus setting a judicial precedent.

Observations by the Bombay High Court Courts

1. The **Bombay High Court** ruled that:
   a. The term **"property" is not defined in the SC/ST Act** and must be interpreted broadly to include **both tangible and intangible assets**.
   b. **Data, digital files, and intellectual rights** are also property and are capable of valuation for compensation.

Key Highlights of the Supreme Court Judgment

1. The **Supreme Court**, led by **Justices B.V. Nagarathna and S.C. Sharma**, endorsed this broader interpretation and **dismissed the Special Leave Petition** without even issuing a notice to the couple.
2. **Recognition of IP as Property**: Intellectual property such as **research data, patents, copyrights, digital files, and electronic material** has now been legally recognized as "property" under the SC/ST Act for compensation purposes.
3. **Section 15A(11)(d)** of the Act, which mandates compensation for "damage to property," has been interpreted to include **intangible assets**.
4. The Supreme Court **dismissed Maharashtra government's appeal** and upheld the Bombay High Court's expansive interpretation of "property."

Provisions Invoked

1. **SC/ST Act, 1989**:
   a. Prevents atrocities and hate crimes against Scheduled Castes and Scheduled Tribes.
   b. Provides both **criminal and civil remedies** including **compensation for damage to property**.
2. **Section 15A of Act – Rights of Victims and Witnesses**:
   - **Sub-section (11)(d):** Entitles victims to compensation for **death, injury, or damage to property**.
3. **Rule 12 of SC/ST Rules**:
   - **Sub-rules (4) and (5):** Provide for **monetary relief** to victims after assessment of loss of life and property.

Significance of the Judgment

1. **Precedent Setting**: First-time recognition of **intellectual property under SC/ST Act**.
2. **Widened Legal Interpretation**: Tangible and intangible property now both covered.
3. **Increased Protections**:
   a. Offers **better legal safeguards** to scholars, researchers, and professionals from SC/ST communities.
   b. Recognizes **creative, academic, and digital contributions** as valuable assets needing protection.

6. Odisha Demands 50% Share in Central taxes

In February 2025, the Odisha Government demanded an **increase in states' share** of central taxes to **50 per cent from the existing 41 per cent**.

What were the demands of the Odisha Government?

1. **Increase in share in Central Taxes:** From the **current 4.52%** recommended by the previous finance commission to **4.96%** for Odisha.
2. **Cess and surcharge:**
   a. **Inclusion** of cess and surcharge in divisible pool.
   b. **Containment of overuse** of cess and surcharge. This can be by stricter tests for the cess and surcharges to qualify for exclusion from the divisible pool, through a constitutional amendment, if necessary.
3. **Modified Population Variable**:
   a. Instead of considering the entire population in the **tax devolution formula**, consider:

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i. Share of **vulnerable population** including **SC and ST**.
ii. Those **requiring special attention** like people above 80 years of age and widows without any support.

What is Tax Devolution?

1. **Tax devolution** refers to the process of **transferring a share of the tax revenue** collected by the Central Government to the State Governments as per the recommendations of the **Finance Commission.**
2. It seeks to ensure **fiscal federalism** and **equitable distribution** of resources.
3. **Types of tax devolution**:
   a. **Vertical devolution**: The distribution of tax proceeds between the Union and states.
   b. **Horizontal devolution:** The distribution of tax proceeds among states based on various criteria.

What is the status of Tax Devolution in India?

1. **Vertical Devolution:**
   a. The share of states in Central Taxes as per the **14th Finance Commission** was **42%** while the **15th Finance Commission** recommended sharing **41%** with the states.
   b. The **adjustment of 1%** was to provide for the newly formed union territories of Jammu and Kashmir, and Ladakh from the resources of the centre.
2. **Horizontal Devolution:**
   a. This is based on various criteria as seen below:

Criteria	14th Finance Commission	15th Finance Commission
Population (2011)	17.5% (1971) + 10.0% (2011)	15.0% (2011)
Income Distance	50.0%	45.0%
Area	15.0%	15.0%
Forest Cover	7.5%	10.0%
Demographic Performance	N/A	12.5%
Tax Effort	N/A	2.5%

4. **Performance based grants**:
   a. As per the **15th Finance Commission**, it is applicable to:
      i. Sectors like health, school education, higher education, implementation of agricultural reforms etc.
      ii. A portion of grant to local bodies.

Constitutional Provisions on Centre-State Financial Relations

Article	Description
202–206	State financial administration & budget
268–272	Distribution of revenue between Centre and States
280	Constitution of Finance Commission
282	Centre's financial assistance to states
293	Borrowing by States

Challenges in Fiscal Federalism in India

1. **Vertical Fiscal Imbalance:**
   a. Centre controls major revenue sources (e.g., **Income Tax**, **GST**).
   b. States have larger expenditure responsibilities (e.g., health, education).
2. **Horizontal Fiscal Imbalance:**
   a. Developed states like **Maharashtra**, **Tamil Nadu** contribute more but receive less.
   b. States with weaker governance may receive more, raising concerns of unfair allocation.
3. **Overuse of Cess and Surcharges:**
   a. **Not shared** with states.
   b. Constitute **up to 28%** of Centre's tax revenues.
   c. **133% rise** in collections between **2017-18 and 2022-23** (Finance Ministry data).
4. **Issues with Centrally Sponsored Schemes (CSS):**
   a. Reduce fiscal autonomy of states.
   b. State priorities may get overshadowed by central directives.
5. **GST-related Challenges:**
   a. States' revenue independence reduced.
   b. **Delay in GST compensation** impacts state finances.

Current Funding Pattern

Category of State	Funding Ratio (Centre : State)
Northeastern & Hill States	90:10
Other States	60:40

Way Forward for Strengthening Fiscal Federalism

1. **Higher Tax Devolution:**
   a. Consider increasing share **beyond 41%**.
   b. **Rationalise cess and surcharges** to make them shareable.
2. **Reform in CSS Structure:** Provide states with greater **flexibility** in fund usage.
3. **GST Reforms:**
   a. Ensure **timely compensation payments**.
   b. **Strengthen GST Council's dispute resolution** mechanisms.
4. **Enhancing Cooperative Federalism:** Better coordination between **Centre, States, Finance Commission, NITI Aayog, GST Council**.
5. **Support for Disaster-Prone States: Dedicated Central Disaster Fund** for vulnerable states.
6. **Capacity Building:** Improve states' capabilities to **effectively manage devolved resources**.

About the 16th Finance Commission

1. **Constituted:** December 2023
2. **Chairperson:** Dr. **Arvind Panagariya**
3. **Report Due: October 31, 2025**
4. **Applicable Period: 2026–2031**
5. **Terms of Reference:**
   a. Distribution of taxes between Union and States.
   b. Grants-in-aid to states from Consolidated Fund of India.
   c. Measures to augment Panchayat and Municipality resources.
   d. Review of Disaster Management financing.

7. Ban on Begging

In **February 2025**, the **Bhopal district collector** issued an order **prohibiting begging in the district**, following a similar move by the **Indore collector** a month earlier. These orders introduced **stringent measures**, including registration of **FIRs against both those giving and receiving alms**.

Legal Basis of the Ban: BNSS & BNS Provisions

The orders were issued under the new **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** and **Bharatiya Nyaya Sanhita (BNS), 2023**.

1. **Section 163 of BNSS, 2023**:
   a. Empowers **district magistrates, sub-divisional magistrates, or executive magistrates** to issue urgent orders in cases of **"nuisance or apprehended danger."**
   b. Orders can direct individuals or groups to **abstain from certain acts** in specific areas.
   c. **Duration**: Orders remain in force for **not more than two months**, extendable up to **six months** if deemed necessary by the state government.
   d. This is the **successor provision of Section 144 of the CrPC**.
2. **Section 223 of BNS, 2023**:
   a. Punishes disobedience of a lawful public servant's order.
   b. **Penalty**:
      i. **Simple imprisonment up to six months**, or
      ii. **Fine up to ₹2,500**, or both.
      iii. If disobedience **endangers human life or health**, punishment may extend to **1 year and fine up to ₹5,000**.

Historical and Legal Framework on Begging in India

1. **Colonial Roots of Begging Laws**
   a. **The Criminal Tribes Act, 1871**: Criminalized nomadic and vagrant communities, laying the foundation for **anti-beggary laws**.
   b. **Provincial Vagrancy Acts**: **Bengal Vagrancy Act, 1943**, and **Cochin Vagrancy Act, 1945** were precursors to post-Independence laws.
2. **The Bombay Prevention of Begging Act, 1959**
   a. **First formal anti-begging law**, based on colonial vagrancy concepts.
   b. Provisions:
      - **Police can arrest without warrant** any person found begging.
      - **Detention up to 10 years** in certified institutions.
      - **Section 10**: Allows indefinite detention of **"incurably helpless beggars"** (e.g., blind, disabled).

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- Continues to be in force in **Maharashtra and other states**, with active **detention centres** in cities like Mumbai.

Judicial Interventions & Constitutional Dimensions

1. **Delhi High Court Verdict (2018)**
   a. **Struck down several provisions** of the 1959 Act as unconstitutional.
   b. Observations:
      - **"Begging is not a choice, but a compulsion due to poverty."**
      - Criminalizing begging **violates the right to life and dignity** under Article 21.
      - Highlighted the **State's failure to provide social security**.
      - However, **provisions related to forced or organized begging** (e.g., Section 11 – employing others to beg) remain valid.
2. **Supreme Court Stand (2021)**
   a. Rejected PIL seeking removal of beggars from public places.
   b. Emphasized: **Begging is a socio-economic problem, not a criminal issue**.
   c. Advocated a **rehabilitative rather than punitive approach**.

Constitutional and Legislative Framework

1. **Concurrent List, Entry 15**: Empowers **both Union and State governments** to legislate on **vagrancy, beggary, and nomadic/migratory communities**.
2. No central legislation exists, but **many states adopted laws based on the Bombay Act**.
3. **Definition of Beggar under the Act**: A person **soliciting alms, selling articles, performing, or appearing destitute without visible means of livelihood**.

Rehabilitation over Criminalisation: The SMILE Scheme

SMILE – Support for Marginalised Individuals for Livelihood and Enterprise

1. **Launched in 2022** by the **Ministry of Social Justice and Empowerment**.
2. Aims to **rehabilitate beggars and destitute persons**, not punish them.
3. Key Components:
   a. **Shelter, medical care, skill training, education and employment support**.
   b. **Target**: A **"beggar-free India by 2026"**.

Mental Health and Begging

Mental Healthcare Act, 2017:

1. Recognizes needs of **homeless mentally ill persons**.
2. Provides for **care, treatment, and rehabilitation**, especially for those found **wandering in public spaces**.

Policy Alternatives: Model Bill & Urban Policies

1. **The Persons in Destitution (Protection, Care and Rehabilitation) Model Bill, 2016**:
   a. Proposed **repeal of the Beggary Act**.
   b. Suggested establishment of **rehabilitation centres in every district**.
   c. Focused on **care and protection** over detention.
   d. However, the bill saw **no further progress after public consultation**.
2. **City-Level Policies**:
   a. Several cities declared **"begging-free" zones**.
   b. In **2020**, the Union Ministry proposed **rehabilitation-focused projects in 10 cities**, including **Mumbai**.

8. Corruption Perceptions Index (CPI) 2024

1. India has been ranked **96th out of 180 countries** in the 29th **Corruption Perceptions Index (CPI) 2024**, as per the **Transparency International report released in February 2025**.
2. **India's CPI score in 2024 is 38**, marking a **decline from 39 in 2023** and **40 in 2022** — indicating a **worsening perception of public sector corruption**.

Key Points about CPI Index

1. The index measures the **perceived levels of public sector corruption**.
2. The **CPI score ranges from 0 (highly corrupt) to 100 (very clean)**.
3. Each country's score is derived from at least **three data sources**, selected from **13 different corruption surveys and assessments**.

4. Sources include **global institutions like the World Bank and World Economic Forum**.

Global and Regional Highlights

Top and Bottom Performers

Top 3 Countries		
Rank	**Country**	**Score**
1	Denmark	90
2	Finland	88
3	Singapore	84
Bottom 3 countries		
180	South Sudan	8 (Displaced Somalia at the bottom)
179	Venezuela	10
178	Syria	12

- **South Sudan** is now the lowest-ranked country with a score of **8**, while **Somalia** scored **9**.
- **Denmark, Finland, and Singapore** continue to lead the chart with the **highest CPI scores**.

Asia-Pacific Region Performance

- The **regional average score declined to 44**, reflecting **failure to deliver on anti-corruption promises**.
- India's **score of 38** is **below the regional average**.

Performance of India's Neighbours

Country	CPI Score
Bangladesh	23
Pakistan	27
Sri Lanka	32

- **Bangladesh**, despite being a major recipient of **climate finance**, faces serious risks of **embezzlement and corruption**.
- **Pakistan** shows **governance gaps** and **policy delays**, especially in climate-related implementation.

Long-Term Trends and Concerns

1. Since 2012, only **32 countries have significantly improved** their corruption levels.
2. However, **148 countries have either stagnated or worsened**.
3. Over **two-thirds of countries scored below 50**, highlighting global challenges in tackling corruption.
4. The **global average CPI score remains stagnant at 43** for several years.

Corruption and Climate Change: A Dangerous Nexus

1. The CPI 2024 report underlines the **strong linkage between corruption and climate change**.
2. Corruption often leads to **misuse of climate funds**, preventing help from reaching **vulnerable populations**.
3. It hinders effective **implementation of environmental policies**, thereby causing **greater environmental damage**.
4. In many **climate-vulnerable countries**, funds meant for mitigation and adaptation are **siphoned off due to systemic corruption**.

India's Anti-Corruption Framework- Lokpal and Lokayuktas Act

Background and Evolution

1. The idea of **Lokpal (anti-corruption ombudsman)** was first proposed in **1963** during a **discussion on Union Law Ministry's budget allocation**.
2. Between **1968 and 2001**, **eight different bills** were introduced in Parliament but none were passed during that period.
3. Meanwhile, some states took independent initiatives — **Maharashtra was the first to establish a Lokayukta in 1971** under the **Maharashtra Lokayukta and Upayukta Act**.

The Lokpal and Lokayuktas Act, 2013

1. Came into effect on **January 16, 2014**.
2. Provides for a **central anti-corruption ombudsman called Lokpal**, headed by a **Chairperson** who is:
   a. A **former Chief Justice of India**, or
   b. A **former Supreme Court Judge**, or
   c. An **eminent person** with prescribed qualifications.

*Refer Current Affairs Total (CAT) Magazine January 2025, Page 14-15 for Comprehensive Coverage of **Lokpal and Lokayuktas Act.***

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B. International Relations

1. Amir of Qatar Visited India

1. **Sheikh Tamim bin Hamad Al Thani**, the Amir of Qatar, visited India on February 17-18, 2025. This visit marked his second state visit to India, the first being in March 2015.
2. The visit highlighted the growing strategic and economic relations between the two nations, with a focus on **energy**, **infrastructure, technology,** and **investment.**

Key Highlights of the Visit

1. **Joint Business Forum**: The visit coincided with the **India-Qatar Joint Business Forum**, which brought together Indian and Qatari Ministers of Commerce, along with key figures from the **finance, energy, infrastructure**, and **technology sectors.**
2. **Condemnation of Terrorism**: Both leaders strongly condemned terrorism in all its forms, particularly **cross-border terrorism,** and committed to working together to combat it through both bilateral and multilateral efforts.

Bilateral Relations and Trade

1. **Strengthening Diplomatic Ties**: The visit follows earlier engagements by India's External Affairs Minister S. Jaishankar, who visited Doha in June and December 2024, signaling the growing importance of India-Qatar relations.
2. **Energy Security**: Qatar is a key partner in India's energy security, particularly through Liquefied Natural Gas (LNG) imports. These imports play a crucial role in meeting India's energy needs.
3. **Trade**: India is Qatar's **second-largest trading partner**, with bilateral trade reaching $14 billion in 2024. Both countries have set a goal to **double bilateral trade to $28 billion in the next five years**.
4. **Strategic Partnership**: A significant development in the relationship, India and Qatar established a strategic partnership during the visit.

Economic and Trade Developments

1. **LNG Agreements**: Qatar Energy signed a **five-year agreement to supply 12 LNG** cargoes per year to India's GAIL, ensuring the continuity of energy supplies. Additionally, a long-term **20-year LNG deal** worth $78 billion was signed, which will save India at least $6 billion in energy costs.
2. **Qatari Investment in India**: Qatar committed to investing $10 billion in India's infrastructure, energy, and technology sectors, reinforcing its role as a major economic partner.
3. **Bilateral Investment Treaty**: A new Bilateral Investment Treaty (BIT) is being negotiated, potentially catering to Qatari interests, similar to the agreement India signed with the UAE in 2024.

Geopolitical Context and Cooperation

1. **Qatar's Regional Role**: Qatar has increasingly emerged as a key geopolitical player in the Middle East, particularly concerning conflicts such as the Gaza crisis and its role in mediating peace talks.
    - The country has become a diplomatic heavyweight by hosting negotiations, including those with the Taliban and Hamas.
2. **Impact of the Saudi-led Blockade**: The **blockade (2017-2021)** by Saudi Arabia and other Gulf nations had initially disrupted trade routes, but Qatar turned the crisis into an opportunity, opening new trade routes and strengthening relations with countries like India.

3. **India-GCC Cooperation**: Qatar supported India's growing cooperation with the Gulf Cooperation Council (GCC).
    - Both countries expressed satisfaction with the India-GCC Joint Ministerial Meeting held in Riyadh in September 2024.
4. **UN Reforms**: Both sides emphasized the need for reforms in the United Nations, particularly in the Security Council, reflecting their shared interests in global governance.

Diplomatic and Economic Tensions in the Past

1. **2015-2016 Engagements**: Diplomatic ties between India and Qatar were initially focused on labor reform for Indian workers in Qatar and resolving issues like the $1 billion penalty on India's PetroNet, which Qatar waived after diplomatic efforts.
2. **2017-2021 Blockade**: The blockade significantly impacted bilateral relations, especially since Qatar supplied half of India's LNG during this period. However, India maintained a stance for constructive dialogue.
3. **Resolution of Legal Issues**: In December 2023, Qatar addressed the death sentences for Indian Navy veterans arrested on espionage charges, leading to the release of 7 out of 8 veterans by February 2024.

Post-Blockade Developments

1. **Diplomatic Rapprochement**: Despite regional tensions, Qatar has maintained strong ties with India. The India-Middle East Economic Corridor (IMEEC), launched in September 2023, bypassed Qatar, but the recent engagements have paved the way for greater collaboration.
2. **Continued Cooperation**: Discussions during the visit focused on expanding Qatar's investments in India's infrastructure, technology, and energy sectors.

Bilateral Agreements and MoUs

During the visit, several agreements and Memoranda of Understanding (MoUs) were signed:

1. **Revised Double Taxation Agreement**: The revised agreement aims to avoid double taxation and prevent fiscal evasion between the two countries.
2. **Key MoUs Signed**:
    a. MoU on Financial and Economic Collaboration between India's Ministry of Finance and Qatar's Ministry of Finance.
    b. MoU on Cooperation in Youth and Sports.
    c. MoU on Cooperation in Documents and Archives.
    d. MoU between Invest India and Invest Qatar.
    e. MoU between the Confederation of Indian Industry (CII) and the Qatari Businessmen Association.

2. PM Modi Visited France

The **Prime Minister of India Narendra Modi** paid a three-day visit to **France** in February 2025. This was PM Modi's **sixth visit** to France.

What were the Meetings and Conferences attended by PM Modi?

1. **AI Action Summit**:
    a. It was held in Paris, France and was co-chaired by **PM Modi and President Macron**.
    b. Sixty countries, including, China, Brazil, and Australia, signed a joint statement on "Inclusive and Sustainable Artificial Intelligence for People and the Planet" at the AI Action Summit in Paris, 2025.
    c. It sought to build on the important milestones reached during the **Bletchley Park** (November 2023) and **Seoul** (May 2024) summits.

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d. The **Paris Summit has five main themes**: Public Interest AI, Future of Work, Innovation and Culture, Trust in AI, and Global AI Governance.

e. **Points highlighted by PM Modi**:

- **Equitable Access:** AI must be accessible by all, especially the Global South.
- **Global framework for AI:** This requires collective efforts from across the world.
- **Open-source systems**: They are necessary to enhance trust and transparency, and building data sets "free from biases"
- **Transformative power of AI:** Helps in improving health, education, agriculture etc., which can help in achieving the Sustainable Development Goals faster.
- **Need to address concerns**: related to cyber security, disinformation, and deep fakes.

Key outcomes- AI Action Summit, 2025:

Key Outcome	Details	Supporting Entities / Notes
Joint Declaration on Inclusive and Sustainable AI	Signed by 58 countries (e.g., France, China, India) to promote ethical, accessible, and sustainable AI.	1. Ensure AI accessibility and bridge digital divide 2. Develop AI that is open, transparent, ethical, safe, trustworthy 3. Prevent market concentration 4. Promote AI's positive impact on labor markets 5. Advocate for sustainable AI 6. Strengthen international cooperation and governance
Non-signatories	The U.S. and U.K. did not sign the declaration.	1. U.S.: Concern over stifling innovation due to overregulation 2. U.K.: Still in discussion; prefers alignment with national interests
Launch of 'Current AI' Foundation	A $400 million initiative to create AI public goods (open datasets, open-source tools).	Supported by 9 countries (Finland, France, Germany, Chile, India, Kenya, Morocco, Nigeria, Slovenia, Switzerland), plus organizations like Google, Salesforce
Coalition for Sustainable AI	Formed to address AI's environmental impact.	Led by France, UNEP, ITU; Supported by 11 countries, 5 international orgs, and 37 tech firms (e.g., EDF, IBM, Nvidia, SAP)
Divergent Approaches to AI Regulation	Disagreement between countries on AI governance philosophy.	- U.S. (JD Vance): Warned against overregulation- EU/French stance: Support balanced, ethical regulatory frameworks

f. India will host the next AI summit.

2. The two leaders jointly inaugurated the **new Indian Consulate General in Marseille**.
3. PM Modi **paid tributes to the Indian soldiers** who laid down their lives during **World Wars I and II** at the **Mazargues War Cemetery** in Marseille.
   - At Marseille, he also recalled freedom fighter **Veer Savarkar's** courageous attempt to escape British custody in Marseille in 1910.
4. **Visit to the International Thermonuclear Experimental Reactor (ITER) Facility**:
   a. **ITER** is an international **nuclear fusion** research and engineering megaproject aimed at creating energy through a fusion process.

b. It is being built in **Cadarache, Southern France** with the collaboration of **35 countries, including India and France**.

What were the Major Agreements and MoUs Signed?

1. India-France Declaration on Artificial Intelligence (AI)
2. Letter of Intent to Establish the Indo-French Centre for Digital Sciences
3. Agreement for Hosting 10 Indian Startups at the French Start-up Incubator – Station F
4. Declaration of Intent on Partnership for Advanced Modular Reactors (AMRs) and Small Modular Reactors (SMRs)
5. Renewal of MoU for Civil Nuclear Energy Cooperation
6. Joint Declaration of Intent on Triangular Development Cooperation
7. Declaration of Intent between India's MoEFCC and France's Ministry of Ecological Transition

What were the Gifts and Symbolic Gestures exchanged during the visit?

1. **Gifts**
   a. **Dokra artwork**:
      i. Prime Minister Narendra Modi presented the Dokra artwork to **French President Emmanuel Macron**.
      ii. The artwork represents **musicians**, crafted in gold metals and studded with stonework, playing a sarod and a tabla.
         - Dokra art is an ancient form of metal casting that has been practiced in India for over 4,000 years.
         - The earliest known example of this technique is the famous **Dancing Girl of Mohenjo-daro** from the Indus Valley Civilization.
         - This traditional craft employs the **lost-wax technique**, also known as *cire-perdue*, a method of metal casting in which molten metal is poured into a wax mold.
         - The process requires precise and intricate craftsmanship. Dokra artifacts are usually made of **brass, nickel, and zinc alloys**.
         - Dokra art is predominantly practiced by tribal communities in various regions of India, including **Chhattisgarh (Bastar region), West Bengal (Bankura, Dariapur), Odisha, and Jharkhand**.

   b. **Silver engraved table mirror:**
      i. Presented to French First Lady Brigitte Macron
      ii. The mirror was crafted by artists from Rajasthan and has a silver frame with detailed motifs of flowers and peacocks.

   c. **Gifts for US Vice President JD Vance's children:**
      i. The PM met US Vice President JD Vance and his family on the sidelines of the AI Action Summit in Paris.
      ii. The gifts included a sustainable wooden railway toy set, three jigsaw puzzles - depicting **Kalighat Pat, Santhal Painting and Madhubani**, and a sustainable alphabet set.

ART FORM	ORIGIN	CHARACTERISTICS
Kalighat Pat	Kolkata, West Bengal	Bold outlines, vibrant colours, minimal background details, and depictions of mythological, religious, and social themes.
Santhal Painting	Practiced by Santhal tribe in Jharkhand, Bihar, West Bengal, and Odisha	Vivid colours, intricate patterns, and detailed representations of nature, animals, and tribal rituals.
Madhubani	Mithila region of Bihar	Use of natural dyes and pigments, intricate geometric patterns, and themes of mythology, nature, and daily life.

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This visit not only reinforced the **multifaceted cooperation** between India and France but also set the stage for **future collaborations** in technology, defence, and sustainable development. The **personal rapport** between Prime Minister Modi and President Macron, evident throughout the visit, further solidified this strategic partnership, promising a robust and dynamic relationship in the years ahead.

3. PM Modi's US Visit

In February 2025, Prime Minister Narendra Modi paid an **Official Working Visit** to the United States, marking a significant step in strengthening India-US bilateral relations.

The visit witnessed major agreements in **defense**, **trade**, **energy security**, **technology**, **education**, and **regional strategy**.

Key Outcomes of the Visit

1. Strengthening Defense Cooperation

a. The US will sell **F-35 stealth fighter jets** to India, enhancing India's air combat capabilities.

b. A **new 10-year framework for US-India Major Defense Partnership** will be signed this year to deepen military collaboration.

c. India will procure **six additional P8I maritime surveillance aircraft**.

d. Joint defense manufacturing and **technology-sharing agreements** will further bilateral cooperation.

e. A review of **International Traffic in Arms Regulations (ITAR)** will facilitate smoother defense trade and technology exchange.

f. The US and India will collaborate on **autonomous defense technologies** under the **Autonomous Systems Industry Alliance (ASIA)**.

g. Co-production agreements for **Javelin Anti-Tank Guided Missiles** and **Stryker Infantry Combat Vehicles** in India.

2. Extradition of 26/11 Terror Accused Tahawwur Rana

a. The US **Supreme Court approved the extradition** of Tahawwur Rana, wanted for his role in the **2008 Mumbai terror attacks**.

b. This move strengthens **India-US counterterrorism cooperation**.

3. Economic & Trade Expansion: 'Mission 500'

a. Both nations set a goal of **$500 billion in annual bilateral trade by 2030**.

b. A **new Bilateral Trade Agreement (BTA)** is set to be signed by Fall 2025.

c. Indian companies have invested **$7.35 billion in the US**, creating over **3,000 high-quality jobs**.

d. The US imposed **reciprocal tariffs**, but both nations have agreed to work on resolving trade barriers.

Do you Know?

The US is one of the largest trading partners of India with overall bilateral trade in goods and services of $190 billion for the calendar year 2023. India's goods trade surplus with the US has been rising, particularly after the Covid-19 pandemic, doubling from $17.30 billion in 2019-20 to $35.33 billion in 2023-24, alongside a notable shift in the export basket. Meanwhile, India's imports from the US over the past five years have grown at a slower pace compared to its exports.

4. Energy Security and Nuclear Cooperation

a. India will **increase oil and gas imports from the US** to address trade imbalances.

b. The US will support **India's membership in the International Energy Agency (IEA)**.

c. Both countries will fully implement the **US-India 123 Civil Nuclear Agreement**.

d. Plans include the **construction of US-designed nuclear reactors in India**.

e. Collaboration on **advanced modular nuclear reactors** will ensure long-term energy security.

5. People-to-People Connections and Education

a. The US acknowledged the **300,000-strong Indian student community**, contributing **$8 billion annually** to the US economy.

b. Major initiatives include:

- **Joint degree programs** between US and Indian universities.
- **Twinning programs** for student exchange.
- Establishment of **offshore campuses** of US institutions in India.

c. Both nations committed to **streamlining visa processes** for professionals and students.

6. Technology & Innovation Partnerships

a. **Launch of the US-India TRUST (Transforming the Relationship Utilizing Strategic Technology) initiative** to enhance collaboration in **defense, AI, semiconductors, quantum computing, biotechnology, energy, and space**.

b. **Expansion of INDUS Innovation**, a program fostering tech partnerships in **AI, energy, and space exploration**.

c. India and the US will jointly develop quantum computing and biotechnology projects.

d. A new **Strategic Mineral Recovery Initiative** will help India access **critical minerals like lithium, cobalt, and rare earth elements**.

e. A Memorandum of Understanding (MoU) signed between the **US National Science Foundation and Indian Anusandhan National Research Foundation (ANRF)** for research collaborations.

Importance of Critical Minerals in Strategic Sectors
Critical minerals and REEs are essential for strategic industries, including defence, semiconductors, quantum computing, energy, and space. Elements such as neodymium, praseodymium, and samarium are crucial for high-performance magnets used in missiles, fighter jets, and radars. Lithium, cobalt, and nickel power are used in advanced batteries for energy storage and electric vehicles, while gallium and indium are key in semiconductors and AI hardware.

7. Indo-Pacific Strategy and Regional Security

a. **Indian Ocean Strategic Venture** launched to boost **economic connectivity and commerce**.

b. US-India **COMPACT (Catalyzing Opportunities for Military Partnership, Accelerated Commerce & Technology)** established to build trust and deepen partnerships.

India-US Relations in the Past Few Years

India and the US have enhanced engagement due to geopolitical developments, with key milestones including:

1. **2002**: General Security of Military Information Agreement (GSOMIA) signed to facilitate intelligence sharing between India and the US.
2. **2016: LEMOA (Logistics Exchange Memorandum of Agreement)** was signed in 2016 between India and the US. It facilitates reciprocal access to each other's military logistics facilities for refueling, repairs, and other support services
3. **2017: Revival of QUAD**, comprising **India, US, Japan, and Australia**, under Trump's first tenure.
4. **2018:** Signing of **COMCASA (Communications Compatibility and Security Agreement)** to strengthen **intelligence and military communication channels**.
5. **2020:** India signs **BECA (Basic Exchange and Cooperation Agreement)** with the US to deepen **military cooperation**.
6. **Chabahar Port Waiver:** India enjoyed a **US concession** regarding its engagement with **Iran's Chabahar Port development**.
7. **Other Collaborations:**
   a. US joined the International Solar Alliance (ISA).
   b. India joined the Indo-Pacific Economic Framework (IPEF).
   c. India-NASA collaboration on the Gaganyaan human spaceflight mission.

Significance of a Robust India-US Relationship

1. **Advancing Economic Opportunities**: USA is India's top merchandise export destination; India is part of three pillars of the US-led Indo-Pacific Economic Framework (IPEF).
2. **Strengthening Global Strategic Influence**: QUAD and other initiatives help counter China's influence.
3. **Defense Modernization**: India has signed key foundational defense agreements with the US, including GSOMIA, LEMOA, COMCASA, and BECA.
4. **Emerging Technologies & Space Collaboration**:
   a. US-India Initiative on Critical & Emerging Technologies (iCET) launched in 2023.
   b. NISAR (NASA-ISRO Synthetic Aperture Radar) mission.
   c. India joined the US-led Artemis Accord for space governance.
5. **Ensuring Energy Security**:
   a. US-designed nuclear reactors to be built in India.
   b. US is a major supplier of LNG to India.
6. **Countering Terrorism**: Extradition of 26/11 accused Tahawwur Rana strengthens counterterrorism ties.

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7. **Support at Multilateral Forums**:
    a. US supports India's permanent UN Security Council membership and Nuclear Suppliers Group entry.
    b. US backs India's bid for full membership in the International Energy Agency.
8. **Fighting Climate Change & Renewable Energy**:
    a. US joined India-led International Solar Alliance.
    b. Launched US-India Renewable Energy Technology Action Platform (RETAP).
    c. Both are part of the Global Biofuels Alliance (GBA).

Challenges in India-US Partnership

1. **Trade & Economic Issues**:
    a. Reciprocal tariffs and protectionist measures impact Indian exports.
    b. India remains on the US 'Special 301' Priority Watch List for IPR concerns.
    c. US revoked India's GSP (Generalized System of Preferences) in 2019.
2. **Geopolitical Divergences**:
    a. India's independent foreign policy differs from US positions (e.g., Russia-Ukraine War).
    b. India avoids turning QUAD into a military alliance.
3. **Visa & Immigration Challenges**:
    a. US tightening visa regulations (e.g., H-1B) affecting Indian professionals.
    b. Deportation of illegal Indian immigrants.
4. **Sanctions Concerns**: US raised concerns over India's purchase of S-400 air defense system from Russia under CAATSA.

Way Forward for Strengthening India-US Partnership

1. **Finalizing the Bilateral Trade Agreement (BTA)** to enhance market access, reduce tariffs, and strengthen supply chains.
2. **Early finalization of the new 10-year defense framework (2025-2035).**
3. **Easing H-1B Visa Restrictions** for Indian IT professionals and researchers.
4. **Seeking CAATSA Waiver** to strengthen defense ties and counter regional threats.
5. **Enhancing AI and Emerging Technology Cooperation** through the US-India TRUST Initiative.
6. **Managing Concerns Over Human Rights** by respecting India's democratic diversity without external interference.

4. India-U.S. Civil Nuclear Agreement

1. The Indian government aims to develop **100 GW of nuclear energy by 2047** through amendments to the **Atomic Energy Act** and the **Civil Liability for Nuclear Damage Act**.
2. The **United States recently removed three Indian nuclear entities** from its **Entity List**, which restricts trade with foreign entities deemed a national security risk.
    a. The removed entities include:
        i. Bhabha Atomic Research Centre (BARC)
        ii. Indira Gandhi Atomic Research Centre (IGCAR)
        iii. Indian Rare Earths (IRE)
3. **Significance of Removal**: Paves the way for implementing the long-pending **U.S.-India Agreement Concerning Peaceful Uses of Nuclear Energy** (123 Agreement).

Overview of the India-U.S. Civil Nuclear Agreement

Background

1. **1974**: India conducted its first nuclear test, leading to U.S. sanctions.
2. **2005**: India and the U.S. agreed on **civil nuclear cooperation**.
3. **2008**: The **U.S.-India Civil Nuclear Agreement**, also called the **123 Agreement**, was finalized under **Section 123 of the U.S. Atomic Energy Act**.

Key Provisions

1. **IAEA Safeguards**: India permanently placed its civilian nuclear reactors under **International Atomic Energy Agency (IAEA) safeguards** and signed an **Additional Protocol** allowing enhanced IAEA inspections.
2. **Nuclear Testing & Security**: India adopted a **voluntary moratorium** on nuclear testing and strengthened the security of its nuclear arsenal.

3. **U.S. Collaboration**: The agreement allowed **U.S. companies** to build nuclear reactors in India and supply **nuclear fuel** for its civilian energy program.
4. **NSG Waiver**: India, despite not being a signatory to the **Non-Proliferation Treaty (NPT)**, received a waiver from the **Nuclear Suppliers Group (NSG)**, enabling nuclear trade.

Significance of the Agreement

1. **Ended India's Nuclear Isolation**: Lifted a **three-decade U.S. ban** on nuclear trade with India.
2. **Recognition of India's Nuclear Status**: India gained **de facto recognition** as a nuclear power, allowing it to maintain its **nuclear weapons program** while accessing international nuclear fuel and technology.
    a. Enabled agreements with **France, Russia, the UK, Japan, and Canada** for peaceful nuclear projects like **Jaitapur** and **Kudankulam**.
3. **Strengthened India-U.S. Strategic Partnership**: The deal marked a shift from strained relations to a **comprehensive strategic alliance**.
4. **Enhanced Domestic Energy Security**: Allowed India to improve **reactor efficiency** from **50-55% (2006-07) to 80%**, supported by **uranium import agreements** with **France, Kazakhstan, Australia, Canada, and Russia**.
5. **Entry into Global Export Control Regimes**: Post-2008, India joined:
    a. **Missile Technology Control Regime (MTCR) (2016)**
    b. **Wassenaar Arrangement (2017)**
    c. **Australia Group (2018)**

Challenges in Implementing the Agreement

1. **Civil Liability Law Issues**: India's **Civil Liability for Nuclear Damage (CLND) Act, 2010**, conflicts with global norms.
    a. **Section 17B of CLND Act**: Allows **Nuclear Power Corporation of India Limited (NPCIL)** to claim compensation from suppliers in case of accidents, deterring **foreign investment**.
    b. **Supreme Court Verdict (2010)**: Reinforced supplier liability, influenced by the **Bhopal Gas Tragedy**, discouraging **private sector participation**.
2. **Commercial Viability Issues**: The bankruptcy of **Westinghouse (2017)** delayed the planned **six AP1000 nuclear reactors in Kovvada, Andhra Pradesh**.
3. **High Capital Costs**: Nuclear energy remains **more expensive** compared to **solar and wind energy**, reducing its attractiveness.

Key Features of India's CLND Act, 2010

1. **Operator Liability**: Strict liability is **exclusively assigned** to the nuclear plant operator (**NPCIL**).
2. **Supplier's Right of Recourse**: **Section 17** allows **NPCIL** to seek compensation from **suppliers** for defective equipment.
3. **Alignment with CSC**: The **CLND Act** complies with the **Convention on Supplementary Compensation**, enabling India to participate in **international nuclear trade**.
4. **Insurance Mechanism**: The **Indian Nuclear Insurance Pool (₹1,500 crore)** provides risk coverage to **operators and suppliers**.
5. **Non-Retrospective Application**: Future amendments to **liability limits** will not affect **existing contracts**, ensuring stability for suppliers.

Way Forward to Operationalize the Agreement

1. **Amend the CLND Act**: Align Indian liability laws with the **Convention on Supplementary Compensation (CSC)** by shifting **liability solely to the operator**.
2. **Intergovernmental Liability Agreement**: India and the U.S. should establish a **formal agreement** clarifying the **limited liability** of private U.S. companies.
3. **Fully Implement the Insurance Pool**: The **₹1,500 crore Indian Nuclear Insurance Pool** should be expanded to provide financial protection to both **operators and suppliers**.

5. "Dunki Routes" and Illegal Migration

1. The term **"Dunki routes"** refers to **perilous (dangerous) and illegal migration pathways** used by individuals attempting to enter countries like the **United States without valid documentation**.

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2. These journeys often span multiple continents, including **Latin America, Central America, and Europe**, with migrants using **visa-on-arrival facilities or fake visas** to reach their final destination—mostly the U.S.
3. Recently, India witnessed a surge in **deportations from the United States**, exposing the complex web of human trafficking, economic desperation, and weak migration systems.
   a. States like **Punjab, Gujarat, and Haryana** are major hubs for such illegal migration.
   b. These areas are frequently targeted by human trafficking networks, which determine routes based on their international connections.
   c. **Deportation** is the legal removal of non-citizens from a country for **violating immigration laws**.
      - In the U.S., deportation is handled by the **U.S. Immigration and Customs Enforcement (ICE)**.

Why the "Dunki Route"?

Many Indian migrants choose these dangerous paths due to:

1. Limited legal migration channels and **slow visa processes**.
2. **Economic distress and unemployment** in India, especially in rural areas.
3. **Societal pressure** and a "success culture" in some communities, like the **Patels in Gujarat**, where migrating to the U.S. is seen as a status symbol.
4. **Exorbitant agent fees** and human smugglers who lure people with promises of employment and legal residency.

How the Dunki Route Operates?

1. Migrants are first sent to countries with **lenient visa policies** (e.g., **Ecuador, Bolivia, Guyana**, or **tourist visas from Brazil and Venezuela**).
2. From there, they **travel via land or air** to **Central America or the Caribbean** using fake visas (often **Schengen visas**).
3. Common paths include:
   a. **Europe (via fake Schengen visa) → Central America → Mexico → U.S. border crossings**
   b. **Malaysia → Thailand → Azerbaijan/ Kazakhstan → Guatemala/Costa Rica → U.S.**
   c. **Turkey/Kazakhstan → Russia → onward to U.S.**
4. Some also attempt sea routes via **Mexico or the Caribbean islands**.

Schengen visa
Schengen visa allows the holder to **travel freely in the Schengen Area** comprising 29 European countries, for short stays of a **maximum of 90 days in any 180-day period**. The visas are not purpose-bound, but they do not grant the right to work. The **Schengen Area comprises** 29 European countries, 25 of which are EU member states.

Consequences of Illegal Migration

1. Migrants face **harassment, robbery, assault**, and even **sexual violence**, often without legal recourse.
2. Many perish en route, and **repatriating dead bodies becomes impossible**.
3. The high risk is exploited by a **flourishing human smuggling network**, charging fees ranging from **₹30 lakh to ₹1 crore** per migrant.

India's Response to Illegal Migration

To address the crisis, India is taking both **legislative** and **diplomatic steps**:

1. Overseas Mobility (Facilitation and Welfare) Bill, 2024 (Proposed)

   a. Aims to promote **safe, legal, and orderly migration** for overseas employment.
   b. Seeks to replace the outdated **Emigration Act, 1983**.

2. Awareness and Prevention Measures

   a. **Indian missions/consulates** regularly issue advisories to educate prospective migrants.
   b. Campaigns focus on:
      - **Risks of illegal migration**
      - **Registered recruiting agents**
      - **Job fraud prevention**

3. Cracking Down on Human Trafficking Networks: Authorities are planning to **regulate recruitment agencies**, ensure **job transparency**, and tighten **monitoring systems**.

4. Strengthening Diplomatic Channels: India is in discussions with the **U.S. and other nations** for fair **deportation protocols** and better **visa access mechanisms**.

World Migration Report 2024: India's Dual Identity
The International Organisation for Migration (IOM) has released the biennial **World Migration Report 2024**. According to the report, India received over **USD 111 billion** in remittances in 2022, the largest in the world, becoming the **first country to reach and even surpass the USD 100 billion** mark. India is also the origin of the largest number of international migrants in the world, with large diasporas living in countries such as the United Arab Emirates, the United States and Saudi Arabia.

H-1B Visa: The Legal Migration Path Under Debate

The **H-1B visa program** allows U.S. companies to hire skilled foreign workers in specialized roles. It is a **temporary visa (up to 6 years)**, often used by Indian IT and STEM professionals.

Indians and the H-1B Visa

1. Indians account for **over 70% of H-1B visas** granted annually.
2. In comparison, **China** receives around **12-13%**.
3. The H-1B program remains vital for **India-U.S. economic relations**, though it has faced political scrutiny, especially during **Trump-era immigration tightening**.

H-1B Visa Application Process: Key Steps

1. **Electronic Registration** with U.S. Citizenship and Immigration Services (USCIS)
2. **Lottery Selection**, if applications exceed annual cap (65,000 regular + 20,000 advanced degree cap)
3. **Petition Filing** by selected employers
4. **Petition Approval and Visa Issuance**
5. **Additional Lotteries**, if visa quotas remain unfilled

6. 'Gold Card' Visas for US Citizenship

US President Donald Trump has introduced a new "Gold Card" immigration initiative, replacing the existing EB-5 visa program.

This new policy aims to attract wealthy foreign investors by offering a streamlined path to U.S. citizenship and permanent residency.

Key Features of the Gold Card Program

1. Requires a minimum investment of **$5 million** from foreign investors.
2. Provides a direct pathway to **U.S. permanent residency and citizenship**.
3. Replaces the EB-5 visa program, which has been in place since **1990**.
4. Designed to attract high-net-worth individuals willing to make significant economic contributions.

Comparison: Gold Card vs. EB-5 Visa Program

EB-5 Visa Program

1. Established in **1990** to boost the American economy through **job creation and capital investment**.
2. Requires a minimum investment of **$1.05 million** (or **$800,000** in economically distressed areas, known as **Targeted Employment Areas**).
3. Grants **Green Cards** to eligible investors who meet the job creation and investment criteria.

Criticism of EB-5

1. Faced **fraud and misuse allegations**, with reports suggesting that funds were used for real estate projects, including those linked to the Trump family businesses.
2. Calls for **reform** intensified during Trump's presidency due to concerns about program integrity and misallocation of funds.

Impact on Indian Investors

Green Card Statistics

1. In **2023**, only **631 Indians** obtained Green Cards through the **EB-5 program**.
2. The **$5 million investment requirement** may make the Gold Card program less attractive to many Indian investors.

Impact on Other Immigration Categories

1. Over **one million Indians** are currently waiting for Green Cards in the U.S.
2. The backlog for **employment-based Green Card applicants** from India is projected to reach **2.19 million by 2030**.
3. The introduction of a new investor category like the Gold Card may **further extend waiting periods** for applicants in other visa categories.

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7. US Sanctions International Criminal Court (ICC)

1. In February 2025, President Donald Trump signed an executive order imposing sanctions on the **International Criminal Court (ICC)**.
2. The U.S. accused the ICC of conducting "illegitimate and baseless actions" targeting the United States and its ally, **Israel**.
3. The sanctions include financial restrictions and visa bans on individuals and their families who assist in ICC investigations into U.S. citizens or its allies.

About the International Criminal Court (ICC)

Headquarters: The Hague, Netherlands

Background:

1. The ICC is the world's first **permanent international criminal court**.
2. **Founding Treaty:** Rome Statute, adopted in 1998, entered into force in 2002.
3. **Crimes Prosecuted:** Genocide, War Crimes, Crimes Against Humanity and Crime of Aggression

Membership:

1. **125 countries** are members of the ICC.
2. Key **Non-Members: India, Israel, United States, Russia and China**
3. In 2015, **Palestine** was accepted as a member, granting it jurisdiction over international crimes in Gaza.
4. **Recent Members: Malaysia** (2019) and **Ukraine** (2025).

Official Languages of ICC : English, French, Arabic, Chinese, Russian, and Spanish.

Structural Issues in ICC's Functioning

1. **High Dependence on State Cooperation:**
   - The ICC lacks executive powers, including the ability to arrest suspects or collect evidence independently. It relies on the cooperation of member states to enforce its decisions.
2. **Political Pressure:**
   - The ICC often finds itself caught between **power politics** and the **human rights agenda**. In some cases, certain states may use it to target political opponents, casting doubts on the court's impartiality.

Has Trump Sanctioned the ICC Before?

Yes, this is not the first time the U.S. has taken action against the ICC.

- **In June 2020:**
  - Trump's administration sanctioned **Fatou Bensouda**, the ICC's chief prosecutor, and another senior court official.
  - The sanctions were imposed because the ICC pursued investigations into alleged **war crimes** and **crimes against humanity** committed by U.S. forces in **Afghanistan**.
  - The U.S. administration called the ICC a "kangaroo court," dismissing it as an "unaccountable political institution."

ICC vs. International Court of Justice (ICJ)

Although both institutions are key components of the international legal system, they serve **different functions**.

1. **International Court of Justice (ICJ):**
   a. **Established:** 1945
   b. **Primary Function:** Acts as the principal judicial organ of the **United Nations (UN)**.
   c. **Roles:**
      i. **Settles legal disputes** between states in accordance with international law.
      ii. Provides **advisory opinions** on legal matters referred to it by UN organs or specialized agencies.
2. **International Criminal Court (ICC):**
   a. **Jurisdiction:** Operates independently of the UN, though it works closely with international organizations and governments.

8. Panama Exits China's Belt and Road Initiative: A Strategic Shift

In February 2025, Panama decided not to renew its participation in China's Belt and Road Initiative (BRI) upon the agreement's expiration.

- Panama joined the BRI in 2017, becoming the first Latin American country to do so.

Understanding the Belt and Road Initiative (BRI)

1. Launched in 2013 by Chinese President Xi Jinping, the BRI aims to enhance global trade connectivity through infrastructure development.
2. Two main components:
    a. **Silk Road Economic Belt** – A land-based network linking China to Central Asia, Europe, and the Middle East.
    b. **21st Century Maritime Silk Road** – A sea-based trade route connecting China with Southeast Asia, Africa, and Europe.
3. The BRI has significantly expanded China's economic footprint but has faced criticism for creating economic dependencies and strategic vulnerabilities.

Recent Exits from the BRI

Panama is not alone in reconsidering its **BRI participation**. Several nations have either **withdrawn, renegotiated, or reduced their engagement** with China's initiative due to economic and strategic concerns.

- **Italy**: In 2019, Italy became the first G7 nation to join the BRI. However, by 2023, Italian officials expressed dissatisfaction with the limited economic benefits and signaled intentions to withdraw from the initiative.
- **Philippines**: In late 2023, the Philippines announced its departure from the BRI, citing concerns over unfavorable loan terms and the strategic implications of Chinese-funded infrastructure projects.

*Refer Current Affairs Total (CAT) Magazine December 2024, Page 26-27 for Comprehensive Coverage of **Belt and Road Initiative.***

9. Tea Horse Road: The Historic Trade Route Connecting India and China

1. In February, 2025 China's Ambassador to India, Xu Feihong, highlighted the significance of the ancient **Tea Horse Road**, a trade route spanning over 2,000 km that historically connected China to India via Tibet.
2. Although less renowned than the Silk Road, this route played a crucial role in **commerce** and **cultural** exchange for centuries, facilitating the trade of tea, horses, and other valuable goods across challenging terrains.

Origins and Development

1. The **origins of the Tea Horse Road** date back to the **Tang Dynasty (618-907 CE)** when trade between Southwest China, Tibet, and India flourished.
2. Buddhist monk **Yijing (635-713 CE)** documented early trade exchanges, mentioning goods such as sugar, textiles, and rice noodles moving from China, while horses, Tibetan gold, saffron, and medicinal herbs were exported.
3. By the **Song Dynasty (960-1279 CE)**, official markets were established along the route to regulate the trade of tea and horses, which became the dominant commodities exchanged between China and Tibet.
    - Over time, traders also dealt in other goods along various branches of the route.

The Structure of the Tea Horse Road

Rather than a single pathway, the Tea Horse Road was a network of multiple routes originating in **Yunnan and Sichuan provinces**, passing through **Lijiang and Dali**, reaching **Lhasa in Tibet**, and then extending into the Indian subcontinent via present-day **India, Nepal, and Bangladesh**.

The route crossed perilous (danger or risky) terrains, often exceeding **10,000 feet in elevation**.

Significance of the Tea Horse Road

1. **Trade of Tea and Horses**: Tibetan demand for Chinese tea was a key driver of the route's importance. A legend suggests that tea became popular in Tibet

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when a **Chinese princess married a Tibetan king in the 7th century** and introduced the beverage.

- Tibetan nomads relied on tea for its warmth and sustenance, often drinking it with yak butter. Meanwhile, **China required strong Tibetan horses for military and transportation purposes**, as the central plains lacked quality horses.

2. **Cultural and Economic Exchange**: The route facilitated exchanges in art, architecture, and technology.
   - It also helped integrate remote mountainous regions into broader trade networks, fostering economic development.
3. **Tea as Currency**: In Tibet, tea was pressed into **brick-shaped blocks**, making it easier to transport and trade. These tea bricks functioned similarly to currency in medieval Tibet.
4. **Military and Strategic Importance**: By the 10th century, official trading posts were established to regulate and supervise trade.
   - The sturdy Tibetan horses were vital in China's military campaigns, including conflicts with Mongol tribes, who later formed the **Mongol Empire under Genghis Khan**.

Expansion in the Early 20th Century

Following the collapse of the **Qing Dynasty in 1912**, the Tea Horse Road remained vital. As China integrated into global markets, **Yunnan's tea industry expanded**, and the route helped introduce new techniques and products to remote areas.

Tea Horse Road's Role During World War II

During **World War II**, when Japan controlled much of China's coastline, the Tea Horse Road became an essential supply route for transporting goods and military supplies to **China's resistance forces**. This strategic importance prolonged the relevance of the route even in modern history.

Decline of the Route

With the establishment of the **People's Republic of China in 1949**, the importance of the Tea Horse Road declined due to:

1. **Mao Zedong's land reforms**, which altered traditional trade patterns.
2. **Advancements in modern transportation**, making the historic route obsolete.
3. **The decline of traditional porter systems**, where workers once carried loads up to 150 kg.

Legacy and Tourism Revival

1. Although commercial use of the Tea Horse Road diminished, its cultural and historical significance remains.
2. China has promoted tourism along the ancient path, particularly in **Lijiang**, which became a **UNESCO World Heritage Site in 1997**.
3. UNESCO highlights Lijiang's importance as a goods distribution center from the **12th century onward**, where trade between Sichuan, Yunnan, and Tibet flourished.
4. The area reflects a unique blend of **Han, Bai, and Tibetan cultures**, showcasing architectural and artistic influences from Confucianism, Taoism, and Buddhism.

The **Tea Horse Road** played a significant role in facilitating trade, cultural exchange, and economic integration between China, Tibet, and India. Though it lost relevance due to modern developments, its legacy continues through historical recognition and tourism. The route remains a testament to the enduring interactions between India and China over centuries.

10. India Assumes Chairmanship of BOBP-IGO

1. In February 2025, India has assumed the Chairmanship of the Bay of Bengal (BOB) Inter-Governmental Organisation from Bangladesh at the **13th Governing Council Meeting** held in **Malé, Maldives.**

2. This meeting was part of the high-level conference ***"Policy Guidance for Mainstreaming Ecosystem Approach to Fisheries Management (EAFM) in Small-Scale Fisheries"***, hosted by Maldives, in collaboration with the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO).

About Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO)

1. **Genesis:** 2003
2. **Purpose:** It is an Inter-Governmental Organisation promoting cooperation and providing technical advisory for sustainable coastal fisheries in the Bay of Bengal region.
3. **Members**: Bangladesh, India, Maldives and Sri Lanka.
    a. Indonesia, Malaysia, Myanmar and Thailand are cooperating non-contracting parties.
4. **Bay of Bengal Large Marine Ecosystem Project II:**
    a. **Purpose:** Addresses issues related to the overexploitation of marine living resources, the degradation and loss of critical habitats and water pollution.
    b. **Tenure:** Five-year project (2023-2028) with funding from the Global Environment Facility (GEF).

India's Commitment to Strengthening Regional Cooperation

India stressed the importance of cooperation in key areas such as:

1. Marine Resource Management
2. Training and Capacity Building
3. Research and Policy Advocacy
4. Addressing Illegal, Unreported, and Unregulated (IUU) Fishing
5. Resolving Regional Fisheries Challenges

Collaborations for a Sustainable Future

India is optimistic about continued support and collaboration from international organizations, including:

- Food and Agriculture Organization (FAO)
- Southeast Asian Fisheries Development Center (SEAFDEC)
- United Nations Office on Drugs and Crime (UNODC)

11. India Becomes 2nd Country to Adopt EPL for Pilots

In **February 2025**, India became the **second country in the world after China** to implement **Electronic Personnel License (EPL)** for pilots.

What is EPL and Why Does It Matter?

1. The **Electronic Personnel License (EPL)** system allows pilots to **access their licenses digitally** through the **eGCA mobile app**, replacing traditional paper-based documentation.
2. This innovation ensures:
    a. **Real-time verification** by global aviation agencies.
    b. **Enhanced safety and compliance** with international standards.
    c. **Convenience, efficiency, and security** for pilots and aviation authorities.
3. The move aligns with the **Digital India initiative**, reflecting India's push toward technology-driven governance.

How Does EPL Improve Aviation Governance?

1. **Digital Access**: Pilots can instantly view their license status, reducing dependency on manual documentation.
2. **Operational Efficiency**: Faster clearances and improved coordination between aviation authorities.
3. **Safety Assurance**: Better verification systems ensure pilots meet **international aviation standards**.
4. **Global Alignment**: Supports **ICAO's modern aviation standards**, positioning India as a **tech-driven aviation hub**.

India's Global Standing in Aviation

1. India is projected to become the **third-largest aviation market by 2026**.
2. The introduction of **EPL places India among global innovators**, reinforcing its position in the international aviation community.

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3. The **Directorate General of Civil Aviation (DGCA)** — India's key aviation regulatory body — has been pivotal in adopting this system, aligning with **best global practices**.

Do you know?

1. **India continues to have among the lowest airfares in the world.**
2. The **Ministry of Civil Aviation is responsible for the formulation of national policies** and programs for the development and regulation of the civil aviation sector in India.
3. The **Directorate General of Civil Aviation (DGCA) is the regulatory authority** for civil aviation in India, primarily dealing with safety issues.
4. India has the **highest share of women pilots in the world (15%)**.
5. India is the **3rd largest domestic aviation market** after USA and China.
6. Over **157 airports targeted by 2030** under aviation expansion.

Major Government Initiatives Boosting Aviation Growth

1. UDAN (Ude Desh ka Aam Nagrik) – 2016

a. **Objective**: Enhance **regional connectivity** by linking underserved airports.

b. **Incentives**: Subsidized fares and financial support for airlines to operate on smaller routes.

c. **Impact**: Boosted tourism and economic development in smaller cities.

2. Digi Yatra

a. A digital initiative offering **paperless and seamless airport experiences**.

b. Enables passengers to **digitally verify identity and travel documents**, reducing wait time and improving convenience.

3. National Civil Aviation Policy (NCAP) 2016: A comprehensive policy to boost:

a. Regional connectivity

b. Passenger safety

c. Air transport operations

d. Maintenance, repair, and fiscal support for the sector

About ICAO: The Global Aviation Authority

The **International Civil Aviation Organization (ICAO)** is a **UN agency** formed in **1944**, responsible for regulating international air navigation.

ICAO's Key Functions:

1. **Facilitates international cooperation** in civil aviation.
2. **Develops air transport infrastructure and standards**.
3. Establishes **international safety and navigation procedures**.
4. Promotes **harmonized global aviation policies**.

ICAO's Constitution:

1. **Chicago Convention** forms ICAO's legal foundation.
2. The **Assembly**, comprising all member states, meets **every three years**.

ICAO's Impact:

1. Developed a **global air mobility network**.
2. Supported **sustainable aviation growth**.
3. Helped build a **modern international air transport ecosystem**.

C. SECURITY

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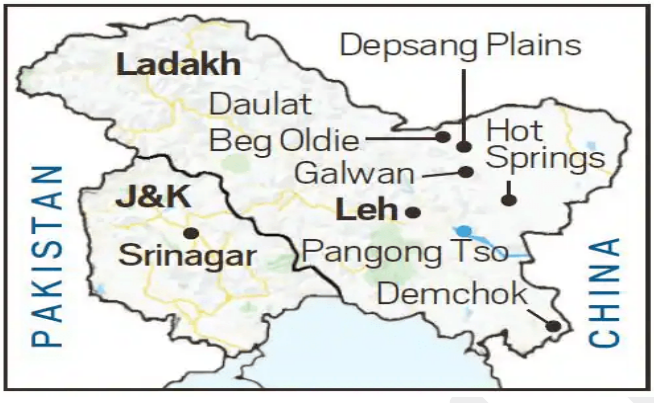
1. India Opens Demchok for Civilian Visitors Under Battlefield Tourism Initiative

1. India has officially opened **Demchok**, a key friction points along the **Line of Actual Control (LAC)** with China, for **civilian visitors** under the newly launched **Battlefield Tourism initiative**.
2. The move comes just months after the disengagement process was completed in the **Demchok and Depsang Plains regions** of Eastern Ladakh.



Overview of the Battlefield Tourism Initiative:

1. The initiative is **jointly led by the Ministry of Defence, Ministry of Tourism, and respective state governments**.
2. Aims to offer **citizens access to forward border locations** of strategic and historic importance while promoting **tourism and socio-economic development** in these regions.
    - **Total of 77 forward sites** included in the initiative: **21 in Arunachal Pradesh, 14 in Ladakh, 11 in Jammu and Kashmir, and 7 in Sikkim**

Significance of Demchok Opening:

1. **Demchok** was one of the key friction points in the **India-China border standoff** post-2020.
2. **Chinese troops had occupied areas near Charding Nullah**, leading to restrictions on Indian troop movement.
3. The recent disengagement, part of an agreement between India and China announced on **October 21, 2024**, has allowed **Indian troops to resume patrolling** in the Demchok area.
4. The agreement came **two days before PM Narendra Modi and President Xi Jinping met during the BRICS Summit 2024 in Kazan, Russia (in October)** to ease bilateral tensions.

Key Loc1ations under Battlefield Tourism:

1. **Arunachal Pradesh**: Tawang, Bum La, Gorsam, Lohit, Kameng Region, Walong.
2. **Ladakh**: Demchok, Galwan (site of 2020 clashes), Pangong Tso (location of multiple stand-offs since 1962).
3. **Jammu & Kashmir**: Includes various strategic forward posts.
4. **Sikkim**: Key border areas added to promote high-altitude tourism.

2. NASM-SR - India's 1st indigenously developed air-launched anti-ship missile

1. In February 2025, the **Naval Anti-Ship Missile - Short Range (NASM-SR)** underwent successful flight trials from an **Indian Naval Sea King helicopter** at the **Integrated Test Range (ITR)**, Chandipur, off the coast of Odisha.
2. The trial validated its **Man-in-Loop capability**, **sea-skimming mode**, and **precision strike effectiveness** against ship targets.
3. It is **India's 1st indigenously developed air-launched anti-ship missile**, designed to **enhance the Indian Navy's maritime strike capabilities**.
4. Developed by the **Defense Research & Development Organization (DRDO)**, NASM-SR is **highly precise**, features **advanced targeting technology**, and is capable of **in-flight retargeting**.

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Key Features of NASM-SR

1. **Man-in-Loop Capability:** Allows **real-time human intervention** during flight for retargeting.
   a. **High-bandwidth two-way datalink** enables continuous communication with the pilot.
   b. Transmits **live seeker images**, enabling pilots to **redirect the missile to a more strategic target**.
2. **Advanced Targeting System**
   a. **Bearing-Only Lock-On Mode**: Missile is launched towards an approximate target area before locking onto a specific enemy ship.
   b. **Indigenous Imaging Infra-Red (IIR) Seeker**:
      - Enables **terminal guidance** for **precision strikes**.
      - Transmits **real-time images** to the pilot for **in-flight decision-making**.
   c. **Sea-Skimming Mode**: The missile flies **low over the sea surface**, avoiding enemy radar detection.
   d. **Pinpoint Accuracy**: Demonstrated in trials by **striking a small ship target with high precision**.
3. **Navigation & Control**
   a. **Fiber Optic Gyroscope-based Inertial Navigation System (INS)** for accurate mid-course guidance.
   b. **Electro-Mechanical Actuators & Jet Vane Control** for superior manoeuvrability.
   c. **Radio Altimeter** ensures **low-altitude terrain-following flight** for stealth operations.
4. **Propulsion & Warhead System**
   a. Uses **solid propulsion technology** for extended range and endurance.
   b. Equipped with an **in-line ejectable booster** and **long-burn sustainer**, ensuring stable flight.
   c. Features a **high-impact warhead**, maximizing damage to enemy ships.
   d. **Reliable power system** ensures seamless coordination of missile sub-systems.

Development & Production

1. NASM-SR has been developed by various **DRDO laboratories**, including:
   a. **Research Centre Imarat (RCI)** – Missile system integration.
   b. **Defence Research and Development Laboratory (DRDL)** – Propulsion and aerodynamic design.
   c. **High Energy Materials Research Laboratory (HEMRL)** – Warhead and explosive systems.
   d. **Terminal Ballistics Research Laboratory (TBRL)** – Warhead testing and impact analysis.

3. Naga Peace Process and the 2015 Framework Agreement

The **National Socialist Council of Nagalim (Isak-Muivah faction)**, or **NSCN (I-M)**, recently reiterated that its **2015 Framework Agreement** with the Indian government should not be equated with the **2017 Agreed Position** signed with a conglomerate of rival Naga groups under the **Working Committee of the Naga National Political Groups (NNPGs)**.

Background of the Naga Peace Process

1. The **Naga insurgency** is one of India's oldest internal security challenges.
2. Multiple peace talks have been held since the 1997 ceasefire between the Government of India and NSCN (I-M).
3. Two major developments:
   a. **Framework Agreement** with NSCN (I-M): *August 2015*
   b. **Agreed Position** with NNPGs: *November 2017*

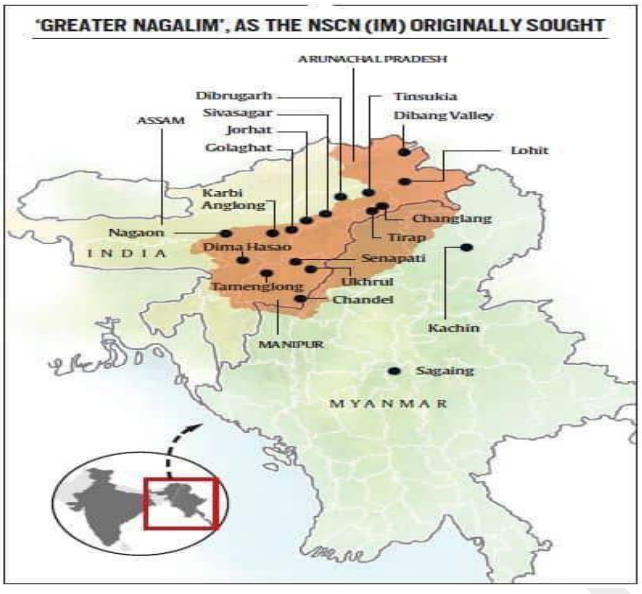
2015 Framework Agreement: Key Highlights

The **Framework Agreement (FA)**, signed in **August 2015**, aimed to pave the way for a **comprehensive peace settlement** to end the protracted insurgency in Nagaland.

Key Features of the Agreement:

1. **Recognition of Naga Identity**: The Indian government acknowledged the *"unique history, culture, and position"* of the Nagas.
2. **Shared Sovereignty**: The agreement introduced the concept of **shared sovereignty**, suggesting a special political and administrative status for Nagas within the Indian Union.
3. **Peaceful Resolution through Dialogue**: The agreement was intended to be the **foundation for further negotiations**, leading to a final accord.

4. **Autonomous Governance**: As interpreted by NSCN (I-M), the agreement allows for **special autonomous arrangements** with enhanced **legislative, executive, and financial powers** for Naga regions.
5. **No Immediate Territorial Change**: Although NSCN (I-M) seeks integration of all Naga-inhabited areas into a unified **"Nagalim"** (including parts of **Arunachal Pradesh, Assam, and Manipur**), the agreement does **not commit to redrawing existing state boundaries**.



Contentious Issues in the Peace Process

Despite the initial optimism, several issues have impeded the final settlement:

1. Demand for Separate Flag and Constitution: NSCN (I-M) insists that the FA included provisions for a **distinct Naga flag and constitution**, a demand that the Government of India has consistently refused.

2. Ambiguity in Language: The **vague wording** in the FA has led to **contrasting interpretations**.

a. NSCN (I-M) interprets "sharing sovereign power" as **acknowledgment of separate sovereignty**.
b. The Indian government disagrees with this interpretation.

3. Impact of Article 370 Abrogation (2019): The **revocation of Article 370** (which granted Jammu & Kashmir a separate constitution and flag) **hardened the government's stance**, making it politically difficult to accept NSCN (I-M)'s demands.

4. **Poor Drafting of the Agreement:** The **lack of clarity and specificity** in the agreement has complicated negotiations and prolonged the deadlock.
5. **nternal Divisions Among Naga Groups**
   - During **R.N. Ravi's tenure** as interlocutor, smaller groups like the **NNPGs** were brought into the dialogue process.
     - o While this move aimed at broadening negotiations, **NSCN (I-M) perceived it as an attempt to divide the Nagas**, thereby stalling progress.
6. **No Clear Timeframe for Final Accord:** Despite reinitiated talks, **lack of clarity over the final roadmap**, especially regarding the **flag and constitution**, has stalled progress.
7. **Lack of Transparency:** The **full text of the Framework Agreement has never been made public**, leading to confusion and multiple interpretations.

Current Status of the Peace Process

1. **Stalemate Since 2019**: Negotiations have **remained stuck**, primarily due to the unresolved **flag and constitution** issues.
2. **NSCN (I-M)'s Stand**: The group demands that the **original spirit of the 2015 agreement be honoured**.
3. **No Final Settlement Yet**: Despite over two decades of dialogue, **a comprehensive peace accord is still pending**.
4. **Absence of Full-Time Interlocutor**: Since 2021, there has been **no full-time appointed interlocutor**, further weakening the negotiation process.

Way Forward: Recommendations for a Sustainable Peace Accord

1. **Inclusion of All Factions:** The Government must **engage all stakeholders**, including NSCN (I-M) and NNPGs, to **ensure inclusivity and consensus** in the final settlement.
2. **Political & Administrative Autonomy**
   a. Consider **establishing a bicameral assembly for Nagaland**, with **nominated members from various tribes**.
   b. Grant **greater legislative and financial autonomy** to the Naga Assembly.

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3. **Autonomous Councils in Neighboring States: Create autonomous councils** for Naga-dominated areas in **Arunachal Pradesh, Assam, and Manipur**, with powers similar to those under the **Sixth Schedule** of the Constitution.
4. **Integration and Rehabilitation of Naga Cadres**
   a. **Absorb NSCN (I-M) cadres** into local armed forces or paramilitary units.
   b. Provide a **structured rehabilitation package** to **mainstream former militants** and prevent the resurgence of insurgency.
5. **Cultural and Symbolic Recognition:** Promote **Naga identity through cultural institutions**, local governance models, and **linguistic rights**.
6. **Trust-building Measures**
   a. **Appoint a full-time interlocutor** to actively pursue negotiations.
   b. Initiate **confidence-building measures** such as:
      - Greater **economic investments**
      - **Infrastructure development**
      - **Cultural exchanges**
7. **Clear Roadmap with Deadlines:** Define a **transparent, time-bound roadmap** for reaching the final agreement to ensure **mutual commitment and accountability**.

Constitutional Safeguards for Nagaland: Article 371A

In the backdrop of the **Naga peace process**, it is essential to understand the **special constitutional provisions** already in place for Nagaland. These provisions are enshrined in **Article 371A of the Indian Constitution**, providing **autonomy and protection** to preserve the unique identity and customs of the Naga people.

Key Provisions of Article 371A: Special Constitutional Status of Nagaland

1. Parliamentary Acts Not Automatically Applicable

- As per Article 371A, **Acts of Parliament shall not apply to Nagaland** in respect of the following matters unless the **Nagaland State Legislative Assembly** specifically decides to adopt them:
  - **Religious or social practices of the Nagas**
  - **Naga customary law and procedure**
  - **Administration of civil and criminal justice involving decisions according to Naga customary law**
    - **Ownership and transfer of land and its resources**

 This provision ensures that Naga cultural, legal, and land practices are preserved and not overridden by national legislation.

2. Special Responsibility of the Governor for Law and Order

- The **Governor of Nagaland** holds a **special responsibility for maintaining law and order**, particularly during periods of **internal disturbances caused by hostile elements**.
- In exercising this responsibility, the Governor:
  - Must consult the **Council of Ministers**
  - Exercises **individual judgment**, and the **Governor's decision is final**
- This **special power ceases** only when the **President of India directs** its withdrawal.

 This unique arrangement reflects the Centre's concern for maintaining peace in a sensitive region while ensuring administrative oversight.

3. Financial Responsibility of the Governor

- The **Governor must ensure** that **funds provided by the Central Government** for any **specific purpose** are included **only under the relevant demand for grants** in the State Legislative Assembly.
- These funds **must not be diverted or included under any unrelated demand**.

 This clause is aimed at ensuring transparency and targeted utilization of central funds, especially for development and welfare programs.

4. Special Administrative Arrangement for Tuensang District

- Article 371A also mandated the **creation of a Regional Council** for the **Tuensang district**, with **35 members**.
- The **Governor has the authority to frame rules** regarding:
  - Composition and structure of the Council
  - Manner of selection and qualifications of members
  - Their **term, salaries, and allowances**
  - **Procedure and conduct of business**
  - **Appointment of officers and staff**, including their **service conditions**

- Any other matter related to the **effective functioning** of the Council

 This provision was initially designed to give special administrative care to Tuensang, one of the most backward and sensitive regions of Nagaland.

Significance in the Context of Naga Peace Process

1. **Article 371A already provides a high degree of autonomy** to Nagaland in cultural, administrative, and legal matters, showcasing India's **constitutional flexibility** in accommodating ethnic diversity.
2. However, **NSCN (I-M)** argues that these provisions are **not sufficient** and **demand further autonomy**, including a **separate flag and constitution**.
3. The government, on the other hand, views **Article 371A as a robust constitutional safeguard**, making **additional concessions politically difficult**, especially post-**Article 370 abrogation**.

4. First Flight Test of BrahMos NG Missile in 2026

1. **India and Russia have partnered to develop the BrahMos NG** (Next Generation) missile, a more **advanced version of the original BrahMos system.**
2. The 1st flight test of the BrahMos NG is planned for Next year and **its production is expected to begin around 2027-28**.
3. This upgraded missile is designed to be more **compact, lighter, and incorporate cutting-edge technology**.

Key Points:

1. **Enhanced Features:**
   a. **Range:** The BrahMos NG retains the **impressive range of 290 kilometers**, similar to its predecessor.
   b. **Design:**
      - **Compact and Lightweight:** Weighs only **1.6 tonnes**, much lighter than the earlier version, which weighed **3 tonnes**.
      - **Length:** It measures **6 meters**, compared to the previous version's **9 meters**.
   c. **Speed:** It reaches a top speed of **3.5 Mach**, making it a supersonic missile.
   d. **Stealth and Precision:**
      - The missile features a **reduced radar cross-section**, enhancing its stealth capabilities.
      - It includes an **indigenous seeker with an AESA radar** (Active Electronically Scanned Array), improving both **precision** and **stealth**.
3. The smaller size of the BrahMos NG allows it to be integrated with a variety of platforms:
   a. **Sukhoi-30MKI:** A Russian-origin fighter aircraft.
   b. **LCA Tejas:** India's own indigenously developed Light Combat Aircraft.

History of BrahMos:

1. **Initiation (1983):** India began the **Integrated Guided Missile Development Programme (IGMDP)** to achieve self-reliance in missile production.
2. **Need for a Cruise Missile (1990s):** Post-Gulf War, India recognized the need for a modern **cruise missile system**.
3. **India-Russia Collaboration:**
   a. India partnered with Russia to develop the BrahMos missile system, ensuring the preservation of India's **Non-Alignment policy**.
   b. On **February 12, 1998**, Dr. A.P.J. Abdul Kalam and N.V. Mikhailov signed an Inter-Governmental Agreement in Moscow, creating **BrahMos Aerospace**, a joint venture between **India's DRDO** (Defence Research and Development Organisation) and **Russia's NPO Mashinostroyenia**.
   c. **Ownership Structure:** India holds a **50.5%** stake, while Russia holds **49.5%** in the joint venture.
4. **First Successful Test Launch (2001):** The BrahMos missile had its first successful launch on **June 12, 2001**, from a land-based launcher off the coast of Chandipur, Orissa.
5. **Service and Deployment:** The BrahMos missile system is in service with the **Indian Army**, **Indian Navy**, and **Indian Air Force**.

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5. Tamal: India's last Imported Warship

India is set to commission **Tamal**, a stealth frigate under construction in **Russia**, which will be **India's last warship to be imported or commissioned outside the country**.

Going forward, India will fully design and construct its own warships, reflecting its transformation into a **builder's navy**.

Background: The Frigate Deal

1. The ship is part of a broader **Inter-Governmental Agreement (IGA)** signed between India and Russia in **October 2016** for **four additional follow-on stealth frigates**.
2. Key details of the deal:
   a. **Two ships** to be **imported from Russia**.
   b. **Two ships** to be **constructed in India by Goa Shipyard Ltd. (GSL)** under a **technology transfer arrangement**.
      - All four ships under this project are powered by **engines from Zorya Nashproekt, Ukraine**.
3. A **$1 billion deal** was signed for the **two frigates under direct purchase from Russia**.

The First Import Under the Deal: INS Tushil

1. **INS Tushil**, the **first frigate** built in Russia under the deal, was commissioned on **December 9, 2024**, in **Kaliningrad**.
2. The ship reached its **home port at Karwar** on **February 14, 2025**, after an extensive journey:
   a. Sailed **over 12,500 nautical miles**
   b. Visited **eight countries across three continents**

6. TRAI Tightens Rules to Curb Spam Calls and Text Messages

1. In a significant move to combat the menace of spam and unsolicited commercial communication (UCC), the **Telecom Regulatory Authority of India (TRAI)** has notified an amendment to the **Telecom Commercial Communications Customer Preference Regulations (TCCCPR), 2018**, on **February 12, 2025**.
2. These new rules aim to **enhance customer protection**, **strengthen regulatory enforcement**, and **promote transparency in commercial communication**.

TRAI's Revised Rules vs Earlier Rules under TCCCPR, 2018

Aspect	Earlier Provision (TCCCPR, 2018)	Updated Provision (Feb 2025 Amendment)
Complaint Window for Spam Calls/SMS	Customers could file complaints **within 3 days** of receiving spam.	Complaint window **extended to 7 days**.
Action Timeline for Unregistered Telemarketers (UTMs)	Telcos had **30 days** to take action.	Telcos must act **within 5 days**.
Threshold for Action Against Spammers	Action was taken if **10 complaints in 7 days** were received.	Action now triggered by **5 complaints in 10 days**.
SMS Header Tagging for Message Type	No clear tagging system for easy identification.	SMS headers must be tagged with: **"-P" (Promotional)** **"-S" (Service)** **"-T" (Transactional)** **"-G" (Government)**
Number Series for Telemarketing	Telemarketers used **10-digit numbers** or **140 series**.	**10-digit numbers banned** for telemarketing. **140 series** for promotional calls. **1600 series** introduced for **service/ transactional calls**.

Aspect	Earlier Provision (TCCCPR, 2018)	Updated Provision (Feb 2025 Amendment)
Action Against Repeat Violators	General warnings or disconnections without strict penalties.	- **1st Violation**: 15-day bar on outgoing services. - **Repeat Violations**: Disconnection of all telecom resources (including PRI/SIP trunks) for **1 year** and **blacklisting**.
Penalties on Telcos for Misreporting Spam Complaints	Not explicitly defined.	Financial disincentives: **₹2 lakh (1st instance)** **₹5 lakh (2nd)** **₹10 lakh (subsequent)**.
Detection Mechanism (Spam Analysis)	No AI-based detection mandated.	Mandatory use of **AI/analytics** to detect patterns like: - High call volumes - Short durations - Low incoming/outgoing ratios
User Opt-Out from Promotional Messages	Not strictly enforced.	Telcos must provide **opt-out mechanism**, with **opt-in option** anytime.
Telemarketer Registration Requirements	Basic registration process.	Mandatory **physical verification**, **biometric authentication**, and **mobile number linking**.
Reporting Tools (DND App)	**DND app outdated and rarely used.**	**Revamped DND app** launched for easy spam reporting by use

About Telecom Regulatory Authority of India (TRAI)

The **Telecom Regulatory Authority of India (TRAI)** is the **statutory regulatory body** established to oversee and regulate the **telecommunication sector in India**.

Key Facts:

1. **Established:** 20th February 1997
2. **Headquarters:** New Delhi
3. **Legal Status:** Statutory body established under the **Telecom Regulatory Authority of India Act, 1997**
4. **Current Chairperson (as of 2025): Anil Kumar Lahoti**
5. **Parent Ministry: Ministry of Communications, Government of India**

TRAI vs TDSAT

While TRAI is the **regulatory authority**, **Telecom Disputes Settlement and Appellate Tribunal (TDSAT)** is the **adjudicatory body** formed under the **TRAI (Amendment) Act, 2000** to settle disputes arising from telecom regulation and decisions of TRAI.

7. Aero India 2025

Aero India – India's Premier Aerospace and Defence Event

1. **Aero India** is a **biennial event** that has evolved into a landmark in the global aerospace calendar.
2. It features **spectacular air displays by the Indian Air Force (IAF)** and participation from leading **global aerospace firms**, **technology experts**, **government officials**, and **strategic defence planners**.
3. The event not only showcases India's **technological advancements** and **aerospace capabilities**, but also acts as a catalyst for **international collaboration**, **business development**, and **strategic dialogue** in defence and aviation.

Current Context

1. India successfully hosted the **15th edition of Aero India**, **Asia's largest air show and aviation exhibition**, from **10th to 14th February 2025** at the **Yelahanka Air Force Station in Bengaluru, Karnataka**.

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2. Organized by the **Defence Exhibition Organisation**, under the **Department of Defence Production, Ministry of Defence**.
3. The event was held under the theme **"The Runway to a Billion Opportunities"**, highlighting India's growing role in the global aerospace and defence sector.

Aero India 2025: Key Highlights

1. The event featured **state-of-the-art aircraft displays**, **cutting-edge defence technologies**, and **product launches** by Indian and global aerospace companies.
2. Participation from **numerous international exhibitors**, **delegations from major countries**, and **Indian defence startups and MSMEs**.
3. Several **bilateral defence cooperation meetings**, **MoUs**, and **joint venture announcements** took place during the business days.
4. The air show included **aerobatic displays** by Indian Air Force squadrons and global demonstration teams, enthralling thousands of visitors.

Aero India 2023

The **14th edition of Aero India**, held from **13th to 17th February 2023**, was the **largest edition ever** since its inception in **1996**.

Key Achievements of Aero India 2023:

1. Participation from **over 100 countries**
2. **809 exhibitors** (domestic and international)
3. **First-ever mega flypast with 53 aircraft**, demonstrating India's growing air power
4. Total footfall of **over 7 lakh visitors** across five days

Aero India 2023 had set a high benchmark in terms of scale and global participation, which was effectively carried forward and enhanced in Aero India 2025.

8. Exercises/Operations in News

Name	Type	Participants	Brief Description
TROPEX 25 Exercise	Theatre Level Operational Readiness Exercise (TROPEX)	Indian Navy, Indian Air Force (IAF), Indian Coast Guard, Indian Army	• **Conducted-** biennially • Held across **Indian Ocean** Region (4300 nm North-South up to 35°S Latitude and 5000 nm from Strait of Hormuz to Sunda & Lombok Straits). • Included **AMPHEX (Amphibious Exercise), Joint Work-Up Phase, Cyber & Electronic Warfare, and Tactical Phase.**
Exercise Ekuverin (2025)	Joint Military Exercise	Indian-Maldives	• **Edition-**13th • Held at Maldives • **Objectives:** - Enhance interoperability and cooperation in counter-insurgency and counter-terrorism operations. - Conduct joint humanitarian assistance and disaster relief operations. • **Key Facts:** - **Meaning of Ekuverin**: 'Friends' in the Dhivehi language. - First edition held in 2009, conducted annually since then.

Exercise CYCLONE-III	Joint Special Forces Exercise	India-Egypt	• **Edition-3rd** • **Held at**- Rajasthan's Mahajan Field Firing Ranges • **Objectives:** - Boost operational synergy through joint tactical drills. - Conduct counter-terrorism operations and training for real-world threats in desert terrains.
Exercise Dharma Guardian 2025	Military Exercise	Indian-Japan	• **Edition-6th** | Held at Mount Fuji, Japan. • **Objectives:** - Focus on joint urban warfare and counter-terrorism tactics. - Simulate UN-mandated operations. • **Key Facts:** - **Historical ties**: Buddhism was introduced to Japan in the 6th century. - **Diplomatic Relations**: Established in 1952, strengthened by post-WWII economic ties, with India supplying iron ore. - **Security Cooperation**: Regular "2+2" Dialogue meetings, Acquisition & Cross-Servicing Agreement (ACSA) signed in 2020, operational in 2021. • **Other bilateral Exercises:** - **Shinyuu Maitri:** Air Force Exercise - **JIMEX**: Naval exercise. - **Veer Guardian:** Air Combat Exercise
Navika Sagar Parikrama II	Maritime Expedition (Circumnavigation Voyage)	INSV Tarini crewed by two Indian Navy women officers	• INSV Tarini completed the 3rd leg of Navika Sagar Parikrama II on February 18, 2025, entering Port Stanley. • **Purpose:** - Promotes women empowerment. - Focuses on maritime excellence and self-reliance. • **Expedition Details:** Started on October 2, 2024, with a 40,000 km journey in 5 legs: **1.** Goa to Fremantle (Australia). **2.** Fremantle to Lyttleton (New Zealand). **3.** Lyttleton to Port Stanley (Falkland Islands). **4.** Port Stanley to Cape Town (South Africa). **5.** Cape Town to Goa (final leg). **- Upcoming legs:** Continue to Cape Town, then return to India. **INSV Tarini Details:** - Inducted into the Indian Navy on February 18, 2017. - Participated in the first Navika Sagar Parikrama in 2017. - Operated by 2 Lieutenant Commander women officers.

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D. ECONOMY

1. Economic Survey 2024-25

The Economic Survey provides a comprehensive analysis of India's economic trajectory. It highlights:

1. **Growth Trends**: Covers India's economic progress and global optimism towards the nation.
2. **Sectoral Performance**: Focuses on infrastructure, agriculture, industries, and futuristic sectors.

Who Prepares the Economic Survey?

1. Prepared by the **Economic Division** of the **Department of Economic Affairs (DEA), Ministry of Finance**.
2. Compiled under the guidance of the **Chief Economic Advisor (CEA)**.

Presentation & Preparation

1. Released **one day before the Union Budget**.
2. Summarizes **annual economic developments** and outlines **short- and medium-term economic prospects**.
3. Presented in Parliament ahead of the Budget for the upcoming financial year.

Policy Perspective to Budget

1. Serves as a **flagship document** of the Ministry of Finance.
2. Provides **detailed statistical data** covering various economic aspects.
3. Acts as an **authoritative guide** to the Indian economy and sets the policy context for the Union Budget.

Economic Landscape

The Survey analyzes key economic indicators, enabling better resource mobilization and allocation in the Budget. **It covers**: Agriculture & Industrial Production, Infrastructure Development, Employment Trends, Money Supply & Financial Markets, and Trade & Foreign Exchange Reserves

How is the Economic Survey Related to the Budget?

1. Identifies **economic challenges and opportunities**, helping in policy formulation.
2. Provides insights into **economic trends** that influence **Budget allocations and priorities**.
3. Aids in **better fiscal planning** by offering a macroeconomic perspective.

Chapter-1. State of the Economy: Getting Back into the Fast Lane

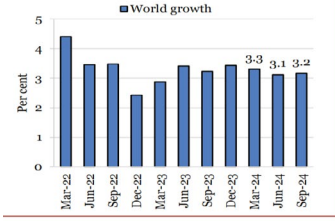
Global Economic Scenario

1. **Growth Trends**: The global economy grew by **3.3% in 2023**, with the IMF projecting **3.2% growth** for the next five years.
2. **Manufacturing Slowdown**: Weak external demand and supply chain disruptions led to a slowdown, especially in Europe and parts of Asia.
3. **Services Sector**: Outperformed other sectors, supporting global economic growth.

Key Global Challenges

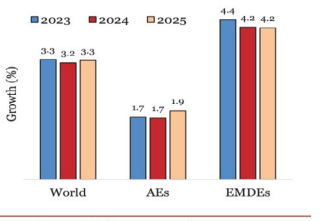
1. **Inflationary Pressures**: Inflation rates are approaching central bank targets, though **services inflation remains persistent** while **core goods inflation has declined significantly**.
2. **Geopolitical & Trade Uncertainty**:
   a. Tensions in the **Middle East** have disrupted **Suez Canal trade**, affecting **15% of global maritime trade**.
   b. **Geopolitical Economic Policy Uncertainty Index** rose from **121.7 (2023) to 133.6 (2024)**, reflecting global economic policy concerns.
   c. **World Trade Uncertainty Index** increased from **8.5 (2023) to 13 (2024)** due to trade tensions and shifting policies in major economies.

Chart I.1: Resilient global growth trends in 2024



Source: OECD Economic Outlook, Volume 2024 Issue 2.

Chart I.2: Steady growth outlook across country groups



Source: IMF WEO (January 2025)
Note: AEs- Advanced Economies, EMDEs- Emerging market and developing economies

Indian Economy

Growth & Demand Trends

1. **Real GDP Growth**: Estimated at **6.4% in FY25**, aligning with the decadal average.
2. **Private Consumption**: Expected to grow by **7.3%**, supported by a rebound in rural demand.
3. **Real Gross Value Added (GVA)**: Projected at **6.4% growth** in FY25.

Sectoral Performance

1. **Agriculture**: Expected to **rebound to 3.8% growth**.
2. **Industry**: Estimated to grow by **6.2%**, supported by strong growth in construction and utility services.
3. **Services**: Forecasted at **7.2% growth**, driven by financial, real estate, professional, and public services.

Economic Indicators

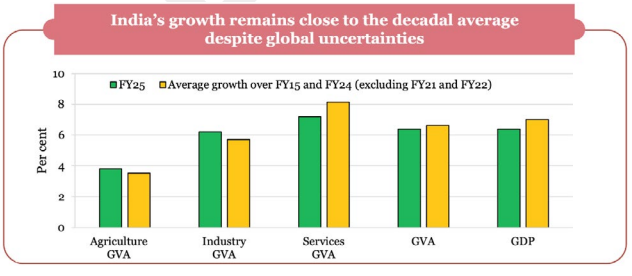
1. **Manufacturing Strength**: India continues to lead in **manufacturing PMI** growth.
2. **Services Expansion**: PMI services remain strong, supported by rising orders, sales, and employment.
3. **Inflation**: Retail inflation (CPI) softened from **5.4% (FY24) to 4.9% (Apr-Dec 2024)**.
4. **Capital Expenditure (CAPEX)**: Increased consistently since FY21, with **8.2% YoY growth (Jul-Nov 2024)** post-elections.

External Sector

1. **Global Trade Share**: India ranks **seventh in global services exports**, highlighting its competitiveness.
2. **Resilient Exports**: **Non-petroleum, non-gems & jewellery exports** grew **9.1% (Apr-Dec 2024)** despite global volatility.

Employment Trends

1. **Unemployment Rate**: Declined from **6% (2017-18) to 3.2% (2023-24)** (PLFS report).
2. **Formal Sector Growth**: EPFO subscriptions surged from **61 lakh (FY19) to 131 lakh (FY24)**, indicating expanding employment opportunities.

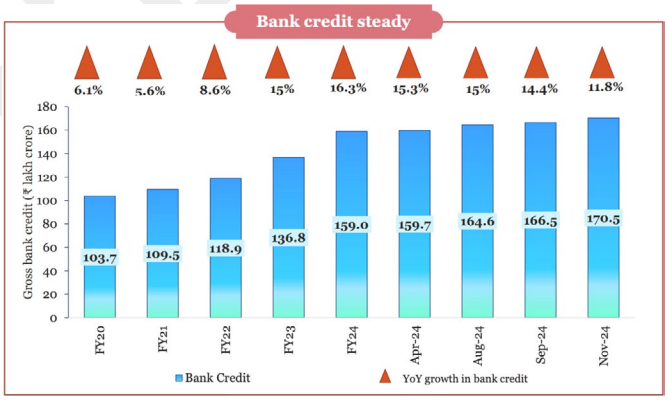


Chapter-2. Monetary and Financial Sector Developments: The Card and the Horse

1. **Steady Credit Growth**: Bank credit continues to expand at a stable pace, aligning with deposit growth.
2. **Improved Profitability**: Scheduled Commercial Banks (SCBs) have witnessed higher profitability, with declining **Gross Non-Performing Assets (GNPAs)** and a rising **Capital-to-Risk Weighted Asset Ratio (CRAR)**.

Banking Sector Performance & Credit Availability

1. **Credit Growth**: For two consecutive years, credit growth has exceeded **nominal GDP growth**.
   - The **credit-GDP gap** narrowed from **(-)10.3% in Q1 FY23 to (-)0.3% in Q1 FY25**.
2. **Asset Quality**: GNPAs of SCBs declined from their peak in FY18 to **2.6% (Sept 2024)**.
3. **Capital Strength**: SCBs' **CRAR stood at 16.7%**, with all banks meeting the **Common Equity Tier-1 (CET-1) requirement of 8%**.



4. **Global Comparison**:
   a. India's **bank credit to GDP ratio** is lower than advanced economies like the **US, UK, and Japan**.
   b. Among emerging markets, it remains lower than some but higher than **Indonesia and Mexico**.
5. **Rural Banking Expansion**: **Regional Rural Banks (RRBs)** increased their branches from **14,494 (2006) to 21,856 (2023)**.
6. **Financial Inclusion**: RBI's **Financial Inclusion Index** rose from **53.9 (March 2021) to 64.2 (March 2024)**, reflecting broader financial access.

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Capital Market Developments

1. **Primary Market Mobilization**: **₹11.1 lakh crore** was raised via equity and debt markets (Apr-Dec 2024), a **5% increase over FY24**.
2. **Demat Accounts Growth**: Rose **33% YoY**, reaching **18.5 crore (Dec 2024)**.
3. **IPO Surge**: **259 IPOs** launched (Apr-Dec 2024), up **32.1% YoY** from **196 (2023)**.
4. **Stock Market Capitalization**: BSE market cap to GDP ratio stood at **136% (Dec 2024)**, significantly higher than **China (65%) and Brazil (37%)**.

Insurance Sector Developments

1. **Total Premium Growth**: Increased **7.7% in FY24**, reaching **₹11.2 lakh crore**.
2. **Insurance Penetration**: Declined from **4% (FY23) to 3.7% (FY24)**.
   a. **Life Insurance**: Dropped slightly from **3% to 2.8%**.
   b. **Non-Life Insurance**: Remained stable at **1%**.

Pension Sector Developments

1. **Subscriber Growth**: **16% YoY** increase, reaching **783.4 lakh (Sept 2024)** from **675.2 lakh (Sept 2023)**.
2. **Pension Index Decline**: India's **Mercer CFA Institute Global Pension Index** score fell from **45.9 (2023) to 44 (2024)**.

Cybersecurity in the Financial Sector

1. **Cyber Risks on the Rise**: Nearly **20% of all reported cyber incidents** involve financial institutions, with banks being the most affected.
2. **Financial Impact**: Cyberattacks caused **$2.5 billion in losses**, a **fourfold increase since 2017** (IMF Global Financial Stability Report).

Effectiveness of Insolvency Law

1. **Resolution Under IBC**: **₹3.6 lakh crore** recovered from **1,068 resolution plans** (Sept 2024).
   - This represents **161% of liquidation value** and **86.1% of fair asset value**.

Chapter-3. External Sector: Getting FDI Right

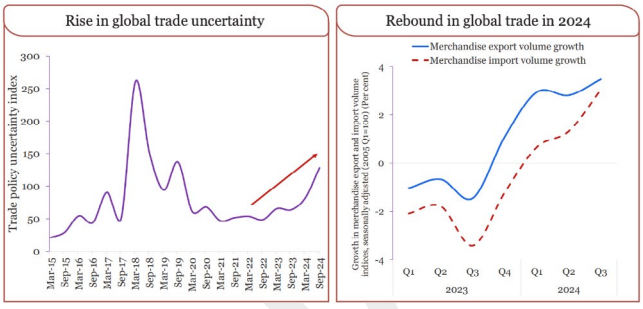
External Sector: Getting FDI Right

India's external sector has remained resilient despite global trade uncertainties and economic challenges.

Global Trade Dynamics

1. **Red Sea Disruptions**: Since **November 2023**, trade route adjustments have led to **higher shipping costs and delays**.
2. **Hormuz Strait Tensions**: Disruptions in the **world's key oil transit route (21% of global petroleum trade)** have increased energy prices.

Global trade dynamics

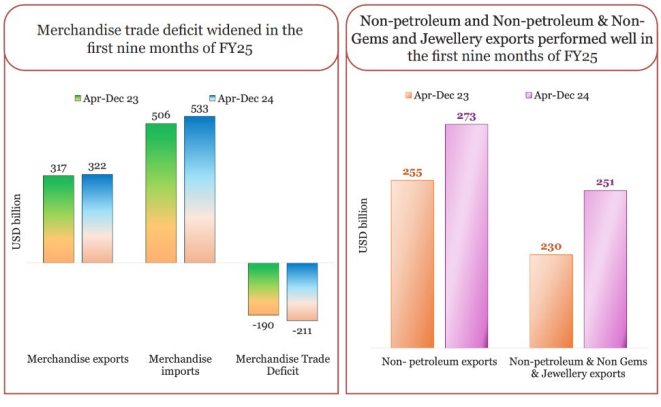


3. **Climate Impact**: Drought in the **Panama Canal** has hindered **5% of global maritime trade**.
4. **Rise in Trade Alliances**: Since **2022**, countries have increasingly preferred **bilateral trade agreements** over multilateral deals.

Global Trade Performance (2024)

1. **WTO Data (Q3 2024)**:
   a. **Merchandise Exports** grew **3.5% YoY**; **Merchandise Imports** rose **3% YoY**.
   b. **Global Services Trade** saw **7.9% export growth** and **6.7% import growth**.

India's trade performance in the first eight months of FY25



Tariff and Non-Tariff Policies

1. **Lower Tariffs**:
   a. India's **average tariff rate on dutiable items** declined from **48.9% (2000) to 17.3% (2024)**.

   b. China's tariffs dropped from **16.4% to 8.3%** over the same period.
2. **Non-Tariff Measures (NTMs)**:
   a. **26,000+ new trade and investment restrictions** were imposed worldwide between **2020-2024** (Global Trade Alert).
   b. Sectors most affected: **Agriculture, Manufacturing, and Natural Resources**.

India's Trade Performance

1. **Export Growth**: Overall exports (merchandise + services) grew **6% YoY (FY25, first nine months)**.
   - **Services sector** expanded **11.6%**.
2. **Import Growth**: Imports rose **6.9%**, reaching **USD 682.2 billion**, fueled by domestic demand.
3. **Global Market Share**: India holds **10.2% of global exports** in **Telecommunications, Computer, & Information Services**, ranking as the **2nd largest exporter** (UNCTAD).

India's Balance of Payments

1. **Current Account**: CAD stood at **1.2% of GDP (Q2 FY25)**, backed by strong **net services receipts** and **higher private transfers**.
2. **Capital & Financial Account**: Surpluses recorded from **Q1 FY23 to Q2 FY25**, driven by strong **FDI, FPI, and external borrowings**.

Foreign Direct Investment (FDI) Performance

1. **FDI Inflows**: Increased **17.9% in FY25** compared to FY24.
2. **Cumulative FDI (2000-2024)**: Surpassed **USD 1 trillion (April 2000 - September 2024)**.

Foreign Exchange Reserves

1. **Composition**: Includes **foreign currency assets (FCA), gold, SDRs, and IMF reserve positions**.
2. **Current Level**: Stood at **USD 640.3 billion (Dec 2024)**, covering **10.9 months of imports** and **90% of external debt**.

India's External Debt: Stable Debt Levels: The **external debt-to-GDP ratio** remained at **19.4% (Sept 2024)**, indicating a **manageable debt burden**.

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Chapter-4. Prices and Inflation: Understanding the Dynamics

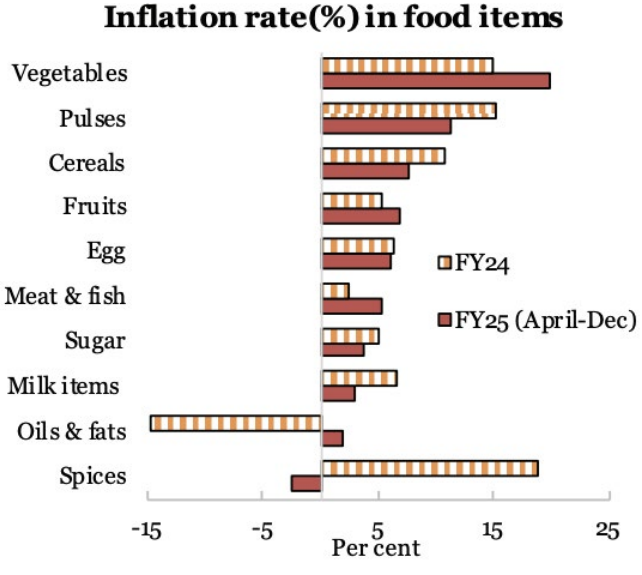
1. **Global Inflation** fell from **8.7% (2022) to 5.7% (2024)** (IMF).
2. **Core Inflation** reached its **lowest level in a decade**.

Domestic Inflation Trends

1. **Retail Inflation** in India declined from **5.4% (FY24) to 4.9% (FY25, Apr-Dec 2024)**.
2. **Key Factors**:
   a. **Core Inflation** dropped by **0.9 percentage points**, mainly due to **lower core services inflation** and **reduced fuel price inflation**.
   b. **Core services inflation** declined more than **core goods inflation**, leading to overall moderation.

Food Inflation Trends

1. **Persistent Inflation**: Food prices remained high due to **extreme weather events** (cyclones, heavy rains, droughts, heatwaves) affecting **vegetable production** (onions, tomatoes) and **supply chains**.
2. **Consumer Food Price Index (CFPI)** rose from **7.5% (FY24) to 8.4% (FY25)**, mainly driven by **vegetables and pulses**.
3. **Adjusted Food Inflation**: Excluding **Tomato, Onion, and Potato (TOP)**, the **average food inflation in FY25 was 6.5%**.



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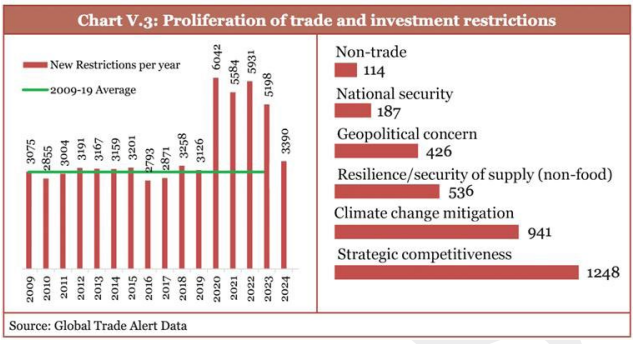
Government Measures to Control Food Inflation

1. **Cereals**:
   a. **Stock limits** imposed on **wheat**.
   b. **Wheat and rice** released from central stocks via the **Open Market Sale Scheme**.
   c. **Bharat brand** introduced for affordable **wheat flour and rice**.
2. **Pulses**:
   a. **Chana dal, moong dal, and masur dal** sold at subsidized rates under **Bharat brand**.
   b. **Stock limits** placed on **tur and desi chana**.
   c. **Duty-free imports** of **desi chana, tur, urad, masur, and yellow peas** allowed.
3. **Vegetables**:
   a. **Onion buffer stock** of **4.7 lakh MT (rabi onion) procured under the Price Stabilisation Fund**.
   b. **Subsidized sale** of **onions and tomatoes**.

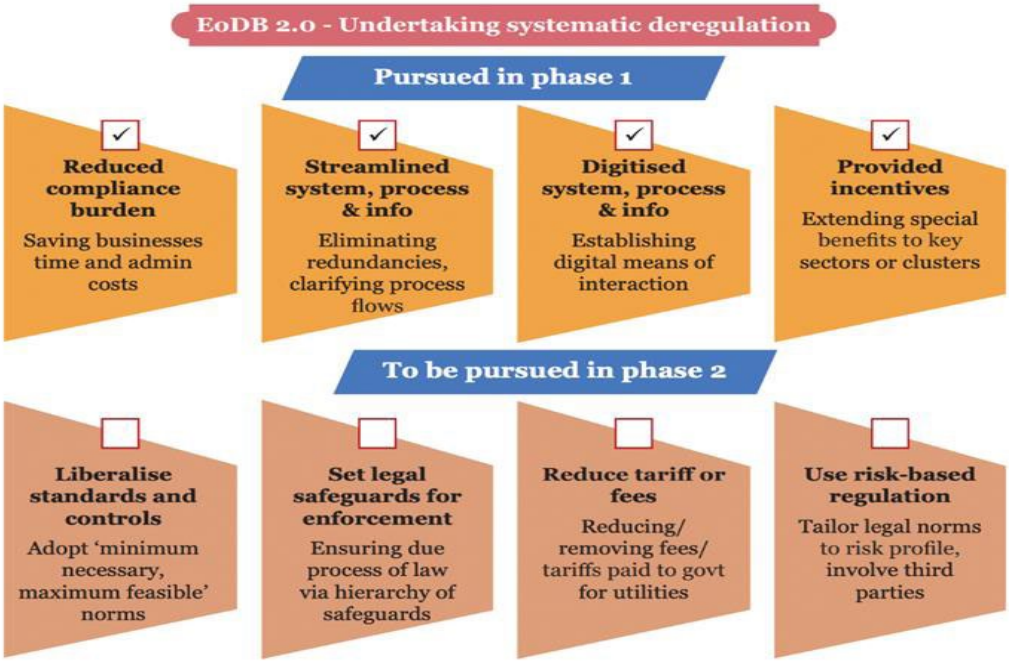
Chapter-5. Medium Term Outlook: Deregulation Drives Growth

1. To achieve **Viksit Bharat by 2047**, India must sustain an **8% GDP growth rate** over the next two decades.
2. The **IMF's World Economic Outlook** forecasts India's economy to reach **USD 5 trillion by FY28** and **USD 6.3 trillion by FY30**.
3. India's **medium-term growth** will be shaped by **geo-economic fragmentation (GEF)**, **China's dominance in manufacturing**, and **the energy transition's dependence on China**.



Geo-Economic Fragmentation (GEF): A New Global Reality

1. **GEF** refers to the **policy-driven reversal of globalization**, causing **economic realignments**.
   - It disrupts **trade, capital, and migration flows**, reshaping global economic dynamics.
2. **China's Dominance**:
   a. **Manufacturing**: By **2030**, China is expected to control **45% of global manufacturing** (UNIDO), surpassing the **US and allies**.
   b. **Energy Transition Technologies**: China commands **80% of the global solar panel supply chain** and **a major share of battery production**.



Impact of GEF

1. **Increase in Trade and Investment Restrictions**: Over **24,000 new trade and investment restrictions** were implemented globally between **2020-2024**.
2. **Shifting FDI Patterns**: Foreign Direct Investment (FDI) is increasingly **concentrated among geopolitically aligned nations**, making **emerging markets more vulnerable**.

Deregulation and Economic Freedom: A Growth Catalyst

1. **Systematic deregulation** can enhance growth by reducing unnecessary constraints on businesses.
2. **Three-step approach for states to drive deregulation**:
   a. **Identifying regulatory hurdles** under **Ease of Doing Business (EoDB) 2.0**, with a focus on developing a strong **SME (Mittelstand) sector**.
   b. **Benchmarking regulations** against other states and countries.
   c. **Evaluating the cost burden** of regulations on businesses.

Chapter-6. Investment and Infrastructure: Keeping it Going

1. Over the past five years, the government has prioritized **public investment in infrastructure**, spanning **physical, digital, and social sectors**.
2. Capital expenditure on **key infrastructure sectors** has grown at an **annual rate of 38.8% from FY20 to FY24**.

Infrastructure Developments Across Sectors

A. **Physical Infrastructure**

1. ***Railways***

   a. **Expansion & Modernization**:
      - **17 new pairs of Vande Bharat trains** were introduced between April and October 2024.
      - **91 Gati Shakti multi-modal cargo terminals** became operational.

   b. **Sustainability Goals**: Indian Railways aims to generate **30 GW of renewable energy by 2030**.

   c. **Key Projects**:
      - **Automatic Block Signaling** enhances efficiency on high-density routes.
      - **Mumbai-Ahmedabad High-Speed Rail** (508 km), initiated in 2015 with Japanese collaboration, is progressing.

2. ***Roads***

   a. **India's Road Network**:
      - **63.4 lakh km total road length**, with **146,195 km of National Highways (NH)** carrying **40% of freight traffic**.
      - **5,853 km of NH constructed in FY25**.

   b. **Major Initiatives**:
      - **Bharatmala Pariyojana** (2017) aims to develop **34,800 km of NH**; **76% of projects awarded**, and **18,926 km completed**.
      - **Multi-Modal Logistics Parks (MMLP)**: Six locations—**Chennai, Indore, Nagpur, Jalna, Jogighopa, and Bengaluru**—awarded till December 2024.

3. ***Civil Aviation***

   a. **Growing Cargo Capacity**: **8 million MT handled in FY24**.

   b. **UDAN Scheme**: **619 routes operationalized**, linking **88 airports, 2 water aerodromes, and 13 heliports**.

4. ***Ports, Shipping & Inland Waterways***

   a. **Operational Efficiency**:
      - Average container turnaround time reduced from **48.1 hours in FY24 to 30.4 hours in FY25 (April-November)**.

   b. **Key Developments**:
      - **Sagarmala Programme** focuses on port modernization and industrialization.
      - **Chabahar Port & INSTC** enhance trade between **Mumbai and Eurasia**.
      - **Harit Nauka Guidelines (2024)** aim to transition **1,000 inland vessels to green energy** over the next decade.
      - **FY24 witnessed a 43% rise in vessel traffic and 34% growth in container traffic**.

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B. **Energy Infrastructure**

1. ***Power Sector***

a. **Capacity Expansion**:

- Total installed power capacity reached **456.7 GW (Nov 2024)**, growing at **7.2% YoY**.
- Renewable energy's share now stands at **47%** of total installed capacity.
- **Renewable energy capacity** surged **15.8% YoY**, reaching **209.4 GW** (Dec 2024).

b. **Key Policies**:

- **Revamped Distribution Sector Scheme** and **SAUBHAGYA** aim to enhance power accessibility.

C. **Digital Infrastructure**

1. ***Telecommunications***

a. **5G Expansion**: By **October 2024, 5G services covered all states and UTs**.

b. **Key Initiative**: **BharatNet Project** ensures broadband access in rural areas.

2. ***IT & Data Centers***

a. **Cloud Computing Growth**: **National Informatics Centre (NIC)** manages **1,917 cloud applications** under **MeghRaj GI Cloud Initiative**.

b. **Data Center Market**: Expected to grow from **USD 4.5 billion (2023) to USD 11.6 billion (2032)**.

D. **Rural & Urban Infrastructure**

1. ***Rural Drinking Water & Sanitation***

a. **Jal Jeevan Mission (2019)**:

- **12 crore households** now have access to piped drinking water.
- **100% coverage in** Arunachal Pradesh, Goa, Haryana, Himachal Pradesh, Gujarat, Punjab, Telangana, Mizoram, and three UTs.

b. **Swachh Bharat Mission Phase II – Grameen**:

- **1.92 lakh villages** declared **ODF+ in 2024**, bringing the total to **3.64 lakh ODF+ villages**.

2. ***Urban Development***

a. **Pradhan Mantri Awas Yojana - Urban (2015)**: **89 lakh houses completed**.

b. **Urban Transport**:

- Metro and rapid rail projects operational or under construction in **29 cities**.
- **1,010 km of metro operational in 23 cities**.

c. **AMRUT Scheme**:

- Tap water coverage increased to **70%**, and **sewerage coverage reached 62%**.

E. **Strategic Infrastructure**

1. ***Tourism***

a. **PRASHAD Scheme**: Enhancing **infrastructure at pilgrimage destinations**.

b. **Swadesh Darshan 2.0 (2022)**:

- **75 out of 76 projects completed** as of December 2024.
- **26 out of 48 heritage projects completed**.

2. ***Space Sector***

a. **India's Space Assets**: **56 active satellites**: **19 communication, 9 navigation, 4 scientific, and 24 earth observation satellites**.

b. **Vision 2047 Initiatives**:

- **Bhartiya Antariksh Station** through Gaganyaan follow-up missions.
- **Chandrayaan-4 Lunar Sample Return Mission & Venus Orbiter Mission**.
- **Next-Gen Launch Vehicle development**.

Chapter-7. Industry: Business Reforms & Growth

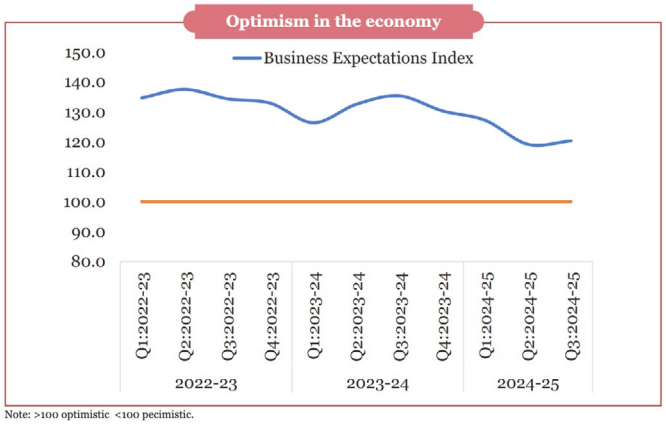
1. The **manufacturing sector** is projected to grow **6.2% in FY25**, led by **electricity and construction**.
2. India's **global manufacturing share stands at 2.8%**, significantly lower than **China's 28.8%**, highlighting vast growth potential.

Core Input Industries

Cement: Second-largest producer globally, but per capita consumption is **290 kg**, far below the global average of **540 kg**.

Steel

1. Demand is rising due to **expanding end-user industries** and policies like the **National Steel Policy** and **PLI schemes**.
2. **Steel Scrap Recycling Policy** promotes efficient reuse, essential for transitioning to **green steel**.



Note: >100 optimistic <100 pecimistic.

Chemical & Petrochemical Industry: India **imports 45%** of its **petrochemical intermediates**, making self-sufficiency a key focus.

Capital Goods

1. **Technology gaps** force India to import **advanced machinery**.
2. Government initiatives like **Smart Manufacturing** and **Industry 4.0** aim to modernize production through **SAMARTH Udyog centers**.

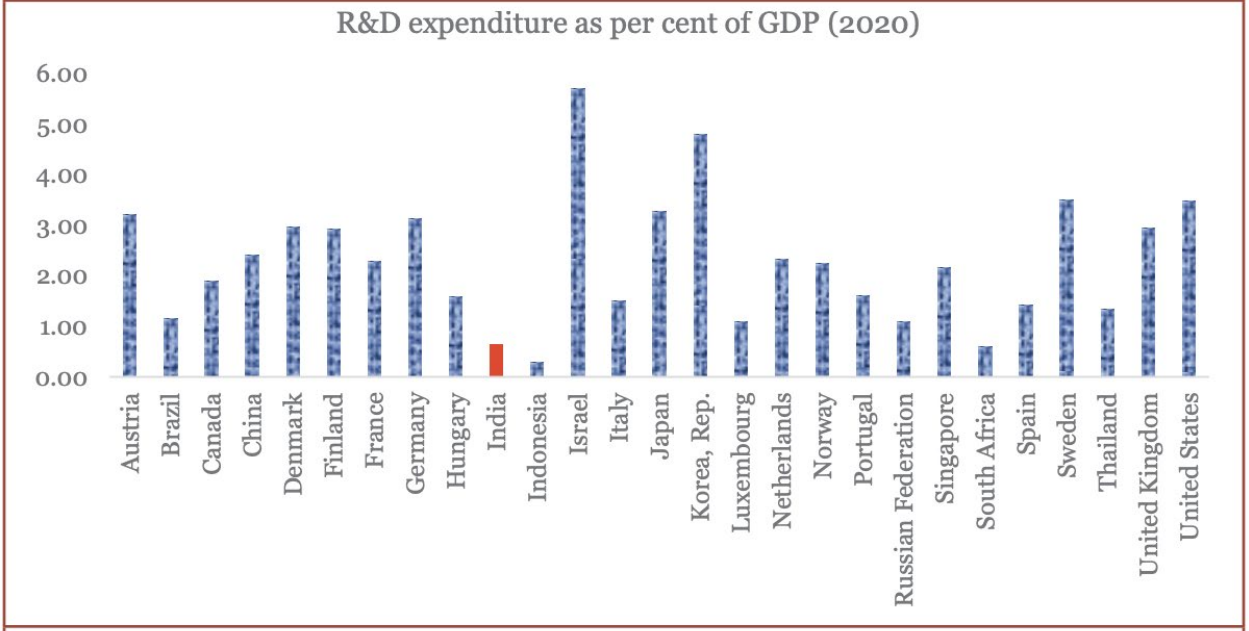
Automobile Industry

1. **Domestic sales increased by 12.5% in FY24**, boosting economic growth.
2. The **PLI scheme** for automobiles has been **extended by a year** to support expansion.

Electronics

1. **99% of smartphones** sold in India are now locally manufactured, reducing import reliance.
2. **Make in India** and **Digital India** initiatives have attracted foreign investment.
3. However, India holds only **4% of the global electronics market**, primarily focusing on **assembly rather than design and core components**.

Chart VII.12 : R&D spending in India calls for a leap forward



Source: World Bank

Textiles

1. Contributes **11% to manufacturing GVA**, ranking **second globally in cotton, silk, and man-made fiber**.
2. India is the **sixth-largest textile exporter** with **4% of global trade**.
3. **Technical textiles** hold strong growth potential, ranking **fifth globally**.

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4. **Challenges**:
    a. **MSME dominance** limits scalability and efficiency.
    b. **Fragmentation** increases logistics costs.
    c. **Cotton reliance** reduces competitiveness.
    d. **Limited FDI, outdated technology, imported machinery, and a skill gap** affect productivity and innovation.

Pharmaceuticals

1. **Third-largest globally by volume**, growing at **10.1% annually** over five years.
2. **PLI schemes & SPI initiatives** aim to reduce import dependence.
3. India is advancing in **cell & gene therapy**, with its **first indigenous CAR-T cell therapy** approved.
4. **Clinical trial waivers** for drugs approved in the **USA, UK, Japan, Australia, Canada, and EU** expedite new treatments.

MSME Sector

1. A **key economic driver**, generating employment with **low capital costs**.
2. **Government support programs**:
    a. **Self-Reliant India Fund** and **MSME-Cluster Development Programme**.
    b. **Credit Guarantee Scheme** for better credit access.
    c. **MSME Samadhan & CHAMPIONS portals** to resolve industry challenges.

State-Wise Industrial Production

1. **Gujarat, Maharashtra, Karnataka, and Tamil Nadu** contribute **43%** of India's industrial output.
2. The **northeastern states** account for just **0.7%**, highlighting regional imbalances.

Chapter-8. Services: Adapting to New Challenges

Services:

1. The **service sector** now contributes **55.3% to India's GVA** in FY25, up from **50.6% in FY14**.
2. India ranks **7th globally in services exports**, holding a **4.3% market share (2023)**.
3. It provides employment to nearly **30% of the workforce**.

Service Sector Performance in India

1. Services support GDP not only directly but also through **servicification of manufacturing**, where industries increasingly rely on services for production and value addition.
2. Major service industries include **trade, hotels, restaurants, transport, communication, finance, and real estate**.

Trade in Services

1. **Computer & business services** dominate, accounting for nearly **70% of India's services exports**.
2. India remains among the **top five fastest-growing** services-exporting nations in FY25.

Logistics & Physical Connectivity Services

Railways

1. India has the **4th largest railway network globally**.
2. Passenger traffic grew **8% in FY24**, while **freight revenue rose by 5.2%**.

Road Transport**:** The **largest contributor to transport GVA**, accounting for **78% of the sector**.

Aviation**:** India is the **world's fastest-growing aviation market**.

Ports, Waterways & Shipping

1. India aims to become a **top-five player in shipbuilding & repair** by 2047 through **Maritime India Vision 2030** and **Maritime Amritkaal Vision 2047**.
2. **Inland waterways** span **14,850 km**, with **4,800 km currently operational** across **26 waterways**.

Tourism & Hospitality

1. The sector's **GDP contribution returned to 5%** in FY23, creating **7.6 crore jobs**.
2. India ranked **14th in world tourism receipts (2023)**, with **1.8% of global earnings**.

Real Estate: Post **Real Estate Regulatory Authority (RERA)** implementation, India now ranks **31st out of 89 countries** in the **Global Real Estate Transparency Index (2024)**.

IT, Telecom & Emerging Services

1. **IT & Computer Services:** Grew at an average **12.8% annually over the past decade (FY13–FY23)**, raising its **GVA share from 6.3% to 10.9%**.
2. **Global Capability Centres (GCCs):** India is a leading hub for **GCCs**, with over **1,700 centers operating in FY24**, transforming the corporate landscape.
3. **Telecommunication**
   a. India is the **second-largest telecom market** with an **84% teledensity**.
   b. Offers the **world's lowest data rates** and achieved the **fastest 5G rollout globally**.

State-Wise Service Sector Performance

1. The **service sector contributes 55% to national GVA** but varies across states.
2. In **FY23, Karnataka & Maharashtra** alone accounted for **over 25%** of India's total service sector GSVA.
3. Meanwhile, **19 states combined contributed just 25%** to the sector's GSVA.

Chapter-9. Agriculture and Food Management: A Sector Poised for the Future

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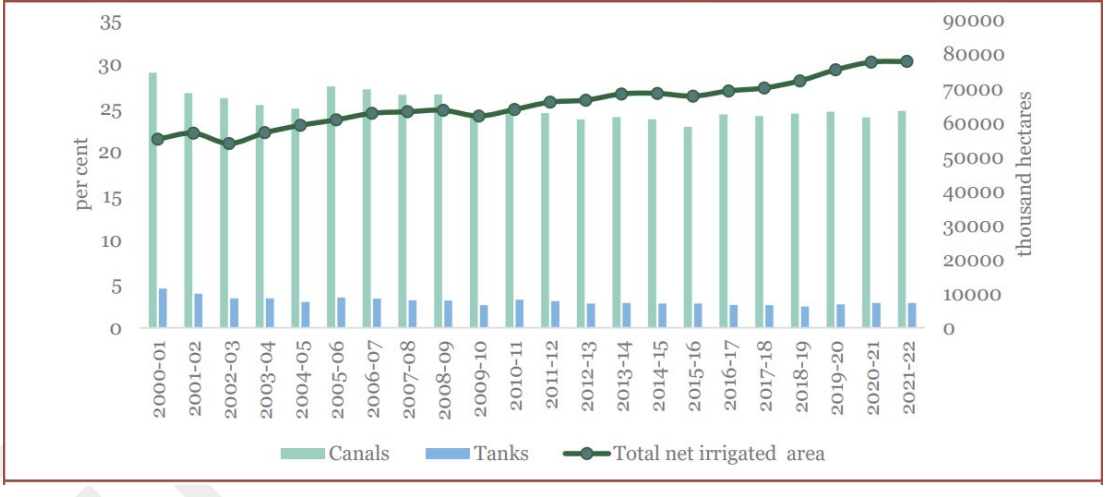
1. The **agriculture and allied sector** contributes **~16% to India's GDP (FY24 PE)** and supports **46.1% of the population**.
2. **High-value sectors** like **horticulture, livestock, and fisheries** are driving growth.
3. India produces **11.6% of global cereals**, yet yields remain lower than other top producers.
4. The **MSP for Arhar and Bajra** has been raised by **59% and 77%**, respectively, over the weighted cost of production for FY25.

Seeds & Fertilizers: Enhancing Productivity

1. In **2023-24**, ICAR produced **1.06 lakh quintals of breeder seeds** across **1,798 varieties** for **81 crops**.
2. Key initiatives: **Seed banks, 'Urea Gold' (urea + sulfur for better absorption), PM PRANAM** (reducing chemical fertilizer use).

Chart IX.8: Sources of irrigation



Irrigation & Rainfall: Expanding Coverage & Efficiency

1. Only **55% of India's net sown area** is irrigated, and **over two-thirds** of agricultural land faces drought risks.
2. Key interventions: **Per Drop More Crop (PDMC) under PMKSY, Micro Irrigation Fund (MIF), Rain-fed Area Development (RAD)**.

Agriculture Credit: Strengthening Financial Support

1. **7.75 crore Kisan Credit Card (KCC) accounts** exist, expanded in **2018-19** to cover fisheries & animal husbandry.
2. Key initiatives: **Modified Interest Subvention Scheme (MISS), Prompt Repayment Incentive (PRI), PM Fasal Bima Yojana (PMFBY), PM-KISAN**.

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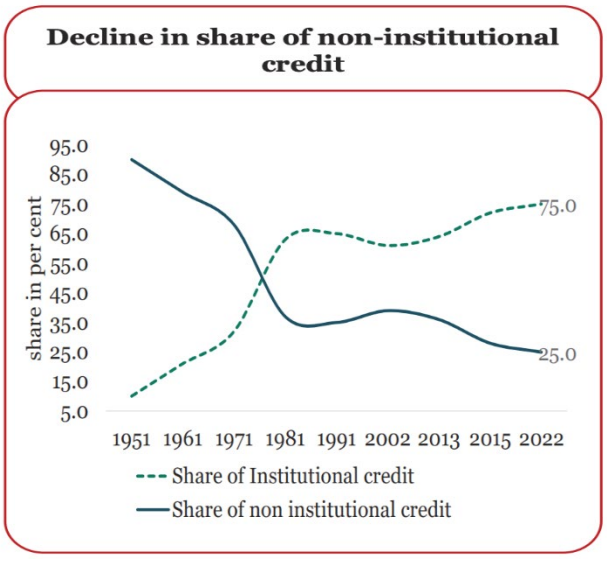


Farm Mechanization: Improving Access

1. High machinery costs hinder adoption among **small & marginal farmers**.
2. Key schemes: **Sub-Mission on Agricultural Mechanization (SMAM), Custom Hiring Centres (CHCs), Farm Machinery Banks, Drone Technology for Women SHGs**.

Agricultural Extension: Spreading Knowledge

1. Essential for **boosting productivity** and **sustainable farming**.
2. Initiative: **Sub-Mission on Agricultural Extension (SMAE)** to improve **entrepreneurship and knowledge dissemination**.

Agriculture Marketing: Strengthening Infrastructure

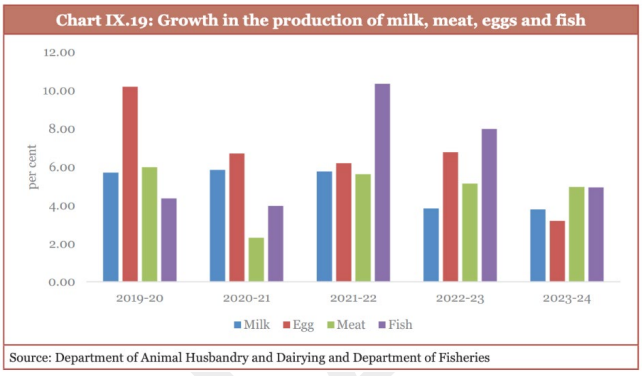
Key schemes: **Agriculture Marketing Infrastructure (AMI), Agriculture Infrastructure Fund (AIF), e-NAM** for better market access.

Climate-Resilient Agriculture

1. A **2°C rise in temperature** and **7% increase in rainfall** by 2099 could cause an **8-12% drop in productivity**.
2. Key programs: **National Mission for Sustainable Agriculture, Paramparagat Krishi Vikas Yojana (PKVY), Mission Organic Value Chain Development for the Northeast (MOVCDNER)**.

Allied Sectors: Enhancing Resilience

1. Fisheries lead with an **8.7% CAGR**, followed by livestock at **8% CAGR**.
2. Key initiatives: **Rashtriya Gokul Mission, Livestock Health & Disease Control Program, PM Matsya Sampada Yojana (PMMSY), Fisheries & Aquaculture Infrastructure Development Fund (FIDF)**.



Cooperatives: Institutional Strengthening

1. Cooperatives play a crucial role in **agriculture, credit, banking, housing, and women's welfare**.
2. Key interventions: **Model Bye-Laws for Primary Agricultural Credit Societies (PACS), PACS as Common Service Centres (CSCs), retail fuel outlets, micro-ATMs in cooperatives**.

Food Processing: Driving Economic Growth

1. Employs **12.41% of the organized sector workforce**.
2. Agri-food exports make up **~11.7% of total exports**, with processed food exports rising from **14.9% (FY18) to 23.4% (FY24)**.
3. Key programs: **PM Kisan Sampada Yojana, Production Linked Incentive Scheme for Food Processing (PLISFPI), PM Formalization of Micro Food Processing Enterprises (PMFME)**.

Food Security & Management

Major programs: **National Food Security Act (NFSA), PM Garib Kalyan Anna Yojana, Credit Guarantee Scheme for e-NWR-based Pledge Financing (CGS-NPF)** for post-harvest lending.

Chapter-10. Climate and Environment: The Need for Adaptation

1. India's **per capita carbon emissions** are just **one-third of the global average**, despite being a rapidly growing economy.
2. The **Forest Survey of India 2024** reports an **additional carbon sink of 2.29 billion tonnes CO_2 equivalent** created between **2005 and 2021**.

Prioritizing Climate Adaptation

1. India ranks **7th among the most climate-vulnerable nations**.
2. Adaptation spending increased from **3.7% of GDP in FY16 to 5.6% in FY22**, primarily funded domestically.
3. Global climate finance is **skewed towards mitigation**, leaving adaptation efforts underfunded.
4. The **National Adaptation Plan (NAP)** is being developed by the **MoEFCC** to define India's adaptation priorities.

Building Climate Resilience Across Sectors

1. **Agriculture Adaptation:** Focus on **climate-resilient seeds, groundwater conservation, soil health improvement, and modified cropping practices**.
2. **Urban Resilience**
   a. Cities face **heat stress, urban flooding, and declining groundwater**.
   b. Key initiatives: **National Mission on Sustainable Habitat (NMSH), AMRUT, Smart City Mission, Urban River Management Plan, River Cities Alliance (RCA)**.
3. **Coastal Adaptation**
   a. India's coastline is vulnerable to **heavy rains, storms, and tidal flooding**.
   b. Key measures: **Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI), Conservation and Management of Mangroves and Coral Reefs, Coastal Regulation Zones**.
4. **Water Management Adaptation**
   - Key interventions: **Jal Shakti Abhiyan, National Aquifer Mapping Project (NAQUIM), Bhu-Neer portal, Flood Watch India app**.

Energy Transition: Lessons & Strategies

1. India **depends heavily on coal** (10% of global reserves) but has **limited natural gas (0.7%)**.
2. **Non-fossil energy capacity** stands at **2,13,701 MW**, making up **46.8% of total generation**.
3. **Key energy transition schemes:**
   a. **Solar Power Scheme for Tribal & PVTG Villages (PM JANMAN, DA JGUA)**
   b. **PM Surya Ghar Muft Bijli Yojana**
   c. **Viability Gap Funding (VGF) for Offshore Wind Energy**
   d. **Green Energy Corridor (GEC), National Bioenergy Programme, PM-KUSUM, National Green Hydrogen Mission**
4. **Lesson learned**: Developed nations warn against shutting down thermal power without stable alternatives.
5. **Green finance regulations**: SEBI mandates **Business Responsibility & Sustainability Reporting (BRSR)**, **Green Debt Securities**, and **Sovereign Green Bonds (SGrBs)**.

Sustainable Lifestyles for Climate Action

1. **LiFE Mission (COP26, 2021)** promotes **eco-friendly living**.
2. **Food waste** contributes to **>8% of global greenhouse gas emissions**, with **17% of available food wasted annually**.
3. **By 2030, LiFE actions could save $440 billion globally**.
4. Key initiatives: **PM KUSUM, PM Surya Ghar Muft Bijli Yojana, Ecomark, Go Electric campaign, PAT scheme, Ek Ped Maa Ke Naam, Green Credit Programme**.

Circular Economy & Resource Efficiency

1. **Resource circularity** could **save 11% of GDP by 2030 and 30% by 2050**.
2. Key measures: **Tax benefits, subsidies, low-interest loans for recycling, and Extended Producer Responsibility (EPR) framework**.
3. **Plastic pollution**: India's per capita plastic use is **14 kg**, far below the global average of **35 kg**. By **2050, plastics could contribute 15% of global emissions**.
4. **Air pollution**: **99% of the global population breathes unsafe air**, with **low- and middle-income countries most affected**.
5. Key initiatives: **National Clean Air Programme (NCAP), Graded Response Action Plan, Crop Residue Management in Punjab, Haryana, UP & Delhi**.

Chapter-11. Social Sector : Expanding Reach and Empowering Communities

1. **Sustainable and inclusive economic growth** is key to India's **Viksit Bharat 2047** vision.
2. Development requires investment in **education, health, social security, and skill-based employment opportunities**.

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Rising Social Services Expenditure

1. Government spending on **social services** has consistently increased since **FY17**, with a **15% CAGR from FY21 to FY25**.
    a. **Education expenditure** grew at **12% CAGR**.
    b. **Health expenditure** increased at **18% CAGR**.

Key Outcomes

1. **Reduced Urban-Rural Gap**: Monthly per capita expenditure (MPCE) fell from **84% (2011-12) to 70% (2023-24)**.
2. **Declining Inequality**: Gini coefficient improved in **rural areas (0.237 in 2023-24 from 0.266 in 2022-23)** and **urban areas (0.284 from 0.314)**.

Education: Strengthening the Foundation

1. **Major Initiatives**: **New Education Policy (2020), NISHTHA (teacher training), DIKSHA, PM SHRI, PM POSHAN**.
2. **Early Childhood Education**: Programs like **Aadharshila, Navchetana, and National Framework for Early Childhood Stimulation**.
3. **Progress**:
    a. **Primary-level Gross Enrollment Ratio (GER)** is nearly **universal (93%)**.
    b. **Higher education GER** improved from **23.7% (2014-15) to 28.4% (2021-22)**.
4. **Digital Learning Initiatives**: **SWAYAM, e-VIDYA, Artificial Intelligence in education**.

Healthcare: Expanding Access & Affordability

1. **Government health expenditure share** increased from **29% to 48%**.
2. **Rising health concerns**: **Mental health issues in children and adolescents**, and an increase in **non-communicable disease (NCD) deaths (from 37.9% in 1990 to 61.8% in 2016)**.
3. **Lower out-of-pocket expenses**: Share in total health expenditure declined from **62.6% to 39.4%**.
4. **Key Health Initiatives**:
    a. **Ayushman Bharat PM-JAY**, **Jan Aushadhi scheme**, **SDG Localisation** in healthcare.
    b. **Tech-driven healthcare**: **U-WIN, E-Sanjeevani, Ayushman Bharat Digital Mission (ABDM), ICMR's 'i-DRONE'** for North-East outreach.

Rural Infrastructure Development

1. **Roads**: **99.6% of target habitations connected** under **PM Gram Sadak Yojana (PMGSY)**.
    a. **PM-JANMAN**, a dedicated **tribal road connectivity vertical**, was introduced under PMGSY.
2. **Housing**: **2.69 crore homes built** under **PMAY-G** since **2016**.
3. **Water Resources**: **68,843 Amrit Sarovars** constructed under **Mission Amrit Sarovar**.
4. **Drinking Water**: **12.2 crore tap water connections** provided under **Jal Jeevan Mission**.

Localising SDGs for Inclusive Growth

1. **Gram Panchayat Development Plans** under **Mission Antyodaya & Transformation of Aspirational Districts Programme (TADP)**.
2. **Gender Inclusion**: Gender Resource Centres (GRCs) and Gender Point Persons (GPPs) for local-level gender equity.

Boosting Rural Incomes & Employment

A. **Rural Livelihoods (DAY-NRLM)**
    1. **Empowering Women & SHGs**:
        a. 10.05 crore rural households mobilized into 90.90 lakh SHGs.
        b. 1.37 lakh SHG members trained as Banking Correspondent Sakhis.
        c. ₹49,284 crore capital support provided to SHGs.
    2. **Agriculture & Non-Farm Livelihoods**:
        a. 2.64 crore households established agri-nutri gardens.
        b. 4.30 crore women farmers supported.
        c. 3.13 lakh rural enterprises set up through Start-Up Village Entrepreneurship Programme (SVEP).

B. Rural Employment (MGNREGS)
1. 99.98% wage payments made via DBT under the National Electronic Fund Management System.
2. Now supports asset creation for sustainable livelihoods, converging with Nutri Gardens, fodder farms, and other schemes.

Chapter-12. Employment and Skill Development: Key Priorities

India's Demographic Advantage

1. With **26% of the population aged 10-24 years**, India stands at a pivotal moment to leverage its youth for economic growth.
2. The nation is set to become the **third-largest economy by 2030**, following the **USA and China**.

Employment Trends

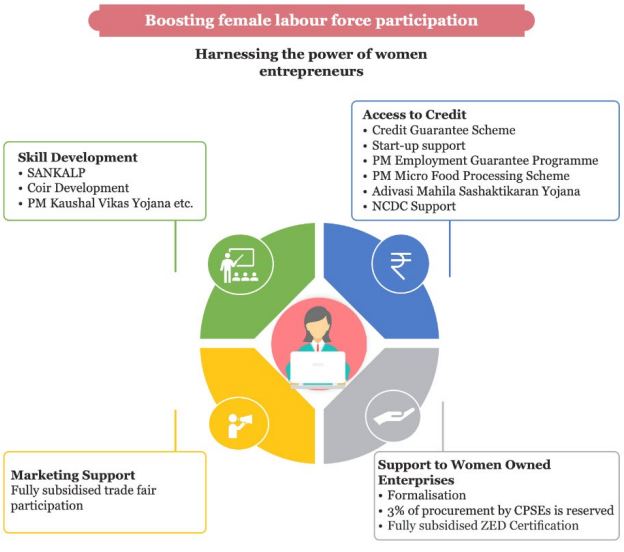
1. **Unemployment rate** declined from **6.0% (2017-18) to 3.2% (2023-24)**.
2. **Labour Force Participation Rate (LFPR)** increased from **49.3% to 50.4%**, while **Worker-to-Population Ratio (WPR)** rose from **46% to 47.2%** (Q2 FY24 to Q2 FY25).
3. **Self-employment share** grew from **52.2% (2017-18) to 58.4% (2023-24)**.

Sectoral Workforce Distribution

1. **Agriculture's workforce share** increased from **44.1% (2017-18) to 46.1% (2023-24)**.
2. **Manufacturing** and **services sectors** saw a decline from **12.1% to 11.4%** and **31.1% to 29.7%**, respectively.

Rising Female Workforce Participation

1. **Female LFPR** surged from **23.3% (2017-18) to 41.7% (2023-24)**.
2. **21 states** reported a **30-40% FLFPR**, while **seven states/UTs** exceeded **40%**, with **Sikkim leading at 56.9%**.



Wages and Earnings Growth

1. **Regular wage/salaried and self-employed workers' earnings** increased at a **5% CAGR (2018-19 to 2023-24)**.
2. **Casual workers' daily wages** grew at **9% CAGR**.
3. **Rural wages**:
   a. **Agricultural wage rates** increased by **5.7% for men** and **7% for women**.
   b. Adjusted for inflation, **real wage growth** was **0.6% (men) and 1.8% (women)**.
4. **Corporate profitability** reached a **15-year high**, with **22.3% growth in FY24**, but **employment increased by only 1.5%**.

Expanding Formal Sector Employment: EPFO net additions more than doubled, from **61 lakh (FY19) to 131 lakh (FY24)**.

Unorganised Sector Welfare

1. **eShram portal** facilitates **registration and social security benefits** for unorganised workers.
2. **eShram – "One-Stop-Solution"** integrates various **welfare schemes** into a single platform.

Job Creation: Policy & Technological Interventions

1. **Labour Law Reforms**
   a. **Four Labour Codes** aim to simplify regulations, ensuring a balance between **job security and flexibility**:
      - **Code on Wages, 2019**
      - **Code on Social Security, 2020**
      - **Industrial Relations Code, 2020**
      - **Occupational Safety, Health, and Working Conditions Code, 2020**
2. **Digital Economy & Gig Workforce**
   a. **India's digital economy** is projected to exceed **USD 1 trillion by 2025**.
   b. The **gig workforce** is expected to reach **23.5 crore by 2029-30**, forming **6.7% of the non-agricultural workforce**.
3. **Green Economy & Employment**
   a. **1.02 million jobs in the renewable energy sector (2023)**, with **hydropower leading**.
   b. **Women-led job creation** through **SHGs and solar entrepreneurship**.
   c. **Decentralized Renewable Energy (DRE)** to drive **climate-smart employment solutions**.

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d. **Challenges for women**: Climate change, disasters, gender-biased tools, limited financing, and socio-cultural barriers.

Skilling for a Changing Workforce

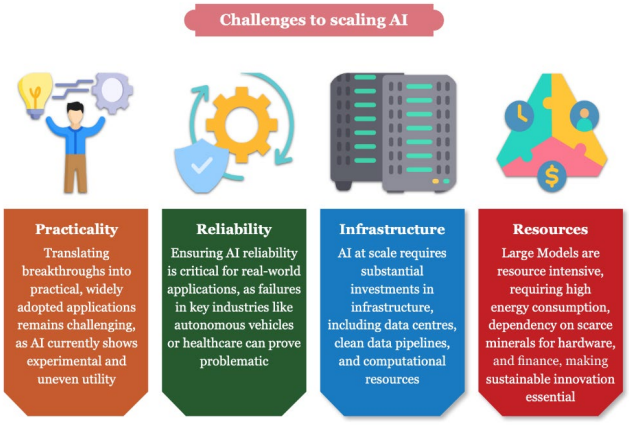
1. **Current Skill Levels**
   a. **4.9% of youth (15-29 years)** received **formal vocational training**, while **21.2%** were trained informally.
   b. **90.2% of workers** have an education **up to secondary level or lower**.
   c. **88.2%** of the workforce is engaged in **low-skilled jobs**.
2. **Major Skilling Initiatives**
   a. **Reskilling & Upskilling**:
      - **1.24 crore enrolled** in **Craftsmen Training Scheme (ITIs)**.
      - **PMKVY** trained **1.57 crore**, with **1.21 crore certified**.
      - **Women's participation in PMKVY**: **58% in FY25**.
   b. **Future Skills & Industry Collaboration**:
      - **200+ new-age skills** under the **National Council for Vocational Education & Training**.
      - **ITI Upgradation Scheme (2024)**: **1,000 ITIs** upgraded in **hub-and-spoke model**.
      - **PM Internship Scheme** to enhance industry partnerships.
   c. **Digital Skilling Infrastructure**:
      - **Skill India Digital Hub Portal** to democratize access to industry-aligned courses.

Chapter-13. Labour in the AI Era: Crisis or Catalyst?

The rapid advancements in **Artificial Intelligence (AI)** over the past four years are transforming labour markets. While AI-driven automation promises efficiency and innovation, it also raises concerns about **economic displacement** and **widening social inequalities**.

AI and Job Disruptions

1. **Global AI investments (2021-2023):** USD **761 billion**.
2. **ILO estimates**: **75 million jobs** worldwide face complete automation risk.
3. **NASSCOM projection**: India's AI market is set to grow at **25-35% CAGR by 2027**.



Human-Centric AI: Balancing Automation & Employment

1. AI presents **both opportunities and challenges** for India's labour-intensive economy.
2. **Lessons from past tech revolutions** show that poorly managed transitions lead to **job losses, economic distress, and inequality**.
3. A **collaborative approach** between the **government, industry, and academia** is essential to ensure AI **enhances** rather than **replaces** human labour.
4. The future of work will be shaped by **"Augmented Intelligence"**, where humans and machines **work together** rather than compete.
5. Strengthening **Enabling, Insuring, and Stewarding Institutions** will be key to **mitigating risks** and ensuring an inclusive AI-driven economy.

2. Union Budget 2025-26

Understanding the Indian Budget

1. Defined under **Article 112** of the Constitution as the **"Annual Financial Statement."**
   - **Note:** The term **"Budget"** is **not explicitly mentioned** in the Constitution.
2. A statement of **estimated receipts and expenditure** of the Government for a **financial year**.
3. The **Department of Economic Affairs (DEA)** under the **Ministry of Finance** is responsible for preparing the **Union Budget**.

History of the Indian Budget	
Pre-Independence	***Post-Independence***
1. **7th April 1860**: **James Wilson** presented **India's first budget** as the **first Finance Member** of the British Government. 2. **1947-48**: **Liaquat Ali Khan** presented the budget as a member of the **Interim Government**.	1. **26th November 1947:** R.K. Shanmukham Chetty presented Independent India's first budget.

Budget Presentation and Approval Process

1. **Budget is presented** in Parliament.
2. **General discussion** in **both Houses** (Lok Sabha & Rajya Sabha).
3. **Standing Committees** scrutinize the **Demands for Grants** of individual ministries.
4. **Detailed discussion and voting** on **Demands for Grants** in **Lok Sabha**.
5. **Passing of Appropriation Bill and Finance Bill** to give effect to the Budget proposals.

Components of the Budget	
Revenue Budget Includes	**Capital Budget Includes**
• **Tax Revenue Receipts** (e.g., Income Tax, GST). • **Non-Tax Revenue Receipts** (e.g., Dividends, Fees, Fines). • **Government Expenditure** for day-to-day functioning.	• **Capital Receipts** (e.g., Loans, Disinvestment Proceeds). • **Capital Payments** (e.g., Infrastructure Spending, Loan Repayments).

Two Parts of the Budget	
Part A – Macroeconomic Aspects	**Part B – Finance Bill**
• Government Schemes • Sectoral Priorities • Resource Allocation	• Taxation Proposals • Income Tax Revisions • Changes in Indirect Taxes

Budget Documents		
Major Budget Documents	**Fiscal Policy Statements (FRBM Act, 2003)**	**Other Explanatory Documents**
• **Annual Financial Statement** (*Under Article 112*). • **Demands for Grants** (*Under Article 113*). • **Finance Bill** (*Under Article 110*).	• Macro-Economic Framework Statement • Medium-Term Fiscal Policy & Fiscal Strategy Statement	• Expenditure Budget • Receipt Budget • Expenditure Profile • Budget at a Glance • Memorandum Explaining the Provisions in the Finance Bill • Output Outcome Monitoring Framework • Key Features of Budget 2025-26

Provision	Key points
Article 112	President shall in respect of every financial year cause to be laid before both the Houses of Parliament a statement of the estimated receipts and expenditure of the Government of India for that year, referred to as the **"annual financial statement".**
Article 113	**No demand for a grant shall be made except on the recommendation of the President.**
Article 114	**No amount** can be withdrawn from the Consolidated Fund of India **(CFI) without authorization from the Parliament.**

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Article 266	All revenues received by the government shall be credited to the "**Consolidated Fund of India".** All other public money, such as **provident fund, Postal insurance, etc, shall be credited to the Public Account of India.**
Article 267	Parliament may by law establish a **Contingency Fund of India to meet unexpected or unforeseen expenditures.**

1. **On 1 February 2025, Union Minister for Finance and Corporate Affairs** Smt Nirmala Sitharaman **presented** her **8th consecutive Union Budget 2025-26 in Parliament.**
2. **Theme**: **"Sabka Vikas" – Balanced growth for all regions**

Principles of Viksit Bharat

The budget outlines the following broad principles to achieve a prosperous India: **Zero-poverty, 100% good quality school education,** Access to high-quality, affordable, and comprehensive healthcare, **100% skilled labour** with meaningful employment, **70% women** in economic activities, Farmers making our country the **'food basket of the world'**

The budget focuses on 5 key objectives:

1. Accelerate growth
2. Secure inclusive development
3. Invigorate private sector investments
4. Uplift household sentiments
5. Enhance spending power of India's rising middle class

Focus Areas: Poor (Garib), Youth, Farmer (Annadata) and Women (Nari)

Transformative Reforms

The budget aims to initiate reforms in the following sectors to augment India's growth potential and global competitiveness: Taxation, Power Sector, Urban Development, Mining, Financial Sector, and Regulatory Reforms

Four Growth Engines

Finance Minister Nirmala Sitharaman in her budget speech outlined **four main engines** for India's growth and development

1. **Agriculture as the First Engine** With initiatives like the *PM Dhan-Dhaanya Krishi Yojana*, a renewed push for *Aatmanirbharta in pulses*, and focused support for high-yield seeds, cotton, fruits, vegetables, fisheries, and makhana in Bihar, the budget treats **agriculture not just as a welfare sector** but a **modern growth engine aimed at productivity, sustainability, and rural prosperity.**
2. **MSMEs as the Second Engine** The budget **strengthens India's entrepreneurial backbone** by easing credit access, revising MSME classification, introducing credit cards for micro enterprises, and boosting labour-intensive sectors like leather, footwear, toys, and food processing. The National Manufacturing Mission and clean-tech focus signal a move toward resilience and scale.
3. **Investment as the Third Engine** It includes **public investment** in infrastructure, rural skilling, education, AI, health, tourism, and digital connectivity. Simultaneously, **private sector-driven R&D is being incentivized**, alongside large-scale funding mechanisms like SWAMIH Fund 2 and deep-tech support to catalyze innovation and job creation.
4. **Exports as the Fourth Engine** A new *Export Promotion Mission*, digital infrastructure like *BharatTradeNet*, incentives for Global Capability Centres (GCCs), support for air cargo and marine exports, and trade facilitation measures position India as a **reliable player in global supply chains.**

Budget Estimates 2025-26

Metric	Estimate
Total Receipts (excl. borrowings)	₹ 34.96 lakh crore
Total Expenditure	**₹ 50.65 lakh crore**
Net Tax Receipts	₹ 28.37 lakh crore
Fiscal Deficit	**4.4% of GDP**
Gross Market Borrowings	₹ 14.82 lakh crore
Capex Expenditure	₹ 11.21 lakh crore **(3.1% of GDP)**

Key Figures from Budget Estimates (BE) 2025-26

1. Total Expenditure (BE 2025-26): ₹50,65,345 crore
2. Capital Expenditure (BE 2025-26): ₹11,21,090 crore
3. Effective Capital Expenditure: ₹15,48,282 crore
   - This includes capital expenditure + grants-in-aid for creation of capital assets)

Resource Transfers to States (BE 2025-26)

Resource Transfers to States and Union Territories (BE 2025–26)

1. **Total Transfers (BE 2025–26):** ₹25,01,284 crore
2. **This includes:**
   a. Devolution of States' Share in Central Taxes
   b. **Grants and Loans** (such as Finance Commission Grants, special assistance, etc.)
   c. **Releases under Centrally Sponsored Schemes (CSS)**
3. **Increase Over Previous Year (2023–24 Actuals):** The transfers in 2025–26 are **₹4,91,668 crore higher** than the actual transfers made in 2023–24.

BUDGET IN DETAIL

RECEIPTS

1. **Revenue Receipts**
   a. Revenue receipts are the government's income from **tax and non-tax sources**.
   b. Grown from ₹27.29 lakh crore (2023–24) to ₹34.20 lakh crore (2025–26 BE) — an increase of **25.4% over two years**.
   c. Reflects improved tax buoyancy and better revenue administration.
2. **Tax Revenue (Net to Centre)**
   a. This is the **Centre's share** after devolution to states.
   b. Increased from ₹23.27 lakh crore to ₹28.37 lakh crore between 2023–24 and 2025–26 — a **22% rise**.
   c. Indicates stable tax collections and increased economic activity.
3. **Non-Tax Revenue**
   a. Includes **dividends, spectrum fees, interest receipts**, etc.
   b. Jumped from ₹4.01 lakh crore to ₹5.83 lakh crore — a sharp **45% growth**.
   c. Suggests dependence on one-time income sources like spectrum auctions and improved PSU performance.
4. **Capital Receipts (Excluding Borrowings)**
   a. Comprise **loan recoveries and disinvestment**, excluding borrowings.
   b. Slight dip from ₹17.14 lakh crore (2023–24) to ₹16.44 lakh crore (2025–26) — a **reduction of 4%**.
   c. Indicates a **limited push in asset sales or loan recovery** during this period.
5. **Recovery of Loans**
   a. A marginal revenue source — increased from ₹26,646 crore to ₹29,000 crore (up **8.8%**).
   b. Shows minimal fiscal reliance on this stream.
6. **Other Receipts (e.g., Disinvestment)**
   a. Fluctuating performance — ₹33,122 crore in 2023–24 to a target of ₹47,000 crore in 2025–26.
   b. Despite **42% increase in BE**, past trends show **shortfalls**, suggesting challenges in executing disinvestment targets.
7. **Borrowings and Other Liabilities (Fiscal Deficit)**
   a. Represents the **government's borrowing need** due to the gap between income and expenditure.
   b. Reduced from ₹16.54 lakh crore to ₹15.68 lakh crore, showing a **decline of 5.2%**.
   c. As % of GDP: From **5.6% (2023–24)** to **4.4% (2025–26)** — reflecting **fiscal consolidation** efforts.
8. **Total Receipts (Revenue + Capital)**
   a. Increased from ₹44.43 lakh crore (2023–24) to ₹50.65 lakh crore (2025–26) — a **14% rise**.
   b. Signifies **moderate overall resource expansion**, driven largely by revenue gains.

EXPENDITURE

1. **Total Expenditure**
   a. Mirrors total receipts: ₹44.43 lakh crore (2023–24) to ₹50.65 lakh crore (2025–26).
   b. Reflects a **balanced budget approach** in accounting terms.
2. **Revenue Expenditure**
   a. Day-to-day government spending (salaries, pensions, subsidies).

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b. Increased from ₹34.94 lakh crore to ₹39.44 lakh crore — a **12.8% rise**.
c. Share in total expenditure has reduced, indicating **shifting focus to capital spending**.

3. **Interest Payments**
   a. Increased from ₹10.64 lakh crore to ₹12.76 lakh crore — a **19.9% rise**.
   b. Comprises **~32% of revenue expenditure** in 2025–26 — highlights the **burden of past borrowings**.
4. **Grants for Creation of Capital Assets**
   a. Revenue spending that helps create assets, such as state infrastructure grants.
   b. From ₹3.03 lakh crore to ₹4.27 lakh crore — a **40.6% jump**.
   c. Indicates **greater use of revenue funds for productive purposes**.
5. **Capital Expenditure**
   a. Direct asset-creating expenditure (roads, railways, schools).
   b. Increased from ₹9.49 lakh crore to ₹11.21 lakh crore — **18% growth**.
   c. Central to government's **growth-led economic strategy**.
6. **Effective Capital Expenditure (CapEx + Capex Grants)**
   a. From ₹12.53 lakh crore to ₹15.48 lakh crore — **a robust 23.5% rise**.
   b. Reflects a **high-quality fiscal push** toward long-term asset creation.

DEFICITS

1. **Revenue Deficit (Revenue Expenditure – Revenue Receipts)**
   a. Revenue Deficit = Revenue Expenditure – Revenue Receipts
   b. Indicates how much the government is **borrowing just to meet its daily operational expenses** (salaries, subsidies, pensions).
   c. The Revenue Deficit has been on a declining trend, reducing from **2.6% of GDP in 2023–24** to **1.9% in the Revised Estimates for 2024–25**, and is further projected to fall to **1.5% in the Budget Estimates for 2025–26**.
   d. A lower revenue deficit means **more fiscal space** for capital investment.
   e. A high revenue deficit is **unsustainable** as it shows the government is borrowing for routine expenditure.
   f. The deficit is **declining steadily**, showing a **better balance in revenue management**
   g. Dropped from ₹7.65 lakh crore (2.6% of GDP) to ₹5.23 lakh crore (1.5% of GDP) — a **31.6% reduction**.
   h. Indicates **improved matching of day-to-day revenue with earnings**.
2. **Effective Revenue Deficit (Revenue Deficit – Capex Grants)**
   a. Effective Revenue Deficit = Revenue Deficit – Grants for creation of capital assets
   b. This adjusts for revenue expenses that **lead to asset creation** (like grants to states for capital work).
   c. A better measure than revenue deficit to know how much **non-productive revenue expenditure** is happening.
   d. A low or zero effective revenue deficit means **borrowed money is being used productively**.
   e. The **Effective Revenue Deficit** has shown a sharp decline, falling from **1.6% of GDP in 2023–24** to **1.0% in the Revised Estimates for 2024–25**, and is projected to further reduce to just **0.3% in the Budget Estimates for 2025–26**.Sharp decline indicates the government is **directing revenue funds toward capital creation**.
   f. From ₹4.61 lakh crore to ₹96,654 crore — a **massive 79% drop**.
   g. Now just **0.3% of GDP**, showing **most revenue deficit is now productive spending**.
3. **Fiscal Deficit**
   a. It reflects the **total borrowing requirement** of the government.
   b. A high fiscal deficit means the government is **spending much more than it earns**, leading to more borrowing.
   c. The Fiscal Deficit is steadily narrowing, declining from **5.6% of GDP in 2023–24** to **4.8% in the Revised Estimates for 2024–25**, and is further targeted to reduce to **4.4% in the Budget Estimates for 2025–26**.

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d. It's closely watched by credit rating agencies and investors for economic stability.
e. **Trend is downward**, showing the government's **commitment to fiscal consolidation** and reducing dependence on borrowings.

4. **Primary Deficit (Fiscal Deficit – Interest Payments)**
   a. Primary Deficit = Fiscal Deficit – Interest Payments
   b. It shows the government's **current year shortfall**, **excluding past interest burdens**.
   c. It tells us if the government is borrowing **just to pay interest** or also to meet new spending.
   d. A low primary deficit means **fiscal stress is under control**, excluding debt repayment.
   e. The **Primary Deficit**, which excludes interest payments from the fiscal deficit, is on a consistent downward path — declining from **2.0% of GDP in 2023–24** to **1.3% in the Revised Estimates for 2024–25**, and further to **0.8% in the Budget Estimates for 2025–26**. Steady decline shows **greater fiscal discipline** and **reduced fresh borrowing pressure**.
   f. Reduced sharply from ₹5.91 lakh crore to ₹2.93 lakh crore — a **50% fall**.
   g. Indicates that apart from interest costs, the **government is close to balancing its core budget**.

Sources of Receipts – Union Budget 2025–26

(Breakdown per ₹1 received by the Government)

1. **Income Tax – ₹0.22 (22%)**
   a. Represents the **personal income tax collected from individuals** and Hindu Undivided Families (HUFs).
   b. It is the **largest single contributor to the Union Government's receipts**, highlighting the growing role of the salaried and small business class.
   c. Reflects an **expanding tax base**, increased formalization, and improvements in digital tax compliance systems.
2. **Corporation Tax – ₹0.17 (17%)**
   a. Levied on the **profits of companies** and includes both domestic and foreign firms operating in India.
   b. Indicates strong corporate earnings post-COVID and signals **economic revival in the formal business sector**.
   c. The second-largest contributor, this tax is crucial for maintaining the fiscal health of the Centre.
3. **Goods & Services Tax (GST) & Other Indirect Taxes – ₹0.18 (18%)**
   a. Includes **Central GST**, service tax remnants, and other indirect taxes like cesses and surcharges.
   b. Reflects **consumption-based taxation**, aligning government revenue with overall economic activity.
   c. A stable and integrated indirect tax regime supports **ease of doing business and revenue predictability**.
4. **Union Excise Duties – ₹0.05 (5%)**
   a. Imposed on the **manufacture of specific goods**, notably **petroleum products and tobacco**, which lie outside GST.
   b. The share is declining over time due to the shift of most goods to the GST regime.
   c. Still remains important due to its role in **fuel pricing and revenue from sin goods**.
5. **Customs Duties – ₹0.04 (4%)**
   a. Collected on **imports into India**, including tariffs on foreign goods.
   b. Indicates **low reliance on trade taxation**, aligned with India's **liberal trade policy and global integration**.
   c. Reduced protectionism supports competitiveness but limits revenue potential.
6. **Non-Tax Revenue – ₹0.09 (9%)**
   a. Comprises **dividends from PSUs, interest from loans, spectrum fees, and license charges**.
   b. This is a **crucial non-debt, non-tax source** that helps reduce fiscal deficit without imposing new taxes.
   c. Reflects **government efficiency in asset utilization and public sector profitability**.
7. **Non-Debt Capital Receipts – ₹0.01 (1%)**
   a. Includes **proceeds from disinvestment and recoveries of past loans**.

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   b. The small share indicates **slow pace of privatization** and limited capital recycling.
   c. Scope exists to improve this through more strategic asset monetization.

8. **Borrowings & Other Liabilities – ₹0.24 (24%)**
   a. This is the **gap between total government expenditure and income**, financed through borrowings.
   b. At nearly one-fourth of every rupee, it shows continued reliance on **fiscal deficit financing**.
   c. Highlights the need for **prudent fiscal management and deeper revenue mobilization**.
9. While 76% of receipts are from taxes and income, **24% still comes from borrowings**, underlining the importance of **fiscal consolidation and sustainable financing**.
10. Nearly **one-fourth of every rupee spent is borrowed**, indicating the importance of fiscal discipline and the need to increase revenue efficiency.

Expenditure – Where Does Every ₹1 Go?

(Breakdown per ₹1 spent by the Government)

1. **State Share of Taxes & Duties – ₹0.22 (22%)**
   a. Devolved to states as per the **Finance Commission's recommendations**.
   b. Reflects the constitutional commitment to **fiscal federalism**, ensuring state governments have funds to deliver public services.
   c. This is the **largest expenditure item**, reaffirming cooperative governance.
2. **Interest Payments – ₹0.20 (20%)**
   a. Paid on past loans taken by the government, both domestic and external.
   b. This is a **non-productive but unavoidable commitment**, consuming 1/5th of the budget.
   c. It reflects the **burden of past deficits and limits spending flexibility** for development and welfare.
3. **Central Sector Schemes – ₹0.16 (16%)**
   a. Fully funded and implemented by the Union Government (e.g., PM Awas Yojana, Jal Jeevan Mission).
   b. Reflects direct government investment in **national-level development**, infrastructure, and social welfare.
   c. Shows strong policy focus on centrally controlled growth programs.
4. **Centrally Sponsored Schemes – ₹0.08 (8%)**
   a. Jointly funded by Centre and States (e.g., MGNREGA, PM Poshan, National Health Mission).
   b. Crucial for **grassroots development**, especially in rural and backward areas.
   c. Promotes **Centre-State collaboration** in addressing poverty and social development.
5. **Defence – ₹0.08 (8%)**
   a. Covers salaries, pensions, procurement, and operations of the **Army, Navy, and Air Force**.
   b. Essential for **national security and strategic preparedness**.
   c. Allocation is stable, balancing military needs with fiscal limits.
6. **Finance Commission & Other Transfers – ₹0.08 (8%)**
   a. Includes **grants to states** for local bodies, disaster relief, and sectoral development as per the Finance Commission's mandate.
   b. Enhances state capacity for **health, education, infrastructure, and disaster management**.
   c. Supports **equalization and fiscal balance across regions**.
7. **Other Expenditure – ₹0.08 (8%)**
   a. Administrative functions, innovation, digital infrastructure, and support to various ministries.
   b. Reflects spending on **governance, regulatory institutions, and emerging sectors** like AI, climate tech, and skilling.
8. **Major Subsidies – ₹0.06 (6%)**
   a. Includes **food, fertilizer, and petroleum subsidies**.
   b. Aims to protect vulnerable sections (farmers, poor households) from price volatility.
   c. Share has reduced over time, showing an attempt to **target and rationalize subsidies**.
9. **Pensions – ₹0.04 (4%)**
   a. For retired **civil and defence personnel**, under the old pension scheme.
   b. Represents a **legacy liability**, especially with increasing life expectancy.
   c. Calls for **long-term pension reforms** and sustainability of retirement systems.

10. **42% of total expenditure** is locked in committed liabilities — **22% to states and 20% to interest payments**.
11. This leaves only **~30–35% of the budget for developmental and welfare spending**, emphasizing the need for **fiscal prioritization and reforms**

Sources of Deficit Financing

To meet its fiscal deficit, the government relies on a mix of financing tools in addition to market borrowings (G-secs). The key alternative sources are as follows:

1. Securities Against Small Savings

a. This includes borrowings from **small savings schemes** such as the Public Provident Fund (PPF), National Savings Certificates (NSC), Sukanya Samriddhi Yojana, and others. These instruments are popular among households and offer the government a non-market source of funds.

b. The reliance on small savings was **₹5.5 lakh crore in 2021–22**, but it has steadily decreased to **₹4.0 lakh crore in 2022–23** and **₹4.5 lakh crore in 2023–24**.

c. In the **Revised Estimates of 2024–25**, this dropped further to **₹4.1 lakh crore**, and for **2025–26 (BE)**, it is projected to be **₹3.4 lakh crore**.

d. This trend suggests that while small savings remain a key source, the government is **gradually reducing its dependence**, possibly due to **liquidity constraints and the relatively higher cost of funds** associated with these instruments.

e. **Small savings remain the top non-market source**, though they're slowly declining.

2. Short-Term Borrowings (Treasury Bills and Similar Instruments)

a. Short-term borrowings are typically of **less than one year duration**, used to manage temporary mismatches in cash flows.

b. The amount raised through short-term borrowings stood at **₹0.8 lakh crore in 2021–22**, which rose slightly to **₹1.1 lakh crore in 2022–23**.

c. However, it sharply declined to **₹0.5 lakh crore in 2023–24**, and in **2024–25 (RE)**, the government is actually planning a **net repayment of ₹1.2 lakh crore** — indicating it is paying back more than it borrows.

d. For **2025–26 (BE)**, the figure is **₹0**, implying **no new short-term borrowing** is planned.

e. This marks a **clear shift toward long-term and more stable financing methods**, reducing dependency on quick but volatile funding sources.

f. **Short-term borrowings are being reduced or repaid**—a sign of long-term debt discipline.

3. Other Sources (Public Account, State Provident Funds, External Debt, etc.)

a. This includes borrowing from **internal debt mechanisms** like the Public Account, state provident funds, and external multilateral/ bilateral lenders.

b. In **2021–22**, this category contributed **₹2.2 lakh crore**, which fell to **₹1.2 lakh crore in 2022–23**, and further declined to **₹0.7 lakh crore in 2023–24**.

c. For **2024–25 (RE)**, the inflow is estimated at **₹1.1 lakh crore**, while for **2025–26 (BE)**, it returns to **₹0.7 lakh crore**.

d. The **steady decline** in this source shows a move towards **more disciplined and predictable debt management**, with less reliance on miscellaneous or ad hoc funding mechanisms.

4. Market Borrowings – The Core Source

a. Despite diversification, **market borrowings via long-term government securities (G-Secs)** remain the **primary and most stable source** of financing.

b. Across recent years, these borrowings have been **stable in the range of ₹11.5–₹12.3 lakh crore annually**.

c. The government continues to rely on this channel as its **mainstay for financing fiscal deficit**, though it ensures borrowing stays within a **controlled and sustainable range** to maintain macroeconomic stability and investor confidence.

Trend in Gross Tax Receipts (as % of GDP)

1. **Gross Tax Receipts** refer to the **total tax revenue** collected by the government **before** deducting the share of taxes that must be transferred to the states as per Finance Commission recommendations.
2. Net Tax Receipts (also called Net Tax Revenue to Centre) refer to the Central Government's actual share of tax revenue after deducting the states' share of taxes as mandated by the Finance Commission.

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3. **Overall Gross Tax Receipts**
   a. From **2016–17 to 2018–19**, gross tax revenue remained relatively stable, hovering around **11.0% to 11.2% of GDP**.
   b. However, in **2019–20** and **2020–21**, the ratio declined to **10.0%** and **10.2%** respectively. This fall can be attributed to the combined effects of an **economic slowdown** and the **COVID-19 pandemic**, which severely impacted income, consumption, and business activity.
   c. Post-pandemic, there has been a strong and sustained recovery. From **2021–22 onwards**, tax receipts have been rising steadily, with gross tax revenue projected to reach **12.0% of GDP in BE 2025–26** — the highest in the past decade.
   d. This rebound reflects a **strengthening tax base**, better enforcement, and revival in both consumption and income growth.
4. **Direct Tax Collection Trends (as % of GDP)**
   a. Direct taxes (including personal income tax and corporation tax) saw a **gradual increase** from **5.5% of GDP in 2016–17** to **6.0% in 2018–19**, reflecting rising income levels and formalization.
   b. The pandemic years saw a setback, with a decline to **5.2% in 2019–20** and further to **4.8% in 2020–21**.
   c. However, **from 2021–22 onwards**, there has been a **strong and consistent rise in direct tax collections**, with BE 2025–26 projecting them at **7.1% of GDP** — a significant improvement and the highest in recent years.
   d. This trend suggests **higher corporate profitability**, better tax compliance, and expanding formal sector employment. It also indicates a **welcome shift toward more progressive taxation**.
5. **Indirect Tax Collection Trends (as % of GDP)**
   a. Indirect tax collections, which include GST, excise, and customs duties, saw a **gradual decline** from **5.6% in 2016–17** to **5.0% in 2018–19**, reflecting the **transition to GST and rate rationalization**.
   b. In **2020–21**, there was a slight uptick to **5.4%**, possibly due to higher excise collections on fuel and improved compliance.
   c. Since **2021–22**, indirect tax revenue has largely **stabilized between 5.0% and 5.5%**, although there has been a **mild dip to 4.9% in recent years**.
   d. The plateau suggests that while GST is now well-established, **growth in indirect taxes is slower**, potentially due to **moderate consumption growth** and tax rate reductions on essential items.

Union Budget 2025–26 – Key Expenditure

1. Total Government Expenditure Growth
   a. The government's total expenditure has grown from ₹19.75 lakh crore in 2016–17 to ₹50.65 lakh crore in 2025–26 (BE) — over 2.5x increase in a decade.
   b. This reflects sustained investment in welfare, infrastructure, and development, while also accommodating rising liabilities.

2. Rising Interest Payments – A Fiscal Constraint
   a. Interest payments are projected at ₹12.76 lakh crore in 2025–26, up from ₹10.64 lakh crore in 2023–24 — nearly 20% growth.
   b. They form over 25% of total expenditure, showing the significant burden of past borrowings on the fiscal space.

3. Capital Expenditure Push – Infrastructure-Led Growth
   a. Capital expenditure (asset creation) will rise from ₹9.49 lakh crore (2023–24) to ₹11.21 lakh crore (2025–26), an increase of 18%.
   b. Grants-in-aid for capital assets — mostly to states/PSUs — also grow sharply by 41%, reaching ₹4.27 lakh crore.
   c. Total effective capital expenditure will reach ₹15.48 lakh crore in 2025–26, forming about 4.3% of GDP.
   d. This indicates a strong structural shift toward productive, growth-oriented public spending.

4. Capital vs Revenue Spending – Improving Quality of Expenditure
   a. Capital expenditure's share in GDP has almost doubled from 2.6% (2018–19) to 4.3% (2025–26 BE).
   b. Revenue expenditure (non-asset creating, like salaries and pensions) is expected to decline as a share of GDP — from 14.4% (2020–21) to 9.8% (2025–26).

c. This reflects a more disciplined and investment-focused budget framework.

5. Major Sectoral Allocations in 2025–26

a. Interest Payments: ₹12.76 lakh crore (25.2% of total expenditure)
b. Transport: ₹5.49 lakh crore — strong focus on roads, railways, infrastructure
c. Defence: ₹4.92 lakh crore — steady allocation for security and procurement
d. Rural Development: ₹2.67 lakh crore
e. Pensions: ₹2.77 lakh crore
f. Total Subsidies: Over ₹3.8 lakh crore (food, fertiliser, petroleum)

6. Social Sector Priorities

a. Health: ₹98,311 crore
b. Education: ₹1.28 lakh crore
c. Urban Development: ₹96,777 crore (a sharp increase from ₹63,670 crore)
d. Agriculture & Allied Sectors: ₹1.71 lakh crore (from ₹1.41 lakh crore in 2024–25)
e. Science & Tech saw a massive 68% increase — reflecting push in innovation and R&D.

7. Transfers to States – Stronger Fiscal Federalism

a. Transfers to States/UTs increase from ₹20.65 lakh crore (2023–24) to ₹25.60 lakh crore (2025–26) — a growth of ~24%.
b. Devolution of taxes alone accounts for ₹14.22 lakh crore (56% of total transfers).
c. Other transfers include Centrally Sponsored Schemes (₹5.14 lakh crore), Finance Commission Grants (₹1.33 lakh crore), and capital loans/grants like the ₹1.5 lakh crore Special Capex Assistance.

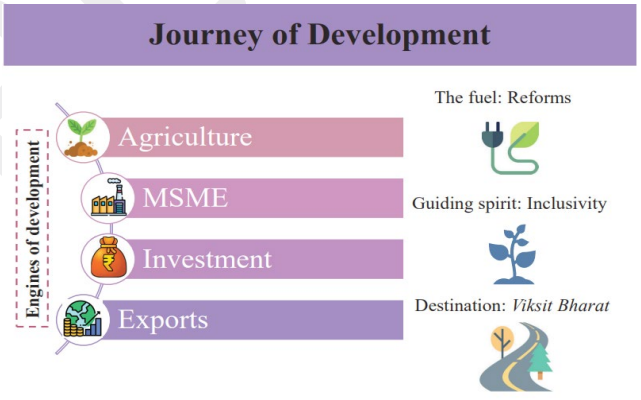
8. Composition of Expenditure – Long-Term Strategy

a. Central Sector Schemes (e.g., PM Awas, Jal Jeevan) consistently take up ~30–32% of spending.
b. Interest payments and establishment costs together account for another ~35%.
c. Centrally Sponsored Schemes and Finance Commission grants reflect growing Centre-State collaboration.
d. Effective Capital Expenditure is increasing — over ₹15 lakh crore in 2025–26 — indicating long-term multiplier benefits.

While total spending is rising, the focus is clearly shifting from revenue-heavy to capital-intensive expenditure.This aligns with goals of job creation, infrastructure development, and sustainable growth, while controlling revenue leakages.

ENGINES OF GROWTH

The budget highlights the following sectors as engines of growth in the journey to Viksit Bharat:



AGRICULTURE AS THE 1st ENGINE OF DEVELOPMENT	
Initiative	**Key Points**
Prime Minister Dhan-Dhaanya Krishi Yojana	- Developing Agri Districts Programme, Covering **100 districts with low productivity**, moderate crop intensity, and below-average credit parameters, Benefiting 1.7 crore farmers - **Launched in partnership with the states**
Building Rural Prosperity and Resilience	- Comprehensive **multi-sectoral programme,** Phase-1 **covering 100 developing agri-districts** - Focus on addressing **under-employment in agriculture through skilling**, investment, technology, and invigorating the rural economy, Launched in partnership with states
Aatmanirbharta in Pulses	- **6-year mission**, Focus on **Tur, Urad, and Masoor** - **NAFED** and **NCCF** to procure these pulses from farmers **during the next 4 years**

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Comprehensive Programme for Vegetables & Fruits	- Promote production, efficient supplies, processing, and remunerative prices for farmers - **Launched in partnership with state**s
Makhana Board in Bihar	- Improve production, processing, value addition, and marketing of makhana
National Mission on High Yielding Seeds	- Strengthen the research ecosystem, Targeted development and propagation of seeds with high yield, Commercial availability of more than **100 seed varieties**
Fisheries	- Framework for sustainable harnessing of fisheries from **Indian Exclusive Economic Zone** and High Seas, Special focus on the **Andaman & Nicobar and Lakshadweep Islands**
Mission for Cotton Productivity	- **5-year mission**, Facilitate significant improvements in productivity and sustainability of cotton farming, Promote extra-long staple cotton varieties
Enhanced Credit through KCC	- Loan limit under the Modified Interest **Subvention Scheme enhanced from ₹ 3 lakh to ₹ 5 lakh** for loans taken through the KCC
Urea Plant in Assam	- Annual capacity of **12.7 lakh metric tons**, Located at **Namrup, Assam**

MSMEs AS THE 2nd ENGINE OF DEVELOPMENT

Initiative	Key Points
Revision in Classification Criteria	- **Investment limit enhanced to 2.5 times,**Turnover limit enhanced to **2 times,** Applies to all MSMEs

₹ in Crore	Investment		Turnover	
	Current	Revised	Current	Revised
Micro Enterprises	1	2.5	5	10
Small Enterprises	10	25	50	100
Medium Enterprises	50	125	250	500

Credit Cards for Micro Enterprises	- **Customized Credit Cards with ₹ 5 lakh limit** for micro enterprises registered on **Udyam portal** - **10 lakh cards to be issued in the first year**
Fund of Funds for Startups	- New Fund of Funds with a **fresh contribution of ₹ 10,000 crore,** Expanded scope
Scheme for First-time Entrepreneurs	- New scheme for **5 lakh women, Scheduled Castes, and Scheduled Tribes first-time entrepreneurs** - Provide term-loans **up to ₹ 2 crore in the next 5 years**
Focus Product Scheme for Footwear & Leather Sectors	- Enhance productivity, quality, and competitiveness of India's footwear and leather sector - Facilitate employment for **22 lakh persons**, **Generate turnover of ₹ 4 lakh crore**, Exports of over ₹ 1.1 lakh crore
Measures for the Toy Sector	- Scheme to create high-quality, unique, innovative, and sustainable toys, **Making India a global hub for toys**
Support for Food Processing	- **National Institute of Food Technology, Entrepreneurship and Management to be set up in Bihar**
Manufacturing Mission	- National Manufacturing Mission covering small, medium, and large industries - Furthering the **"Make in India" initiative**

INVESTMENT AS THE 3rd ENGINE OF DEVELOPMENT

Investing in People

Initiative	Key Points
Saksham Anganwadi and Poshan 2.0	- Enhanced cost norms for nutritional support
Atal Tinkering Labs	- **50,000 Atal Tinkering Labs** to be set up in Government schools in the next 5 years
Broadband Connectivity	- Broadband connectivity to all Government secondary schools and primary health centres in rural areas under the Bharatnet project
Bharatiya Bhasha Pustak Scheme	- Provide digital-form Indian language books for school and higher education
National Centres of Excellence for Skilling	- **5 National Centres of Excellence** for skilling with global expertise and partnerships - Equip youth with skills for **"Make for India, Make for the World" manufacturing**
Expansion of Capacity in IITs	- **Additional infrastructure in 5 IITs started after 2014,** Facilitate education for 6,500 more students
Centre of Excellence in AI for Education	- Total outlay of ₹ **500 crore**
Expansion of medical education	- **10,000 additional seats in medical colleges** and hospitals next year - Adding to 75,000 seats in the next 5 years
Day Care Cancer Centres	- Set up in all district hospitals in the next 3 years, 200 Centres in 2025-26
Strengthening urban livelihoods	- Scheme for socio-economic upliftment of urban workers - Help improve incomes and sustainable livelihoods
PM SVANidhi	- Revamped scheme with enhanced loans from banks, **UPI-linked credit cards with ₹ 30,000 limit**
Social Security Scheme for Online Platform Workers	- Identity cards, registration on e-Shram portal, Healthcare under **PM Jan Arogya Yojna for gig workers**

Investing in the Economy

Initiative	Key Points
Public Private Partnership in Infrastructure	- Infrastructure-related ministries to come up with a **3-year pipeline of projects in PPP mode,** States also encouraged
Support to States for Infrastructure	- **Outlay of ₹ 1.5 lakh crore for 50-year interest-free loans to states** for capital expenditure and incentives for reforms • Capital expenditure includes the **expenditure that leads to creation of long-term physical/ financial assets** including expenditure incurred on acquiring fixed assets like land and investment that gives profits or dividend in future.
Asset Monetization Plan 2025-30	- **2nd Plan for 2025-30 to plough back capital of ₹ 10 lakh crore** in new projects
Jal Jeevan Mission	- Extended until 2028 with an enhanced total outlay

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Urban Challenge Fund	- **₹ 1 lakh crore fund for 'Cities as Growth Hubs',** 'Creative Redevelopment of Cities', and 'Water and Sanitation', **Allocation of ₹ 10,000 crore for 2025-26**
Nuclear Energy Mission for Viksit Bharat	- Amendments to the Atomic Energy Act and the **Civil Liability for Nuclear Damage Act** **- Research & development of Small Modular Reactors (SMRs)** with an outlay of ₹ 20,000 crore, 5 indigenously developed SMRs to be operational by 2033. • SMRs are **advanced nuclear reactors** that have a power capacity of up to 300 MW(e) per unit, which is about one-third of the generating capacity of traditional nuclear power reactors.
Shipbuilding	- Revamped Shipbuilding Financial Assistance Policy, Large ships above a specified size to be included in the infrastructure harmonized master list (HML)
Maritime Development Fund	- **Corpus of ₹ 25,000 crore**, Up to 49% contribution by the Government, Balance from ports and private sector
UDAN - Regional Connectivity Scheme	- Modified scheme to enhance **regional connectivity to 120 new destinations** **- Carry 4 crore passengers in the next 10 years,** Support helipads and smaller airports in hilly, aspirational, and North East region districts
Greenfield Airport in Bihar	**- Greenfield airports in Bihar,** Expansion of **Patna airport capacity** **- Brownfield airport at Bihta**
Western Koshi Canal Project in Mithilanchal	- Financial support for the **Western Koshi Canal ERM Project in Bihar**
Mining Sector Reforms	- Policy for **recovery of critical minerals from tailings**
SWAMIH Fund 2	- **₹ 15,000 crore fund for expeditious** completion of another 1 lakh dwelling units - Contribution from the Government, banks, and private investors
Tourism for employment-led growth	- Top 50 tourist destination sites to be developed in partnership with states through a challenge mode

Investing in Innovation	
Initiative	**Key Points**
Research, Development and Innovation	- **₹ 20,000 crore allocated to implement private sector-driven Research**, Development and Innovation initiative
Deep Tech Fund of Funds	- Explored to catalyze the next generation startups
PM Research Fellowship	- **10,000 fellowships for technological research in IITs and IISc** with enhanced financial support
Gene Bank for Crops Germplasm	- **2nd Gene Bank with 10 lakh germplasm** lines for future food and nutritional security
National Geospatial Mission	- Develop foundational geospatial infrastructure and data
Gyan Bharatam Mission	- Survey, documentation, and conservation of manuscript heritage, Cover more than 1 crore manuscripts, Undertaken with academic institutions, museums, libraries, and private collectors

EXPORTS AS THE 4th ENGINE OF DEVELOPMENT	
Export Promotion Mission	
Initiative	**Key Points**
Export Promotion Mission	- Driven jointly by the Ministries of Commerce, MSME, and Finance, Sectoral and ministerial targets
BharatTradeNet	- Unified platform for international trade, Trade documentation and financing solutions
National Framework for GCC	- Guidance to states for promoting Global Capability Centres (GCCs), Focus on emerging tier 2 cities • GCCs are **offshore facilities** that **help multinational corporations (MNCs) manage their business operations**. They are also known as Global In-house Centres (GICs) or Captive Centres.

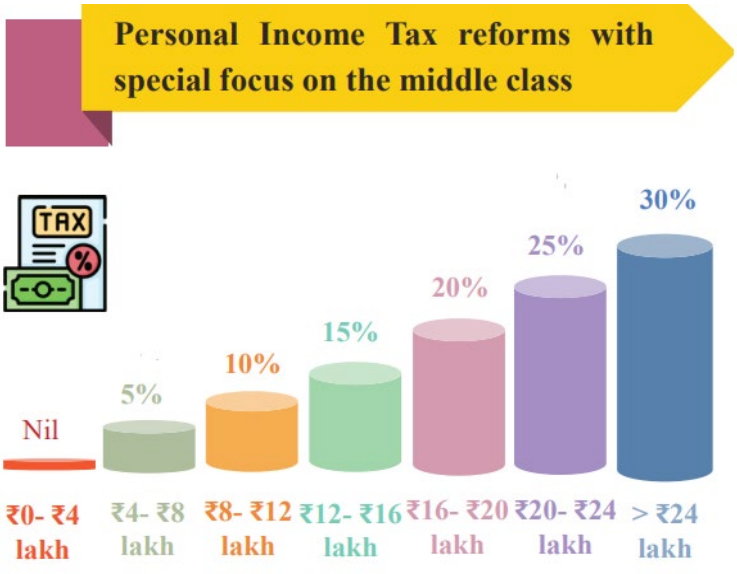
Reforms as Fuel: Financial Sector Reforms and Development	
Initiative	**Key Points**
FDI in Insurance Sector	- **FDI limit raised from 74% to 100%** for companies investing the entire premium in India
Credit Enhancement Facility by NaBFID	- **NaBFID to set up a 'Partial Credit Enhancement Facility'** for corporate bonds for infrastructure
Grameen Credit Score	- Public Sector Banks to develop **'Grameen Credit Score'** framework - Serve the credit needs of SHG members and people in rural areas
Pension Sector	- Forum for regulatory coordination and development of pension products
High Level Committee for Regulatory Reforms	- Review of all non-financial sector regulations, certifications, licenses, and permissions
Investment Friendliness Index of States	- will be **Launched in 2025** to further the spirit of competitive cooperative federalism
Jan Vishwas Bill 2.0	- Decriminalize more than **100 provisions in various laws**

Part B: Direct Tax

Personal Income Tax

Initiative	Key Points
Tax-Free Income Limit	- **No personal income tax** payable up to **income of ₹ 12 lakh (₹ 1 lakh per month)** - Excludes special rate income such as capital gains
Tax-Free Limit for Salaried Taxpayers	- **₹ 12.75 lakh for salaried taxpayers** due to standard deduction of **₹ 75,000**
Benefits of New Structure	- Substantially reduce taxes for the middle class, Boost household consumption, savings, and investment, Leave more money in the hands of the middle class
New Income-Tax Bill	- Clear and direct tex, Simple to understand for taxpayers and tax administration - Lead to tax certainty and reduced litigation
Revenue Foregone	- **About ₹ 1 lakh crore in direct taxes**

Revised Tax Rate Structure



TDS/TCS Rationalization for Easing Difficulties

Initiative	Key Points
TDS Rationalization • TDS (**Tax Deducted at Source)** is the tax which is deducted on a payment made by a company to an individual, in case the amount exceeds a certain limit.	- Reduction in the number of rates and thresholds above which TDS is deducted
TDS Limit for Senior Citizens	**- Doubled from ₹ 50,000 to ₹ 1 lakh for tax deduction on interest**
TDS Limit on Rent	- Increased from ₹ 2.40 lakh to ₹ 6 lakh annually
TCS Threshold for LRS • TCS **(Tax Collected at Source)** is the tax which is collected by sellers while selling something to buyers. • LRS **(Liberalized Remittances Scheme)** is a scheme by the Reserve Bank of India that allows Indian residents to send money abroad for personal reasons. The scheme was introduced in 2004 to make it easier for people to send money abroad for a variety of reasons.	Increased from ₹ 7 lakh to ₹ 10 lakh
Higher TDS Deduction	**- Applies only in non-PAN cases**
Decriminalization of TCS Delay	- Decriminalization for cases of delay in payment of TCS up to the due date of filing statement

Reducing Compliance Burden

Initiative	Key Points
Small Charitable Trusts/ Institutions	- Increased registration period from **5 years to 10 years**
Self-Occupied Properties	- Benefit of claiming the annual value as nil extended for two such properties without any condition

Ease of Doing Business

Initiative	Key Points
Arm's Length Price Scheme	- Scheme for determining arm's length price of international transactions for a block period of three years
Safe Harbour Rules	Under this clause, a **fund will be exempt if it does not have a business connection in India.**
National Savings Scheme (NSS)	- Exemption of withdrawals made by individuals **on or after August 29, 2024**
NPS Vatsalya Accounts • NPS (National Pension System) is a defined-contribution pension system in India regulated by the Pension Fund Regulatory and Development Authority which is under the jurisdiction of the Ministry of Finance.	- Similar treatment as normal NPS accounts, subject to overall limits

Employment and Investment

Initiative	Key Points
Tax Certainty for Electronics Manufacturing	- Presumptive taxation regime **for non-residents providing services** to resident companies establishing or operating electronics manufacturing facilities
Safe Harbour for Tax Certainty	- Introduction of a safe harbour for non-residents storing components for supply to specified electronics manufacturing units

Tonnage Tax Scheme for Inland Vessels

Initiative	Key Points
Tonnage Tax Scheme Extension	- Benefits of the existing tonnage tax scheme extended to inland vessels registered under the **Indian Vessels Act, 2021**, Promotes inland water transport in the country

INDIRECT TAX

Rationalization of Customs Tariff Structure for Industrial Goods

Initiative	Key Points
Removal of Tariff Rates	- 7 tariff rates removed (in addition to seven removed in 2023-24), 8 remaining tariff rates, including 'zero' rate
Application of Cess	- Appropriate cess to maintain effective duty incidence, Marginal reduction in incidence for a few items
Levy of Cess/ Surcharge	- Not more than one cess or surcharge, Social Welfare Surcharge on 82 tariff lines exempted
Revenue Foregone	**- About ₹ 2,600 crore in indirect taxes**

Relief on Import of Drugs/Medicines

Initiative	Key Points
Exemption from BCD (Basic Customs Duty)	BCD refers to **the tax imposed on the goods when they are transported across the** international borders. The customs duty is levied under the Customs Act 1962. **- 36 lifesaving drugs** and medicines fully exempted from BCD - Specified drugs and medicines under **Patient Assistance Programmes fully exempted** **- 37 more medicines added along with 13 new patient assistance programmes**
Concessional Customs Duty	- 6 lifesaving medicines to attract concessional customs duty of 5%

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Support to Domestic Manufacturing and Value Addition

Initiative	Key Points
Critical Minerals	- **Cobalt powder and waste, scrap of lithium-ion battery, Lead, Zinc**, and **12 more critical minerals fully exempted from BCD**
Textiles	- 2 more types of shuttle-less looms fully exempted from textile machinery, BCD rate on knitted fabrics revised from **"10% or 20%" to "20% or ₹ 115 per kg, whichever is higher"**
Electronic Goods	- BCD on Interactive Flat Panel Display (IFPD) increased from **10% to 20%, BCD reduced to 5% on Open Cell and other components**, BCD on parts of Open Cells exempted
Lithium Ion Battery	- **35 additional capital goods for EV battery manufacturing exempted** - 28 additional capital goods for mobile phone battery manufacturing exempted
Shipping Sector	- Exemption of BCD on raw materials, components, consumables, or parts for the manufacture of ships extended for another 10 years, Same dispensation to continue for ship breaking
Telecommunication	**- BCD reduced from 20% to 10% on Carrier Grade ethernet switches**

Export Promotion

Initiative	Key Points
Handicraft Goods	- Time period for export extended from six months to one year, further extendable by another three months if required**, 9 items added to the list of duty-free inputs**
Leather Sector	- BCD on Wet Blue leather fully exempted, **Crust leather exempted from 20% export duty** • It refers to unfinished hides that have been dehaired and tanned with chromium salts and chromium sulfate.
Marine Products	- **BCD reduced from 30% to 5% on Frozen Fish Paste (Surimi)** for manufacture and export of its analogue products, **BCD reduced from 15% to 5% on fish hydrolysate** for manufacture of fish and shrimp feeds
Domestic MROs for Railway Goods	- Railways MROs to benefit similarly to aircraft and ships MROs in terms of import of repair items - Time limit extended for export of such items from 6 months to one year and made further extendable by one year

Union Minister of Finance and Corporate Affairs Smt. Nirmala Sitharaman also said that **Democracy, Demography and Demand** are **key pillars of Viksit Bharat journey. She said that the middle class gives strength of India's growth and the Government has** periodically hiked the **'Nil tax' slab in recognition to their contribution.** She said the proposed new tax structure will **substantially boost consumption, savings and investment, by putting more money in the hands of the middle class.**

3. RBI Cuts Repo Rate

1. The **Monetary Policy Committee (MPC) of the Reserve Bank of India (RBI)** has **cut the repo rate by 25 basis points (bps) to 6.25%** under the **Liquidity Adjustment Facility (LAF)**.
2. This marks the first such cut in nearly **five years**, signaling a shift in RBI's monetary policy approach.

Key Decisions by MPC

1. **Repo Rate Cut:** The **policy repo rate** has been **reduced by 25 bps to 6.25%** to support economic growth.
2. **Retaining a 'Neutral' Monetary Policy Stance:** A **neutral stance** means RBI will remain flexible and **adjust policy rates** based on economic conditions rather than committing to a specific direction.
3. **GDP Growth Projection for FY 2025-26:** The **GDP growth rate** for **FY 2025-26 is projected at 6.7%**, indicating moderate economic recovery.

4. **Inflation Outlook**
    a. **Food inflation** is expected to **soften significantly**, easing pressure on household expenses.
    b. **Core inflation** (excluding food and fuel) is anticipated to **rise but remain moderate**, maintaining price stability.

Rationale Behind MPC's Decisions

1. **Declining Inflation:** Inflation levels have **fallen**, allowing RBI to **ease interest rates** without compromising price stability.
2. **Economic Recovery:** Growth is **expected to recover** from the low observed in **Q2 of FY 2024-25**.
3. **Global Uncertainties:** Persistent **volatility in global financial markets** and **uncertainties in trade policies** have influenced policy adjustments.
4. **Impact of Weather Events: Adverse climatic conditions** pose risks to food production and inflation stability.

Liquidity Adjustment Facility (LAF)

1. The **Liquidity Adjustment Facility (LAF)** is a **monetary policy tool** used by **central banks to manage liquidity** in the banking system.
2. It comprises two key rates:
    a. **Repo Rate:** The interest rate at which the **RBI lends money to commercial banks** to meet short-term liquidity needs.
    b. **Reverse Repo Rate:** The interest rate at which **banks can deposit their surplus funds with the RBI** to earn interest.

4. Gross Domestic Knowledge Product: A New Measure for India's Knowledge Economy

1. The Union Ministry of Statistics and Programme Implementation (MoSPI) recently organized a session on the **"Conceptual Framework of Gross Domestic Knowledge Product (GDKP) Measurement."**
2. This follows an earlier discussion in 2021 when **NITI Aayog** introduced the concept through a presentation.
3. The **GDKP framework aims to measure the contributions of knowledge-driven sectors, innovation, and intellectual assets** to India's economic growth.
4. It also evaluates the impact of knowledge on economic and social life. To advance this initiative, MoSPI will establish a **technical committee** to assess the proposal and develop a structured methodology for measuring the knowledge economy.

Need for GDKP

1. **Enhancing Economic Metrics:** GDKP provides a better framework to measure knowledge sectors, innovation, and intellectual assets that drive India's economic growth.
2. **Supplementing the GDP Measure:** While **GDP (Gross Domestic Product)** primarily captures tangible economic activities, **GDKP supplements it by incorporating intangible knowledge-based contributions.**
3. **Aligning with Global Standards**
    a. Advanced economies are integrating **intangible assets, digital innovation, and intellectual capital** into economic assessments.
    b. India aims to **align its GDKP framework with global methodologies** to remain competitive.
4. **Guiding Policy Innovation for Key Sectors**
    a. A clear GDKP framework will help shape **effective policies for education, research, technology, and entrepreneurship development.**
    b. It will provide insights into how knowledge contributes to economic advancement, aiding policymakers in resource allocation.

Challenges in Implementing GDKP in India

1. **Conceptual Challenges**
    a. No **universally accepted methodology** exists for measuring the knowledge economy.
    b. **Integrating traditional, indigenous, and informal knowledge systems** into a structured framework remains complex.

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2. **Data Collection and Measurement Issues:** India lacks a **centralized database** to track knowledge-related outputs such as **patents, research publications, and innovation metrics.**
3. **Quality vs. Quantity Debate**
   a. The sheer volume of research papers, patents, or educational degrees **does not necessarily indicate meaningful knowledge contribution.**
   b. Ensuring that knowledge metrics **reflect real economic and social impact** is a key challenge.
4. **Economic Constraints**
   a. India's knowledge economy is still at a **nascent stage**, with limited translation of research into **economic value through patents, startups, and innovation-driven industries.**
   b. Strengthening innovation ecosystems, funding research, and fostering entrepreneurship are necessary to overcome these hurdles.

5. New Harmonised System Codes for GI-Tagged Rice

1. India has introduced new **Harmonised System (HS) codes** for **Geographical Indication (GI)-tagged rice varieties** to facilitate smoother exports.
2. This was achieved through an amendment to the **Customs Tariff Act (1975)**, ensuring that GI-recognized rice can be exported without requiring **special notifications from the Ministry of Finance.**

Understanding the Harmonised System (HS)

1. **What is the Harmonised System (HS)?**

The **Harmonised System (HS)** is a globally recognized **product classification system** developed by the **World Customs Organization (WCO)**. It serves as a standardized system for categorizing traded goods.

2. **Structure of HS Classification**
   a. The HS assigns **specific six-digit codes** for various classifications and commodities.
   b. Countries can further refine classifications by **adding additional digits** beyond the first six.
3. **Governance and Updates**
   a. The HS system is governed by the **International Convention on the Harmonized Commodity Description and Coding System.**
   b. The **HS Committee**, consisting of **member countries**, manages the classification system and updates it every **5–6 years** to reflect trade developments.
4. **Global Adoption and Implementation**
   a. The HS classification system is used in **98% of international trade.**
   b. It encompasses **over 5,000 commodity groups.**
   c. More than **200 countries and economies** have adopted the HS system for trade regulations.
5. **Key Benefits of HS Codes**
   a. Provides a **common coding method** that helps countries **organize and track products** in global trade.
   b. Extensively used by **governments, international organizations, and private entities** for trade policies, internal taxation, and market analysis.
   c. Reduces **international trade costs** and supports **economic research** by enabling consistent and transparent classification of goods.

Significance of HS Codes for GI-Tagged Rice

1. The introduction of **dedicated HS codes for GI-tagged rice** will **streamline exports** and prevent administrative hurdles.
2. It will **enhance India's recognition in the global market** for its unique and traditional rice varieties.
3. The amendment ensures that **exporters no longer require special notifications**, simplifying trade procedures.

6. Regulation of Payment Systems in India

1. The **Reserve Bank of India (RBI)** has released the **'Payment System Report, December 2024'**, which provides an in-depth analysis of trends in **payment transactions** over the last **five calendar years (CY), up to CY-2024**.
2. This **bi-annual report** evaluates the growth and evolution of **India's payment ecosystem**, particularly in digital transactions.

Key Findings of the Report

1. Surge in Digital Payment Transactions

a. In **2013**, there were **222 crore digital transactions** amounting to **₹772 lakh crore**.

b. By **CY-2024**, digital transactions have **grown 94 times in volume** and **over 3.5 times in value**, highlighting India's rapid transition toward a digital economy.

2. Growth of Unified Payment Interface (UPI)

a. **UPI transactions** have recorded a **Compound Annual Growth Rate (CAGR)** of **74.03% in volume** and **68.14% in value** over the past **five years**.

b. UPI continues to be the **dominant digital payment mode** in India, driving financial inclusion and digital adoption.

3. Credit and Debit Card Trends

a. The **number of credit cards** has **more than doubled** in the last **five years**, reflecting an increase in consumer credit and online transactions.

b. Meanwhile, **debit card usage has remained relatively stable**, as consumers increasingly shift toward **UPI and other digital payment methods.**

4. India's Participation in Global Payment Initiatives

a. India has joined **Project Nexus**, a framework aimed at **multilateral linkage of Fast Payment Systems (FPS)** among: **Malaysia, Philippines, Singapore, Thailand and India.**

b. **Project Nexus**, conceptualized by the **Bank for International Settlements (BIS)**, facilitates **instant cross-border retail payments** by interlinking domestic **FPS platforms**.

Understanding Payment Systems in India

1. **Definition:** Payment systems are mechanisms designed to **facilitate the clearing and settlement** of **monetary and financial transactions.**
2. **Role of RBI:** As the regulator, **RBI oversees, develops, and enhances** the efficiency and security of India's **payment infrastructure**.
3. **Key Components:** India's payment ecosystem consists of multiple channels, including **UPI, card networks, digital wallets, and Real-Time Gross Settlement (RTGS) systems.**

7. India's Graduate Skill Index 2025

1. In February 2025, **Mercer-Mettl** released **India's Graduate Skill Index 2025** which offers critical insights into the employability of Indian graduates, focusing on the challenges and opportunities in an AI-driven world.
2. With industries evolving rapidly due to artificial intelligence (AI) and automation, the need for a skilled workforce capable of adapting to these changes has never been greater.

Key Findings

The **India's Graduate Skill Index 2025** report provides critical insights into employability trends, offering data on the strengths and weaknesses of Indian graduates across various sectors and skill sets.

1. **Overall Employability Decline**
   a. **Employability rate** of Indian graduates has slightly **decreased** to **42.6% in 2024** from **44.3% in 2023**. This decline is primarily driven by a drop in employability for **non-technical roles**.
   b. **Employability in technical fields** such as **AI and machine learning** has seen **improvement**, reflecting the increasing demand for such specialized skills.
2. **High Proficiency in AI & Machine Learning (ML) Roles**
   a. **46.1%** of graduates are **employable in AI and machine learning (ML) roles**, the **highest employability rate** among technical fields.
   b. AI-related job roles are emerging as a key area of employability due to the **industry's shift towards automation and digital transformation**.

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3. **Soft Skills – A Critical Area of Development**
   a. **50%** of Indian graduates possess essential **soft skills** such as **communication**, **critical thinking**, and **leadership**, which are crucial for working in collaboration with AI.
   b. However, **Creativity** remains a challenge, with an employability rate of **44.3%** in this area, indicating a gap that needs attention in educational systems.
4. **Learning Agility as an Essential Skill**
   a. **Learning agility**, or the ability to quickly acquire new skills and knowledge, is seen as essential for navigating the future job market.
   b. **46%** of graduates are proficient in learning agility, a crucial trait for adapting to evolving job roles.
5. **Gender Disparity**
   a. **Male graduates** show a slightly higher employability rate (**43.4%**) compared to **female graduates** (**41.7%**).
   b. While gender parity is observed in fields like **AI & ML** and **data science**, but in other roles, such as **software testing**, gender-specific challenges persist.
6. **Regional Disparities in Employability**
   a. **Delhi** reports the **highest employability rate** (**53.4%**), followed by **Himachal Pradesh** (**51.1%**) and **Punjab** (**51.1%**).
   b. **Uttar Pradesh**, **West Bengal**, and **Assam** show lower employability rates, suggesting the need for region-specific skill development initiatives.
7. **Institutional Performance**
   a. Graduates from **Tier 1 colleges** maintain the highest employability at **48.4%**, followed by **Tier 2 (46.1%)** and **Tier 3 (43.4%)** institutions.
   b. **Tier 2 colleges** have particularly excelled in specialized technical roles like **UI/UX development**, with an employability rate of **58.3%**.
8. **Demand in Non-Technical Roles: Financial analysts** and **sales/business development professionals** have been identified as the most employable in **non-technical fields**, with **45.4%** and **45.3%** employability rates, respectively.

Challenges in Graduate Employability

1. **Gaps in the Education System**
   a. **Indian colleges** often focus more on theoretical knowledge than on developing **practical skills**, leaving graduates unprepared for job-specific tasks.
   b. This is especially noticeable in non-technical roles, such as **digital marketing** and **human resources**, where practical, hands-on experience is crucial.
2. **Impact of AI on Job Roles**
   a. **Automation and AI** are significantly **transforming traditional job roles**. **28% of employers** believe that a major transformation of technical skills will be necessary for **1/3rd of their talent base** by **2025** to stay competitive.
   b. This highlights the need for continuous upskilling to meet the demands of an AI-driven economy.
3. **Soft Skills Deficit**
   a. Many graduates still lack essential **workplace skills**, including **communication**, **teamwork**, and **critical thinking**.
   b. This soft skills gap, particularly in non-technical domains, hinders overall employability.

Initiatives to Improve Employability

1. **Skill Development Programs**
   a. **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)** and the **Jan Shikshan Sansthan (JSS)** scheme focus on equipping youth with job-ready skills.
   b. These programs aim to provide training in **industry-specific skills** and increase employability in areas such as **manufacturing**, **services**, and **technology**.

2. **Gender-Specific Programs**
   a. **Stand Up India** and **Women in Science and Engineering-KIRAN (WISE-KIRAN)** aim to improve **women's employability** in traditionally male-dominated fields like **engineering** and **technology**.
3. **AI & Digital Skill Initiatives**
   a. The **IndiaAI mission**, launched by the Indian government, is aimed at promoting **AI innovation** and establishing **AI labs** in Tier 2 and Tier 3 cities to build a future-ready workforce.
   b. The **IndiaAI future skills program** aims to enhance **AI education** and ensure the expansion of **AI skills** across diverse regions in India.

8. Potash Mining in India

1. The Government of India is set to **explore Potash mining in Punjab's Fazilka and Sri Muktsar Sahib districts** as part of its efforts to reduce import dependence.
2. Surveys by the **Geological Survey of India (GSI)** have also identified significant **Potash reserves in Rajasthan**, highlighting the potential for domestic production.

What is Potash?

1. Potash is an **impure combination of potassium carbonate and potassium (K) salts**.
2. **Principal Ore: Sylvinite** is the most common ore used for Potash extraction.

Uses of Potash

1. **Agriculture (Major Use – Over 90%)**
   a. Potash is a key component of fertilizers and is one of the three primary nutrients in agriculture, alongside **Nitrogen (N) and Phosphorus (P)**, collectively forming the **N-P-K ratio**.
   b. The ideal nutrient ratio for optimal plant growth is **4:2:1 (N:P:K)**.
2. **Water Purification: Potash alum** is used for **removing water hardness** and has **antibacterial properties**, making it essential in water treatment.
3. **Industrial Applications:** Used in the **manufacturing of glass, ceramics, soaps, detergents, and explosives**.

Common Types of Potash Fertilizers

1. **Sulphate of Potash (SOP)** – A premium-grade Potash fertilizer.
2. **Muriate of Potash (MOP)** – The most widely used Potash fertilizer.
3. **Potash Derived from Molasses (PDM):**
   a. A **100% indigenous fertilizer** under the **Nutrient-Based Subsidy (NBS) scheme**.
   b. **NBS Scheme:** Provides fertilizer subsidies based on the **actual nutrient content** (Nitrogen, Phosphorus, and Potassium).

Potash as a Critical Mineral

Under the **Mines & Minerals (Development and Regulation) Amendment (MMDR) Act, 2023**, Potash has been **classified as a critical mineral**, emphasizing its **strategic importance** for India's agricultural and industrial needs.

Economic Status of Potash in India

1. **Potash Reserves in India**
   - **Rajasthan:** Holds **89% of India's Potash deposits**.
   - **Madhya Pradesh:** Accounts for **5%** of Potash reserves.
   - **Uttar Pradesh:** Contains **4%** of Potash reserves.
2. **Import Dependency:** According to the **Indian Mineral Yearbook 2022**, India **meets 100% of its Potash requirement through imports**, making domestic exploration and production a key priority.

9. MoM Classifies Barytes, Felspar, Mica, and Quartz as Major Minerals

1. In **February 2025**, the **Ministry of Mines (MoM)** issued a gazette notification shifting **Barytes, Felspar, Mica, and Quartz** from the list of **Minor Minerals** to the **Major Mineral category**.
2. This decision aligns with the objectives of the **National Critical Mineral Mission (NCMM)**, which was approved by the **Union Cabinet on January 29, 2025**.

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National Critical Mineral Mission (NCMM)

1. The **National Critical Mineral Mission** aims to enhance India's **self-sufficiency in critical minerals**, which are essential for technological advancements. Key objectives of the mission include:
   a. **Recovery of critical minerals** from other minerals and overburden.
   b. **Supporting domestic production** of minerals needed for **electric vehicles, renewable energy, spacecraft, and healthcare sectors**.
   c. **Reducing import dependence** on critical minerals such as **Lithium, Beryl, and Tantalum**.
2. The reclassification of **Barytes, Felspar, Mica, and Quartz** as **major minerals** is aligned with these goals, as these minerals contain **associated critical minerals** that are crucial for **India's strategic and industrial needs.**

Why Were These Minerals Reclassified?

The primary objective of this reclassification is to ensure that mining operations focus not only on extracting the primary minerals but also on scientifically recovering associated critical minerals. **Key reasons include:**

1. **Enhancing Mineral Extraction Efficiency:**
   a. **Quartz, Felspar, and Mica** occur in **pegmatite rocks**, which also contain critical minerals like **Lithium, Beryl, Niobium, Tantalum, Tin, and Tungsten**.
   b. **Barytes** is often associated with **Antimony, Cobalt, Copper, Lead, Manganese and Silver**.
      - **Baryte** is widely used in various industrial applications, including:
        - **Oil and gas drilling** (as a weighting agent in drilling fluids).
        - Electronics, TV screens, rubber, glass, ceramics, and paint manufacturing.
        - **Radiation shielding** in **hospitals, power plants, and laboratories** (due to its high density).
   c. The new classification will promote **comprehensive mining** that targets both primary and critical minerals.
2. **Boosting India's Strategic Resource Security:**
   a. The shift will **increase domestic production** of essential materials for the **energy transition, semiconductor, and aerospace industries**.
   b. This move is key to reducing reliance on **imports from China and Australia**.
3. **Implementing Stringent Regulatory Standards:**
   a. Major minerals require stricter exploration and mining regulations under the Mines and Minerals (Development and Regulation) Act, 1957 **(MMDR Act).**
   b. This ensures **systematic extraction, better reporting, and responsible environmental practices**.

Implications of the Reclassification

1. **Extended Mining Lease Periods**
   - The **lease period for mines** extracting these minerals will now be extended to **50 years** (compared to the shorter periods under the minor mineral classification).
   - Existing leases will be adjusted accordingly, ensuring a smooth transition.
2. **Regulatory Oversight by the Indian Bureau of Mines (IBM)**
   - Mining operations for these minerals will now be **monitored under major mineral regulations**, ensuring higher accountability and scientific extraction methods.
3. **Smooth Transition Period**
   - A **four-month transition period**, until **June 30, 2025**, has been provided to facilitate regulatory adjustments and compliance.
4. **No Change in Revenue Sharing Model**
   - **State governments** will continue to receive revenue from these minerals as before, ensuring that the transition does not impact local economies.

Benefits of the Reclassification

1. **Scientific Identification and Recovery of Critical Minerals**
   - Mining operations will now prioritize the **extraction of critical elements** like Lithium, Beryl, and Tantalum, ensuring optimal utilization of India's mineral resources.
2. **Strengthening India's Technological and Energy Sectors**
   a. The increased domestic supply of essential minerals will support **electronics manufacturing, battery production, and renewable energy technologies**.
   b. Sectors such as **space exploration, defense, and healthcare** will benefit significantly from this move.
3. **Reduced Dependence on Imports**
   a. By increasing domestic mineral production, India can **cut reliance on imports from mineral-rich countries like China and Australia**.
   b. This will enhance **India's economic security and industrial self-reliance**.

About MMDR Act, 1957

1. The **Mines and Minerals (Development and Regulation) Act, 1957** is an Act of the Indian Parliament that governs the development and mining of minerals in India.
2. **Commencement**: The Act came into force on a date designated by the **Central Government**.

Features of the MMDR Act

1. The MMDR Act applies to the **entire country** of **India**, covering all aspects of mineral exploration, extraction, and regulation.
2. The Act provides provisions for obtaining the following:
   - **Prospecting Licenses** (for exploring minerals)
   - **Mining Leases** (for extracting minerals)
   - **Reconnaissance Permits** (for preliminary exploration activities)
3. The Act includes detailed rules for regulating the **grant** and **terms** of these licenses and leases, ensuring transparency and proper management.
   - It imposes **general restrictions** on activities related to: Mining, Prospecting and Reconnaissance operations
4. These restrictions ensure that mining activities are carried out in an organized and sustainable manner.

Amendments to the MMDR Act

1. The Act has been amended multiple times, with significant changes introduced in **1986**, **1994**, and **2023**.
2. The 2023 amendment introduced a provision for the exploration license specific to critical minerals.
3. The amendment granted the **Central Government** the authority to auction mineral concessions specifically for **critical minerals**, thereby streamlining and enhancing the management of vital mineral resources.

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E. Science & Technology

1. Chandrayaan-3: Mapping the Lunar South Pole

1. India's Chandrayaan-3 mission has marked a significant milestone in lunar exploration, particularly in understanding and mapping the Moon's South Pole.
2. Researchers from the Physical Research Laboratory (PRL), Panjab University, and ISRO's Laboratory for Electro-Optics Systems have leveraged **Chandrayaan-3 data** to develop the **first high-resolution geological map of the region**.
3. This study provides crucial insights into the **Moon's terrain**, **resource distribution**, **and geological history**, laying the foundation for future lunar missions and potential human settlement.

Geological Mapping and Key Findings

1. The high-resolution map reveals an **undulating terrain** composed of highlands and plains, essential for identifying potential resource locations and crater formations.
2. **Chandrayaan-3's Pragyan rover** has played a crucial role in spectral analysis, offering valuable insights into the Moon's surface composition and secondary **crater ejecta**.
3. The detection of **sulfur and other elements** has deepened our understanding of **lunar mineralogy**, providing a better grasp of the Moon's formation and evolution.
4. Further analysis of Chandrayaan-3's data supports the **Magma Ocean Hypothesis**, indicating that the **Moon once had a partially molten subsurface**. Additionally, crater dating has revealed that parts of the **South Pole region are over 3.7 billion years old**, offering a preserved record of early solar system conditions.
5. The mission's findings also reinforce the **Giant Impact Hypothesis**, which suggests that the Moon was formed after a Mars-sized object collided with Earth.
6. These insights not only enhance our understanding of lunar geology but also strengthen the connection between Earth and its natural satellite.

Significance of the Moon's South Pole

The South Pole is a **scientifically and strategically important** region for future space missions due to its unique environmental conditions:

1. **Water Ice Reserves**: Permanently shadowed regions (PSRs) contain water ice, which can be used for drinking **water**, **oxygen extraction**, and **hydrogen-based rocket fuel**.
2. **Sustained Sunlight**: Peaks of Eternal Light receive continuous sunlight for over 200 Earth days, making them ideal for solar energy harvesting and long-term missions.
3. **Scientific Exploration**: Lunar regolith and ice deposits preserve records of early planetary formation, volatile compounds, and cometary impact history.
4. **Gateway for Deep Space Missions**: Establishing a lunar base at the South Pole could serve as a launch point for future Mars and deep-space missions, aligning with NASA's Artemis program.
5. **Global Interest**: Space agencies including **ISRO**, **NASA**, **CNSA**, and **Roscosmos** are prioritizing this region for scientific discoveries and resource utilization.
6. **Potential for Human Settlement**: The combination of water, sunlight, and essential minerals enhances the feasibility of future lunar colonization.

Challenges and Ethical Considerations

1. With increasing lunar exploration, concerns about **regolith disturbance** have emerged. Frequent landings and surface operations may alter volatile distribution, impacting future scientific studies.
2. Sustainable and responsible exploration is necessary to ensure **minimal ecological disruption** while **maximizing scientific and economic benefits**.

Future Considerations for Lunar Exploration

The insights gained from Chandrayaan-3 pave the way for long-term lunar exploration and sustainable resource utilization. Future efforts should focus on:

1. **Sustainable Resource Utilization**:
   a. Water ice extraction for life support and fuel production.
   b. Development of lunar mining technologies and responsible resource management.
2. **Lunar Habitat Development**:
   a. Establishing permanent research stations with advanced radiation shielding.
   b. Autonomous construction using lunar regolith for habitat development.
3. **Technological Advancements**:
   a. AI-powered robotic systems for navigation and construction.
   b. Enhanced solar power harvesting and thermal management.
4. **International Collaboration**:
   a. Coordination between ISRO, NASA, CNSA, ESA, and private enterprises.
   b. Development of standardized regulatory frameworks for peaceful and equitable exploration.
5. **Scientific Exploration and Astrobiology**:
   a. Deep-core drilling for lunar interior analysis.
   b. Study of potential microbial life signatures preserved in regolith.
6. **Challenges and Risk Mitigation**:
   a. Ensuring astronaut safety for long-duration lunar missions.
   b. Managing increased lunar traffic and its impact on scientific studies.

Key Lunar Missions and Their Contributions

Mission	Country	Year	Key Contribution
Luna 2	USSR	1959	First human-made object to impact the Moon
Apollo 11	USA	1969	First human landing on the Moon
Lunar Prospector	USA	1998	Indirect evidence of water ice at poles
Chang'e 1	China	2007	High-resolution lunar mapping
Chandrayaan-1	India	2008	Confirmed water molecules on the Moon
Chang'e 4	China	2019	First far-side Moon landing
Chandrayaan-2	India	2019	Orbiter operational; Vikram lander experienced hard landing
Chandrayaan-3	India	2023	First successful lunar landing at 'Shiv Shakti Point'; sulfur detection and geological advancements
Luna 25	Russia	2023	Attempted but failed South Pole landing
SLIM	Japan	2023	First pinpoint soft landing
Artemis II & III	USA	2024+	Crewed missions; first woman on the Moon

Chandrayaan-3's historic landing at the Moon's South Pole has cemented India's position as a key player in global lunar exploration. The detection of sulfur, potential water ice, and geological insights strengthens future lunar colonization efforts. With upcoming missions like **LUPEX** and **Chandrayaan-4**, ISRO aims to further scientific understanding and expand international space collaboration. The Moon's South Pole is set to become a hub for resource extraction, habitat construction, and deep-space missions, positioning India at the forefront of sustainable lunar exploration.

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2. Nasa Launches Satellite To Detect Water On The Moon

1. NASA's **Lunar Trailblazer** orbiter was successfully launched aboard a **SpaceX Falcon 9 rocket** from Kennedy Space Center, Cape Canaveral.
2. The **primary payload** of the mission was Intuitive Machines' **lunar lander (IM-2)**, which aims to drill beneath the Moon's surface to search for water.
3. The **Lunar Trailblazer** is a **secondary payload** designed to identify and map water on the Moon, particularly in permanently shadowed regions.

Objectives of Lunar Trailblazer

1. **Altitude & Orbit:** The orbiter will operate at approximately **100 km** above the lunar surface, conducting a series of flybys before settling into its mapping orbit.
2. **Scientific Goals:**
   a. Determine the **form, distribution, and abundance of water** on the Moon.
   b. Enhance understanding of the **lunar water cycle**.
   c. Guide **future human missions** in locating and extracting water resources.

Instruments on Board

Lunar Trailblazer carries two primary instruments to conduct its mission:

1. **Lunar Thermal Mapper (LTM)**
   a. Developed by the University of Oxford.
   b. Measures **lunar surface temperature** to understand how temperature influences water movement.
2. **High-resolution Volatiles and Minerals Moon Mapper (HVM3)**
   a. Identifies water presence by detecting unique **light reflection patterns**.
   b. Helps distinguish between water in different forms (ice, bound in minerals, etc.).

Importance of Lunar Water

Lunar water holds immense significance for space exploration:

1. **Drinking Water:** Processed into drinkable water for astronauts.
2. **Oxygen Supply:** Converted into **breathable oxygen**.
3. **Rocket Fuel:** Hydrogen extracted from water can serve as **fuel for rockets**.
4. **Deep Space Exploration:** Availability of water on the Moon can support long-term human missions and future exploration of **Mars and beyond**.

The Search for Water on the Moon

1. The Moon has been traditionally considered **dry**, but recent measurements suggest the presence of **small amounts of water** even in sunlit areas.
2. **Permanently shadowed craters** at the lunar poles could hold **significant ice deposits**.
3. Water could also be trapped in lunar rock and dust.
4. **Potential Sources of Lunar Water:**
   a. **Solar Wind Interaction:** Charged particles from the Sun may react with lunar minerals to form water.
   b. **Meteorite & Comet Impacts:** Water may have been deposited over billions of years.
   c. **Ancient Geological Processes:** Understanding lunar water can offer insights into the history of Earth and the Solar System.

3. Euclid Discovers 1st Einstein Ring: A Remarkable Milestone in Astrophysics

1. In February, 2025, the European Space Agency (ESA) announced a discovery by its Euclid space mission: the detection of a rare Einstein Ring around the galaxy NGC 6505.
2. This discovery is a major milestone in the **study of the Universe**, particularly in understanding **dark matter and dark energy.**

What is the Euclid Space Mission?

1. The Euclid space telescope**, launched by ESA in 2023** aboard a **SpaceX Falcon 9 rocket** from Cape Canaveral, Florida, is a mission dedicated **to studying the dark Universe**.
2. It aims to uncover the mysteries of **dark energy and dark matter** by mapping the shapes, distances, and motions of billions of galaxies across **one-third of the sky**, spanning over **10 billion light-years**.
   a. **Primary Objective:** Create the largest 3D cosmic map to reveal the distribution of dark matter and study the influence of dark energy on the Universe's evolution.

b. **Location:** Positioned 1.5 million km away from Earth at the **Lagrangian Point 2.**
   - A Lagrange point or libration points is a location in space where the gravitational pull of two large bodies precisely balances the centripetal force required for a smaller object to stay in place.

c. **Duration:** Expected to operate for **six years**, observing galaxies dating back 10 billion years.

Discovery of the Einstein Ring

1. During its early testing phase, which began in July 2023, Euclid sent test images to Earth in September 2023. Initially blurry, these images **hinted at an Einstein Ring**.
2. After further analysis and observations, scientists confirmed the ring's existence, leading to the official announcement in 2025.
   a. **Galaxy Involved:** The Einstein Ring was discovered around NGC 6505, a galaxy located nearly 590 million light-years away from Earth.
   b. **Lens Effect:** The ring was formed by light from an unnamed galaxy 4.42 billion light-years away, distorted by NGC 6505's gravitational pull.
   c. **Rarity:** Einstein Rings are extremely rare, found in less than 1% of galaxies. The first was discovered in 1987.

What is an Einstein Ring?

An Einstein Ring is a striking circular structure of light caused by gravitational lensing, a phenomenon **predicted by Albert Einstein's** General Theory of Relativity.

a. **Gravitational Lensing:** When a massive celestial object (such as a galaxy or dark matter) bends and magnifies light from a distant background object due to its gravitational pull.
b. **Conditions for Formation:** A perfect alignment between the observer (Euclid telescope), the lensing object (NGC 6505), and the background light source.
c. **Observation:** Not visible to the naked eye; can only be detected using powerful space telescopes like Euclid.

Why is This Discovery Important?

The detection of the Einstein Ring around NGC 6505 is crucial for multiple reasons:

1. **Understanding Dark Matter and Dark Energy**
   a. **Dark Matter:** A form of invisible matter that does not emit light or energy but is inferred from gravitational effects. It makes up most of the Universe's mass.
   b. **Dark Energy:** A mysterious force causing the accelerated expansion of the Universe, constituting approximately 68% of its total energy.
   c. **Significance:** Since dark matter does not interact with light, Einstein Rings allow indirect detection of its presence and distribution.
2. **Studying the Expansion of the Universe:** The bending and stretching of light through gravitational lensing provide valuable insights into how space expands over time.
3. **Probing Distant Galaxies:** Einstein Rings act as cosmic magnifying glasses, enabling scientists to study distant galaxies that would otherwise remain invisible.

Phenomena Similar to Einstein Rings

1. **Einstein Cross:** A rare gravitational lensing effect where light from a distant galaxy forms four distinct images around the foreground galaxy in a cross-like pattern.
2. **Strong Lensing vs. Weak Lensing:**
   a. **Strong lensing** results in clearly visible distortions such as Einstein Rings.
   b. **Weak lensing** causes subtle stretching or shifting of background galaxies, useful for studying large-scale cosmic structures.

Future Impact of the Euclid Mission

The detection of this Einstein Ring is just the beginning. Euclid is expected to discover over 100,000 strong lensing effects, significantly enhancing our understanding of the cosmos.

1. **Advancements in Astrophysics:**
   a. Revealing hidden structures in the Universe.
   b. Providing deeper insights into cosmic evolution.
   c. Improving models of gravitational lensing and general relativity.

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The discovery of the Einstein Ring by the Euclid space telescope is a major step forward in astrophysics. It confirms key predictions of Einstein's General Theory of Relativity and opens new avenues for studying dark matter, dark energy, and the large-scale structure of the Universe. As Euclid continues its mission, it is expected to uncover even more cosmic phenomena, transforming our understanding of the fundamental forces shaping the cosmos.

4. The Most Energetic Neutrino Ever Detected[1]

Recently, Astrophysicists have detected the most energetic neutrino ever observed, with an astonishing energy of 220 petaelectronvolts (PeV).

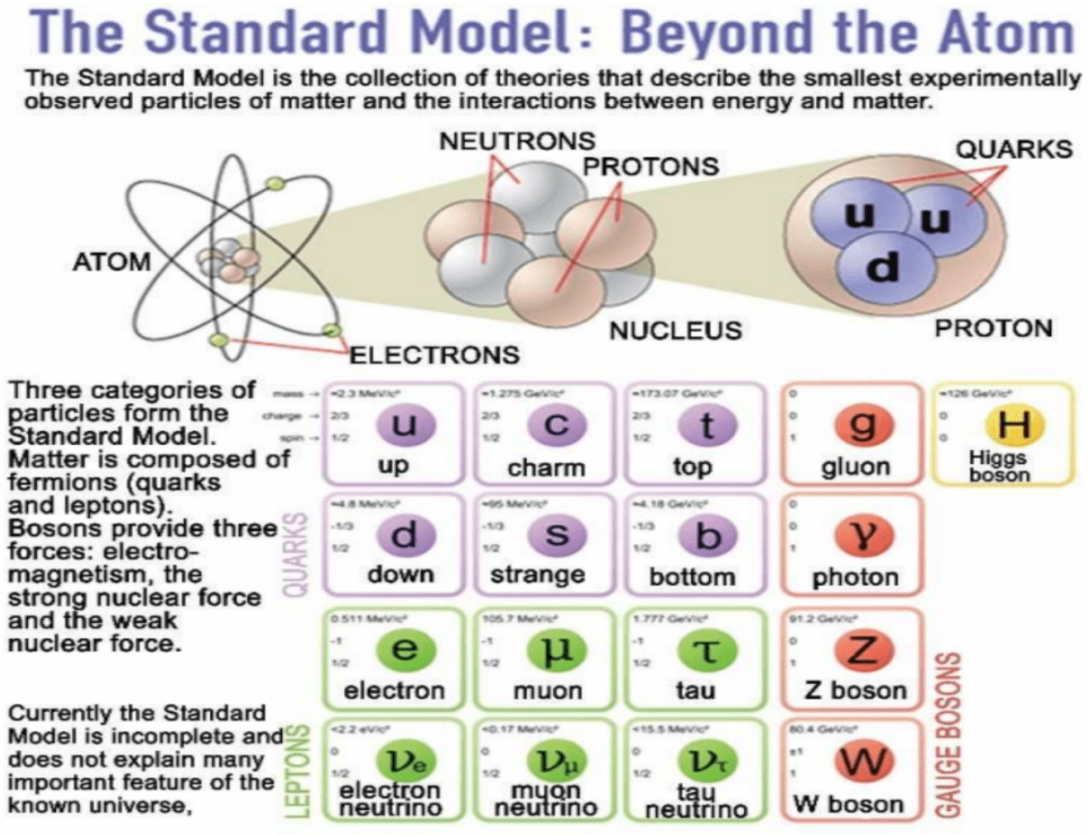
2. This discovery was made by the **Cubic Kilometre Neutrino Telescope (KM3NeT)**, an advanced underwater observatory still under construction at the **bottom of the Mediterranean Sea.**
3. The neutrino is estimated to have originated from beyond the Milky Way galaxy, marking a significant milestone in astroparticle physics.

Major Highlights of the Discovery

1. The detected neutrino had **30 times more energy** than any previously recorded neutrino.
2. **Extreme Energy Comparison:**
   a. **100 trillion times** more energy than a typical particle at the Sun's core.
   b. **Trillions of times** more energy than medical X-rays.
   c. **Ten billion times** more than the most hazardous radioactive particles.
   d. **Twenty thousand times** more energetic than any particle produced in the **Large Hadron Collider (LHC)**.
3. **Unknown Origin:** While its precise source remains undetermined, it is believed to have originated from outside the **Milky Way**.

What are Neutrinos?

Neutrinos belong to the category of **leptons** in the **Standard Model of Particle Physics**. They are unique subatomic particles with extraordinary properties:



a. **Electrically neutral** and **nearly massless**.
b. **Second-most abundant** particles in the universe after **photons**.
c. **Most abundant** among particles that constitute matter.
d. **Extremely elusive**, interacting weakly with matter, hence often called **"ghost particles"**.
e. **Can pass through entire planets and vast distances** undetected.

Types of Neutrinos

There are **three primary types** of neutrinos:

a. **Electron neutrino** (□e)
b. **Muon neutrino** (□μ)
c. **Tau neutrino** (□τ) These neutrinos are produced when their respective **leptons** (electron, muon, and tau) interact with matter.

Sources of Neutrinos

Neutrinos are produced by various astrophysical and nuclear phenomena:

a. Stars (including the Sun)
b. Supernovae
c. Galaxies
d. Nuclear reactions

Cubic Kilometre Neutrino Telescope (KM3NeT)

1. **KM3NeT** is an ambitious deep-sea neutrino observatory currently being built by an **international collaboration of over 300 scientists and engineers from 21 countries**.
2. Once completed, it will occupy a **cubic kilometre of seawater** and house over **6,000 light detectors** to track neutrino interactions.

Key Components of KM3NeT

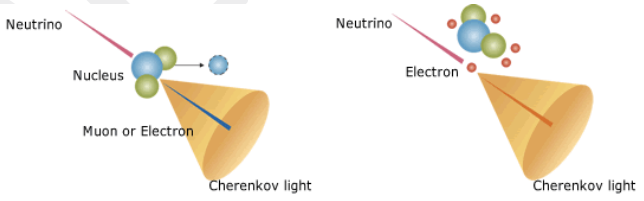
1. **ARCA (Astroparticle Research with Cosmics in the Abyss)**:
   a. Located **3.4 km deep** near **Sicily, Italy**.
   b. Focused on detecting **high-energy astrophysical neutrinos**.
2. **ORCA (Oscillation Research with Cosmics in the Abyss)**:
   a. Located **2.4 km deep** near **Provence, France**.
   b. Designed to study **low-energy neutrinos and neutrino oscillations**.

How Does KM3NeT Detect Neutrinos?

1. Neutrinos rarely interact with matter, making them extremely difficult to detect. However, in rare instances, a neutrino collides with a water molecule, leading to a cascade of secondary particles.
2. This results in the emission of **Cherenkov radiation**—a faint bluish glow that can be detected by KM3NeT's optical sensors.

Detection Process:

1. **Neutrino Collision:** A neutrino strikes a water molecule, creating secondary particles (e.g., muons).
2. **Cherenkov Radiation:** These particles travel **faster than light in water**, emitting **Cherenkov radiation**.
3. **Light Detection:** The light detectors of **KM3NeT** capture this glow.
4. **Data Analysis:** By analyzing the radiation pattern, scientists reconstruct the **neutrino's energy and trajectory**.



The generated charged particle emits the Cherenkov light.

Why is This Discovery Important?

The study of neutrinos is crucial for understanding fundamental questions in astrophysics and particle physics. This breakthrough could:

1. Provide **insights into the early universe**, potentially revealing conditions moments after the **Big Bang**.
2. Help explore the **Higgs mechanism and mass generation**, as neutrinos defy predictions of the **Standard Model** by possessing mass.
3. Lead to **new physics beyond the Standard Model**, as current theories struggle to explain neutrino properties fully.
4. Offer a **unique way to study deep-space objects**, since neutrinos travel unobstructed over cosmic distances, unlike photons which can be blocked by dust and other matter.

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Challenges and Future Prospects

Despite its success, the **KM3NeT project** faces challenges:

1. **Understanding the source:** Unlike other high-energy cosmic neutrinos, this event's origin remains unidentified.
2. **Comparison with IceCube:** The **IceCube Neutrino Observatory** in Antarctica, which has been operational since 2011, has yet to detect such high-energy neutrinos. This discrepancy raises questions about the rarity and nature of these extreme particles.
3. **Need for more data:** Further observations are essential to confirm the significance of this detection and unravel the mysteries of cosmic neutrinos.

With continued advancements in **neutrino detection technology**, future discoveries by KM3NeT and IceCube could revolutionize our understanding of **the universe, fundamental forces, and the physics beyond the Standard Model**.

Conclusion

The detection of the most energetic neutrino ever observed is a landmark event in astroparticle physics. With an energy of **220 PeV**, this ghost particle challenges existing theories and paves the way for groundbreaking discoveries. As KM3NeT progresses, scientists anticipate further revelations that could reshape our comprehension of **the cosmos and fundamental physics**.

5. Discovery of a Nascent Ultra-Diffuse Galaxy at the Tip of NGC 3785's Tidal Tail

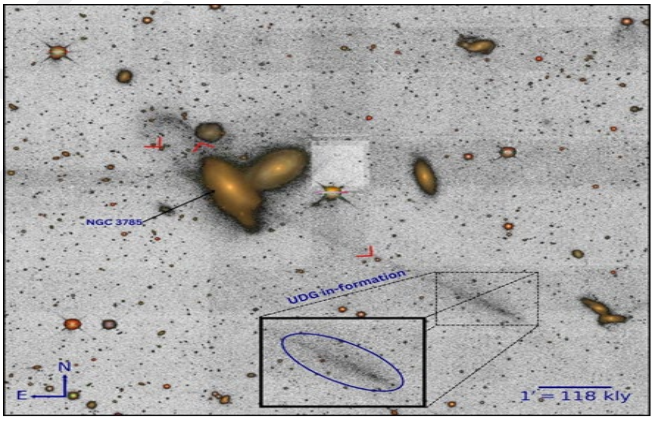
1. In January 2025, astronomers discovered a **nascent ultra-diffuse galaxy (UDG)** in the **Leo constellation**, 430 million light-years from Earth.
2. This galaxy is forming at the tip of the **longest-known tidal tail**, extending from **NGC 3785 galaxy**.
3. The discovery provides new insights into **galaxy evolution** and the formation of faint cosmic structures.

What is NGC 3785?

1. **NGC 3785** is a galaxy located in the **Leo constellation**, known for hosting the **longest tidal tail ever discovered**.
2. It has become a focal point for astronomers because of its extraordinary size and the unique phenomena occurring within its structure.

What is a Tidal Tail?

1. A **tidal tail** is a long, thin stream of stars and interstellar gas that extends from a galaxy as a result of gravitational forces, known as **tidal forces**.
2. These forces occur during **close interactions or mergers between galaxies**, where the gravitational pull distorts their shapes and pulls material away from them.
3. Tidal tails are formed **when two galaxies pass close to each other**, transferring material into elongated streams.
4. These features provide crucial insights into the history of galactic interactions and their effects on galaxy evolution.
5. The tidal tail of NGC 3785 stretches an astonishing **1.27 million light-years**, making it the longest tidal tail ever recorded.



How Was It Discovered?

1. **Initial study:** The tidal tail was first identified by **Omkar Bait**, a student at the **National Centre for Radio Astrophysics (NCRA)** in Pune. He observed the tail's unusual length and unique features during his study of NGC 3785.
2. **Detailed Analysis:** Using advanced image processing techniques, a thorough **photometric analysis** has been conducted to measure the tail's extent and properties accurately.
3. The study revealed its record-breaking length of 1.27 million light-years and star-forming clumps along the tail, indicating active processes of material accumulation and galaxy formation.

What are Ultra-Diffuse Galaxies (UDGs)?

1. **Ultra-diffuse galaxies (UDGs)** are **faint galaxies** with **extremely low surface brightness**. Unlike traditional galaxies, UDGs **contain fewer stars spread out over a larger area**, making them appear faint and diffuse.
2. UDGs are **challenging to detect** due to their low brightness.
3. Despite their faintness, they are of great interest because they provide clues about the formation and evolution of galaxies under unique conditions.

Formation of the UDG at NGC 3785's Tidal Tail

1. At the tip of NGC 3785's tidal tail, astronomers observed the **formation of a nascent UDG**. This galaxy appears to have formed due to gravitational interactions between NGC 3785 and a neighbouring galaxy.
2. The material pulled along the tidal tail accumulated at its tip, triggering **star formation** and leading to the emergence of the UDG.
3. The presence of **star-forming clumps** along the tidal tail offers critical evidence of these processes.

Why is This Discovery Significant?

1. **Insights into Galaxy Evolution:** This discovery provides a unique opportunity to study how faint and diffuse galaxies like UDGs are formed.
   a. It highlights the role of **gravitational interactions** between galaxies in shaping their structures.
   b. It demonstrates how material pulled into tidal tails can lead to the creation of entirely new galaxies over time.
2. **Importance of Studying Tidal Tails:** Tidal tails act as natural laboratories for understanding the dynamics of galaxy interactions.
   a. They allow astronomers to observe how galaxies exchange material during close encounters.
   b. The presence of star-forming regions along these tails provides valuable data on how new galaxies are formed in these extreme conditions.

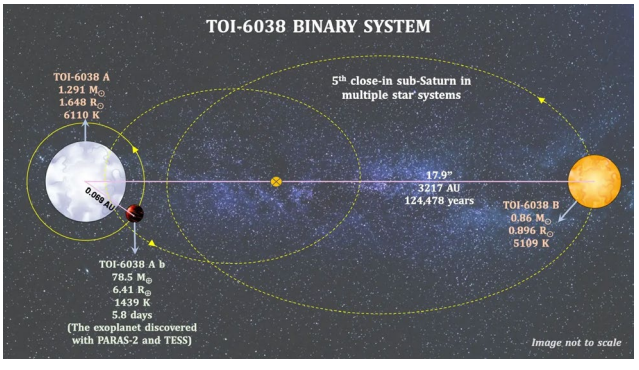
Upcoming Missions and Their Potential

Recent and upcoming advancements in observational technology are expected to revolutionize the study of faint galactic features:

1. **Euclid Space Telescope**: Recently launched, this mission is designed to detect faint features with high sensitivity and resolution.
2. **Rubin Observatory's Legacy Survey of Space and Time (LSST)**: This ground-based survey will systematically observe large areas of the sky, uncovering more tidal features and faint galaxies like UDGs.
3. These tools will enable astronomers to study **low surface brightness features**, refine theories about galaxy evolution, and uncover more instances of UDG formation.

6. Scientists Discover a Dense Sub-Saturn Planet Using PARAS-2 Spectrograph

1. In **February 12, 2025**, scientists from the **Physical Research Laboratory (PRL)**, Ahmedabad made a discovery: a new **exoplanet** (a planet outside our solar system), named **TOI-6038A b**.
2. This exoplanet, categorized as a **dense sub-Saturn**, has a mass of **78.5 times that of Earth** and a radius **6.41 times that of Earth**. It orbits a **bright, metal-rich F-type star** in a circular orbit with a period of **5.83 days**.
3. This discovery is significant as **sub-Saturns**—a class of planets that fall between Neptune-like and gas giants—are absent in our Solar System. Studying such exoplanets helps scientists understand planetary formation and evolution in diverse environments.



The TOI-6038 Binary System

The host star of TOI-6038A b, **TOI-6038A**, is part of **a wide binary system**, with a companion **K-type star (TOI-6038B)** located **3,217 AU away**. This binary system presents an intriguing case for studying planetary migration and formation dynamics.

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Key Features of TOI-6038A b

1. **Size & Mass**:
   a. Mass: **78.5 Earth masses**
   b. Radius: **6.41 Earth radii**
2. **Density**: **1.62 g/cm³**, making it one of the densest known sub-Saturn exoplanets.
3. **Orbital Period**: **5.83 days** in a circular orbit around its host star.
4. **Host Star (TOI-6038A)**: A **bright, metal-rich F-type star** in a binary system.
5. **Companion Star (TOI-6038B)**: A **K-type star** located **3,217 AU away**.

Significance of the Discovery

Advancement in Indian Astronomical Research

1. This is the **second exoplanet discovery** using the **PARAS-2 spectrograph**, attached to the **2.5-meter telescope** at PRL's **Mount Abu Observatory**.
2. It marks the **fifth exoplanet detection** using the combined efforts of **PARAS-1 and PARAS-2**, showcasing **India's growing expertise in advanced astronomical instrumentation**.
3. The **PARAS-2 spectrograph** is the **highest-resolution stabilized radial velocity (RV) spectrograph in Asia**, used to precisely measure the mass of exoplanets.

Planetary Formation and Migration Insights

1. TOI-6038A b likely formed through **high-eccentricity tidal migration (HEM)** or **early disk-driven migration**.
2. The **presence of a binary companion** raises questions about how external gravitational influences shape planetary orbits.
3. Despite the companion star's presence, initial analysis suggests **secular perturbations** may not fully explain TOI-6038A b's **close-in orbit**, making it a subject for further investigation.

Internal Structure and Composition

1. Preliminary analysis suggests that TOI-6038A b has a **massive rocky core** comprising about **75% of its total mass**.
2. The remaining **25% consists of a hydrogen-helium (H/He) envelope**, providing insights into the transition between **terrestrial planets and gas giants**.

Potential for Future Studies

1. The system's **brightness** makes it an **ideal candidate for atmospheric characterization** and **spin-orbit alignment studies**.
2. Further observations may help refine existing theories on **exoplanet migration** and uncover **undetected companions** that could influence the planet's evolution.

7. Microsoft's Majorana 1: Its 1st Quantum Computing Chip

1. In February 2025, Microsoft introduced its first quantum computing chip, **Majorana 1**, marking a significant milestone in the field of practical quantum computing.
2. Microsoft claims that Majorana 1 could enable quantum computers capable of solving meaningful, industrial-scale problems **in years, not decades**.
3. While independent scientists have raised doubts about this ambitious claim, they acknowledge that Microsoft has taken on a formidable challenge and that its efforts in this direction are noteworthy.

What is Quantum Computing?

Quantum computing is an advanced field that leverages the principles of quantum mechanics to solve complex problems beyond the capabilities of classical computers.

1. **Bits vs. Qubits**: Traditional computers use bits (0s and 1s), whereas quantum computers use **qubits**, which can exist in multiple states simultaneously (superposition).
2. **Superposition**: Enables quantum computers to process multiple solutions at once, leading to faster problem-solving.
3. **Entanglement**: When qubits are entangled, changing one qubit instantaneously affects the other, regardless of distance. This allows quantum computers to perform calculations exponentially faster than classical computers.

The Power of Quantum Computing

A fully functional quantum computer has the potential to revolutionize several fields:

1. **Cryptography**: Could break current encryption methods in seconds while enabling ultra-secure quantum communications.

2. **Drug Discovery & Materials Science**: Quantum simulations can model molecular interactions at an atomic level, accelerating medicine and material development.
3. **Artificial Intelligence & Optimization**: Enhances machine learning speeds and solves problems that traditional computers struggle with.
4. **Climate & Energy**: Improves carbon capture, nuclear fusion, and energy system efficiency.
5. **Example**: Google's quantum chip recently solved a problem in five minutes that would take a classical supercomputer longer than the age of the universe.

What is Majorana 1 and Why is it Important?

Majorana 1 is a groundbreaking quantum chip that utilizes **topological qubits**, offering several advantages:

1. **Smaller**: 100 times smaller than traditional qubits.
2. **More Stable**: Naturally protected from external interference, reducing computational errors.
3. **Scalable**: Capable of supporting up to **one million qubits**, compared to current chips that handle around 1,000 qubits.

How Does Majorana 1 Work?

Majorana 1 is based on **Majorana Zero Modes (MZMs)**—a special type of quantum particle that Microsoft has successfully engineered.

1. **Topoconductor Material**: Microsoft developed a new material, **topoconductors**, by combining indium arsenide (a semiconductor) with aluminum (a superconductor).
2. **Topological Superconductivity**: Cooling the material to near absolute zero and applying specific magnetic fields creates a special superconducting state that stabilizes Majorana qubits.
3. **Digital Control**: Unlike traditional analog-based quantum systems, Majorana 1 uses digital pulses to control qubits, making large-scale quantum computing easier.

Key Features of Majorana 1

1. First quantum chip powered by Topological Core architecture.
2. Utilizes topoconductors (Topological Superconductors), creating a new state of matter beyond solids, liquids, or gases.
3. Built from indium arsenide (semiconductor) and aluminum (superconductor) to enhance stability.
4. Relies on Majorana fermions, unique subatomic particles that act as their own antiparticles.
5. Features eight qubits initially, with potential expansion to one million.
6. **Applications**:
   - Breaking down microplastics.
   - Creating self-healing materials.
   - Improving healthcare solutions.
   - Advancing chemistry and materials science.

Why is Majorana 1 a Game Changer?

1. **Less Error-Prone**: Unlike traditional qubits, which require complex error correction, Majorana qubits are inherently stable, needing less correction.
2. **Scalability**: With the ability to fit up to **one million qubits** on a single chip, it brings large-scale, fault-tolerant quantum computing closer to reality.
3. **Revolutionary Architecture**: Uses the **Topological Core architecture**, ensuring superior performance in quantum computations.

The Science Behind Majorana Particles

Microsoft named the chip "Majorana 1" because it consists of **Majorana particles**, a unique type of subatomic particle with unusual properties:

1. A **Majorana particle is its own anti-particle**.
2. In contrast, other matter-forming particles (fermions) have distinct anti-particles. For example, the **electron's anti-particle is a positron**, and the **proton's anti-particle is an anti-proton**.
3. However, uniquely among fermions, a **Majorana particle's anti-particle is another Majorana particle**.
4. If two Majorana particles meet, they annihilate each other in a flash of energy.
5. One of the major open questions in contemporary physics is whether **neutrinos** are also Majorana particles.

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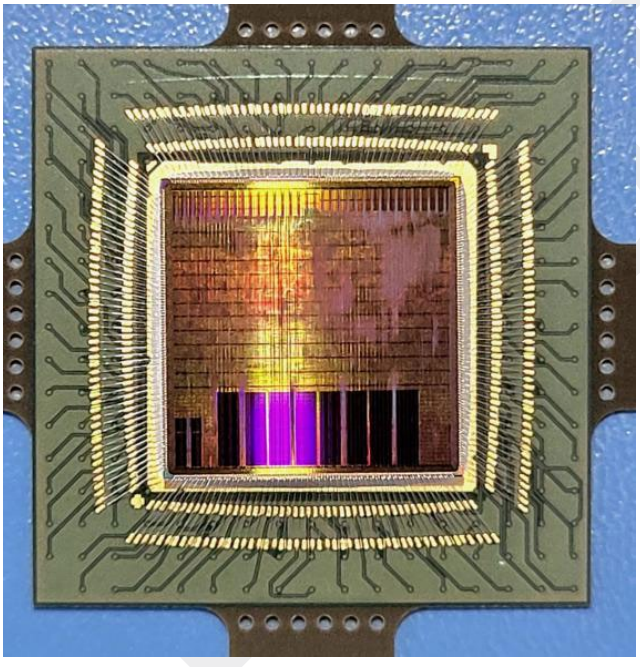
Why Microsoft's Majorana 1 Stands Out?

1. **Fewer Qubits Required**: Unlike competitors such as **Google's Willow and IBM's chips**, Majorana 1 requires fewer qubits to achieve superior performance.
2. **Lower Error Rates**: Ensures more reliable quantum computations compared to rival technologies.
3. **Combining AI and Quantum**: Can unlock real-world solutions, such as breaking down microplastics into harmless byproducts.

While there are still challenges ahead, **Majorana 1 represents a bold leap forward in quantum computing**. If successful, it could accelerate progress in fields such as cryptography, materials science, AI, and sustainable technology. Whether Microsoft's ambitious claim of solving industrial-scale problems within years rather than decades holds true remains to be seen, but one thing is clear: **the future of computing is being redefined**.

8. IIT Madras and ISRO Develop Indigenous Shakti-Based Semiconductor Chip



In February 2025, the Indian Institute of Technology (IIT) Madras and the Indian Space Research Organisation (ISRO) have developed and successfully an indigenous aerospace-grade **Shakti-based semiconductor chip**, named **IRIS (Indigenous RISC-V Controller for Space Applications)**.

About the IRIS Chip

1. **Foundation & Technology**:
   a. The IRIS chip is based on the SHAKTI microprocessor, developed by IIT Madras.
   b. It utilizes the **RISC-V architecture**, an open-source processor technology.
   c. Developed under the **'Digital India RISC-V' (DIRV) initiative**, backed by the **Ministry of Electronics and Information Technology (MeitY)**.
2. **Predecessors & Evolution**:
   a. IRIS is the **third SHAKTI-based chip**, following **RIMO (2018)** and **MOUSHIK (2020)**.
   b. While RIMO and MOUSHIK were technology demonstrators, IRIS is optimized for performance and reliability.

Key Features of IRIS

1. **Designed for Space Applications**:
   a. Supports ISRO's command and control systems.
   b. Enhances reliability with **fault-tolerant internal memories**.
   c. Includes **custom modules** such as **watchdog timers** and **advanced serial buses**.
   d. Configured to meet the **computing requirements of ISRO's existing sensors and systems**.
2. **Future-Ready & Scalable**:
   a. Supports **multiple boot modes**.
   b. Provides **hybrid memory/device extensions** for future missions.
3. **Fully Indigenous Manufacturing**:
   a. Conceptualized by IISU, Thiruvananthapuram.
   b. Designed & developed at IIT Madras.
   c. Fabricated at Semiconductor Laboratory (SCL), Chandigarh (180 nm technology node).
   d. Packaged by Tata Advanced Systems Ltd., Karnataka.
   e. Motherboard PCB manufactured in Gujarat; software developed and tested at IIT Madras.

Significance of IRIS

1. **Advances India's 'Make in India' mission**:
   a. Demonstrates India's capability in end-to-end semiconductor design and fabrication.
   b. Strengthens India's position in the global semiconductor industry.
2. **Strategic Importance**:
   a. Reduces dependence on foreign semiconductor technology.
   b. Enhances national security by **indigenizing critical components for space missions**.
   c. Enables the **development of advanced microprocessor-based products**.
3. **Applications Beyond Space**:
   a. Can be utilized in **launch vehicles, ground stations, IoT, and industrial IoT applications**.

Understanding RISC-V and SHAKTI

What is RISC-V?

1. **RISC-V (Reduced Instruction Set Computing - V)** is an open-standard **Instruction Set Architecture (ISA)**.
2. Unlike proprietary ISAs, **RISC-V is freely available** for customization.
3. Provides a **flexible and cost-effective alternative** to commercially available architectures.

India's Contribution to RISC-V

1. **SHAKTI Series (IIT Madras)**: India's first indigenous RISC-V microprocessors.
2. **VEGA Microprocessors (C-DAC)**: Another initiative to develop India's microprocessor ecosystem.

9. ISRO Develops World's Largest Solid Propellant Mixer

1. In February 2025, Indian Space Research Organisation (ISRO) has developed the **world's largest solid propellant mixer.**
2. This **10-ton Vertical Propellant Mixer**, developed by ISRO's Satish Dhawan Space Centre (SDSC) SHAR in collaboration with the Central Manufacturing Technology Institute (CMTI), Bangalore, a premier R&D organization under the Ministry of Heavy Industries.

Importance of the Propellant Mixer

1. Solid propellants are crucial for rocket motors that launch satellites and other spacecraft.
2. These propellants require precise mixing of hazardous ingredients to ensure safety and efficiency.
3. The newly developed 10-ton Vertical Mixer allows ISRO to increase production capacity for solid propellants, enabling larger and more frequent space missions.
4. With this advancement, ISRO strengthens its capabilities in the global space industry.

Technical Specifications

1. **Weight**: 150 tons
2. **Dimensions**: 5.4 m (length), 3.3 m (breadth), 8.7 m (height)
3. **Mixing Mechanism**: Hydrostatic-driven multiple agitators
4. **Control System**: PLC-based with SCADA stations for remote operation, ensuring safety and precision.

Key Features

1. **High Capacity**: Can mix 10 tons of propellant in a single batch, improving production efficiency.
2. **Precision Engineering**: Designed to ensure accurate mixing of ingredients for better-quality rocket motors.
3. **Safety Enhancements**: Remote-controlled operation and safety systems minimize risks associated with handling hazardous materials.

Impact on India's Space Program

1. Enhances India's self-reliance in critical space technology under the Atmanirbhar Bharat initiative.
2. Enables ISRO to increase the production of solid rocket motors, boosting the frequency and scale of space missions.
3. Strengthens India's position as a key player in the global space sector.

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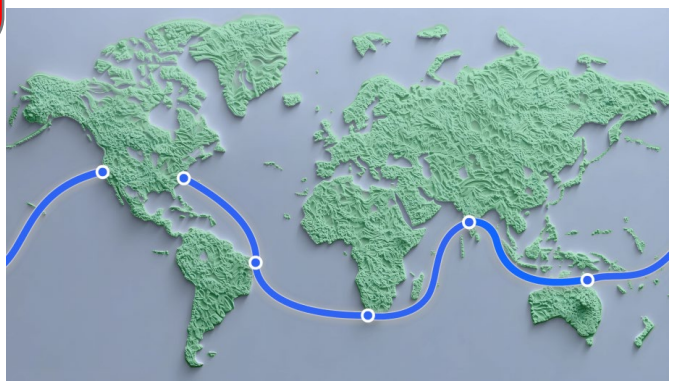
10. Meta to Build World's Longest Subsea Fibre Cable - Project Waterworth



1. Meta Platforms (formerly Facebook) has announced the plan to build the **world's longest subsea fibre-optic cable**, known as **Project Waterworth**.
2. This massive project will stretch over **50,000 kilometers**, connecting **5 continents**.
3. It is part of **Meta's growing investment** in **physical infrastructure to support its digital services.**

Key Features of Project Waterworth:

1. The cable will connect **five continents**: the **United States, India, Brazil, South Africa**, and other key regions.
2. It will use **24-pair fibre-optic technology**, which is the highest capacity available for data transfer today.
3. The cable's faster data transfer will help promote **economic cooperation** between regions and bring **more people online**, especially in emerging markets.
4. **95%** of **intercontinental data traffic is carried by subsea cables,** making them critical to global communication.
5. The cable will be laid at a depth of **up to 7,000 meters (23,000 feet)**, which avoids common sea traffic and disturbances from shallow waters.
6. In areas like coastlines, special **burial techniques** will be **used to protect the cable from damage in high-risk zones**, such as those **prone to earthquakes or extreme conditions.**
7. This subsea cable will support Meta's growing focus on **artificial intelligence (AI)** and help improve its **AI-powered data centers** and other technologies.
8. Meta plans to invest **up to $65 billion** in AI infrastructure this year alone, a larger sum than analysts had expected.
9. A part of this budget will go toward building a new platform to develop **AI-powered humanoid robots**.
10. The exact cost of the cable has not been disclosed, but reports suggest that **Project Waterworth** could cost around **$2 billion**.
11. The project is expected to take **several years** to complete, as it is a **multi-billion-dollar** investment.

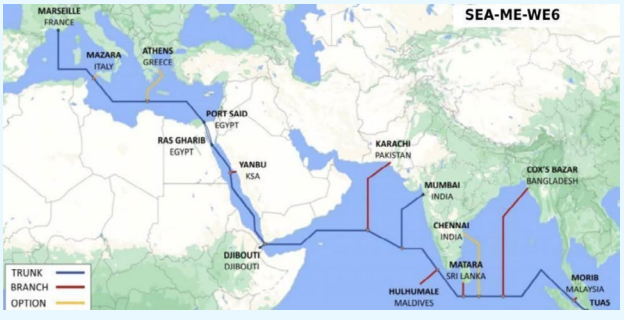
Comparison to Other Cable Projects:

12. Meta had **previously contributed** to the construction of the **2Africa subsea cable launched in 2020**, which currently holds the title of the longest subsea cable at **45,000 kilometers**.
13. The **2Africa** cable connects **33 countries** across **Africa, Europe, the Middle East, and Asia** and is supported by major telecom companies such as **Telecom Egypt**, **China Mobile**, and **Vodafone**.

Is there any other Subsea Cable Projects which is Connecting India

India is playing an active role in **submarine cable resilience** and security, which is crucial for **global internet connectivity**.

India's Undersea Cable Expansion



1. **New Cable Systems**: India is also l**aunching 2 new undersea cable systems:**
   a. **India Asia Xpress (IAX)**: Connects India (Chennai, Mumbai) with Singapore, Thailand, and Malaysia.
   b. **India Europe Xpress (IEX)**: Connects India (Chennai, Mumbai) with France, Greece, Saudi Arabia, Egypt, and Djibouti.
2. **Cable Length**: Over **15,000 km** collectively.
3. **Ownership**: Both cables are owned by **Reliance Jio**.

Importance of Cable Resilience and Security

1. India's focus on **submarine cable security** is increasing due to threats of physical damage and cyberattacks.
2. India is involved in the **International Advisory Body for Submarine Cable Resilience (IABSR)**, aiming to strengthen the resilience of submarine cables globally.

Impact of Submarine Cable Disruptions

1. In **March**, three submarine cables were disrupted, affecting traffic to India.
2. Despite disruptions, **alternative routes** and **Indian data centers** helped maintain internet services.

Bangladesh Connectivity Issue

1. Bangladesh halted plans to sell bandwidth to Northeast India, but this has **limited impact** because Northeast India is already connected via **fiber on Power Grid transmission lines**.
2. Over **half of Bangladesh's internet traffic** comes from India.

Vulnerability of Choke Points

1. A key vulnerability is the **Malacca Strait**, a critical route for undersea cables between India and Singapore.
2. Disruptions here could impact multiple cables.
3. India is exploring alternative routes to **bypass the Malacca Strait** but has no current solution.

11. India's first Automated Bio-Medical Waste Treatment Plant

1. In February 2025, India's **first indigenous Automated Bio Medical Waste Treatment Plant** launched at **AIIMS, New Delhi**.
2. The Automated Biomedical Waste Treatment Rig, named **"Sṛjanam,"** was developed by **CSIR NIIST** (National Institute for Interdisciplinary Science and Technology), **Thiruvananthapuram**.

What is Bio-medical waste?

1. Biomedical waste is any waste that is generated during the **diagnosis, treatment, or immunization of human beings or animals**, or in the **research activities** for production or testing of biologicals.
2. **The Biomedical Waste Management Rules**, 2016 provides a framework for the proper handling, treatment, and disposal of biomedical waste. Its features include:
   a. **Applicability:** The ambit of the rules has been expanded to include vaccination camps, blood donation camps, surgical camps or any other healthcare activity**.**
   b. **Pre-treatment of waste**: Through disinfection or sterilisation on-site in the manner as prescribed by World Health Organization (WHO) or by the National AIDS Control Organisation (NACO).
   c. **Establish a Bar-Code System:** For bags or containers containing bio-medical waste for disposal.
   d. **Phase-out** the use of chlorinated plastic bags, gloves and blood bags within two years (starting from March 2016).
   e. **Segregation of waste:** Into 4 categories based on its nature, typically using color-coded bins

12. Amendments to Genetic Engineering Appraisal Committee Rules

1. In January 2025, the **Union Ministry of Environment, Forest, and Climate Change (MoEF&CC)** has introduced significant amendments to the rules governing the **Genetic Engineering Appraisal Committee (GEAC)**.
2. These changes aim **to enhance transparency, accountability, and trust** in the regulation of **genetically modified (GM) crops** and organisms in India.

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What is Genetic Engineering Appraisal Committee (GEAC)?

1. The GEAC, a **statutory body under the Environment (Protection) Act, 1986**, is tasked with overseeing activities related to genetically modified organisms (GMOs) and hazardous microorganisms. The body appraises:
   a. Research and industrial applications involving GMOs.
   b. Proposals for the release of genetically engineered organisms and their products.
   c. Environmental and risk assessments associated with GM technologies.
2. **Composition of GEAC:** The GEAC is chaired by a senior official from the MoEF&CC and co-chaired by a representative from the **Department of Biotechnology (DBT)**.

Its membership includes scientists, environmentalists, and policymakers to ensure diverse expertise in decision-making.

In 2013, the Coalition for GM-Free India alleged a conflict of interest involving a Technical Expert Committee member, who was associated with an organization funded by Monsanto, a leading multinational biotech company.

Amendments to the GEAC Rules

1. **Disclosure of Interests**: Every member of the GEAC must now clearly declare any personal or professional connections that might affect their ability to make unbiased decisions.
   - Members must provide a written list of their professional associations from the last 10 years when they join the committee. This helps the GEAC identify any potential conflicts of interest early.
2. **Conflict of Interest**: If a member is connected in any way (directly or indirectly) to a matter under discussion, they must inform the committee before the discussion starts.
   a. These members are generally expected to stay out of the decision-making process for such topics unless the committee specifically requests their input.
   b. Members are also required to update their declarations if new situations arise that could create a conflict of interest. If there is any doubt about whether a conflict exists, the chairperson of the committee will decide.
3. **Transparency in Decision-Making**: These rules aim to ensure that decisions are unbiased and based solely on scientific and environmental considerations.
4. **Public Involvement**: The government has opened the amendment notification for public feedback. Citizens can submit objections or suggestions within 60 days of the announcement.

What is the Supreme Court's Role behind this?

1. In July 2023, the Supreme Court delivered a split verdict on the government's 2022 conditional approval of GM mustard for environmental release. The key directives included:
   a. **National Policy on GM Crops**: The court directed the Centre to establish a comprehensive national policy for GM crops.
   b. **Conflict of Interest Resolution**: The court emphasized the need for a systematic approach to address potential conflicts of interest.

Potential Implications of Conflict of Interest

1. **Bias in Decision-Making**: Favouring specific companies or technologies could undermine the integrity of GEAC decisions.
2. **Compromised Public Trust**: Undisclosed conflicts can erode confidence in regulatory bodies and their processes.
3. **Regulatory Weakness**: Unaddressed conflicts might result in ineffective regulation, prioritizing private over public interests.
4. **Legal and Ethical Concerns**: Conflicts could lead to ethical violations or legal challenges, damaging the credibility of the regulatory framework.
5. **Economic Impacts**: Promoting certain products due to biased decisions might pose risks to public welfare and environmental safety.

What is Genetic Modification?

1. **Genetic modification (GM)** involves inserting DNA into a host organism's genome to introduce new or altered traits.
2. In agriculture, this technology is used to create plants with specific characteristics, such as resistance to pests, diseases, or environmental conditions.

Methods of Producing GM Crops

1. **Direct Approach**: Techniques like gene gun, electroporation, and microinjection introduce the desired gene directly into plant cells.
   Example: Gene gun method uses DNA-coated gold or tungsten particles to deliver genes.
2. **Agrobacterium tumefaciens-mediated Gene Transfer**: Utilizes a soil bacterium, A. tumefaciens, known as "nature's genetic engineer." Modified Ti plasmids are used to transfer genes without causing diseases in plants.

Applications of GM Crops

1. **Biofortification**: Enhancing micronutrient content in crops (e.g., Golden Rice).
2. **Edible Vaccines**: Producing vaccines using GM plants to reduce costs and side effects.
3. **Biofuels**: Using GM algae and cyanobacteria for sustainable energy production.
4. **Phytoremediation**: Cleaning up pollutants using genetically modified plants.

Regulatory Framework in India

India has a stringent regulatory framework for GM crops to ensure safety and sustainability:

1. **Recombinant DNA Advisory Committee (RDAC)**: Monitors national and international biotechnology developments.
2. **Review Committee on Genetic Manipulation (RCGM)**: Approves high-risk experiments and field trials.
3. **Genetic Engineering Appraisal Committee (GEAC)**: Evaluates and approves GM organisms and their products for release.
4. **State Biotechnology Coordination Committee (SBCC)**: Monitors state-level GM activities and ensures compliance.

Status of GM Crops in India

1. **Bt Cotton**: Commercialized in 2002, significantly boosting cotton production.
2. **Bt Brinjal**: Approved in 2009 but placed under a 10-year moratorium due to public concerns. Field trials resumed in 2020-2023.
3. **GM Mustard**: Yet to begin commercial cultivation despite conditional approvals.

Advantages and Disadvantages of GM Crops

Advantages of GM Crops	Disadvantages of GM Crops
1. **Better Than Conventional Breeding**: Faster and more precise introduction of traits. Enables cross-species gene transfer. 2. **Pest and Disease Resistance**: Bt crops produce toxins that protect against pests, reducing pesticide use. Virus-resistant traits improve crop productivity. 3. **Drought and Herbicide Tolerance**: Reduces dependence on water and soil-disturbing practices. Promotes sustainable agricultural practices. 4. **Enhanced Nutritional Value**: GM crops can be enriched with vitamins and minerals to improve food security.	1. **Health Concerns**: Potential horizontal gene transfer leading to unintended ecological consequences. 2. **Resistance Issues**: Pests and weeds may develop resistance to GM traits (e.g., glyphosate-resistant weeds). 3. **Impact on Genetic Diversity**: Risk of reducing genetic diversity among crops and their wild relatives. 4. **Effects on Pollinators**: Concerns about the impact of GM crops on pollinator populations.

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13. Intensified Special NCD Screening Drive Launched

1. The **Ministry of Health & Family Welfare** has introduced the **Intensified Special Non-Communicable Disease (NCD) Screening Drive** to improve early detection and management of NCDs across India.
2. This initiative aims to ensure comprehensive screening of individuals aged **30 years and above**, covering common NCDs and three major cancers—**Oral, Breast, and Cervical cancer**.

Key Highlights of the Screening Drive

1. **Objective**: Achieve **100% screening** for NCDs and common cancers among individuals aged **30 years and above**.
2. **Implementation Strategy**: Conducted through **Ayushman Arogya Mandirs (AAMs)** and **other healthcare facilities nationwide** under the **National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD)**.
3. **Role of Ayushman Arogya Mandirs (AAMs)**: These centers, established under the **Ayushman Bharat** initiative, have upgraded **existing rural and urban Primary Health Centers (PHCs) and Sub-Centers** to provide better healthcare services, including NCD screening.

Understanding NP-NCD (National Programme for Prevention and Control of Non-Communicable Diseases)

Background & Evolution

1. **2010**: Initially launched as the **National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases, and Stroke (NPCDCS)** under the **11th Five-Year Plan**, covering **100 districts across 21 states**.
2. **12th Five-Year Plan**: Aimed at **phased expansion** to cover **all districts in India**.
3. **2013-14**: Integrated into the **National Health Mission (NHM)**, a **centrally sponsored flagship scheme**, to enhance access to **affordable and quality healthcare services**.

Objectives of NP-NCD

1. **Promote Health Awareness**: Encourage **behavioral change** through active participation from the **community, civil society, and media**.
2. **Early Detection & Management**: Implement **screening, diagnosis, treatment, and follow-ups** at various healthcare levels to ensure **continuity of care**.
3. **Capacity Building & Strengthening Healthcare Infrastructure**:
   a. Enhance **supply chain management** for **medicines, equipment, and logistics**.
   b. Implement **a standardized digital monitoring system** for improved evaluation.

What Are Non-Communicable Diseases (NCDs)?

NCDs are **chronic health conditions** that do not spread from person to person. They generally develop **over a long period** and result from **genetic, physiological, environmental, and behavioral factors**.

Major Types of NCDs

1. **Cardiovascular Diseases (CVDs)** – Includes **heart attacks and strokes**.
2. **Cancers** – Various types, including **oral, breast, and cervical cancer**.
3. **Chronic Respiratory Diseases** – Such as **asthma and chronic obstructive pulmonary disease (COPD)**.
4. **Diabetes** – Affects **blood glucose levels** and increases health complications.

When linked to unhealthy lifestyle choices, these conditions are often referred to as **"lifestyle diseases."**

Key Risk Factors for NCDs

Behavioral Factors	Metabolic Factors	Environmental Factors
Tobacco Use (including passive smoking)	High Blood Pressure (Hypertension)	Outdoor Air Pollution
Unhealthy Diet (high salt, sugar, and fat intake)	Overweight/Obesity	Indoor Air Pollution

Behavioral Factors	Metabolic Factors	Environmental Factors
Harmful Alcohol Consumption	High Blood Glucose (Diabetes)	Stress
Lack of Physical Activity	Abnormal Blood Lipid Levels (High Cholesterol)	

The Growing Burden of NCDs

Global Scenario

1. NCDs are the **leading cause of death and disability worldwide**, accounting for **74% of total deaths**.
2. **77% of NCD-related deaths occur in low- and middle-income countries**.
3. **Four major NCDs** responsible for **over 80% of premature deaths annually**:
   a. **Cardiovascular diseases (17.9 million deaths)**
   b. **Cancers (9.3 million deaths)**
   c. **Chronic respiratory diseases (4.1 million deaths)**
      - **Diabetes (2.0 million deaths)**

India's NCD Burden

1. **NCDs contribute to 60% of total deaths in India**.
2. **Higher out-of-pocket medical expenditure**: Travel and treatment costs place financial strain on families.
3. **Impact on life expectancy**: Among lower education groups, life expectancy is significantly reduced due to **high mortality from NCDs between ages 30–69**.
4. **Economic Impact**: WHO projects that the **economic burden of NCDs in India will exceed ₹280 lakh crore by 2030**.
5. **Poverty & Social Impact**: NCDs **increase healthcare costs**, slowing down **poverty reduction efforts** in low-income groups.
6. **Gender Disparity**: Women are more affected, with a prevalence of **62 per 1,000 women** compared to **36 per 1,000 men**.

Initiatives for NCD Prevention & Control

Global Efforts

1. **Sustainable Development Goal (SDG) 3.4**: Targets **one-third reduction in premature NCD mortality by 2030**.
2. **WHO Global Action Plan (2013–2030)**: Strengthens NCD prevention and control efforts worldwide.
3. **Global NCD Compact (2020–2030)**: Focuses on **accelerating global progress in tackling NCDs**.

Indian Initiatives

1. **Affordable Medicines and Reliable Implants for Treatment (AMRIT)**: Provides **low-cost medicines** for **cancer and cardiovascular diseases**.
2. **Eat Right India Movement** (by FSSAI): Promotes **healthy eating habits**.
3. **Fit India Movement (2019)**: Encourages **physical fitness and an active lifestyle**.
4. **National Oral Health Programme**: Enhances **oral healthcare services** within existing health facilities.
5. **National Mental Health Programme (NMHP) (1982)**: Aims to improve **access to mental healthcare services**.
6. **National Programme for Healthcare of Elderly (NPHCE) (2010)**: Addresses **age-related health concerns**.
7. **National Tobacco Control Programme (NTCP) (2007-08)**: Works towards **reducing tobacco consumption and awareness** of its harmful effects.

Recommendations for Effective NCD Prevention & Control

1. **Integrated Approach**
   - Collaboration across **health, education, finance, transport, and agriculture sectors** is necessary to **address NCD risk factors comprehensively**.
2. **Better NCD Management**
   - **Investment in early detection, screening, and treatment** through **primary healthcare systems** is crucial for timely intervention.
3. **Leverage Digital Health Technologies**
   - **Telemedicine, mobile health apps, and AI-driven diagnostics** can significantly improve access to healthcare.
   - An estimated **investment of $0.24 per patient per year** in digital health interventions could **save over 2 million lives in the next decade**.

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4. **Fiscal Policies to Reduce Risk Factors**
   - **Higher taxes on tobacco, sugar, and salt** can help in reducing consumption and promoting healthier choices.
5. **Life-Course Approach**
   - Policymakers should integrate **NCD prevention with social protection schemes, labor policies, and long-term care programs**.
6. **Strengthening Healthcare Infrastructure**
   - Increased **government investment** and **public-private partnerships** are necessary to **address regional disparities** in NCD treatment facilities.

14. Indian Scientists Discover Universal Cancer Biomarkers for Non-Invasive Diagnosis

1. Indian researchers have identified common metabolites across multiple cancer types, including **pancreatic cancer** and **glioma** (a type of brain and spinal cord cancer).
2. This breakthrough offers the potential for **universal cancer biomarkers**, providing a **promising non-invasive method** for early cancer detection and treatment strategies.
   - A **non-invasive method refers** to a medical procedure or diagnostic test that does not require surgery or penetration of the body with instruments.
   - Instead, it relies on techniques such as blood tests, imaging scans, or fluid analysis to detect diseases, making it safer, painless, and more convenient for patients.

What Are Biomarkers?

A biomarker (biological marker) is a measurable indicator of biological processes in a cell or organism. These markers can be detected in blood, body fluids, or tissues and serve various medical applications, including:

1. **Disease Diagnosis:** Enables non-invasive early detection of cancers.
2. **Personalized Treatment:** Helps tailor treatment based on an individual's unique genetic or molecular profile.
3. **Monitoring Treatment Response:** Tracks how effectively a patient is responding to therapy.

The Need for Reliable Cancer Biomarkers

1. Aggressive cancers like pancreatic and glioma are often diagnosed in later stages, leading to poor survival rates.
2. The absence of early detection methods underscores the urgent need for non-invasive and reliable biomarkers in cancer diagnostics.
3. **Exosomes**, tiny extracellular vesicles, play a crucial role in carrying tumor-derived metabolites, offering valuable insights into the tumor microenvironment (TME) and cancer progression.

Research Breakthrough by Indian Scientists

A team from the **Institute of Nano Science and Technology (INST), Mohali**, an autonomous institute under the **Department of Science and Technology (DST),** has made a significant advancement in cancer biomarker research.

a. Researchers successfully identified **metabolites in exosomes derived from pancreatic, lung, and glioma cancer cell lines**.

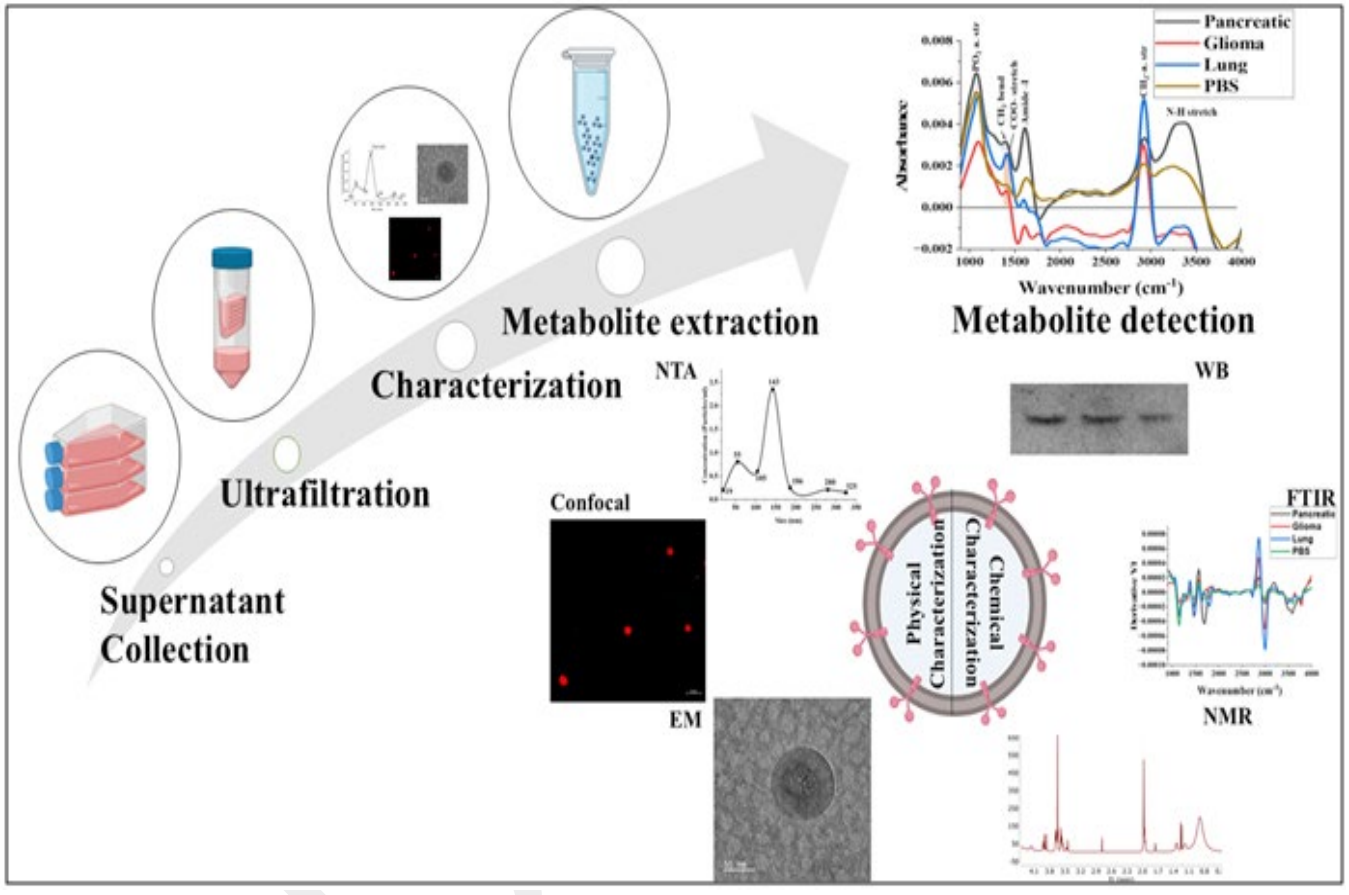
b. These metabolites show potential as **universal cancer biomarkers**, improving cancer diagnostics and treatment strategies.

Advanced Research Techniques Used

The study employed a **multi-technique approach** to analyze exosomes, surpassing conventional single-method studies. Techniques used include:

1. **Nanoparticle Tracking Analysis (NTA)** – Measures particle size and concentration.

2. **Electron Microscopy (EM)** – Provides detailed imaging of exosomes.
3. **Western Blot (WB)** – Detects specific proteins in exosomes.
4. **Fourier Transform Infrared Spectroscopy (FTIR)** – Analyzes molecular compositions.
5. **Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)** – Identifies and quantifies metabolites.
6. **Nuclear Magnetic Resonance (NMR)** – Provides insights into metabolic interactions within TME.



Impact on Cancer Diagnosis and Treatment

1. The identified metabolites highlight **dysregulated metabolic pathways** in the tumor microenvironment, offering deeper insights into cancer progression.
2. These findings pave the way for **non-invasive and precise cancer detection**.
3. The research, published in the journal **Nanoscale**, supports the development of targeted therapies to disrupt metabolic abnormalities in tumors.
4. By enhancing treatment precision and potentially reducing side effects, this discovery could significantly improve patient outcomes, particularly in **personalized cancer medicine**.

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F. GEOGRAPHY & ENVIRONMENT

1. Four New Wetlands Under the Ramsar Convention

1. **In February 2025,** India has recently added four new wetlands under the Ramsar Convention, increasing its **tally from 85 to 89.**
2. This makes India the country with the **highest number of Ramsar sites in Asia** and the **third highest globally**.
3. The newly designated wetlands are from **Tamil Nadu, Sikkim, and Jharkhand.**

Key Highlights:

1. Tamil Nadu continues to lead with **20 Ramsar sites**, the highest among Indian states.
2. Sikkim and Jharkhand have received their **first-ever Ramsar sites**.
3. The **total area covered** under Ramsar sites in India is now **1.358 million hectares**.

About the Ramsar Convention on Wetlands

1. **Established:** 1971 (Came into force in 1975) in Ramsar, Iran.
2. **Objective:** Provides a framework for national and international efforts to conserve and wisely use wetlands.
3. **Wetlands Definition:** Areas where water covers the soil or is present at/near the surface, either permanently or seasonally.
4. **Categories of Wetlands under Ramsar:**
   a. **Natural:** Oases, estuaries, deltas, mangroves, coastal areas, coral reefs.
   b. **Human-made:** Fishponds, rice paddies, reservoirs.
5. **World Wetlands Day:** Celebrated on **2nd February** annually to commemorate the signing of the convention.
   - Theme for 2025- **"Protecting Wetlands for Our Common Future,"**

Newly Added Ramsar Sites (February 2025)

1. Sakkarakottai Bird Sanctuary (Tamil Nadu)

a. **Location:** Near the Gulf of Mannar, along the Central Asian Flyway.
b. **Significance:**
   - Historical importance: The Sakkarakottai Tank was dug in **1321 A.D.** through community participation (**Kudimaramattu**).
   - Home to **120+ bird species**, including Painted Stork and Black-headed Ibis.
   - Important for **hydrological regulation, soil erosion prevention, and groundwater replenishment**.
c. **Vegetation:** Rich in **Babul (Acacia nilotica) trees**, providing nesting habitats for birds.

2. Therthangal Bird Sanctuary (Tamil Nadu)

a. **Location:** Therthangal village, near the Gulf of Mannar, along the Central Asian Flyway.
b. **Ecological Importance:**
   - Home to rare species such as the **Egyptian vulture (Endangered)** and **Indian spotted eagle (Vulnerable)**.
   - Plays a crucial role in **climate regulation, groundwater recharge, and irrigation**.

3. Khachoedpalri Wetland (Sikkim)

a. **Location:** Demazong Valley, West Sikkim, at **1,700 meters above sea level** in the Eastern Himalayas.
b. **Cultural Significance:**
   - Also known as **"Wishing Lake"** (locally "Sho Dzo Sho" – *Oh Lady, Sit Here*).
   - Sacred to both **Buddhists and Hindus**.
c. **Ecological Importance:**
   - Cirque-type wetland surrounded by lush forests.
   - Home to bird species like **House Swifts, Fishing Eagles, and Brahminy Kite**.
   - **Threats:** Land-use changes and **tourism-related sedimentation and pollution**.

4. Udhwa Lake (Jharkhand)

a. Jharkhand's first Ramsar site.

b. **Location:** Gangetic Plains bio-geographic zone.

c. **Cultural Significance:** Named after **Saint Uddhava** from the Mahabharata, a friend of Lord Krishna.

d. **Ecological Importance:**

- Identified as an **Important Bird Area (IBA)**.
- Consists of **two interconnected water bodies – Patauran and Berhale**.
- Connected to the Ganga River via the **25 km long Udhuwa Nala at Farakka**.

e. **Key Species Found:**

- Black-necked Stork (Near Threatened)
- Oriental White-backed Vulture (Critically Endangered)
- Nordmann's Greenshank (Spotted Greenshank - Rare species)

Amrit Dharohar Initiative

1. **Launched:** June 2023 by the **Ministry of Environment, Forest & Climate Change (MoEFCC)**.
2. **Objective:** Conservation of Ramsar sites while generating employment and supporting local livelihoods.
3. **Implementation:** Over three years with collaboration between Central Government ministries, State Wetland Authorities, and conservation organizations.
4. **Key Focus Areas:** Species and Habitat Conservation, Nature Tourism, Wetland Livelihoods and Wetland Carbon Sequestration

2. Maharashtra leads the country in recognising CFRR

1. Maharashtra leads the country in recognising Community Forest Resource Rights (CFRR), having granted titles to 8,661 villages .
2. Chhattisgarh holds the second position with 4,328 CFRR titles issued as of September 2024, followed by Odisha, which ranks third with 3,659 titles granted as of August 31, 2024.

Community forest rights

1. **CFR** refers to **forest areas traditionally used and managed** by local communities.
2. It includes **common forest lands** within a village's traditional or customary boundaries.
3. These areas can be part of:
   a. **Reserved forests**
   b. **Protected forests**
   c. **Protected areas** (like wildlife sanctuaries or national parks)

Legal Clarity and Status of CFR Rights

1. Statutory Backing

a. **CFR** is **legally defined** under **Section 2(a)** of the **Forest Rights Act (FRA), 2006**.

b. It is a **recognized legal category of forest rights**, distinct from individual forest rights.

2. Legal Entitlement, Not a Concession

a. CFR rights are **not a privilege granted by the state**.

b. They are **legal entitlements** of **Scheduled Tribes (STs)** and **Other Traditional Forest Dwellers (OTFDs)** who have been historically dependent on forests.

3. Vested in the Gram Sabha

a. The **Gram Sabha** is the **statutory authority** to:

- **Initiate the process** of CFR claims.
- **Protect, conserve, and manage** the forest resource.

b. This ensures **decentralised, community-based forest governance**.

4. Recognition Process

a. Title to CFR is given in the **name of the Gram Sabha**.

b. Requires submission of a **claim**, verification by officials, and approval by the **District Level Committee (DLC)**.

5. Protection from Diversion

a. Once CFR rights are recognised, **no forest land can be diverted** (e.g., for mining or development) **without Gram Sabha consent**.

b. This has been reinforced by **MoEFCC guidelines (2009)** and **Supreme Court judgments**.

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What CFR Rights Include

1. **Right to protect, regenerate, conserve or manage** any community forest resource for sustainable use.
2. **Right to access and use** minor forest produce (like tendu leaves, bamboo, honey).
3. **Right to traditional knowledge and intellectual property** related to biodiversity.
4. **Right to protect against destruction or diversion** of forest land without community consent.

Significance of CFR Rights

1. Livelihood Security

a. Forest dwellers depend heavily on **non-timber forest produce (NTFP)**.

b. CFR enables **collective ownership**, allowing communities to **harvest, process, and market produce** like Bamboo,Tendu leaves, Mahua, Sal, Amla, etc.

2. Ecological Stewardship

a. Communities have a **stake in conserving biodiversity**.

b. Traditional ecological knowledge leads to **better forest management**, especially in: fire control, water conservation, sustainable harvesting.

3. Decentralised Governance

a. Empowers **Gram Sabhas** over forest departments.

b. Leads to **local-level forest governance**, which is more: Transparent, participatory and accountable

4. **Historical Justice**: Recognises the rights of **Scheduled Tribes** and **Other Traditional Forest Dwellers (OTFDs)** who were historically **excluded from forest governance**.

The Forest Conservation Rules, 2022

1. The **Forest Conservation Rules, 2022** were established to update the Forest (Conservation) Act of 1980.
2. They aim to make the process of **diverting forest land for non-forest activities like mining or infrastructure more efficient** while ensuring environmental safeguards are maintained.
3. However there are apprehensions that **new forest conservation rules will undermine the implementation of community forest resource rights .**

Issues with forest conservation rules 2022

1. **No Requirement of Gram Sabha Consent at Initial Stages of Forest Land Diversion Proposals**
   a. Earlier, before a project (like a mine or highway) could get **initial clearance** for using forest land, the **Gram Sabha (village assembly)** had to **give prior informed consent**.
   b. Under the **2022 rules**, this consent is **no longer required at the first stage**.
   c. The project can now get "**in-principle clearance**" *before* consulting the Gram Sabha.
   d. It is concerning because it **disempowers local communities**.
   e. Makes Gram Sabha approval a **formality**, not a safeguard.
   f. Violates the **Forest Rights Act (2006)**, which gives Gram Sabhas legal power to approve or reject such projects.
2. **Responsibility of Recognising Rights under FRA Shifted from Project Authorities to State Governments, After In-Principle Clearance**
   a. Earlier, it was the responsibility of the **project proponent (e.g., mining company)** to **ensure that forest rights were settled** before forest clearance.
   b. Now, the **State Government** is responsible for ensuring this — **but only after** the project gets the first-level (in-principle) forest clearance.
   c. It Creates a **conflict of interest**: State governments often support projects for revenue.
   d. Rights of forest dwellers may be **rushed or ignored** to fast-track approvals.
   e. It **weakens accountability** of project developers.
3. **Private Parties and Corporations Can Now Be Allowed to Plant on Degraded Forests and Claim Them under Compensatory Afforestation**
   a. When forest is diverted for a project, companies are legally required to **compensate** by planting trees elsewhere – this is called **compensatory afforestation**.
   b. Now, **private entities can "adopt" degraded forest lands**, plant trees, and **claim** those lands as fulfilling their obligation.

c. This may lead to **privatisation of forest commons** — areas traditionally used by local communities for grazing, gathering, or cultural practices.
d. Once a private company takes control of such land, **local people may be denied access**.
e. It Encourages "**greenwashing**" — appearing eco-friendly while actually harming local rights and biodiversity.

4. **Introduced 'Land Banks' for Compensatory Afforestation**
   a. States can now create **pre-identified land banks** (usually degraded forests or community lands) where compensatory afforestation can take place.
   b. When a project is approved, the company can just plant trees in these banks instead of finding new land.
   c. These "banks" often include **common lands used by tribal and forest-dwelling communities**, but **not legally recognised** under FRA.
   d. It bypasses **customary ownership and traditional use**, making it easier for governments to **alienate land without consent**.
   e. It prioritises **bureaucratic convenience** over **legal and moral obligation to protect community rights**.

Current Status of CFR Rights

1. **Limited implementation** across India:
   a. **Maharashtra**: Only state to **operationalise** CFR rights effectively.
   b. **Chhattisgarh**: Recognised ~**36%** of potential CFR areas.
   c. **Odisha**: Recognised ~**10%** of potential areas.
   d. **Madhya Pradesh & Karnataka**: **No recognition** of CFR rights so far.
   e. Most states show **minimal or no progress**.
2. **Displacement of Forest Dwellers**
   a. Over **1,00,000 people displaced** due to creation of protected areas by the **National Tiger Conservation Authority (NTCA)**.
   b. Includes **64,000+ families** removed from **core tiger reserve areas**.
   c. Since 2000, protected areas have increased by **72%**, often ignoring **community consent** and rights.
3. **Impact of Development Projects**
   a. Over **3 lakh hectares** of forest land diverted for **Mining** and **Infrastructure**
   b. Recent policies (e.g., **Green Credits Rules**) neglect **community forest rights**, prioritising economic goals.
4. **Green Displacement & Carbon Forestry**
   a. Projects aiming to sequester **2.5 gigatonnes of CO_2** (carbon forestry) raise alarms:
   b. Risk of **further displacement** of forest dwellers.
   c. Reinforces "green grabbing" under the guise of climate mitigation.
5. **The CFR–FCR conflict represents a deeper battle between:**
   a. **Rights of the people** vs **power of the state**,
   b. **Ecological justice** vs **economic growth**,
   c. **Democratic governance** vs **bureaucratic control**.
6. **Resolving this requires:**
   a. **Restoring the primacy of the FRA**,
   b. Making **Gram Sabha consent binding**,
   c. Ensuring **recognition of CFR rights before any diversion**, and
   d. Aligning **forest clearance procedures with constitutional and legal protections**.

3. Shikari Devi Wildlife Sanctuary Designated as Eco-Sensitive Zone

1. The Government of India has recently designated the areas around **Shikari Devi Wildlife Sanctuary** in Himachal Pradesh as **Eco-Sensitive Zones (ESZs)**.
2. This decision aims to protect the unique biodiversity and environmental significance of the sanctuary.

About Shikari Devi Wildlife Sanctuary

1. **Location**: The sanctuary is situated in the middle altitudinal range of the Himalayas in Mandi District, Himachal Pradesh.
2. **Significance**: It is named after **Shikari Devi**, a revered goddess, with a temple dedicated to her within the sanctuary.
3. **Streams**: The sanctuary is home to **Juni Khud**, a tributary of the Beas River, which flows through the area.

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4. **Biodiversity**: Shikari Devi is an **Important Bird Area (IBA)** recognized by Birdlife International, highlighting its ecological significance.
5. **Vegetation**: The sanctuary is characterized by **alpine pastures** and **temperate deciduous forests**.
6. **Fauna**: The sanctuary supports a diverse range of wildlife, including the **Asiatic Black Bear**, **Leopard**, **Barking Deer**, and the **Giant Flying Squirrel**.

4. Drying Up the World's Largest Lake: A Caspian Crisis

1. In **February 2025**, an **18th-century 28-meter wooden shipwreck** was discovered off **Mazandaran, Iran**, due to **receding water levels**.
2. Ship believed to be part of a **Russian-influenced merchant fleet**, carrying **botanical cargo like buckwheat**.
3. This accidental find underscores the **environmental breakdown** shaping modern archaeology.
4. **Caspian is World's largest inland water body**, bordering **Azerbaijan, Iran, Kazakhstan, Russia, and Turkmenistan**.
5. It has supported **trade, culture, biodiversity, and livelihoods** for millennia.
6. Now, it's a symbol of **global environmental failure** and the collision between **climate change and industrialization**.

Alarming Environmental Decline

1. The **Caspian Sea's water level** has dropped by **around 2 meters** in the last **20 years**.
2. In **shallow regions** like **Kazakhstan**, the **shoreline has retreated by up to 18 kilometers**.
3. Scientists warn that if current trends continue, the situation will **worsen significantly by 2100**.
4. The **surface area** of the sea could **shrink by up to 34%**.
5. Its **depth may drop by as much as 18 meters**, leaving vast coastal zones dry.
6. The **main causes** are:
    a. **Climate change**, which increases **evaporation rates**.
    b. **Reduced flow from the Volga River**, the sea's largest freshwater source.
    c. **Dams, reservoirs, and excessive water extraction** along the Volga worsen the decline.

Oil Extraction and Environmental Damage

1. **Tengiz Field**: Located on the **northeastern shore** of the Caspian, in Kazakhstan.
2. The **Tengiz oil field** produced **699,000 barrels/day in 2024**.
3. Output is expected to **increase to 850,000 barrels/day by mid-2025**.
4. **Kashagan Field**: A **major offshore oil field**, directly in the **northern Caspian Sea**.
5. The **Kashagan offshore project** has faced **multiple environmental controversies**, including gas leaks and poor safety practices.
6. Ironically resource rich oilfields in the vicinity of the Caspian sea contributes to the shrinking of Caspian sea
7. The **Caspian seal population** has declined by **95% over the last century**.
    a. Fewer than **70,000 seals remain** today.
    b. It is now classified as **critically endangered**.
8. **Five out of six Caspian sturgeon species** are also **critically endangered**, according to the IUCN.
    - Only the **Sterlet (Acipenser ruthenus)** is not currently on the critical list.

Human Cost

1. **Fishing communities** face falling catches and collapsing livelihoods.
2. Towns like **Atyrau** and **Mangystau** suffer economic distress.
3. Health crises:
    a. **Polluted air, water, and soil**.
    b. **Berezovka village**: Residents suffer from **hair loss, vision damage, cancer symptoms** . It is linked to **Karachaganak oil and gas emissions**.
    c. 25 toxic chemicals detected; community demands **relocation and compensation**.

Governance & Legal Frameworks

1. **Fragmented Management**
    a. The five **littoral states of Caspian sea** (Azerbaijan, Iran, Kazakhstan, Russia, Turkmenistan) have **no unified plan** to manage the Caspian Sea.
    b. Each country often acts **in its own interest**, leading to **conflicting policies** and poor coordination.

2. **2018 Convention on the Legal Status of the Caspian Sea**
    a. This agreement defined **territorial boundaries** and **resource rights**.
    b. However, it **does not include binding environmental rules**.
    c. There is **no enforcement mechanism** to prevent pollution or overuse.
3. **Oil Contracts from the 1990s**
    a. Many oil and gas deals were signed when **environmental concerns were minimal**.
    b. These contracts **lack modern environmental safeguards**.
    c. Updating them is **difficult**, as they are tied to long-term economic interests.
4. **Tehran Convention (2003)**
    a. It's the **first legal environmental framework** for the Caspian Sea.
    b. It provides a **strong foundation for cooperation**.
    c. But it suffers from **poor implementation** by member states
    d. **Non-Binding Protocols under the Convention:**
        - **Oil Pollution Protocol**: Offers guidelines, but countries are **not legally required** to act.
        - **Land-based Pollution Protocol**: Identifies sources of pollution, but has **no penalties** for violations.
        - **Emergency Response Protocol**: Encourages action during oil spills, but **relies on voluntary cooperation**.

Major rivers flowing into the Caspian Sea:

River	Origin	Countries Flowing Through	Contribution / Notes
Volga	Valdai Hills, Russia	Russia	Largest contributor (~**80%** of Caspian inflow); heavily dammed for hydroelectric use
Ural	Ural Mountains, Russia	Russia, Kazakhstan	Second major source; enters near Atyrau, Kazakhstan
Kura	Northeast Turkey	Turkey, Georgia, Azerbaijan	Important southwestern inflow; joined by Aras River before reaching Caspian
Terek	Caucasus Mountains	Georgia, Russia	Northern inflow; empties into Caspian in Dagestan region
Sulak	Caucasus Mountains	Russia	Short but significant; flows into Caspian near Makhachkala (Dagestan)
Atrek	Kopet Dag Mountains	Iran, Turkmenistan	Seasonal; often **doesn't reach Caspian** due to agricultural diversion

Shrinking Seas and Inland Water Bodies

Water Body	Location	Status	Main Causes	Key Effects
Aral Sea	Kazakhstan & Uzbekistan (Central Asia)	~90% area lost since 1960s	River diversion for Soviet-era irrigation (Amu Darya, Syr Darya)	Fishing collapse, toxic dust storms, public health crisis
Dead Sea	Jordan, Israel, Palestine	Losing ~1 meter water level/year	Overuse of Jordan River, mineral mining	Sinkholes, reduced tourism, Red Sea–Dead Sea Project (proposed)

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Water Body	Location	Status	Main Causes	Key Effects
Lake Chad	Chad, Niger, Nigeria, Cameroon (Africa)	Shrunk over 90% since 1960s	Climate change (drought), overuse for irrigation	Collapse of fishing/ farming, conflict, migration
Great Salt Lake	Utah, USA	Record low in 2022	Climate change, water diversion for farming/cities	Toxic dust exposure, bird & brine shrimp threat
Lake Urmia	Iran	Lost 80% surface (some recent recovery)	Dams, irrigation, reduced rainfall	Economic collapse, salt storms, public health risks
Lake Poopó	Bolivia	Fully dried up in 2015	Climate change, water diversion for mining/ agriculture	Total loss of livelihoods for fishing communities

5. IUCN'S Released Guidance On OECMS Report

1. In a recently released report, the International Union for Conservation of Nature (IUCN) provided essential **guidance for conserving land, water, and coastal areas through Other Effective Area-based Conservation Measures (OECMs).**
2. This new framework **aims** to complement traditional protected areas, offering a more inclusive and holistic approach to biodiversity conservation.

What are OECMs?

1. An Other Effective Area-based Conservation Measure (OECM) is defined by the Convention on Biological Diversity (CBD) as *"a geographically defined area other than a protected area, managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity."* In situ conservation refers to preserving species in their natural habitats.
2. OECMs **differ from protected areas** (PA) in that **they are not specifically designated for biodiversity protection,** yet they still deliver positive conservation outcomes.
3. While **protected areas** are **legally designated** and managed for biodiversity conservation, OECMs focus on achieving biodiversity goals without necessarily having conservation as the primary aim.
    - Examples of **OECMs include** community-managed forests, sacred groves, and urban green spaces.
4. OECMs are **not intended to replace protected areas** but rather to complement them, expanding conservation efforts beyond traditionally protected regions.
5. They play an essential role in achieving the **2022 Kunming-Montreal Global Biodiversity Framework's Target 3,** adopted during **COP15 of the Convention on Biological Diversity (CBD).**
    - It calls on countries to conserve at least **30%** of terrestrial, inland waters, and coastal and marine areas **by 2030**, also called the '**30x30 target**'.

What is the Convention on Biological Diversity (CBD)?

1. It was one of the key outcomes of the **United Nations Conference on Environment and Development (UNCED)**, also known as the **Earth Summit**, held in Rio de Janeiro in 1992.
2. The Convention has **three main goals**: the **conservation** of biological diversity (or biodiversity); the **sustainable use** of its components; and the **fair and equitable sharing of benefits** arising from genetic resources.
3. It has two major supplementary agreements:
    a. **Cartagena Protocol on Biosafety (2000):** Focuses on the safe handling, transfer, and use of **living modified organisms (LMOs)**
    b. **Nagoya Protocol on Access and Benefit Sharing (2010):** Provides a framework for **the fair and equitable sharing of benefits** arising out of the utilization of genetic resources.

What is the Kunming-Montreal Global Biodiversity Framework (GBF)?

1. It was adopted during **COP15 of the Convention on Biological Diversity (CBD), 2022**.
2. It serves as a roadmap **to halt biodiversity loss** and ensure the **sustainable management of ecosystems by 2030**, replacing the previous **Aichi Biodiversity Targets (2011–2020).**
3. The framework outlines **4 goals and 23 targets for 2030**. Below are the most notable targets:
   a. **30x30 Goal**: Protect 30% of land and marine areas globally by 2030, focusing on areas of high biodiversity.
   b. **Halt Species Extinction:** Stop human-induced extinction of threatened species and facilitate their recovery.
   c. **Finance and Resource Mobilization:** Mobilize **$200 billion annually for biodiversity by 2030**, from public and private sources.

Key Benefits of OECMs

OECMs offer a range of benefits that help enhance biodiversity conservation:

1. **Conservation of Biodiversity**: OECMs provide a unique opportunity to promote long-term conservation alongside other local values. They help conserve critical ecosystems, support the recovery of threatened species, and improve habitat management.
2. **Ecosystem Services**: OECMs protect vital ecosystem services, such as:
   a. **Provisioning services** (e.g., food and water)
   b. **Regulating services** (e.g., flood control and disease regulation)
   c. **Supporting services** (e.g., soil formation and nutrient cycling)
   d. **Cultural services** (e.g., spiritual, recreational, and religious benefits)
3. **Ecological Connectivity**: By connecting fragmented ecosystems, OECMs can play a crucial role in maintaining biodiversity in developed landscapes.
4. **Resilience Against Threats**: OECMs can enhance ecosystem resilience to climate change and other environmental threats.
5. **Community and Indigenous Leadership**: They recognize the role of indigenous and local communities in conservation, strengthening traditional knowledge and cultural heritage.
6. **Ecotourism Opportunities**: OECMs can foster sustainable ecotourism, contributing to local economies.

IUCN's Guidelines for Identifying and Managing OECMs

The IUCN's report provides a set of clear guidelines for the identification, management, and reporting of OECMs. These guidelines ensure that OECMs are recognized, managed, and monitored effectively:

1. **Free, Prior, and Informed Consent (FPIC)**: Obtaining consent from Indigenous peoples and local communities who have historical or customary claims over the lands and resources in an OECM is mandatory.
2. **Site Identification**:
   a. The site must not be a protected area but should have a reasonable likelihood of containing significant biodiversity.
   b. Full consent and participation from local communities are required before proceeding with a detailed assessment.
3. **Reporting**: All OECMs should be reported to the World Database on OECMs, with all relevant data and appropriate consent.
4. **Monitoring**: Monitoring efforts will focus on conservation actions, biodiversity threats, and the effectiveness of governance structures and stakeholder engagement.

Challenges with the OECMs Framework

While OECMs offer significant conservation potential, several challenges must be addressed to maximize their effectiveness:

1. **Lack of Awareness**: There is limited understanding of OECMs among various stakeholders, including governments, communities, and the general public.
2. **Knowledge Gaps**: More research and expertise are needed to effectively implement and manage OECMs.
3. **Financial Constraints**: Insufficient funding for establishing and maintaining OECMs poses a significant challenge.

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4. **Community Engagement**: Differences between conservation goals and community livelihoods can complicate the successful implementation of OECMs.
5. **Threats to Biodiversity**: OECMs are often located in areas where land-use conflicts, such as agriculture or infrastructure development, threaten biodiversity.
6. **Climate Change**: Extreme weather events and habitat shifts due to climate change may undermine the effectiveness of OECMs.

Strengthening the OECMs Framework

To address these challenges and enhance the effectiveness of OECMs, several strategies can be implemented:

1. **Legal Recognition**: Governments should work to regularly assess and update laws and policies that support OECMs, particularly in response to new and unforeseen threats.
2. **Training**: Capacity-building through training programs for site-based teams is essential for effective OECM management.
3. **Increased Financial Support**: Funding mechanisms such as payment for ecosystem services, carbon finance, and biodiversity credits can help secure financial resources for OECMs.
4. **Sustainable Management**: Sustainable agricultural, forestry, and fisheries practices within OECMs can help ensure that biodiversity conservation goals are met.
5. **Prohibition of Harmful Activities**: Environmentally damaging industrial activities and infrastructure development should be restricted in OECMs.
6. **Community-Led Initiatives**: Encouraging local communities to initiate the identification and management of OECMs can lead to more successful and sustainable conservation outcomes.

What is the International Union for Conservation of Nature?

1. The International Union for Conservation of Nature (IUCN) is a global authority on the **status of the natural world** and **measures for its conservation**.
2. It works as a **unique partnership** of governments, civil society organizations, scientists, and experts to protect biodiversity and promote sustainable development.
3. **Founded:** 1948; **Headquarters:** Gland, Switzerland
4. **IUCN Red List:** It is known for its Red List of Threatened Species, which evaluates the risk of extinction for species worldwide.
   - **Categories include**: Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild, and Extinct.

6. Draft Rules for 'One Nation, One Time': Standardizing IST

1. The Department of Consumer Affairs has introduced the **Draft Legal Metrology (Indian Standard Time) Rules, 2025**, aimed at ensuring uniformity in timekeeping across India.
2. These rules mandate the exclusive use of **Indian Standard Time (IST)** across various sectors, eliminating discrepancies in official and commercial activities.

Key Provisions of the Draft Legal Metrology (Indian Standard Time) Rules, 2025

1. Mandatory Use of IST

a. **Indian Standard Time (IST)** will serve as the official reference time for all sectors, including **commerce, transport, public administration, legal contracts, and financial operations**.

b. No entity or individual is allowed to use, display, or record any other time for official or commercial purposes, **except where permitted by law or government guidelines**.

2. Adoption of Time Synchronization Protocols

a. Government offices and institutions must adopt **standardized time synchronization protocols**, such as:
   - **Network Time Protocol (NTP)**
   - **Precision Time Protocol (PTP)**

b. These protocols ensure consistent and accurate timekeeping across digital and public services.

3. Cybersecurity and Resilience Measures

a. To **prevent tampering and cyber threats**, the draft rules propose strict **cybersecurity frameworks** for time synchronization systems.

b. Alternative reference mechanisms will be established to **ensure continuity in case of failures**.

4. Authorized Deviations for Specific Sectors

a. While IST is mandatory, **certain exceptions** are allowed for fields that require different timescales, such as: **Astronomy, Navigation and Scientific research**.

b. Such deviations must receive **prior government approval** before implementation.

Significance of the New Rules

The implementation of these draft rules is expected to bring several benefits, including:

1. **Enhanced National Security** – Ensuring synchronization of critical infrastructure like defense, transportation, and telecommunications.
2. **Seamless Digital Operations** – Preventing time-related discrepancies in **cybersecurity systems, banking transactions, and digital services**.
3. **Accurate Financial Transactions** – Ensuring precision in **record-keeping, stock markets, and banking operations**.

Understanding Indian Standard Time (IST)

1. IST is based on the **central meridian of India (82°30′E)**, which passes through **Mirzapur, Uttar Pradesh**.
2. It is **5 hours 30 minutes ahead of Greenwich Mean Time (GMT)**, now referred to as **Coordinated Universal Time (UTC+5:30)**.
3. The **Council of Scientific and Industrial Research - National Physical Laboratory (CSIR-NPL)** is responsible for maintaining IST.

Regional Variations: 'Chaibagan Time' in Assam

1. Many tea estates in Assam follow an **unofficial local time, known as 'Chaibagan' or 'Bagan Time'**, which is **one hour ahead of IST**.
2. This practice was introduced during British rule to optimize **daylight working hours for tea plantations**.

7. Kampala Declaration

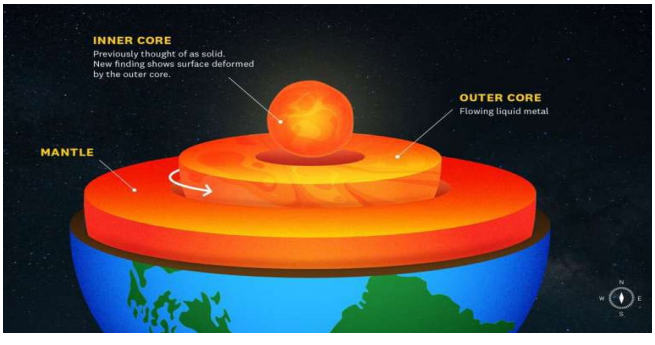
1. At the **African Union (AU) Extraordinary Summit** on the **Post-Malabo Comprehensive Africa Agriculture Development Programme (CAADP)**, the **Kampala CAADP Declaration** was adopted.
2. This declaration outlines a **10-year CAADP Strategy and Action Plan** aimed at **Building Resilient and Sustainable Agrifood Systems** in Africa.

Key Highlights of the Kampala Declaration

1. The **Kampala Declaration** is the successor to the **Malabo Declaration on Accelerated Agricultural Growth and Transformation** for **Shared Prosperity and Improved Livelihoods**, which was adopted in 2014.
2. The implementation period for the new strategy is set to span from **2026 to 2035**.
3. The declaration sets forth **six key commitments** designed to transform and strengthen Africa's agri-food system, ensuring it is more resilient and sustainable.

8. Earth's Core Is Changing Shape

Recent study has revealed that **Earth's inner core is less solid** and **more dynamic than previously believed**. Researchers have observed **structural changes in the core**, suggesting it undergoes slow, **viscous deformation** over time.



This discovery challenges the long-standing notion that the inner core is a rigid, unchanging mass and opens new avenues for understanding Earth's internal processes.

The Study and Key Findings

Researchers from the University of Southern California, the Chinese Academy of Sciences, and the University of Utah **analyzed seismic wave data** from **121 earthquakes** recorded **between 1991 and 2024** near the **South Sandwich Islands in Antarctica**.

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The study, published in *Nature Geoscience*, presented the following key findings:

1. The near surface of **Earth's inner core is not as rigid** as previously assumed.
2. **Structural changes** in the inner core are caused by interactions with the **turbulent**, **molten outer core**.
3. These changes might be **affecting the inner core's rotation** and subtly altering the length of a day.
4. The independent **spin of the inner core appears to be slowing**, contradicting earlier theories that it rotated independently due to interactions with the mantle.
5. This research challenges previous assumptions that structural changes in the inner core occur only over **geological timescales.**

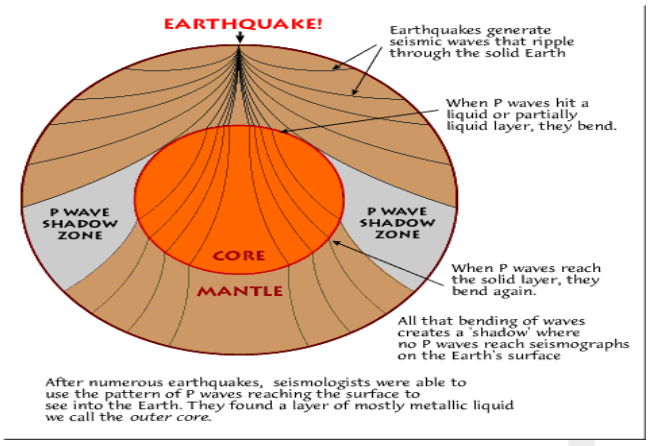
Understanding Seismic Waves and Earth's Internal Structure

What Are Seismic Waves?

Seismic waves, generated by earthquakes, travel through Earth's layers, providing crucial information about its internal composition. The **two primary types of seismic waves** include:

- **P-waves (Primary waves):** Compressional waves that can move through both solids and liquids.
- **S-waves (Secondary waves):** Shear waves that can only travel through solid materials.

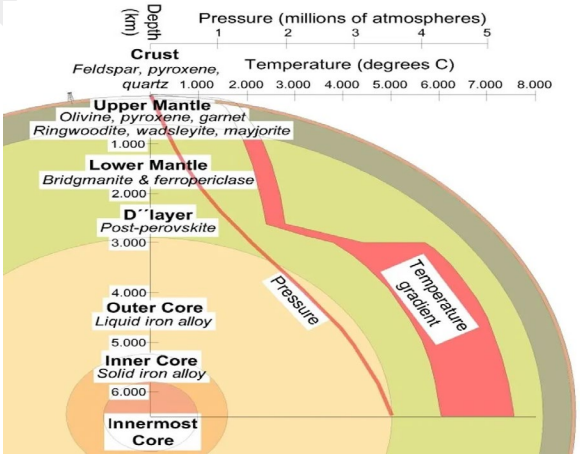
The speed and behavior of these waves depend on the properties of the materials they pass through. By analyzing seismic wave patterns, scientists can infer the composition and behavior of Earth's core.



Layers of Earth

Earth consists of multiple layers, each with unique properties:

1. **Crust:** The outermost solid rock layer, mainly composed of basalt and granite.
2. **Mantle:** A dense, iron- and magnesium-rich layer between the crust and core.
3. **Core:** Comprising two distinct parts:
   a. **Outer Core:** A turbulent, liquid layer made of molten iron and nickel.
   b. **Inner Core:** A dense, solid iron-nickel sphere, previously believed to be rigid.



The Changing Shape of the Inner Core

1. **Evidence from Seismic Data**
   a. Seismic waves recorded at Yellowknife, Canada, exhibited unexpected properties, indicating anomalies in the inner core's behavior.
   b. Researchers found unusual wave patterns that could not be explained by the core's rotation alone.

c. Further investigation revealed that the inner core's surface is experiencing slow, viscous deformation due to its interactions with the outer core.

2. **Viscous Deformation: A Key Discovery**
   a. The deformation of the inner core resembles the slow movement of tar or magma under stress.
   b. This process suggests that the inner core is gradually changing shape over decades rather than remaining static.
   c. The turbulence in the molten outer core appears to be disturbing the boundary between the inner and outer core, leading to structural changes.

Significance of the Findings

1. **New Insights into Earth's Magnetic Field:** The inner core plays a crucial role in generating Earth's magnetic field. Understanding its changing structure may help scientists predict variations in the field.
2. **Improved Understanding of Earth's Rotation:** Changes in the inner core's shape and spin could have subtle effects on Earth's rotational dynamics, including the length of a day.
3. **Challenges Traditional Geological Theories:** The assumption that structural changes in the inner core occur only over millions of years is now being questioned.

9. F11 Bacteria: Solution for PFAS Degradation

1. A recent study has identified *Labrys portucalensis*, also known as F11 bacteria, as a promising microorganism capable of breaking down at least **three types of per- and polyfluoroalkyl substances** (PFAS).
2. This discovery holds significant potential for **addressing PFAS contamination**, a major environmental concern due to the persistence and toxicity of these chemicals.

Understanding F11 Bacteria

1. F11 bacteria belong to the ***Xanthobacteraceae* family** and are aerobic in nature.
2. They have shown the **ability to degrade certain PFAS** compounds, which are otherwise highly resistant to natural decomposition.
3. This bacteria could play a crucial **role in *bioaugmentation***, a technique used in wastewater treatment and environmental remediation.

What is Bioaugmentation?

1. Bioaugmentation refers to the introduction of specialized microorganisms into a polluted environment to accelerate the degradation of stubborn contaminants.
2. In the case of F11 bacteria, its ability to break down PFAS makes it a valuable candidate for improving wastewater treatment processes and mitigating chemical pollution.

Understanding PFAS: The 'Forever Chemicals'

1. Per- and polyfluoroalkyl substances (PFAS) are synthetic chemicals known for their strong resistance to grease, oil, water, and heat.
2. Due to their highly stable molecular structure, PFAS do not easily break down in the environment, leading to long-term contamination.
3. They are commonly used in various products, including:
   a. Nonstick cookware (e.g., Teflon-coated pans)
   b. Grease-resistant food packaging
   c. Waterproof clothing and gear
   d. Firefighting foams and protective equipment

10. Discovery of a Petrified Wood Fossil in Rajmahal Hills

1. A significant **paleontological discovery** was recently made in the **Rajmahal Hills** of **Pakur district, Jharkhand**, where researchers unearthed a rare and well-preserved **petrified fossil** of **teak wood**.
2. This find is crucial in understanding ancient plant life and contributes to the growing knowledge of India's **geological and botanical history.**

What is Petrified Wood?

Petrified wood, also known as **fossil wood**, is formed when plant material undergoes **petrification**, a type of fossilization where minerals gradually replace the original organic material while retaining the structural details of the wood.

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How Does Petrification Occur?

The process of petrification requires specific geological conditions over **thousands to millions of years**, involving the following steps:

1. **Rapid Burial:** The plant material must be quickly covered by sediment, protecting it from decay.
2. **Exposure to Mineral-Rich Water:** Groundwater or lake water containing dissolved minerals seeps into the buried material.
3. **Slow Replacement:** Minerals such as **silica (SiO_2) or calcite ($CaCO_3$)** gradually replace the organic matter, crystallizing and turning the material into stone.
4. **Fossil Formation:** The mineralized structure remains intact, preserving fine details of the wood's rings, bark, and cellular structure.

Types of Petrified Fossils

1. **Petrified Wood:** Fossilized trees that retain detailed cellular structures.
2. **Amber-Preserved Fossils:** Small organisms, such as insects, trapped in hardened tree resin.
3. **Coprolites:** Fossilized animal feces that provide insights into ancient diets.

Significance of the Discovery

1. **First Recorded Petrified Fossil in Rajmahal Hills:** This discovery strengthens the area's status as an important paleontological site.
2. **Insights into Ancient Flora:** The fossilized teak wood helps scientists reconstruct past ecosystems and understand prehistoric vegetation.
3. **Geological and Environmental Importance:** Provides clues about the climate and geological conditions of the Jurassic period.

About Rajmahal Hills

1. **Location:** Part of the **Santhal Pargana division** of Jharkhand.
2. **Geological Origin:** Formed due to **volcanic activity** during the **Jurassic period**, creating ancient **Rajmahal Traps** (volcanic rock formations).
3. **Fossil Deposits:** Rich in plant fossils, some dating back **millions of years**.
4. **Inhabited by Indigenous Tribes:** Home to **Sauria Paharia** (highlands) and **Santhal** (valleys) tribes.

Global Example of Petrification

Petrified Forest National Park (Arizona, USA): Known for vast silicified wood deposits where **chalcedony**, a quartz form, replaces tree tissues while preserving cellular structures.

11. Gujarat's First BHS: Inland Mangrove of Guneri

Gujarat has officially designated the **Inland Mangrove of Guneri** in Kutch as a **Biodiversity Heritage Site (BHS)** under the **Biodiversity Act, 2002**.

This marks a significant milestone as it becomes the **first-ever Biodiversity Heritage Site** in the state.

A Rare Inland Mangrove Ecosystem

1. Unlike conventional mangrove forests found along coastal regions, the **Guneri mangroves** exist **45 km away from the Arabian Sea** and about **4 km from Kori Creek**. This unique positioning makes it an **exceptional inland ecosystem**, differing from traditional mangroves in several ways:
   a. **Absence of tidal water inflow** – Unlike typical mangrove habitats, Guneri does not receive direct seawater through tides.
   b. **No muddy or swampy conditions** – While most mangroves thrive in saline and waterlogged environments, this site has adapted to distinct ecological conditions.
2. Due to its unusual characteristics, the Guneri inland mangrove is considered one of only **eight such ecosystems globally**, making it an ecological treasure.

Rich Biodiversity

The area serves as a crucial habitat for a diverse range of bird species, including:

- **20 migratory species** that visit seasonally.
- **25 resident migratory species** that depend on this ecosystem for survival.

12. Gharial Conservation in India

1. In February 2025, **Madhya Pradesh government** released **10 gharials into the Chambal River** at the **National Chambal Gharial Sanctuary** in Morena.
2. This move strengthens the state's role as **India's leading gharial conservation hub**, as it hosts **over 80% of the country's gharial population**.

About Gharials

Feature	Description
Scientific Classification & Mythological Significance	• **Scientific Name**: *Gavialis gangeticus* • **Type**: Asian crocodilian species • **Sacred Symbolism**: In Hindu mythology, gharials are considered **the divine mount of Goddess Ganga**, reinforcing their **cultural and ecological importance**.

Physical Features	• **Distinctive Snout**: Long, slender snout lined with sharp, **interlocking teeth**, perfectly adapted for catching fish.
	• **Name Origin**: The Hindi word **"ghara"** (pot) refers to the **bulbous snout tip** of adult males, which resembles an inverted pot.
	• **Size**:
	  ○ **Males**: **3-6 meters**
	  ○ **Females**: **2.6–4.5 meters**
	• **Unique Adaptations**:
	  ○ Unlike other crocodilians, **gharial snouts contain sensory cells** that detect vibrations in the water, helping them locate prey.
	  ○ They do **not stalk or ambush prey** like other crocodiles but rely on **swift movements** to catch fish.

Habitat and Distribution	• **Preferred Habitat:** Gharials thrive in **freshwater river systems** with **sandy banks, sandbars, and islands**, which serve as **basking and nesting sites**.
	• **Historical & Current Distribution**
	  ○ **Historical Range**: Spread across the **Indus, Ganga, Brahmaputra, and Mahanadi river systems** in India, Nepal, Bhutan, Pakistan, and Bangladesh.
	  ○ **Current Range**:
	  ▪ **India**: Chambal, Girwa, Ken, Yamuna, Son, Gandak, Mahanadi, Brahmaputra, and Bhagirathi-Hooghly rivers.
	  ▪ **Nepal**: Rapti-Naryani river system.
	  ▪ **Extinct or nearly extinct** in Myanmar, Bhutan, Pakistan, and Bangladesh.

Ecological Importance	• **Gharials help maintain healthy river ecosystems** by controlling fish populations and scavenging carrion. • Their presence is an **indicator of clean and well-balanced freshwater habitats**.

Major Threats to Gharials

1. **Historical Exploitation:** Overhunting for **skin, trophies, eggs, and traditional medicine** drastically reduced their numbers.
2. **Habitat Destruction**
   a. **Dams, embankments, and irrigation canals** disrupt natural river flow and nesting sites.
   b. **Siltation and river course changes** reduce available habitats.
   c. **Sand mining** destroys critical nesting areas.
3. **Human-Induced Threats**
   a. **Overfishing** reduces food supply.
   b. Gharials often get trapped in fishing nets (gillnets), leading to accidental deaths, even in protected areas.
   c. Pollution from industrial waste and plastic degrades river quality.

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Gharial Conservation Efforts in India

1. **Captive Breeding & Reintroduction**
   a. **Project Crocodile (1975)** initiated gharial breeding and reintroduction.
   b. **Key Breeding Centers**:
      - **Deori Gharial Breeding Center** (Madhya Pradesh)
      - **Kukrail Rehabilitation Centre** (Lucknow)
   c. **Process**: Hatchlings are raised in captivity and released into natural habitats.
   d. **Success Story**: The **Gandak River in Bihar** has become a major breeding site for gharials.
2. **Protected Areas for Gharials:** Gharials primarily survive in **five key sanctuaries**:

Sanctuary	Location	River
National Chambal Sanctuary	MP, UP, Rajasthan	Chambal River
Katerniaghat Wildlife Sanctuary	Uttar Pradesh	Girwa River
Chitwan National Park	Nepal	Rapti River
Son River Sanctuary	Madhya Pradesh	Son River
Satkosia Gorge Sanctuary	Odisha	Mahanadi River

Habitat Protection Measures

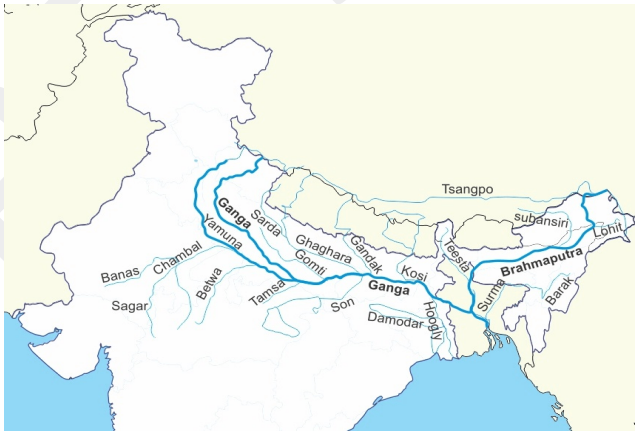
a. **Regulating sand mining and fishing** to prevent habitat destruction.
b. **Strict pollution control** in riverine ecosystems.
c. **Community engagement programs** to raise awareness.

About National Chambal Gharial Sanctuary

1. Located on the **Chambal River**, covering **435 km** across **Madhya Pradesh, Rajasthan, and Uttar Pradesh**.
2. One of **India's cleanest river stretches**, crucial for gharial survival.
3. Established to protect gharials, Gangetic dolphins, and red-crowned roof turtles.
4. **Major Wildlife in the Sanctuary**
   a. **Gharials** – Largest population in India.
   b. **Indian Skimmers** – 80% of India's population found here.
   c. **Other Species**:
      - Red-crowned roof turtle **(endangered)**
      - Ganges river dolphin **(endangered)**
      - Mugger crocodile, smooth-coated otter, striped hyena, and Indian wolf

Chambal River: The Lifeline of Gharials

1. **General Features**
   a. Tributary of the Yamuna River, part of the **Gangetic drainage system**.
   b. One of India's least polluted rivers, making it ideal for gharials.
2. **Course:**
   a. Originates in the Vindhya Range, south of **Mhow (MP)**.
   b. Flows north into Rajasthan, passing **Kota**.
   c. Forms the MP-Rajasthan border, then **turns east to** join the Yamuna in UP.



3. **Major Tributaries:**
   a. **Left bank**: Banas, Mej rivers.
   b. **Right bank**: Parbati, Kali Sindh, Shipra rivers.
4. **Major Dams on Chambal:** Gandhi Sagar Dam, Rana Pratap Sagar Dam, Jawahar Sagar Dam
5. **Erosion and Riverbank Degradation:** Chambal's lower course has a **16-km-wide belt of badland gullies**, caused by **accelerated soil erosion**.

13. Electricity 2025 Report

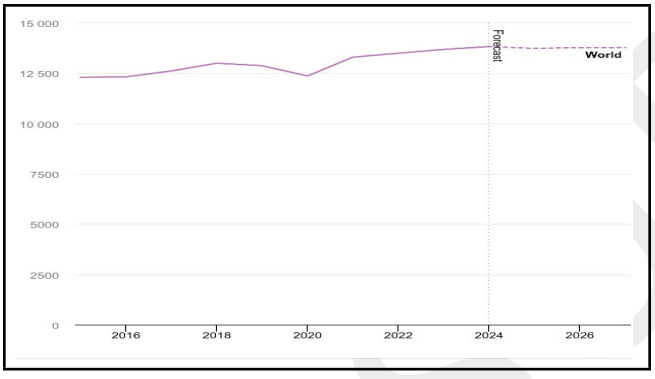
1. In February 2025, the **International Energy Agency (IEA)** released its **Electricity 2025 Report**, outlining key trends in global electricity consumption, emerging technologies, and the growing challenges faced by the energy sector.

2. It sheds light on increasing electricity demand growth, particularly in emerging economies like China and India, while also addressing the evolving energy mix and the increasing influence of weather-dependent renewables.

Key Findings

Global Electricity Demand Growth

1. **Strong Global Growth**:
   a. In 2024, **global electricity demand rose by 4.3%** and is forecast to grow at an average rate of nearly **4% per year until 2027**.
   b. This growth is largely **driven by industrial production**, **rising use of air conditioning**, and the **expansion of electric vehicle charging** and **data centres**.
   c. The increase is substantial, with a projected additional **3,500 TWh** of global electricity demand, roughly equivalent to adding the entire electricity consumption of **Japan** every year.



2. **Regional Breakdown**:
   a. **China** will remain the dominant player, accounting for more than **half of global electricity demand growth** in 2024.
   b. **China's electricity consumption** is expected to **grow by 6% annually** until 2027, driven by industrial growth, electrification, and increased air conditioning demand.
   c. **India** is projected to experience a **6.3% annual growth** in electricity demand, outpacing its historical growth rate of 5%.
   d. This surge is supported by economic expansion, increasing air conditioner ownership, and government schemes facilitating solar energy access.

Electricity Demand in Emerging Economies vs. Advanced Economies

1. **Asia's Rising Share**:
   a. By **2025**, **Asia** is set to consume **half of the world's electricity**, with **China** playing a pivotal role. China's share of global electricity consumption will increase from **a quarter in 2015** to nearly **1/3rd** by mid-decade.
   b. In contrast, **Africa**, despite being home to **20% of the global population**, will account for only **3% of global electricity consumption by 2025**, highlighting the need for significant investment in electrification across the continent.
2. **Advanced Economies**:
   a. Electricity consumption in **advanced economies** like the **United States**, **European Union**, and **Australia** is beginning to rise again, reversing the flat or declining trend seen over the past 15 years.
   b. Factors contributing to this growth include increased use of **electric vehicles**, **air conditioners**, and **data centres**.

The Shift in Energy Sources: Renewables and Nuclear Power

1. **Dominance of Low-Carbon Sources**:
   a. The IEA forecasts that **renewables** (solar, wind, hydropower) and **nuclear power** will meet nearly **95% of global electricity demand growth** through 2027.
   b. This is crucial for limiting the rise in **greenhouse gas emissions** from the power sector.
   c. Solar power, particularly **solar PV**, will see significant growth, contributing around **50% of global electricity demand growth**.
   d. Solar power surpassed **coal in the European Union** in 2024, and the same is expected in **China**, **India**, and **the United States**.
2. **Nuclear Power Expansion**: Nuclear power generation is **projected to rise steadily**, reaching **new highs by 2025**. The recovery of **French nuclear output**, new reactors in **China**, **India**, and **Korea**, and restarts in **Japan** are key drivers of this growth.

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Impact of Weather on Electricity Systems

1. **Weather-Dependent Challenges**:
   a. A significant concern highlighted by the IEA is the growing **weather dependency** of electricity systems. Extreme weather events such as **heatwaves**, **droughts**, and **storms** in regions like the **United States**, **China**, and **India** have caused widespread power disruptions in 2024.
   b. With the rising share of **weather-dependent renewables** like wind and solar, power systems are increasingly vulnerable to fluctuations caused by weather conditions. The IEA stresses the need for **greater system flexibility** to handle such disruptions.
2. **Flexibility and Security**: The flexibility of power systems will be crucial in ensuring **security of supply** and **network resilience**. Policies to improve **demand-side response**, **energy storage**, and **interconnection of grids** are seen as essential to mitigate the risks posed by extreme weather events.

Global Carbon Emissions and the Path to Net-Zero

1. **Stabilizing of CO2 Emissions**:
   a. **Global carbon emissions** from electricity generation are expected to plateau (stay at same level) from 2025 to 2027, following a **1% increase in 2024**.
   b. While this is a positive sign, emissions remain the highest in any sector globally, and further efforts are needed to reduce them.
   c. **Coal-fired generation** is projected to stagnate, while **gas-fired generation** will see moderate growth, particularly in regions like **Asia** and the **Middle East**.

The Role of Asia in Shaping Global Electricity Trends

1. **China's Influence**: China's electricity demand will continue to grow rapidly. This is set to make China the world's largest electricity consumer, surpassing the combined consumption of **the EU**, **the United States**, and **India**.
2. **India's Growing Demand**:
   a. India is on track to meet its rising electricity demand through both **thermal power** and a growing share of **renewable energy**.
   b. India's focus on **solar energy**, coupled with increasing investments in **nuclear power**, will play a key role in meeting this demand sustainably.

Electricity Price Trends and Market Challenges

1. **Price Volatility**:
   a. While **wholesale electricity prices declined** by 20% in some regions in 2024, volatility remains a key challenge.
   b. Events like **Dunkelflaute**, where wind and solar generation are at low levels, have led to **price spikes**, underscoring the need for more **flexible supply** options like **storage** and **demand-side response**.
      - **Dunkelflaute** is a weather phenomenon typically arises in winter, partly due to shorter daylight hours and the correspondingly lower number of sunshine hours.
      - As a result, solar and wind energy yields are reduced, while electricity demand is seasonally high. A "Dunkelflaute" can last for several days.
2. **Policy Adjustments**: The IEA calls for updated **regulatory frameworks** and **market designs** to encourage investments in flexibility solutions, such as better storage systems and more responsive grid operations.

14. India's First Wildlife Biobank at Darjeeling Zoo

1. India's **first wildlife biobank** running at the **Padmaja Naidu Himalayan Zoological Park (Darjeeling Zoo)** in West Bengal.
2. This state-of-the-art facility, which became operational in **July 2024**, is dedicated to preserving genetic material from endangered animal species.

What is a Wildlife Biobank?

1. A **biobank**, also known as a **frozen zoo**, is a repository that collects and stores **biological samples** such as **DNA, tissues, and reproductive cells** from animals.
2. These samples are **cryogenically preserved** at **ultra-low temperatures** (-196°C in liquid nitrogen) to maintain genetic diversity for conservation and research.

Key Features of the Darjeeling Zoo Biobank

1. **Focus on Endangered Species:** The biobank prioritizes animals at risk of extinction, including rare alpine species like **snow leopards, red pandas, and Himalayan wolves**.
2. **Preservation Method:** Samples, including **cells, tissues, and reproductive material from deceased animals**, are stored in **cryogenic conditions** to ensure long-term conservation.
3. **Collaborating Institutions:** The project is undertaken by **Darjeeling Zoo**, in partnership with the **Centre for Cellular and Molecular Biology (CCMB)** under the **Ministry of Science and Technology**.
4. **Future Expansion:** Plans are in place to establish similar biobanks at **Delhi National Zoo** and **Nandankanan Zoological Park (Odisha)**.

Significance of the Biobank

1. **Scientific Research & R&D:**
   a. Enables studies on **genetic mutations, evolutionary biology, and climate change impacts**.
   b. Provides reference material for forensic investigations related to **wildlife crimes**.
2. **Wildlife Conservation:**
   a. **Prevents genetic loss** by preserving genetic diversity.
   b. Assists in potential **revival and breeding programs** for critically endangered species.
   c. Successful precedents include the revival of species like the American **black-footed ferret** (its first clone was made public in 2021 using DNA preserved since 1988) **and northern one-horned rhino** (the last male member died in 2018) using stored DNA.

Role of Biobanks in Conservation and Medicine

1. **Wildlife Biobanks:** Preserve endangered animal species for **future breeding and conservation efforts**.
2. **Human Biobanks:** Store human biological samples like **DNA, blood, and tissues** for medical research.
3. **India's Biobank Network:** As of 2024, **19 registered biobanks** are operational, supporting **genetic studies, disease research, and personalized medicine**.
4. **Regulatory Needs:** India requires **comprehensive biobanking laws** to regulate ethical storage, sharing, and utilization of biological material.

What is Cryogenics?

Cryogenics is the **science of extremely low temperatures** (below -150°C). It is widely used in biological preservation, medical advancements, and space research.

Applications of Cryogenics:

1. **Cryopreservation:** Used for storing **cells, tissues, embryos, and reproductive material**.
2. **Medical Uses:** Applied in **cryosurgery** to eliminate cancerous tissues and in blood and vaccine storage.
3. **Cryonics:** A futuristic field aiming at the preservation of human bodies for potential revival.
4. **Cryoelectronics:** Utilized in **superconductivity research** and space technology.
5. **Rocketry:** Used in **cryogenic rocket engines** (e.g., liquid hydrogen and liquid oxygen fuels).

About Padmaja Naidu Himalayan Zoological Park

1. India's **largest high-altitude zoo**, focusing on the **captive breeding of alpine species**.
2. Successfully breeds and conserves species like: **Snow leopards, Himalayan wolves** and **Red pandas.**
3. **Biodiversity Hub:** Houses endangered species such as **gorals, Siberian tigers, and rare Himalayan birds**

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G. Society And Culture

1. Controversy Over the Three-Language Formula

1. The Union Government has withheld ₹2,152 crore in funds under the **Samagra Shiksha Scheme** to **Tamil Nadu**, citing the State's refusal to implement the **Three-Language Formula** under the **National Education Policy (NEP) 2020**.
2. Tamil Nadu adheres to a **Two-Language Policy** (Tamil and English) and perceives the three-language policy as a form of **Hindi imposition** and a threat to its **linguistic and cultural identity**.

What is the Three-Language Formula?

Evolution of Policy

1. **1948-49**: **University Education Commission** (Radhakrishnan Commission) recommended multilingual learning.
2. **1964-66**: **Kothari Commission** proposed the **Three-Language Formula**.
3. **NEP 1968**: First formal incorporation of the formula.
4. **NEP 1986 & 1992**: Retained the formula.
5. **NEP 2020**: Reiterated the formula with **greater flexibility and no imposition of Hindi**.

Key Features (NEP 2020)

1. Students to learn **three languages**, **two of which must be native to India**.
2. **Languages to be decided by States, regions, and students**.
3. **No mandatory imposition** of any language, including Hindi.
4. Emphasis on **mother tongue/home language** as the **medium of instruction till Grade 5**, preferably till Grade 8.
5. **Sanskrit** promoted as an **optional language**.

Significance of the Three-Language Formula

1. **Multilingualism**: Enhances communication and cultural understanding.
2. **National Integration**: Bridges regional linguistic divides.
3. **Global Competence**: Balances Indian languages with global link language (English).
4. **Cognitive Benefits**: Studies support improved learning outcomes through mother tongue instruction.

Concerns and Challenges

1. **Cognitive Burden**: ASER surveys indicate poor reading and comprehension levels among students:
   a. **60%** of **Class V** students can't read **Class II** level texts.
   b. **25%** of youth (14-18 years) can't fluently read a **Class II** level text in regional languages.
   c. **40%** of this group can't read basic English sentences.
2. **Poor Past Implementation**: Earlier formula saw uneven application across states, with **Sanskrit often prioritised over modern Indian languages**.
3. **Perceived Hindi Imposition**: Non-Hindi states like Tamil Nadu see the policy as an indirect push for Hindi dominance.
4. **Cultural Resistance**: Regional languages feel threatened.
5. **Teacher Shortage**: Scarcity of trained language teachers, especially for non-Hindi Indian languages.
6. ***Funding Challenges* states bear 85% of expenditure on elementary education**; the Centre only contributes 15%.
   - Combined Centre-State education spending remains **below NEP's target of 6% of GDP**, currently around **4-4.5%**.

Census Data on Multilingualism

- **26% of Indians are bilingual, 7% trilingual**
- Urban India: 44% bilingual, 15% trilingual
- Rural India: 22% bilingual, 5% trilingual
- Trends show increasing multilingualism due to urbanisation and migration.

What are constitutional provisions?

1. The Constitution provides that Hindi is the official language of the Union.
2. English was originally meant to continue as the **official language for 15 years** from the commencement of the Constitution (till 1965).
3. However, the **Official Languages Act, 1963** provides for the continued use of English, in addition to Hindi, for all official purposes of the **Union without any time limit.**
4. The legislature of a **State may adopt any one or more of the languages** in use in the State or Hindi as the official language(s) for official purposes of that State.
5. Further, the Constitution provides that it shall be the duty of the Union to promote the spread of the Hindi language so that it may serve as a medium of expression for all the elements of the composite culture of India.

Way Forward

1. **Constructive Dialogue**: The Centre and Tamil Nadu must engage to resolve concerns without disrupting funding.
2. **Flexible Implementation**: Let States choose languages based on local needs.
3. **Resource Support**: Improve infrastructure and teacher availability for language learning.
4. **Focus on Core Learning**: Prioritise **mother tongue** and **English proficiency**, alongside **foundational numeracy and literacy**.
5. **Decentralised Approach**: Give more autonomy to States in education policy formulation.

While the **three-language policy aims to promote linguistic unity and national integration**, its implementation must be **sensitive to regional identities, resource constraints, and pedagogical realities**. The ultimate goal should be **functional multilingualism** without **imposing uniformity**.

25th anniversary of International Mother Language Day

1. **21 February** was declared to be **International Mother Language Day by United Nations Educational, Scientific and Cultural Organization (UNESCO)** on 17 November 1999. It has been observed throughout the world since 21 February 2000.
2. The declaration came up in tribute to the Language Movement done by the Bangladeshis (then the East Pakistanis).
3. Theme for 2025: - *"Silver Jubilee Celebration of International Mother Language Day,"*

2. India Preventing Suicides: A 30% Decline in Death Rates (1990-2021)

1. A recent study published in ***The Lancet Public Health*** presents a significant decline in India's suicide death rate over the past three decades.
2. Based on the **Global Burden of Diseases, Injuries, and Risk Factors Study (GBD 2021)**, the data reveals a 30% reduction in suicide rates from **1990 to 2021**—highlighting both progress and ongoing challenges in suicide prevention.

Suicide Death Rate in India

Year	Suicide Rate (per 1 lakh population)
1990	18.9
2019	13.1
2021	13.0

Over a period of **three decades**, suicide deaths in India decreased by **31.5%**. This decline highlights the positive impact of evolving mental health policies and community-based intervention programs.

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Gender-Specific Trends in Suicide Rates

	Men	Women
1990 Rate	20.9 per lakh men	16.8 per lakh women
2021 Rate	15.7 per lakh men	10.3 per lakh women
Leading Causes	Family problems and financial issues.	Family-related stress, domestic violence, marital issues.
2021 Data Insight	Suicide was the second leading cause of death among men aged 15–39, after road injuries.	Suicide was the leading cause of death among women aged 15–39. - Despite more women becoming educated, suicide rates were higher among those with education up to Class XII — suggesting a complex interplay of empowerment, societal expectations, and mental health stressors.

Global Trends in Suicide

1. **Global Suicide Rate**: 1 suicide every 43 seconds (approx. 740,000 deaths annually).
2. **Gender Disparities**:
   a. **Male Suicides**: In 2021, **519,000** men died by suicide.
   b. **Female Suicides**: In 2021, **227,000** women died by suicide.
   c. Men are more likely to use lethal methods, such as guns, while women often opt for less lethal methods, such as poisoning or overdosing.
3. **Global Decline in Suicide Rates:** The global age-standardized suicide rate decreased by 40% from 1990 to 2021, with men experiencing a 34% decline and women a 50% decline.

Challenges, Implications & Recommendations for Suicide Prevention

Challenges	Implications	Recommendations
Limited access to mental health resources in remote/rural areas	Inadequate support in high-risk regions	Improve mental health infrastructure and expand services in underserved areas
Insufficient mental health infrastructure	Overburdened public health system	Integrate mental health services into primary health care
Lack of mental health insurance coverage	Especially affects the elderly with chronic illnesses	Provide financial literacy support and ensure inclusion of mental health in insurance
Social stigma around mental health	Prevents help-seeking behavior	Launch large-scale public awareness and anti-stigma campaigns
Inadequate data on suicide causes and risk factors	Hinders development of targeted prevention strategies	Collect detailed suicide-related data for evidence-based and targeted interventions
Lack of family/ social support systems	Increases vulnerability of youth and marginalized groups	Provide family counseling, youth support programs, and community-based interventions

Government & Institutional Initiatives for Suicide Prevention

1. Mental Healthcare Act, 2017

a. **Decriminalized suicide attempts:** Section 309 IPC repealed.

- There is no equivalent section in the **Bharatiya Nyaya Sanhita (BNS)** like **Section 309** of **erstwhile IPC** which made suicide a criminal offence.

b. **Significance:** Encourages help-seeking without fear of legal action.

c. Under **Section 115 of the Act**, suicide attempters are presumed to be under severe stress and are not to be punished.

2. National Suicide Prevention Strategy (2022)

a. **Goal:** Reduce suicide mortality by 10% by 2030.

b. **Focus Areas:** Mental health, socio-economic triggers, and public health education.

3. WHO's Mental Health Action Plan (2013–2030)

a. **Global Framework:** Urges countries to integrate mental health into public health policies and reduce stigma.

b. **Relevance:** India's efforts align with WHO objectives for suicide prevention.

4. **National Mental Health Policy (2014)**:

a. It aims to provide accessible and affordable mental health care to all, with a particular focus on integrating mental health services into primary healthcare.

b. It addresses the rising burden of mental health disorders and reduce the societal stigma associated with mental illnesses.

5. **Sustainable Development Goal (SDG) 3.4**

a. This global target promotes **mental health** as a critical component of well-being, with an emphasis on reducing premature mortality from mental health conditions, including suicide.

6. **Toll-Free Helplines**:

a. **Manodarpan**: A toll-free helpline offering psychological support, primarily for students and those facing mental health issues during stressful times.

b. **KIRAN**: A 24/7 national mental health support helpline that provides counseling services to those experiencing mental health crises.

3. UNESCO Launches "Imagine a World with More Women in Science" Campaign

1. In February 2025, UNESCO launched the **"Imagine a world with more women in science"** campaign to mark the **10th anniversary of the International Day of Women and Girls in Science**.
2. The campaign marks the **10th anniversary** of International **Day of Women and Girls in Science** & highlights positive impact of diverse perspectives by using hashtag ***#EveryVoiceInScience***.
   - **UN General Assembly (UNGA)** declared **February 11** as the **International Day of Women and Girls in Science** in 2015.

Current Gender Gap in Science:

1. **Global Perspective**:
   a. **Low Representation**: Women represent only **one-third** of the global scientific community.
   b. **Leadership Gap**: Only **1 in 10** STEM leadership roles are held by women.
2. **India**:
   a. **Women in STEMM**: Women constitute **43%** of STEMM (Science, Technology, Engineering, Mathematics, and Medicine) enrollment.
   b. **Women Scientists**: **18.6%** of Indian scientists are women.
   c. **R&D Projects**: Around **25%** of research and development projects are led by women.

Challenges and Recommendations

Challenges	Recommended Actions
Social and Cultural Norms: Restrictive gender roles limit women's participation.	**Dismantle Gender Stereotypes and Biases in Science**: - Increase visibility of female scientists in textbooks. - Ensure equitable representation of women in decision-making bodies like boards and panels.

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Lack of Role Models: Few visible female leaders in science reduce women's aspirations.	**Enhance Visibility of Women Role Models**: - Highlight more female discoveries and stories. - Include female scientists' images and stories in educational content.
Workplace Inequality: Gender bias in work cultures affects opportunities for women.	**Create Inclusive Workplace Environments**: - Implement policies promoting inclusion, diversity, and equity. - Address gender-based violence, including sexism and sexual harassment.
Educational Barriers: Gender bias in teaching materials and lack of educational support for girls in science.	**Open Educational Pathways for Girls**: - Remove gender bias from educational materials. - Encourage businesses to support women and girls in science through CSR initiatives.

4. Digital Obscenity and the Law

1. In February 2025, a controversy erupted after **Ranveer Allahbadia**, a popular podcaster, made an offensive remark during an episode of the YouTube show *India's Got Latent*, hosted by comedian **Samay Raina**. The comment sparked widespread public outrage, leading to **FIRs being filed in Maharashtra and Assam**. Though the show was originally intended for a limited audience, clips went viral, intensifying backlash.
2. As criticism mounted, Allahbadia **issued a public apology**, admitting he overstepped the line. In response, Samay Raina **removed all videos of the show**. The **Supreme Court granted interim protection from arrest**, though it harshly criticized the comments, saying:
3. The **National Commission for Women (NCW)** also issued summons to Allahbadia, Raina, and others involved in the incident. Legal proceedings are ongoing.

What is Obscenity?

Obscenity refers to anything that **strongly offends prevalent moral standards**, particularly relating to sex or bodily functions. However, defining obscenity is difficult since **what is considered obscene varies** from person to person, place to place, and over time.

- The **Oxford Dictionary** defines obscene as "offensive or disgusting by accepted standards of morality and decency."

Laws Governing Obscenity in Online Content:

1. **Bharatiya Nyaya Sanhita (BNS), 2023**
   a. **Section 294** penalizes sale, display, or distribution of **obscene material**, including **electronic content**.
   b. Obscene material is defined as content that is **lascivious**, appeals to **prurient interest**, or tends to **deprave and corrupt viewers**.
   c. **Penalties**: First-time offenders may face **up to 2 years in prison and a fine of Rs. 5,000**.
2. **Section 67 of the Information Technology (IT) Act, 2000**
   a. Penalizes the **publication or transmission of obscene material in electronic form**.
   b. **Penalties**: Up to **3 years imprisonment and Rs. 5 lakhs fine** for first-time offenders.

Evolution of Obscenity Laws: From Hicklin Test to Community Standards

1. **Hicklin Test (1868)**
   a. Originated in UK (Regina v. Hicklin case).
   b. Obscenity was judged based on **whether any portion** of the content could corrupt susceptible minds.
   c. Applied in **India's 1964 Ranjit D. Udeshi case** to ban *Lady Chatterley's Lover*.
2. **International Shift**
   a. **UK**: The **Obscene Publications Act (1959)** emphasized judging material **as a whole**.
   b. **USA**: In **Roth v. United States (1957)**, the court used the **"average person" test**, based on **contemporary community standards**.
3. **Indian Shift – Aveek Sarkar Case (2014)**
   a. The Supreme Court adopted the **community standards test**, noting evolving social values.

b. Judgment emphasized:
   - Content must be judged **in entirety**, not isolated parts.
   - **Context matters** in evaluating obscenity.
   - Obscenity is no longer judged by **susceptible minds**, but by **national standards and changing mores**.

Freedom of Expression vs. Obscenity

1. **Article 19(1)(a)** of the Indian Constitution guarantees **freedom of speech and expression**.
2. However, **Article 19(2)** allows **reasonable restrictions** on grounds of **decency and morality**.
3. Thus, **free speech is not absolute** — it must be balanced against evolving community standards and societal decency.

About the National Commission for Women (NCW)

1. The **National Commission for Women** (NCW) was set up as a statutory body in **January 1992** under the **National Commission for Women Act, 1990** (Act No. 20 of 1990 of Govt. of India) to:
   a. Review the Constitutional and Legal safeguards for women;
   b. Recommend remedial legislative measures;
   c. Facilitate redressal of grievances and;
   d. Advise the Government on all policy matters affecting women.
2. In keeping with its mandate, the Commission initiated various steps to improve the status of women and worked for their economic empowerment during the year under report.
3. The Commission completed its visits to all the States/UTs except Lakshdweep and prepared **Gender Profiles** to assess the status of women and their empowerment.
4. It received a large number of complaints and acted **suo-moto** in several cases to provide speedy justice.
5. It took up the issue of **child marriage**, sponsored **legal awareness programmes**, **Parivarik Mahila Lok Adalats** and reviewed laws such as **Dowry Prohibition Act, 1961**, **PNDT Act 1994**, **Indian Penal Code 1860** and the **National Commission for Women Act, 1990** to make them more stringent and effective.
6. It organized **workshops/consultations**, constituted **expert committees on economic empowerment of women**, conducted **workshops/seminars for gender awareness** and took up **publicity campaign against female foeticide**, **violence against women** etc. in order to generate awareness in the society against these social evils.

5. India's Digital Health

1. Recently, The **World Economic Forum (WEF)** published an article named ***'India Can Be a Global Pathfinder in Digital Health'.***
2. It highlighted India's potential to lead in developing a global digital healthcare system.
3. It also mentioned that India is making significant steps in **digital health** by using technologies such as **telemedicine**, **electronic health records (EHRs),** & **AI-driven diagnostics** to bridge the healthcare gap between urban and rural areas.
4. India's progress is being seen as a model for other developing countries, especially in building resilient healthcare systems.

What is Digital Health as per WHO ?

As per World Health Organisation (WHO), digital health is the field of knowledge and practices associated with the development and use of digital technologies to improve health.

Components of Digital Health:

1. **Digital Health Applications:**
   a. **EHRs (Electronic Health Records):** Digital systems to maintain patient records.
   b. **Telemedicine:** Remote healthcare consultations via digital platforms.
   c. **Wearable Devices:** Devices to monitor health metrics like heart rate, blood pressure, and activity levels.
   d. **Health Information Systems:** Platforms for managing and exchanging health data across institutions.
2. **Digital Health Technologies:**
   a. **Artificial Intelligence (AI):** Used for diagnostics and predictive analytics.

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b. **Big Data:** Analyzing large datasets to identify health trends and patient patterns.

c. **Internet of Medical Things (IoMT):** A network of interconnected medical devices that communicate with each other to monitor patient health.

d. **Augmented Reality (AR):** Used in medical training and surgery planning.

Prominent Features of India's Digital Healthcare System (As Highlighted by WEF)

1. **Interoperability and Standardization:**
   a. Ensuring smooth data exchange across different systems and stakeholders.
   b. **Examples:**
      - **Ayushman Bharat Digital Mission (ABDM):** Aims to create a national digital health ecosystem using **Unique Health IDs** for patients.
      - **CoWIN Platform:** Managed **over 2 billion doses** of the COVID-19 vaccine and set a global benchmark for digital health systems.
      - **Other Platforms:**
        - **U-Win Portal** for COVID-19 vaccination.
        - **Aarogya Setu App** for contact tracing.
        - **e-Hospital application** for online healthcare services.
2. **Public-Private Collaboration:**
   a. Promoting **partnerships** between the public and private sectors to improve healthcare delivery.
   b. **National Digital Health Mission (NDHM):**
      - The **Health Facility Register (HFR)** standardizes data exchange between private and public healthcare facilities.
3. **Affordability and Accessibility:**
   a. **Digital tools** are being used to make healthcare more **inclusive** and **accessible**, particularly in rural areas.
   b. **Examples:**
      - **e-Sanjeevani Telemedicine Service:** Provides telemedicine services to remote areas, offering millions of **consultations**.
      - **National Tele Mental Health Programme (Tele MANAS):** Provides **mental health support** across the country via digital means.

Concerns Associated with Digital Healthcare

Concern	Solution
Standardization Issues with Digital Health Cards	- Create a unified platform for all health cards (e.g., ESIC, PM-JAY). - Develop interoperable systems for seamless data migration between different health card systems.
Limited Digital Literacy & Access in Rural Areas	- Invest in digital literacy programs, especially in rural and underserved areas. - Increase access to smartphones, internet, and digital healthcare tools via government programs or subsidies.
30% of healthcare institutions in India suffer from **poor data connectivity**, impacting healthcare delivery	- Improve infrastructure and invest in better data connectivity solutions for healthcare institutions. - Develop offline solutions or hybrid models that work well even with poor connectivity.

Cybersecurity Risks and Unauthorized Data Access	- Strengthen cybersecurity frameworks, protocols, and monitoring systems within healthcare systems. - Regularly update and audit data security measures to prevent breaches.
AI Bias in Healthcare **Example**: In the **US**, AI systems in healthcare prioritized healthier white patients over sicker black patients due to the way AI was trained on cost-based data.	- Ensure AI models are trained on diverse and representative datasets. - Implement fairness and transparency audits for AI systems used in healthcare. - Include mechanisms for continuous monitoring and adjustment of AI algorithms to ensure equity in healthcare.
Example: 2022 AIIMS Cyber Attack Exposing Data of 4 Crore Patients	- Enhance backup systems and response protocols for cyber-attacks. - Adopt end-to-end encryption and multi-factor authentication for access to sensitive health data.

6. Crosspathy in India: Bridging Healthcare Gaps or Compromising Medical Ethics?

Crosspathy refers to the practice of doctors trained in one medical system (such as Ayurveda, Yoga, Unani, Siddha, or Homeopathy) using treatments from another system (such as allopathic or modern medicine).

- **For example,** a homeopathic doctor prescribing allopathic medicine. While crosspathy may seem like a solution to address healthcare gaps, particularly in underserved areas, it raises serious concerns about patient safety, ethics, and the qualifications of healthcare providers.

Current Context: Maharashtra FDA's 2025 Decision

1. In January 2025, the **Maharashtra Food and Drug Administration (FDA)** allowed homeopathic doctors who have completed a pharmacology course to prescribe allopathic medicines.
2. This move has sparked significant debate, especially from the Indian Medical Association (IMA), which has strongly opposed this decision.
3. The IMA argues that it violates a stay imposed by the Bombay High Court and contradicts the Supreme Court's stance on crosspathy.
4. This decision has brought the issue of crosspathy to the forefront of public discourse, with supporters claiming it can help address healthcare shortages, particularly in rural areas, while critics warn of the potential risks to patient safety and medical ethics.

Legal Context on Crosspathy

Over the years, the practice of crosspathy has been the subject of numerous legal cases in India. The courts have generally emphasized that practitioners should only provide treatments within their own medical systems unless they are duly qualified to do otherwise.

1. **Poonam Verma vs. Ashwin Patel (1996)**: A homeopath's prescription of allopathic medicines led to the death of a patient. The Supreme Court ruled this as medical negligence, stating that cross-system practice is negligent unless authorized by the state.
2. **State of Punjab vs. Baljit Singh (1999)**: A homeopath without proper qualifications practiced allopathy, leading to a ruling that medical practitioners must only practice within their own system to ensure patient safety.
3. **K.K. Verma vs. Union of India (2007)**: Raised concerns about AYUSH doctors prescribing allopathic drugs without sufficient qualifications.
4. **IMA vs. Tamil Nadu (2014)**: The IMA challenged a rule in Tamil Nadu that allowed homeopaths to prescribe allopathic medicine. While the case was dismissed, it reinforced the IMA's opposition to crosspathy.
5. **Madhya Pradesh High Court (2015)**: Reinforced the need for clear boundaries between medical systems by ruling that AYUSH doctors cannot prescribe allopathic drugs without the appropriate qualifications.

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Why is Crosspathy Being Promoted?

1. Crosspathy has been seen as a potential solution to address the shortage of healthcare professionals, particularly in rural areas. In India, the shortage of specialists is particularly alarming:
   a. There is an **80% shortage of specialists in rural areas**, with only 4,413 specialists available, while 21,964 are needed.
   b. Despite India having over 13 lakh allopathic doctors and 5.5 lakh AYUSH practitioners, most healthcare providers are concentrated in urban centers.
   c. The doctor-population **ratio in India is 1:836**, which is better than the **WHO standard of 1:1000**, but the disparity between urban and rural healthcare access remains significant.
   d. To fill this gap, the government has considered promoting AYUSH doctors to prescribe allopathic medicines, particularly in underserved areas.
      - Homeopathic doctors, after completing specific pharmacology training, could potentially play a key role in bridging this gap by providing patients with access to essential medical treatments.
2. **Utilizing Available Workforce**: There are many trained AYUSH practitioners in India who can be utilized to meet the growing demand for healthcare in rural and remote areas.
3. **Remote Healthcare**: Technologies like **eSanjeevani** provide remote consultations, making healthcare more accessible to rural populations.

Concerns About Crosspathy

Despite the potential benefits, crosspathy raises serious concerns about the safety and efficacy of healthcare practices. These concerns include:

1. **Risk of Misdiagnosis and Unsafe Treatments**
2. **Drug Interactions and Side Effects**
3. **Ethical Issues**: Crosspathy can be viewed as professional misconduct, violating ethical guidelines by practicing outside one's area of expertise.
4. **Regulatory Challenges**: The Medical Council of India (MCI) has set strict guidelines to prevent unqualified practitioners from engaging in crosspathy, stressing the need for clarity in professional boundaries.

Ensuring Safe Crosspathy: Recommendations

If crosspathy is to be promoted, it is essential to ensure that it is done safely and ethically. The following measures are recommended to safeguard patient care:

1. **Bridge Courses for Practitioners**: Offering bridge courses in pharmacology, diagnostics, and emergency care for AYUSH practitioners would help ensure they have the necessary knowledge to safely prescribe allopathic medicines.
2. **Clear Regulations**: that dictate who can prescribe which medicines and under what circumstances.
3. **Ongoing Medical Education**: Continuous education for both modern and traditional medical practitioners should be required to keep them updated on the latest medical practices and ethical standards.
4. **Knowledge Exchange**: Encouraging collaboration through conferences and workshops between modern and traditional medical systems can foster better understanding and integration of practices.
5. **Monitoring and Feedback**: Implementing systems to monitor the performance of practitioners and collect patient feedback.
6. **Public Education**: Educating the public about the risks and benefits of crosspathy will help patients make informed decisions about their healthcare options.
7. **Collaborative Efforts**: Encouraging cooperation between various medical bodies, such as the Indian Medical Association (IMA) and AYUSH councils, can help create a unified approach to crosspathy and address the concerns surrounding it.
8. **Promote Research**: Encouraging research on integrating traditional and modern medicine could lead to better, evidence-based approaches to healthcare, benefiting patients and improving the overall healthcare system.

7. Gyan Bharatam Mission

In the Union Budget 2025–26, the Government of India announced a special initiative named **'Gyan Bharatam Mission'**—a mission aimed at **surveying, documenting, and conserving India's vast manuscript heritage**.

About Gyan Bharatam Mission

1. **Nodal Ministry**: Ministry of Culture
2. **Objective**: To survey, document, and conserve India's manuscript wealth.
3. **Scope**:
   a. Targeting more than **one crore manuscripts** across academic institutions, libraries, museums, and private collections.
   b. Establishment of a **National Digital Repository of Indian Knowledge Systems** for wider knowledge sharing.
4. **Execution Agency**: The mission will be implemented under the **National Mission for Manuscripts (NMM)**.
5. **Budget Allocation**: Increased from **₹3.5 crore to ₹60 crore** for better execution and outreach.

National Mission for Manuscripts (NMM)

1. **Established**: 2003
2. **Nodal Ministry**: Ministry of Culture
3. **Implementation Body**: Functions under the **Indira Gandhi National Centre for the Arts (IGNCA)**.

Objectives of NMM:

1. **Survey and Identification** of manuscripts at the national level.
2. **Documentation and Creation of a National Electronic Database**.
3. **Conservation** using both **modern and traditional methods**.
4. **Training scholars and conservators** in Manuscript Studies.
5. **Digitization of rare and endangered manuscripts**.
6. **Publication** of critical editions and catalogues of unpublished manuscripts.
7. **Public Engagement** through lectures, seminars, and outreach programmes.

Challenges Before the Mission

1. **Huge Manuscript Wealth**: Estimated over **10 million manuscripts**—possibly the **largest collection globally**.
2. **Language and Script Barriers**: Manuscripts exist in numerous languages and scripts, many of which are unreadable today.
3. **Scattered Repositories**: Manuscripts are found across museums, temples, private homes, libraries, and academic institutions.
4. **Poor Condition of Manuscripts**: Many are **brittle, fungus-infected, insect-ridden**, or in a fragile state due to decades of neglect.
5. **Lack of Skilled Scholars**: Traditional scholars are disappearing, and the new generation lacks manuscript skills.
6. **Neglect of Knowledge Value**: The rich knowledge content in manuscripts is often perceived as irrelevant in modern times.

What is a Manuscript?

1. A **manuscript** is a **handwritten composition** on materials such as **paper, bark, cloth, palm leaf, metal**, etc., **at least 75 years old**, with **scientific, historical, or aesthetic value**.
2. **Subject Areas**: Vedas, Vedanta, Ayurveda, Darshan, Yoga, Astronomy, Mathematics, Linguistics, Astrology, Aesthetics, Vaastu, etc.
3. **Languages & Scripts**:
   a. About **70% in Sanskrit**.
   b. Others in **Assamese, Bengali, Hindi, Tamil, Telugu, Marathi, Malayalam, Gujarati, Kannada, Urdu, Punjabi, Odia, Maithili, Dogri, Kashmiri, Nepali, Manipuri**, and more.
4. **Note**:
   a. **Lithographs or printed texts** are **not considered manuscripts**.
   b. **Manuscripts are distinct from Historical records** like firmans, revenue documents, or inscriptions.
      - Manuscripts contain **knowledge content**, not administrative or historical events.

8. Fort William To Be Renamed As Vijay Durg

1. **Fort William**, the **Indian Army's Eastern Command HQ in Kolkata**, has been **renamed Vijay Durg** to remove colonial imprints.
2. It is named after **Maharashtra's oldest Sindhudurg fort,** a former **Maratha naval base under Chhatrapati Shivaji.**

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- Other changes include renaming **Kitchener House,** inside the fort **to Manekshaw House** and **St. George's Gate to Shivaji Gate**.

About Fort Williams:

1. The fort is **located in Kolkata on the eastern banks of the Hooghly River** and was originally **named after King William III of England.**
   a. The original fort was built by the British in **1696** under **Sir John Goldsborough** and **completed in 1706**.
   b. It was damaged during the **Siege of Calcutta (1756)** when **Siraj-ud-Daulah defeated the British**.
   c. After the **Battle of Plassey (1757), Robert Clive rebuilt** it at a new location between 1**758 and 1781.**
2. **Significance:**
   a. Site of the **Black Hole of Calcutta incident** (1756).
   b. It houses a war **memorial** with artifacts from the **1971 Indo-Pak War** and **Bangladesh Liberation War**.

9. Konda Reddi Tribe

Recently, the **Konda Reddi tribe** was in news for **preferring live-in relationship** over marriage due to expensive traditional weddings.

About Konda Reddi Tribe

1. They are recognized as a **Particularly Vulnerable Tribal Group (PVTG).**
2. **Habitation**: In the hilly and forest tracts of **East and West Godavari in Andhra Pradesh** and **Khammam districts** of **Telangana.**
3. **Mother Tongue**: Telugu.
4. **Family and Marriage:** Family is **patriarchal and patrilocal.** Monogamy is a rule but polygamous families are also found.
5. **Faith and Festivals**: They worship **Muthayalamma** (Village deity), **Bhumi Devi** (Earth Goddess), **Gangamma Devi** (River Goddess) etc., and celebrate festivals like **Mamidi Kotha, Bhudevi Panduga, Gangamma Panduga and Vana Devudu Panduga.**

10. Chhatrapati Shivaji Maharaj

Every year, **February 19** marks the **birth anniversary of Chhatrapati Shivaji Maharaj (1630)** — the legendary Maratha ruler who laid the foundation of **Swarajya (self-rule)** and challenged the mighty Mughal Empire with courage and strategy.

Though his birth anniversary was first celebrated in **1870**, it gained prominence during the **freedom movement**, when **Bal Gangadhar Tilak** used it as a means to invoke nationalist sentiment among Indians.

A Glorious Beginning

1. **Born:** 19 February 1630, **Shivneri Fort**, near **Junnar**, present-day **Maharashtra**
2. **Parents:** *Shahaji Bhosale* (a Maratha general) and *Jijabai*
3. From a young age, Shivaji was inspired by the stories of valor and justice, which later shaped his ideals of governance and resistance.

Architect of the Maratha Empire

1. Shivaji established the **Maratha Empire in the 17th century**, built on the ideals of *Swarajya*, military strength, and civil administration.
2. Known for his **guerrilla warfare tactics**, he revolutionized military strategies.
3. Constructed or captured **over 300 forts**, including:
   a. **Raigad Fort** (his capital)
   b. **Sindhudurg Fort** (strategic naval base)

Visionary Reformer and Administrator

Shivaji Maharaj was not just a military genius but also a **pioneer in administration**:

1. Divided the kingdom into **four provinces**, each managed by a **Mamlatdar**.
2. Replaced the **Jagirdari system** with the **Ryotwari system**, ensuring direct revenue collection from farmers.
3. Introduced **Chauth** (25% tax) and **Sardeshmukhi** (10% tax), ensuring a sustainable revenue model.

Honors and Titles Adopted

To establish his sovereign identity, Shivaji assumed several titles that reflect his stature:

1. **Chhatrapati** – Sovereign King
2. **Shakakarta** – Founder of an era
3. **Kshatriya Kulavantas** – Head of the warrior clan
4. **Haindava Dharmodhhaarak** – Protector of the Hindu faith

Shivaji Statue at Pangong Lake

1. Recently, a statue of **Chhatrapati Shivaji Maharaj** was inaugurated on the banks of **Pangong Tso**, situated at an altitude of **14,300 feet**.
2. The unveiling of this statue took place shortly after **India and China** completed their disengagement at **Demchok** and **Depsang**, marking the end of a **4.5-year border standoff**.

Debate on the Statue's Significance

1. While the inauguration of the statue was a moment of pride for many, it has sparked a debate among **army veterans** and **locals**.
2. A retired Colonel has proposed that instead of Shivaji Maharaj, a statue of **Dogra General Zorawar Singh** should have been erected at this site.
    - General Zorawar Singh, whose military campaigns from **1834 to 1840** led to the merging of **Ladakh** with the **Dogra Kingdom** under **Maharaja Ranjit Singh**, is seen as a key figure in the region's history.

About Pangong Tso

1. **Pangong Tso** is an **endorheic lake** located in the Himalayas at a height of about **4,350 m (14,270 ft)**.
    a. An endorheic lake is a body of water that collects in a basin and has no obvious outlet, and does not flow into an ocean or sea.
    b. Endorheic lakes are generally saline as a result of being unable to get rid of solutes left in the lake by evaporation.
2. It is one of the **world's highest brackish water lakes**, formed as a **tectonic lake** during the collision of the **Indian Plate** with the **Eurasian Plate**, an event that led to the creation of the **Himalayas**.
3. The lake occupies the space that was once part of the **Tethys Ocean**.

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H. ETHICS

1. Ethics in International Relations: What Should World Leaders Know?

1. The ongoing Russia-Ukraine war has reignited global debates on the ethical conduct of world leaders in international relations.
2. Recent diplomatic engagements, such as those between the US and Ukrainian Presidents, highlight the urgent need to revisit the moral compass guiding decisions on diplomacy, conflict, and war resolution.
3. This calls for an essential question: Should world leaders rethink the ethical foundations behind their decisions?

Ethics of War: Jus ad Bellum and Jus in Bello

> *"Peace is not merely a distant goal that we seek, but a means by which we arrive at that goal."*
>
> **— Martin Luther King Jr.**

1. The ethics of war are governed by two core principles:
   a. **Jus ad Bellum** – The morality of going to war.
   b. **Jus in Bello** – The morality of conduct during war.
2. These principles form the basis of **Just War Theory**, assessing:
   a. Is it morally just to initiate war?
   b. Are ethical norms being followed during war?
3. However, in today's volatile global landscape, a more profound question arises: **Is war itself morally justifiable anymore?**
4. With rising global tensions and potential threats of large-scale wars, leaders must shift focus from reacting to conflicts to proactively **preventing them**.
5. The pertinent question should not just be *"What caused the war?"*, but rather *"How can war be avoided?"*

Leaders Under Scrutiny: Ethical Questions in Modern Warfare

1. **Technological Warfare**: Drone strikes, cyberattacks, and other modern warfare techniques raise complex moral dilemmas.
   a. **Collateral damage**, especially civilian casualties from drone strikes, challenges moral accountability.
2. **Language and Diplomacy**: Insulting foreign leaders or undiplomatic rhetoric undermines global ethical standards.
3. **Sovereignty vs. Power Politics**:
   a. Ethical challenges arise when powerful nations intervene in other nations' affairs under the pretext of national interest.
   b. Examples include the **Russia-Ukraine war** and the **Israel-Palestine conflict**.
   c. The key concern: Are leaders upholding ethical responsibilities or acting on **self-interest**?

Environmental and Humanitarian Consequences of Leadership Decisions

1. **Nuclear Tests & Climate Change**:
   a. Decisions like conducting nuclear tests have long-term **environmental impacts**, contributing to **climate change** and **loss of life**.
   b. Ironically, **developing countries**, which contribute the least to climate change, suffer the most.
2. **Ethical Accountability**:
   a. Leaders must be held accountable not only for immediate consequences but also for **intergenerational impacts**.
   b. Ethics demands **sustainable leadership**, considering environmental and humanitarian dimensions.

The Role of the United Nations and Ethical Diplomacy

1. **UN's Mandate**: As a global peacekeeper, the **United Nations** plays a vital role in promoting peace and ethical diplomacy.
2. **Challenges**:
   a. The UN often faces criticism for **ineffectiveness or inaction** in key global crises.

   b. A critical question arises: Should the UN remain passive or push for **ethical leadership reforms**?
3. **Promoting Ethical Global Governance**:
   a. UN and peacekeeping agencies must emphasize ethical decision-making over national interests.
   b. Global peace and ethical diplomacy must take precedence over power politics.

The Moral Responsibility of Leaders in Times of Conflict

1. **Global Peace vs. National Interests**:
   a. Leaders must weigh decisions through the lens of **global ethics**, not just national gain.
   b. Are figures like **Putin or Zelensky** truly acting in global interest, or are they driven by **ego, pride, and nationalism**?
2. **Nationalism vs. Global Responsibility**:
   a. Excessive nationalism often leads to global instability.
   b. Leaders must strike a balance between **national duties** and **global responsibilities**, ensuring peace and stability.

The Role of Ethics in Shaping Future Leadership

1. **Ethical Leadership**: Leadership must be grounded in values like **compassion, justice, fairness**, and **empathy**, not power and dominance.
2. **Universal Ethical Framework**:
   a. A shared ethical framework should govern global relations, prioritizing:
      i. **Human dignity**
      ii. **Environmental sustainability**
      iii. **Global peace and justice**
   b. Even if war becomes unavoidable, it must be conducted ethically, minimizing damage and protecting innocent lives.

> *"True peace is not merely the absence of war, it is the presence of justice."* — **Jane Addams**

Ethics in international relations must form the bedrock of leadership decisions. By prioritizing **peace**, **respecting sovereignty**, and **assessing long-term impacts**, world leaders can build a more **just and stable global order**. The **United Nations** must proactively foster ethical governance. Ultimately, **ethical decision-making** is not just about avoiding conflict — it's about **creating a fair, peaceful, and sustainable world** for future generations.

2. The Role of Influencers in Society and Ethical Communication

1. The recent controversy surrounding popular YouTuber Ranveer Allahbadia has sparked important ethical debates about the role of social media influencers in society.
2. This is not merely an individual issue, but a broader concern regarding whether influencers promote "free thinking" without any moral responsibility.
3. As influencers increasingly shape societal behavior, particularly among the youth, ethical questions surrounding their communication become even more significant.

Freedom of Expression and Ethical Boundaries

1. **Right to Freedom of Expression:** Article 19 of the Universal Declaration of Human Rights guarantees everyone the right to freedom of opinion and expression.
2. **Balancing Freedom with Responsibility:** This freedom, however, comes with the responsibility to ensure that one's expression does not harm or offend others.
3. **Moral Boundaries in Communication:**
   a. Ethical communication must uphold human dignity, societal harmony, and respect for family values.
   b. Influencers who share offensive or harmful content risk negatively influencing impressionable audiences, especially children.

> *"Ethics is knowing the difference between what you have a right to do and what is right to do."*
> — **Potter Stewart**

Role of Influencers in Society

1. **Who is an Influencer?**
   a. An influencer is someone who impacts the opinions and behaviors of others, mainly through social media platforms.
   b. They may range from Nano influencers (small following) to Mega influencers (millions of followers).

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2. **Shaping vs. Reflecting Society:**
   a. Ethical concerns arise—are influencers merely reflecting society, or are they actively shaping it?
   b. Given their widespread reach, influencers play a critical role in establishing new societal norms.

Ethical Dilemmas in Modern Media

1. **Unfiltered Content:**
   a. Social media and OTT platforms often host unfiltered content including profanity, violence, and vulgarity.
   b. The growing acceptance of such content raises concerns about desensitization to moral values.
2. **Humor and Ethical Limits:**
   a. Humor must be mindful of ethical limits.
   b. For instance, the incident at the 94th Academy Awards, where actor Will Smith slapped comedian Chris Rock over a joke, highlights the delicate balance between humor and offense.
3. **Need for Ethical Entertainment:**
   a. Society must question the ethical limits of entertainment and demand content that respects moral boundaries.

Gandhi's Three Monkeys in the Digital Age

1. **Relevance of Gandhian Ethics:**
   a. Gandhi's teaching— "See no evil, hear no evil, speak no evil"—remains a timeless guide for ethical communication.
   b. In today's digital era, where harmful content is rampant, these principles are more relevant than ever.
2. **Parental Responsibility:**
   a. Parents play a vital role in monitoring their children's media exposure and instilling ethical values such as respect, empathy, and kindness.
   b. Children should be taught to critically assess media content instead of blindly accepting it.

The Power and Responsibility of Influencers

1. **Influencers as Opinion Shapers:** Influencers have the power to shape public perception and societal behavior.
2. **Responsibility with Influence:** This power must be used ethically, considering the impact of their actions and words.
3. **Entertainment vs. Ethics:**
   a. While entertainment is important, it should not come at the cost of ethics and moral values.
   b. Influencers must strike a balance, promoting content that upholds family dignity and cultural respect.

Influencers and the Vision of Viksit Bharat 2047

1. **Promoting Ethical Values for a Developed India:**
   a. As India aspires to become a developed nation by 2047 (Viksit Bharat), influencers must play a constructive role.
   b. Content that promotes vulgarity or sensationalism undermines this vision.
2. **Sanatan Dharma and Cultural Values:**
   a. The values of Sanatan Dharma—respect for elders, family dignity, and moral behavior—should guide content creation.
   b. Influencers should help preserve and promote India's cultural and ethical heritage.

Parental and Educational Responsibility

1. **Role of Parents:**
   a. Parents should model ethical behavior and actively guide children in making moral decisions.
   b. Teaching values like trust, compassion, and responsibility prepares children to navigate ethical dilemmas.
2. **Role of Schools and Teachers:**
   a. Schools must also take responsibility in shaping ethical attitudes among students.
   b. Teachers should inculcate integrity, accountability, and respect, enabling students to grow into morally strong individuals.

> *"Education without values, as useful as it is, seems rather to make man a more clever devil."*
>
> **— C.S. Lewis**

Ethical Communication: A Case Study

1. **Shashi Kapoor in Deewar:**
   a. A powerful scene in the movie *Deewar* offers a valuable lesson in ethical communication. When Amitabh Bachchan says, **"Tumhare paas kya hai?"**, Shashi Kapoor replies, **"Mere paas Ma hai."**

b. This iconic dialogue reflects the deep-rooted value of family and dignity in communication, reminding us that moral expressions often have a lasting impact over superficial grandeur.

In a digital world where influencers hold immense power, it is imperative that they understand the ethical responsibility that accompanies their role. Their influence should foster a culture of respect, dignity, and moral awareness rather than vulgarity and sensationalism. As India moves toward Viksit Bharat 2047, influencers must align their content with the ethical and cultural ethos of the nation. Ethical communication is not just a moral obligation but a societal necessity in shaping a responsible and value-based future.

3. Case Studies For Practice

Case Study 1: Managing a Complex Humanitarian Crisis

Scenario:

You are the mission leader of an international humanitarian relief operation deployed to a conflict-ridden border region. The area is reeling under a multifaceted humanitarian emergency marked by:

- Prolonged ethnic conflicts
- Mass displacement of over 1.5 lakh people
- Severe food, water, and medical shortages
- Widespread child malnutrition
- Breakdown of local infrastructure and governance
- Hostile terrain and extreme environmental challenges

Relief efforts are frequently disrupted due to sporadic armed clashes. Militant groups block supply routes, and there is deep distrust among the local population toward external aid agencies. Your team is experiencing high stress, fear, and internal disagreements about whether to continue the mission amidst safety concerns.

Q. In such trying circumstances, what would be your ethical and administrative response? What qualities are essential for a public servant to handle such a crisis?

Solution:

A. Ethical and Administrative Response Framework

1. Cognitive Response (Ethical Reasoning):

- Apply **Kantian ethics (categorical imperative)**—uphold human dignity and alleviate suffering.
- Adopt **Utilitarian approach**—maximize relief benefits while minimizing risks.
- Strike a balance between **mission objectives and team safety**.
- Make **compassionate but prudent decisions** based on risk analysis and humanitarian needs.

2. Affective Response (Emotional & Moral Conduct):

- Demonstrate **courage and compassion** in adversity.
- Maintain **empathy for victims** and **morale of relief workers**.
- Show **emotional resilience** and manage fear and fatigue.
- Practice **cultural sensitivity** and build local trust.
- Display **emotional intelligence** in team dynamics.

3. Behavioral Response (Action-oriented):

i. Leadership Actions:

- Provide **clear direction** and **decisive leadership**.
- Build **team cohesion**, resolve internal conflicts.
- Act as a **cultural bridge** between teams and locals.
- Implement **risk mitigation strategies**.

ii. Operational Management:

- Optimize **resource use** under constraints.
- Enforce **security protocols** and protect convoys.
- Establish **effective communication** within teams and with locals.
- Ensure **uninterrupted supply chains** and **safety frameworks**.

iii. Ethical Implementation:

- Adhere to **humanitarian principles**—neutrality, impartiality, and humanity.
- Ensure **transparent and fair aid distribution**.
- Build **trust through ethical conduct and cultural respect**.

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B. Essential Qualities in a Public Servant

Ethics & Integrity	Aptitude & Skills	Emotional Intelligence
• Moral courage • Integrity under pressure • Respect for human dignity • Public service commitment • Transparency & accountability	• Strategic thinking • Crisis management • Risk assessment • Resource planning • Stakeholder coordination	• Empathy • Stress resilience • Cultural sensitivity • Team management • Conflict resolution

These traits ensure **effective service delivery**, uphold **humanitarian ethics**, and maintain **personal integrity** under adverse conditions.

Case Study 2: Integrity and Crisis of Rumors in Public Office

Scenario:

Mr. Arvind, a civil servant known for his honesty and work ethics, is appointed as District Magistrate in an underdeveloped region. To improve rural connectivity, he initiates the construction of a bridge across a local river. Following a transparent bidding process, the contract is awarded.

However, after a spell of heavy rainfall, the construction site suffers damage due to the contractor's negligence in taking preventive measures. Mr. Arvind immediately inspects the site, directs the contractor to carry out repairs at his own cost, and issues necessary warnings.

Due to delays, work stalls temporarily. Meanwhile, some local politicians and vested interest groups, displeased with Mr. Arvind's strict approach, spread rumors accusing him of accepting a bribe to favor the contractor. The matter reaches higher authorities, and Mr. Arvind is summoned for clarification.

Q. (a) How can such incidents affect civil service functioning?

(b) What qualities should a civil servant possess to manage such situations?

Solution:

A. Impact of Such Incidents on Civil Services

1. Impact on Individual Civil Servants:

- Professional vulnerability and reputation damage
- Psychological stress and frustration
- Risk aversion and hesitation in future decisions
- Loss of motivation and administrative initiative

2. Impact on Institution and Governance:

- Decline in public trust
- Erosion of administrative credibility
- Demoralization of honest officers
- Slowdown in service delivery and innovation

3. Impact on Project Implementation:

- Delayed development work
- Increased bureaucratic red tape
- Fear of adverse publicity affecting performance
- Procedural paralysis and inefficient execution

B. Qualities Required in a Civil Servant

Ethics & Integrity	Aptitude & Administration	Emotional Intelligence
• Moral courage • Integrity in decision-making • Adherence to rules • Accountability • Professional ethics	• Documentation discipline • Procedural compliance • Effective communication • Stakeholder engagement • Crisis response skills	• Stress management • Public image handling • Conflict resolution • Maintaining composure • Inspiring team morale

Additional Measures:

1. Maintain **documentary evidence and transparency**.
2. Proactively **communicate facts to superiors and media**.
3. Handle **political pressures with maturity**.
4. Build a **culture of ethics and professionalism**.

I. ESSAY

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The Price of Procrastination: Fulfilling Today's Duties for a Better Tomorrow

"You cannot escape the responsibility of tomorrow by evading it today." **– Abraham Lincoln**

This quote by Abraham Lincoln captures a deep truth that applies to individuals, societies, and nations. Our future depends on how responsibly we act today. If we avoid our responsibilities now, we only delay progress and increase the problems we will face later. History, current events, and everyday experiences clearly show how procrastination and negligence can lead to serious consequences.

Let us begin by looking at some lessons from history. In the 1930s and 1940s, **Europe** faced a growing threat from **Adolf Hitler's** aggressive expansion plans. First, he took over Austria, then parts of Czechoslovakia. Instead of stopping him early, powerful European countries followed a policy of appeasement, hoping he would stop on his own. But he didn't. This delay in taking timely action led to **World War II**—a war that caused unimaginable destruction and loss of life. A prompt and responsible approach could have reduced the scale of damage and suffering. This example clearly shows how ignoring responsibility can lead to disastrous outcomes.

Another historical example is the **French Revolution**. In the years before the revolution, common people in France were suffering due to high taxes, rising inequality, and poor living conditions. However, the French monarchy failed to take timely steps to address the growing problems. Their negligence and inaction eventually led to a massive uprising that not only ended monarchy in France but also inspired revolutions in other parts of Europe. This again shows how ignoring responsibilities can shake the very foundations of power and governance.

Closer to home, we see similar patterns in **Indian history**. After Emperor Aurangzeb, the Mughal Empire began to decline—not suddenly, but due to years of poor administration, lack of reforms, and weak leadership. These failures created a power vacuum, which was later filled by the East India Company (EIC). The slow collapse of such a vast empire was largely due to the failure of timely governance and responsible leadership.

Even the partition of India in 1947 teaches us a valuable lesson. Communal tensions had been rising for years, but the leadership failed to take inclusive steps to prevent division. The result was one of the biggest mass migrations in human history, along with immense violence and suffering. The delay in addressing social divisions in time led to tragic consequences.

Yet, history also gives us positive examples of how timely responsibility can shape a better future. One such example is Sardar Vallabhbhai Patel's efforts after independence. At a time when India was a newly born and fragile country, Patel took swift action to integrate more than 500 princely states into the Indian Union. His responsible and bold decisions ensured national unity and stability, setting a strong foundation for the country.

Moving from history to recent times, we see many examples where delayed action has cost us heavily—especially in terms of the **environment.** For many decades, economic growth was prioritized over environmental protection. Forests were cut, rivers polluted, and industries grew without considering long-term ecological damage.

Today, we are facing the results of this negligence—frequent floods, heatwaves, wildfires, and a drastic loss of biodiversity. Scientists had warned about climate change for decades, but governments and corporations failed to act in time.

As a **Native American proverb** says, *"We do not inherit the Earth from our ancestors; we borrow it from our children."* Unfortunately, we have not fulfilled this responsibility well.

The COVID-19 pandemic is another recent example of how neglecting duties can have serious consequences. Many countries, including India, were not fully prepared for a health emergency of this scale. Shortages of hospital beds, oxygen, and medical staff led to a crisis. But this situation did not arise overnight. It was the result of years of underinvestment in healthcare and weak emergency planning. The suffering during the pandemic was not just due to a virus but also due to years of avoided responsibility in public health systems.

At the heart of good governance lies responsibility. When leaders delay decisions or avoid difficult reforms, it leads to poor service delivery and weak democratic institutions. **In India**, problems like corruption, red-tapism, and growing inequality are

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not new. They have grown over time because timely reforms in economic and social policies were postponed again and again. According to the World Inequality Lab Report, the top 4% of Indians now control nearly 40% of the nation's wealth. This extreme inequality is the result of long-term failure to create inclusive growth and fair policies.

Issues like electoral reforms, judicial delays, and outdated bureaucratic systems have remained unresolved for years. These are not just administrative challenges—they reflect a deeper failure to act with responsibility. Every time we delay these reforms, public trust in institutions weakens further.

Today, India stands at a critical point. We have a young population and an opportunity to lead in the age of **digital transformation**, **artificial intelligence (AI),** and new technologies. But without adequate investment in skills, education, and innovation, this demographic advantage may turn into a liability. Unemployment remains high, and many youth lack the training needed for future jobs. This again is not a sudden problem but a result of years of neglect in preparing the workforce for changing times.

Social issues also highlight how evasion of responsibility can harm progress. Gender inequality, caste-based discrimination, and poor access to basic amenities continue to affect millions. These problems exist because governments, institutions, and even communities have failed to take inclusive and just actions. *Social justice cannot be achieved without consistent and responsible efforts*.

But why do individuals and institutions avoid responsibility in the first place? **One reason** is human nature. People often prefer comfort, ease, and short-term pleasure over long-term effort. Emotional immaturity, lack of discipline, and poor moral reasoning make it harder to act with responsibility. Many individuals postpone important tasks thinking there is still plenty of time.

Social and cultural factors also play a role. In many societies, traditional norms and rigid customs discourage innovation or change. Old beliefs, such as focusing only on the present, prevent people from thinking about long-term impacts. Moreover, social stereotypes and biases often restrict people from taking leadership roles or accepting responsibilities beyond set roles.

Economically, the pursuit of profit often leads businesses to ignore ethical responsibilities. Many companies focus only on financial gains, while neglecting fair labor practices or environmental standards. This mindset leads to exploitation and increases inequality. When economic systems are driven only by short-term profits, long-term responsibility suffers.

On the political front, responsibilities are often ignored due to short-term electoral strategies. Many political parties focus on vote banks rather than long-term national development. Issues like education reform, healthcare improvement, and environmental protection take a backseat because they don't offer quick political gains. Weak internal democracy in political parties and lack of transparency further reduce accountability.

Despite all these challenges, the future is not hopeless. The way forward lies in fulfilling our duties today. Responsible governance, timely policies, and citizen participation can together build a better tomorrow. Tackling climate change, reducing inequality, ensuring justice, and building strong institutions—all require consistent and proactive action.

A very important part of responsibility is thinking about future generations. The choices we make today will affect the lives of people tomorrow. This is called intergenerational equity. Whether it is conserving natural resources or creating equal opportunities, we must act with a sense of duty toward those who will live in the future.

Responsible actions also improve trust in institutions. When governments deliver services efficiently and fairly, people begin to believe in the system. This trust increases civic participation and strengthens democracy. A nation becomes stronger when its citizens and institutions work together with shared responsibility.

But to achieve this, we need to build a responsible mindset. Learning from history is the first step. History shows us how neglect leads to loss and how timely action brings progress. At the personal level, we need to develop emotional intelligence, self-awareness, and moral values. Being responsible means thinking before acting, standing up for what is right, and staying committed even when it is hard.

Critical thinking and discipline are equally important. In today's world of distractions, making thoughtful decisions is a valuable skill. Responsible individuals stay informed, take initiative, and lead by example.

Finally, responsibility is not just a duty—it is a habit and a moral quality. Every choice we make at home, in society, or in our workplace shapes the world around us. When individuals take responsibility, institutions grow stronger, and the nation moves forward with confidence.

As the **old saying** goes, *"It's never too late to start doing the right thing."* By fulfilling today's responsibilities, we can build a tomorrow that is fair, peaceful, and full of promise.

J. SCHEME

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1. NAKSHA Scheme

1. In February 2025, the **Union Ministry of Rural Development** has launched a new initiative named **NAKSHA (National Geospatial Knowledge-based Survey of Urban Habitations)** to bring a modern technological push to **urban land record management**.
2. The initiative is a major step forward under the broader umbrella of the **Digital India Land Records Modernisation Programme (DILRMP)**.

Digital India Land Records Modernisation Programme (DILRMP)

1. The DILRMP was launched in **August 2008**, originally named as **National Land Records Modernisation Programme (NLRMP)**.
2. It was **renamed and integrated** under the **Digital India campaign** in 2016 to give a fresh momentum to digital land governance.
3. It was created by **merging two pre-existing schemes**:
   a. **Computerisation of Land Records (CLR)**
   b. **Strengthening of Revenue Administration and Updating of Land Records (SRA & ULR)**

What is the NAKSHA Scheme?

NAKSHA is a **geospatial technology-driven urban land survey initiative**, specifically designed to create, update, and digitize land ownership records in urban areas.

The scheme aims to enhance **transparency, accuracy, and efficiency** in property documentation and urban planning.

- **Nodal Ministry:** Ministry of Rural Development
- **Implementing Agencies:**
  - **Department of Land Resources (DoLR)**
  - **Survey of India**
  - **National Informatics Centre Services Inc. (NICSI)**

Objectives of the NAKSHA Scheme

1. **Modernization of Urban Land Records:** To ensure precise and regularly updated digital ownership records in urban areas.
2. **Enhanced Urban Planning:** To facilitate better planning for **smart city development** and infrastructure expansion.
3. **Dispute Reduction:** To reduce land-related disputes through **clear, reliable, and verifiable property documentation**.
4. **Transparency and Accessibility:** To develop a **Web-GIS-based IT system** that enables easy access to digital land records.
5. **Sustainable Urban Governance:** To support **efficient land resource management** and improved urban administration.

Key Features of the NAKSHA Scheme

1. **Pilot Launch Scope:**
   a. The scheme has been launched as a **pilot project in 152 Urban Local Bodies (ULBs)** across **26 States and 3 Union Territories (UTs)**.
   b. The selected towns meet the following criteria:
      i. **Area:** Less than 35 sq km
      ii. **Population:** Less than 2 lakhs
2. **Area Coverage:**
   a. As per **Census 2011**, India has **7,933 towns**, occupying about **1.02 lakh square km**, which is a part of India's total geographical area of **32.87 lakh square km**.
   b. Under the NAKSHA pilot, an area of **4,142.63 square km** will be surveyed.
3. **Project Duration:** The pilot phase is expected to be completed **within one year**.
4. **Estimated Project Cost: ₹194 crore**, fully funded by the **Government of India** (100% central assistance).
5. **Use of Drone-based Surveys:** The scheme deploys **high-precision drone technology** for **aerial surveys**, ensuring detailed and accurate spatial mapping.

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6. **Web-GIS Platform:** An **end-to-end digital land record management system**, hosted on a **Web-GIS platform**, will be developed.
7. **Citizen-Centric Approach:** Public access to digital records will improve **ease of living** and empower citizens with **transparent land ownership data**.

2. Expanding Healthcare for Gig Workers under PM-JAY

Who Are Gig Workers?

1. **Gig workers** are individuals engaged in income-generating activities outside the traditional employer-employee framework.
2. These workers usually operate on a task-to-task basis, often mediated by digital platforms. Prominent examples include:
   a. **Food delivery executives** (Zomato, Swiggy)
   b. **E-commerce delivery partners** (Amazon, Flipkart)
   c. **Cab aggregators** (Ola, Uber)
   d. **Freelancers and service providers** via digital platforms
3. They form a large part of India's **informal sector**, with minimal access to formal social protection mechanisms.

Current Context

The **Union Budget 2025** announced the inclusion of **gig workers** under the **Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY)**.

a. Nearly **one crore gig workers** are expected to benefit from this initiative.
b. **Eligibility** will be based on **registration on the e-Shram portal** and issuance of a **Universal Account Number (UAN)**.
c. Healthcare benefits will be available to registered gig workers under the **PM-JAY scheme**.
d. Further clarification is awaited on whether **families of gig workers** will also be covered.

About Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (PM-JAY)

PM-JAY is the **world's largest government-funded health assurance scheme**, launched under **Ayushman Bharat** by the **Ministry of Health and Family Welfare** and implemented by the **National Health Authority (NHA)**.

Key Features of Ayushman Bharat PM-JAY

1. **Health Insurance Coverage**: ₹5 lakh per family per year for **secondary and most tertiary care hospitalization**.
2. **Inclusive Design**: **No cap** on family size, age, or gender — ensuring coverage for all, including **women, children, and the elderly**.
3. **Comprehensive Benefits**:
   a. Includes **pre- and post-hospitalisation expenses**.
   b. Covers **all pre-existing conditions from day one**.
   c. **Transport allowance** is provided per hospitalisation.
4. **Pan-India Portability**: Beneficiaries can avail **cashless treatment** across **public and empanelled private hospitals**, anywhere in the country.
5. **Cashless and Paperless Transactions**: IT-enabled infrastructure ensures seamless service at hospitals.
6. **Hospital Empanelment**:
   a. **All public hospitals** in implementing states are automatically included.
   b. **Private hospitals** empanelled via pre-defined online criteria.
7. **Cost Control via Package Rates**:
   a. Treatments are provided at **pre-fixed package rates**, including all costs.
   b. States/UTs can adjust rates **within a defined bandwidth**.

Existing Social Security Initiatives for Gig Workers in India

The Government and several states have already initiated measures to bring gig workers under social security umbrellas.

Key initiatives include:

1. **Code on Social Security, 2020**: Provides for benefits such as **life and disability cover**, **health insurance**, **accident insurance**, etc., for gig and platform workers.

2. **e-Shram Portal**: A **National Database of Unorganized Workers (NDUW)** to enhance gig workers' access to **employment opportunities** and **social security schemes**.
3. **Rajasthan Platform Based Gig Workers (Registration and Welfare) Act, 2023**: A pioneering legislation to offer **registration, grievance redressal, and welfare schemes** for gig workers.
4. **Karnataka Platform Based Gig Workers (Social Security and Welfare) Bill, 2024**: Proposes a **Welfare Board**, **social security fund**, and **welfare fee collection mechanisms** from platform aggregators.

3. UDAN 5.5: Strengthening Regional Connectivity

1. The Government of India has launched the latest phase of its flagship regional connectivity scheme – **UDAN 5.5** (Ude Desh Ka Aam Naagrik), with a focused approach towards enhancing **last-mile air connectivity** in remote, hilly, and island regions of the country.
2. This phase aims to bridge connectivity gaps in underserved areas by enabling operations through **smaller aircraft, helicopters, and seaplanes**.

About UDAN Scheme

1. The **UDAN (Ude Desh ka Aam Naagrik)** scheme was introduced by the **Ministry of Civil Aviation** in **2016** as a key component of the **National Civil Aviation Policy (NCAP)**.
2. The scheme was envisioned to transform air travel accessibility for the common man in India's **tier-2 and tier-3 cities**.
3. **Objectives of the Scheme:**
   a. To provide **affordable and accessible air travel** to the general public.
   b. To enhance **air connectivity to remote and regional areas**, thereby promoting regional development and economic growth.

Key Features of the UDAN Scheme

1. Airlines operating under UDAN are mandated to cap airfares for **50% of the total seats** at **₹2,500 per hour of flight** (approximately 500 km).
2. The cost differential between the operating cost and revenue is bridged through:
   a. **Viability Gap Funding (VGF):** A financial support mechanism provided by the government.
   b. **Concessions and support** from both Central and State governments, as well as airport operators.
3. **Funding Mechanism:**
   a. The **Regional Connectivity Fund (RCF)** was set up to finance VGF requirements.
   b. The **State Governments** contribute **20%** to the VGF fund.
      - For **Union Territories and North Eastern Region (NER) states**, the contribution is **10%** only.

Special Variants under UDAN Scheme

Over the years, the scheme has evolved with specialized formats to cater to diverse connectivity needs:

1. **Lifeline UDAN:** Introduced during the COVID-19 pandemic to ensure timely transportation of **medical cargo and essential supplies** to remote areas.
2. **Krishi UDAN:** Aimed at improving the **value realization of agricultural produce**, especially from the **NER and tribal districts**, by facilitating faster air transportation.
3. **International UDAN:** Designed to establish **international air connectivity from the NER**, especially from **Guwahati and Imphal**, to neighboring countries.

UDAN 5.5: Enhancing Last-Mile Air Access

The recently launched **UDAN 5.5** phase brings a renewed emphasis on expanding connectivity in **difficult terrain and isolated locations**.

Key Highlights of UDAN 5.5:

1. Targeted at promoting connectivity in **remote, hilly, and island regions** where conventional aircraft operations are not feasible.
2. Routes under this phase will be serviced exclusively by:
   a. **Seaplanes**
   b. **Helicopters**

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   c. **Small aircraft** with seating capacity of **less than 20 passengers**.
3. Operators are encouraged to explore new routes involving **80 water bodies**, including **waterdromes, ponds, and dams**, to operationalize **seaplane services**.
4. The scheme also includes **400 helipads** across the country, allowing operators to plan **chopper routes** to improve accessibility in challenging terrains.

Aircraft Categories under UDAN 5.5:

1. **Category 1A:** Aircraft with **seating capacity less than 9 passengers**.
2. **Category 1:** Aircraft with **seating capacity less than 20 passengers**.

This category-based participation allows for more **flexibility and inclusivity** of smaller operators, particularly those specializing in niche aviation segments such as **air taxi services, helicopters, and amphibian aircraft**.

4. Budget Boost for PM Surya Ghar Muft Bijli Yojana

Union Budget 2025 Increased Allocation for PM Surya Ghar Muft Bijli Yojana (PMSGMBY) by 80% to 20,000 crore.

About PMSGMBY

Feature	Details
Launched	Union Budget 2024-25
Implemented by	Ministry of New and Renewable Energy (MNRE)
Target Beneficiaries	1 crore households
Benefit	300 units/month of free electricity
Implementation Timeline	Till FY 2026-27
Latest Progress (as of Jan 27, 2025)	8.46 lakh households already benefited

What Does the Scheme Offer?

1. **Rooftop Solar Installations**
   a. Households will receive **rooftop solar systems (RTS)** tailored to their average monthly electricity consumption.
   b. The systems will help households meet most of their power needs using clean, renewable energy.
2. **Subsidy Support:** Households are eligible for a **subsidy up to 40%** of the cost, depending on their energy consumption.

Monthly Consumption (Units)	Suggested RTS Capacity (kW)	Subsidy Support (₹)
0 – 150	1 – 2	₹30,000 – ₹60,000
150 – 300	2 – 3	₹60,000 – ₹78,000
Above 300	Above 3	₹78,000

Affordable Financing: Provision for **collateral-free loans** at **low interest (around 7%)** for installations up to **3 kW capacity**, making solar energy accessible for middle and lower-income households.

Innovative Scheme Components

1. **Model Solar Villages**: A **Model Solar Village** will be set up in each district to demonstrate successful solar energy adoption, serving as an inspiration and blueprint for others.
2. **Region-Specific Innovative Projects**: Customized solar solutions will be designed to meet the **local energy needs** and promote regionally viable solar innovations.

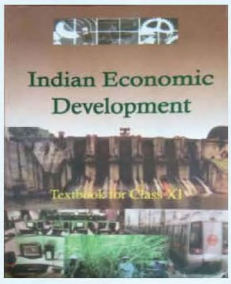
Why This Scheme Matters: Key Benefits

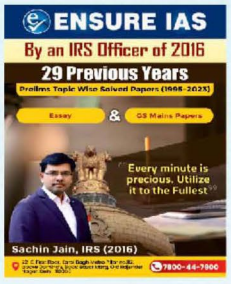
1. **Substantial Cost Savings**: Households can save significantly on monthly electricity bills, while the government expects to save around **₹75,000 crore annually** in power subsidies and infrastructure costs.
2. **Promotion of Renewable Energy**: The scheme is a major step towards India's clean energy goals, helping reduce **carbon emissions** and **dependency on fossil fuels**.
3. **Job Creation**: The installation and maintenance of solar systems are expected to generate **thousands of jobs** in the renewable energy sector, especially in rural and semi-urban areas.
4. **Energy Independence**: The widespread adoption of decentralized solar energy will help reduce the strain on the national grid and foster **self-reliant energy systems at the household level**.

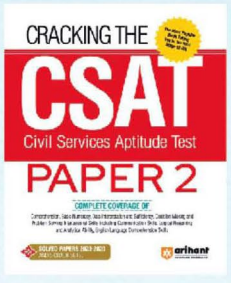
India's Renewable Energy Leap

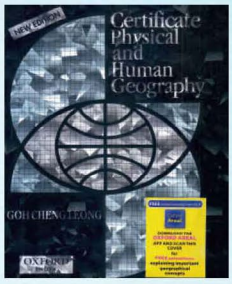
With an investment of over **₹75,000 crore**, the PM Surya Ghar Muft Bijli Yojana is poised to become the **world's largest domestic rooftop solar initiative**, marking a historic shift in how India powers its homes — **clean, decentralized, and affordable**.

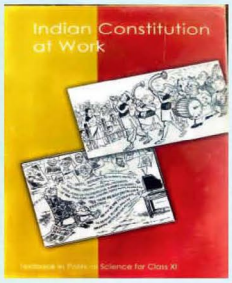
New List of Books to be provided to our classroom students since December 2023

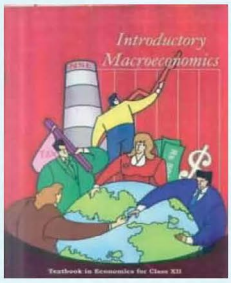


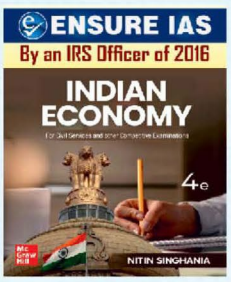


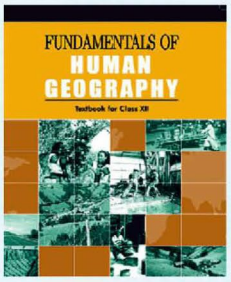


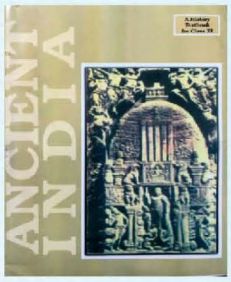


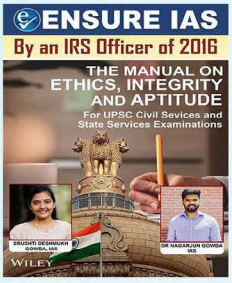


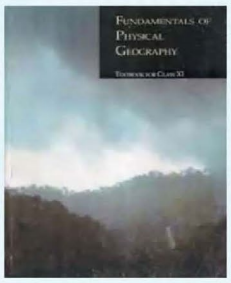


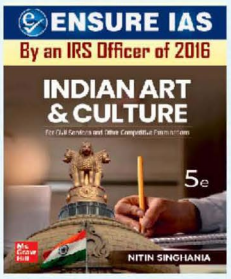


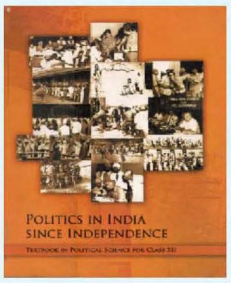


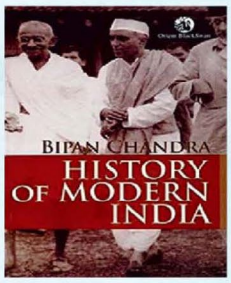


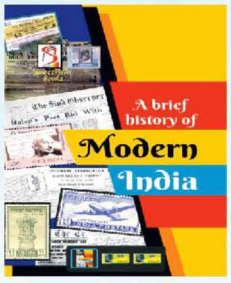


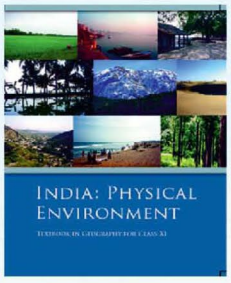


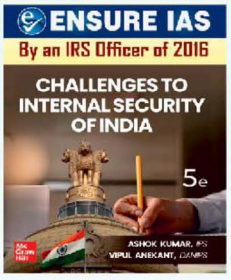


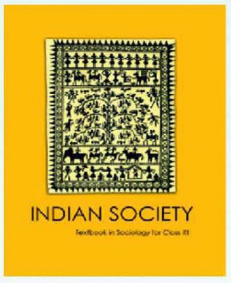


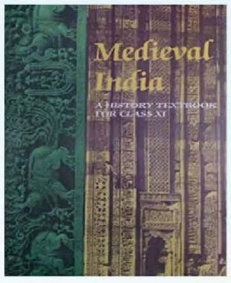


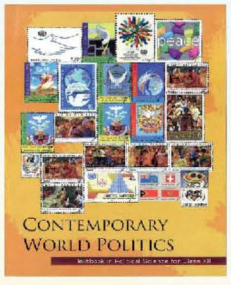


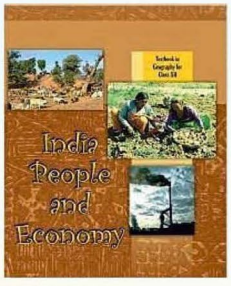


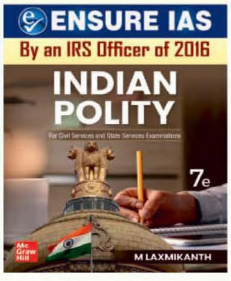


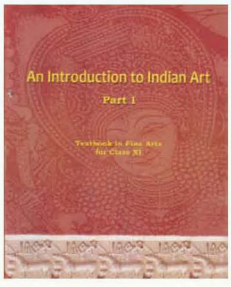


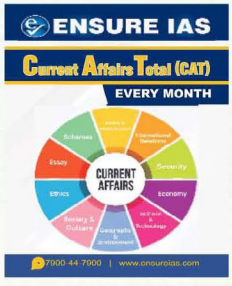












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