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A. Polity & Governance

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1. SC Directive on ART Drugs in India

1. Recently, the Supreme Court of India directed all states to address systemic issues in the procurement and distribution of **Anti-Retroviral Therapy (ART)** drugs for People Living with HIV/AIDS (PLHIV).
2. The judgment came in response to recurring drug shortages and inefficiencies, aiming to ensure uninterrupted access to HIV treatment across the country.

HIV and ART Treatment

1. HIV (Human Immunodeficiency Virus) weakens the immune system by attacking CD4 (T) cells, which are essential for fighting infections. It spreads through blood, semen, vaginal fluids, rectal fluids, and breast milk.
2. If untreated, HIV progresses through **three stages**: **acute infection** (flu-like symptoms), **clinical latency** (asymptomatic period), and finally, **AIDS (**Acquired Immune Deficiency Syndrome), where the immune system becomes severely weakened.
3. However, with timely treatment, not all individuals with HIV progress to AIDS.
4. **Anti-Retroviral Therapy (ART)** is the standard treatment for HIV. It involves a combination of 2 to 4 drugs (commonly referred to as Highly Active Antiretroviral Therapy or HAART) that reduce the viral load in the body to undetectable levels.
5. When HIV is undetectable, the risk of transmission becomes very low — a concept known as "Undetectable = Untransmittable" (U=U).
6. One widely **used combination in India** is the **TLD tablet**, which includes **Tenofovir**, **Lamivudine**, and **Dolutegravir**. Although **ART is not a cure**, it allows PLHIV to live longer and healthier lives.

ART Drug Management in India

1. In India, the National AIDS Control Organisation (NACO), under the Ministry of Health and Family Welfare, oversees the procurement and distribution of ART drugs through the National AIDS Control Programme (NACP).
2. ART is provided **free of cost** at over 700 centers across the country.
3. NACO monitors stock levels and ensures that ART centres are regularly supplied. Treatment protocols and drug quality standards are defined by the National Guidelines for HIV Care and Treatment.

Status of HIV in India

1. According to the India HIV Estimations 2023 report, over 2.5 million people are living with HIV in the country.
2. The North-East states show the highest adult HIV prevalence rates — Mizoram (2.70%), Nagaland (1.36%), and Manipur (1.05%).
3. Meanwhile, four southern states — Andhra Pradesh, Maharashtra, Karnataka, and Tamil Nadu — account for 55% of total HIV cases in India.

Global and National Efforts to Combat HIV

1. Globally, the **UNAIDS 95-95-95 target** aims that by 2030: 95% of people with HIV will know their status, 95% of diagnosed individuals will be on ART, and 95% of those on ART will achieve viral suppression.
2. The Global Fund also plays a key role by financing HIV, TB, and Malaria programs in developing countries.
3. India's response includes the ongoing implementation of the National AIDS Control Programme (NACP), now in its fifth phase (2021–2026).
4. The HIV/AIDS (Prevention and Control) Act, 2017, provides a legal guarantee of free ART treatment and protects the rights of PLHIV.

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Supreme Court Judgment: Key Directives and Background

1. In the case ***Network of People Living with HIV/AIDS & Ors. v. Union of India & Ors.***, the Supreme Court bench comprising Justice Abhay Oka and Justice Ujjal Bhuyan issued comprehensive directions to all states.
2. The decision was prompted by multiple disruptions in ART drug supply, poor procurement transparency, and concerns over drug quality, especially the stability and effectiveness of TLD tablets.

Key issues identified by the Court included:

1. Frequent stockouts of ART drugs in several states.
2. Delays in procurement during the 2021–2022 cycle.
3. Lack of transparency in the tendering process.
4. Quality concerns with ART formulations.
5. Inactive or dissolved Coordination Committees.
6. Absence of an independent monitoring mechanism.

The Court ordered all states to submit affidavits addressing **6 critical areas**:

1. **Continuous Drug Availability** – Prepare and implement state-level plans to avoid ART drug shortages and prohibit procurement from blacklisted suppliers.
2. **Procurement Transparency** – Disclose all procurement and tender processes publicly, including on the NACO website.
3. **Drug Certification and Quality Control** – Ensure that ART drugs meet proper regulatory standards before distribution.
4. **Revival of Coordination Committees** – Re-establish and strengthen these bodies for real-time monitoring of ART stocks and distribution efficiency.
5. **Independent Oversight Mechanism** – Explore the formation of expert panels, including retired judges, healthcare professionals, and PLHIV representatives, to monitor procurement failures.
6. **Systemic Reforms via Consent Orders** – Legally binding commitments must be introduced to prevent future disruptions.

Implications of the Judgment

The Supreme Court's ruling is expected to bring several positive outcomes:

1. Uninterrupted ART drug supply and improved patient health outcomes.
2. Legal precedent for transparent and accountable procurement processes.
3. Enhanced drug quality control with stricter certification requirements.
4. Reinforced state accountability and real-time supply chain oversight through reactivated Coordination Committees and potential independent panels.

Way Forward

To comply with the Supreme Court's directives, states must act promptly to address systemic procurement failures. This includes:

1. Setting up emergency response teams for potential stockouts.
2. Expanding infrastructure to ensure timely ART delivery to all PLHIV.
3. Implementing real-time tracking systems for drug distribution.
4. Making all procurement data publicly available to ensure transparency.

2. Can Two Electors Have Identical Epic Numbers?

1. The Election Commission of India (ECI) has recently issued a clarification regarding voting procedures.
2. It emphasized that an elector is allowed to vote **only at the polling booth mentioned on their EPIC** (Electors Photo Identity Card).
3. This clarification came in response to **reports highlighting that electors from two different states** were found to have **identical EPIC numbers**.

What is EPIC?

1. EPIC stands for Electors Photo Identity Card.
2. It is a photo identity document issued to registered voters.
3. Its purpose is to prevent impersonation during elections.
4. EPIC is issued by the state governments.

5. The legal basis for issuing EPIC is the Registration of Electors Rules, 1960.
6. EPIC includes the name ,age ,residence, photograph and facsimile signature(a copy or reproduction of a person's actual signature) of the elector.
7. It may include other particulars specified by the Election Commission of India (ECI).
8. EPIC is an identity document only.
9. It does not grant the right to vote.
10. The right to vote is available only if the elector's name is present in the electoral roll of their constituency.

Unique EPIC Number and FUSN

1. As per the EC's Manual on Electoral Rolls, 2023, every EPIC is issued with a **unique EPIC number**.
2. The EPIC number is an **alphanumeric series**.
3. This number is **provided by the Election Commission of India (ECI)**.
4. It includes a **Functional Unique Serial Number (FUSN)** that is specific to each **Assembly constituency**.

EPIC Generation Through ERONET

1. Since **2017**, EPICs are being generated through the **ERONET portal**.
2. A **unique EPIC number is allotted** to every elector when the EPIC is issued for the first time.

ERONET: Role and Functionality

1. **ERONET** is a **web-based application**.
2. It handles **elector registration-related issues**.
3. It manages processes like **registration**, **migration**, and **deletion** of names from the electoral roll.
4. ERONET **automates electoral roll management**.
5. It helps in **removal of duplicate entries**.
6. It assists in **including names of electors who have migrated**.

Possibility of Duplicate EPIC Numbers

1. Duplicate EPICs refer to multiple electors having the same EPIC number.
2. These do not indicate fake voters, as the demographic details, polling booths, and constituencies differ.

Voting Rules Despite EPIC Number Duplication

1. Even if the **EPIC number is the same**, an elector can vote **only at their designated polling station**.
2. The polling station must be **within the constituency** and **State/UT** where the elector is **enrolled in the electoral roll**.
3. Voting is **not allowed at any other location**.

Duplicate EPIC Verification Exercise

1. The ECI began a verification exercise on **March 7**.
2. The deadline for the exercise is **three months**.
3. There are over **992 million registered voters** in India.
4. **Fewer than 500,000 voters** were flagged for having **duplicate EPICs**.
5. This represents approximately **0.0005%** of the total electorate.
6. The ECI has already **corrected more than 90%** of the identified duplicate EPICs.

Nature of Duplicate EPICs

1. **Duplicate EPICs** refer to **different electors having the same EPIC number**.
2. These are **not fake voters**.
3. Such electors have **different demographic details**.
4. They are enrolled in **different polling booths**.
5. They belong to **different assembly constituencies**.
6. The issue was **flagged by West Bengal's ruling Trinamool Congress (TMC)**.

Repeat EPICs (Multiple Cards to One Person)

1. The ECI has **not yet begun corrective action** on repeat EPICs.
2. Repeat EPICs refer to **multiple EPIC numbers assigned to the same person**.
3. This often happens when a person **shifts residence and obtains a new EPIC** without cancelling the old one.
4. These are sometimes **mistakenly called duplicate EPICs**, but the Commission treats them differently.
5. **Deletion of voter entries is sensitive**, as **wrongful deletion can create serious issues** for the voter.

Tools for Deletion and the Role of Aadhaar

1. The ECI uses **Photographic Similar Entries (PSE)** to detect duplication.
2. It also uses **Demographically Similar Entries (DSE)** for comparison.

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3. These tools are **not fully effective** due to **scalability issues**.
4. The ECI has planned to implement **Aadhaar-Voter ID linking** to strengthen identification.
5. **Technical consultations** are ongoing between the **UIDAI** and the **ECI**.
6. The goal is to **develop a framework** for integrating Aadhaar with the voter database.

PSE Photographic Similar Entries

1. The purpose of PSE is to **detect duplicate voter entries** by comparing **photographs** in the electoral rolls.
2. If two or more entries have **similar-looking photos**, they are flagged for review.
3. It is used to identify cases where **the same person may be registered multiple times**, possibly in different constituencies.
4. However, **PSE is not foolproof**, as similar-looking individuals or poor photo quality may result in **false positives or negatives**.
5. PSE is usually **used along with other tools**, like **Demographically Similar Entries (DSE)**, for cross-verification.
6. Final action (deletion or retention) is taken only **after manual verification** by electoral officials or BLOs.

DSE Demographically Similar Entries.

1. It is a tool used by the **Election Commission of India (ECI)** to identify **potential duplicate voters** in the electoral rolls.
2. DSE works by comparing **demographic details** of voters instead of photographs.
3. These demographic fields include:
   a. **Name**
   b. **Age or Date of Birth**
   c. **Gender**
   d. **Father's or Husband's Name**
   e. **Address** (or partial address)
4. When multiple entries show **high similarity across these fields**, they are flagged as DSEs.
5. DSE helps in detecting voters who might be **registered multiple times**, either in the same constituency or in different ones.

Duplicate EPICs need to be removed to ensure the **integrity and accuracy of the electoral roll**, preventing any possibility of **multiple voting or impersonation**. This strengthens public trust in the **fairness and transparency of elections**.

3. Judiciary' In-House Inquiry

1. Bundles of cash were allegedly found at the official residence of Delhi High Court judge Justice Yashwant Varma.
2. The incident came to light after a fire broke out at his residence .
3. On March 22 2025 Chief Justice of India (CJI) Sanjiv Khanna initiated an in-house inquiry.

What is an In-House Inquiry?

1. An in-house inquiry is an **internal mechanism of the judiciary** to examine complaints against sitting High Court or Supreme Court judges.
2. It is **distinct from the constitutional impeachment process** under Article 124(4).
3. It is used when allegations do **not meet the high threshold for impeachment**, but still suggest conduct inconsistent with judicial standards.

Why Was the In-House Procedure Created?

1. In **1995**, serious financial misconduct allegations were made against **Bombay High Court Chief Justice A.M. Bhattacharjee**.
2. The **Bombay Bar Association**, led by **Iqbal Chagla**, passed a resolution asking him to resign.
3. A writ petition was filed in the Supreme Court to stop protests by lawyers.
4. During this case (*C. Ravichandran Iyer v. Justice A.M. Bhattacharjee*), the SC said there was a **gap between bad behaviour and impeachable misconduct**.
5. The Court said there was **no process to deal with judges whose behaviour was wrong, but not bad enough for impeachment**.
6. To fill this "**yawning gap**," the SC decided to **create an internal system**.

How Was the Procedure Developed?

1. A **five-member committee** was formed to design the in-house procedure.
2. It included SC Justices **S.C. Agarwal**, **A.S. Anand**, **S.P. Bharucha**, and HC Chief Justices **P.S. Mishra** and **D.P. Mohapatra**.
3. Their goal: create a method to act against judges who **fail to follow judicial ethics or values**, as outlined in the **Restatement of Values of Judicial Life**.
4. The committee submitted its report in **October 1997**.
5. The procedure was officially **adopted by the Supreme Court in December 1999**.

When Was It Revisited?

1. In **2014**, a woman **Additional District and Sessions Judge** from Madhya Pradesh accused a sitting **High Court judge** of **sexual harassment**.
2. This led the Supreme Court to **revisit and clarify** the in-house procedure.
3. Justices **J.S. Khehar** and **Arun Mishra** explained the process in **seven clear steps**.

When is an In-House Inquiry Triggered?

1. The process starts when a **complaint is received** by:
   a. The **Chief Justice of a High Court**,
   b. The **Chief Justice of India (CJI)**, or
   c. The **President of India**.
2. The CJI may either **dismiss the complaint** or seek a **preliminary report** from the concerned High Court Chief Justice.
3. If the report suggests a **deeper probe**, the CJI may initiate a full inquiry.

Who Conducts the Inquiry?

1. A **three-member committee** is formed by the CJI.
2. It generally includes:
   a. **Two Chief Justices of High Courts**
   b. **One senior judge of a High Court**
3. The committee is empowered to **devise its own procedure**, ensuring it follows **natural justice** (e.g., giving the judge a chance to be heard).

What Does the Inquiry Committee Do?

1. The committee investigates the complaint thoroughly.
2. After the inquiry, it submits a **confidential report** to the CJI.
3. The report must specify:
   a. Whether the **allegations have substance**, and
   b. Whether the misconduct is **serious enough to warrant removal proceedings**.

Possible Outcomes of the Inquiry

1. If the committee finds **no substance**, the matter is closed.
2. If the conduct is inappropriate but not serious enough for removal, the **CJI may advise the judge** and **record the report**.
3. If the conduct is serious:
   a. The **CJI may advise the judge to resign or retire voluntarily**.
   b. If the judge refuses, the **CJI may direct the High Court to stop assigning judicial work** to that judge.
   c. Finally, the **CJI may inform the President and Prime Minister** to initiate **formal impeachment proceedings** under the Constitution.

Difference Between in House Inquiry And Impeachment

Aspect	In-House Inquiry	Impeachment
Purpose	To deal with complaints of misconduct not serious enough for removal	To remove a judge for **proved misbehaviour** or **incapacity**
Who initiates	Chief Justice of India (CJI) or Chief Justice of a High Court	Members of Parliament
Legal Basis	Not in the Constitution; created by Supreme Court in 1997	Article **124(4)** (SC) and **Article 218** (HC) of the Constitution
Applicable to	Judges of **High Courts and Supreme Court**	Judges of **High Courts and Supreme Court**

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Process	Internal 3-judge committee reviews complaint and submits report	Motion passed by **each House of Parliament** with special majority
Standard of Proof	Misconduct inconsistent with judicial standards	**Proved misbehaviour or incapacity**
Public Involvement	Confidential, not open to public or media	Conducted in **Parliament**, debated publicly
Outcome if Allegations Proved	CJI may **advise resignation/retirement** or stop judicial work	President **removes judge** after Parliament passes impeachment motion
Outcome if Not Proved	Complaint dismissed or advice given	No action taken
Final Authority	Chief Justice of India	**Parliament** and **President of India**

The in-house process ensures that judges can still be held accountable for **unethical or inappropriate behaviour** that falls short of that standard. It reflects the judiciary's commitment to **maintaining public trust**, **upholding ethical standards**, and ensuring that **no judge is above scrutiny**.

4. SC allows visually impaired persons in judiciary, strikes down discriminatory rules

1. The Supreme Court heard **petitions and a suo motu case** about the **lack of proper quota and inclusion of visually impaired candidates** in judicial service exams in state of Rajasthan and Madhya Pradesh .
2. The main issue was whether **visually impaired persons are suitable** for judicial service and whether **separate cut-offs** should be maintained for them.

Key Rulings

1. The Court said **visually impaired persons cannot be denied the opportunity** to apply for judicial service.
2. It struck down **Rule 6A** of the **MP Judicial Service Rules, 1994**, which excluded visually impaired candidates.
3. It also struck down the **proviso to Rule 7(**A **special condition or exception** that is **added to Rule 7.)**, which unfairly required disabled candidates to either:

a. Have **three years of legal practice**, or
b. Score **70% marks in the first attempt**.

Why the Court Struck Down These Rules

1. The Court said these rules **violated the equality principle** and **reasonable accommodation** as guaranteed under the **Rights of Persons with Disabilities (RPwD) Act, 2016**.
2. It also said that such **indirect discrimination** — like rigid cut-offs and extra hurdles — must be removed to ensure **substantive equality**.
3. The Court emphasized that **disability rights must be treated as fundamental rights**, on par with other constitutional rights under **Articles 14, 15, and 16**.

Key Principles Affirmed

1. **Right Against Disability-Based Discrimination** is to be treated as a **fundamental right**.
2. **Reasonable Accommodation** is not optional — it is part of **Article 21 (Right to Life with Dignity)**.
3. **Inclusivity is a constitutional value** and part of the **basic structure of the Constitution**.

Court's Directions

1. The Court directed that the **selection process must continue** and be completed **within three months**.
2. A **separate cut-off and merit list must be maintained** for visually impaired candidates at every stage — prelims, mains, and interview.
3. If **sufficient PwD candidates are not available**, **cut-off relaxations** should be given — similar to those given to SC/ST candidates.
4. The judgment also clarified that there should be **no distinction between persons with disabilities and benchmark disabilities** when it comes to employment rights.

Impact of the Judgment

1. Sets a **nationwide precedent** that visually impaired persons are **equally eligible** for public services like judiciary.

2. Ensures that **disability is not a barrier** to participation in public employment.
3. Encourages **affirmative action** and **inclusive hiring practices** across government services.

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Aspect	Before the Judgment	After the Judgment
Eligibility of Visually Impaired Candidates	Visually impaired persons were **excluded** from applying to judicial services in Madhya Pradesh.	Visually impaired candidates are now **eligible** to apply and compete equally for judicial posts.
Rule 6A (MP Judicial Rules)	Excluded visually impaired candidates even if they were educationally qualified.	**Struck down** by the Supreme Court as unconstitutional and discriminatory.
Proviso to Rule 7 (MP Rules)	PwD candidates had to have **either 3 years' legal practice** or **70% marks in first attempt**.	These **extra conditions were removed**. Basic qualifications are enough, with **relaxations allowed**.
Cut-off Marks	PwD candidates had to meet the **same cut-off marks** as General/OBC/SC/ST categories.	**Separate cut-offs** must be maintained for visually impaired candidates at all stages of selection.
Merit List for PwD	No **separate merit list** for disabled candidates; lack of clarity and transparency.	Authorities must now **prepare separate merit lists** for visually impaired candidates.
Unfilled Reserved Seats for PwD	Reserved seats for PwD were often **converted to general category** if not filled.	These seats must be **retained, carried forward, or filled with proper efforts** — not casually reassigned.
Legal Status of Disability Rights	Disability rights were seen as part of welfare policy, **not at the level of fundamental rights**.	Supreme Court recognised **disability rights as fundamental rights**, equal to rights under Articles 14–16.
Principle of Reasonable Accommodation (It means changing the rules, process, or environment slightly so that people with disabilities are not left out or unfairly judged.)	Often **ignored or treated as optional** by authorities.	Now **mandatory**, backed by law, international conventions, and part of the **right to equality and dignity**.

The Supreme Court's judgment marks a **historic step toward equal opportunity and dignity** for persons with disabilities in India. By striking down exclusionary rules and affirming that **disability rights are fundamental rights**, the Court has set a strong precedent for **inclusive governance and fair recruitment**.

5. I-T Bill proposes govt can 'override' online access codes

1. The Income tax bill 2025 will give tax officials the **power to override or break passwords** on digital devices and accounts.
2. This can apply to **phones, laptops, emails, social media, cloud storage**, and even **encrypted apps** like WhatsApp.
3. The bill allows officials to either use **password-breaking tools** or ask tech companies to help **bypass login credentials**.
4. Even **phone manufacturers like Apple** could be asked to assist in breaking into a device.
5. A new phrase added to the bill gives legal backing to this power, which **was not present** in the current Income Tax Act.

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Existing Powers and What's Changing

1. Under **Section 132** of the current Act, tax officers can **search premises**, **seize documents**, and **examine electronic records**.
2. If someone refuses to cooperate, officials can **break physical locks** or seize devices.
3. The new bill **keeps these powers** but goes further by allowing entry into **"virtual digital spaces"** by overriding digital access controls.

What changes if the bill becomes act

Aspect	Before (Existing Powers – I-T Act, 1961)	After (Proposed Powers – I-T Bill, 2025)
Search and Seizure	Tax officers could **search premises**, **seize documents**, and **examine electronic records**.	These powers remain unchanged.
Dealing with Non-Cooperation	Officials could **break physical locks** or **seize devices** if the person refused to cooperate.	Still allowed.
Access to Digital Spaces	No **explicit power** to override or bypass **digital access controls** like passwords.	Now **explicitly allows override** of passwords and access codes.
Email Servers	Officers could access only if user gave access or password was shared.	Officers can now **legally override** passwords to access email accounts.
Social Media Accounts	Access was limited unless credentials were voluntarily shared.	Officers can now access **even if user refuses**, by bypassing passwords.
Online Banking/Trading Accounts	Access depended on voluntary disclosure by the person under scrutiny.	Officials may now **override login security** to check account activity.
Cloud Servers	Could only be accessed if login information was given by the user.	Access now allowed by **breaking access controls or seeking tech company help**.
Asset Storage Websites	Officials needed user cooperation to access digital asset details.	Now permitted to **override protections** to view ownership or transactions.
Other Digital Platforms	Not clearly covered under the existing law.	Broadly covered now under the term **"virtual digital space"**.

What Officials Say

1. Tax officials argue that there are **no major changes** in power.
2. They claim the new bill only **simplifies the language** for better understanding.
3. Officials say they already collect digital evidence like **emails and chats** from apps like WhatsApp and Telegram.
4. They believe **access to these platforms is crucial** for proving tax evasion.

Legal and Privacy Concerns

1. Experts say the power to **override passwords** was earlier in a **grey area**, and now the bill makes it **explicit**.
2. **Privacy advocates** and legal experts are worried this could lead to **abuse of power**.
3. Without safeguards, such powers could allow **invasion of personal privacy** or **harassment** of taxpayers.
4. This is seen as a major change from the **Income-tax Act, 1961**, which **did not include digital domain override**.

Digital Privacy Law and Loopholes

1. The **Digital Personal Data Protection Act** is **not yet enforced**.
2. Even after it is implemented, **tax officials may be exempt**, which weakens its impact.
3. This exemption has been **criticized for allowing too much power** to government agencies without checks.

Demand for Safeguards

1. The **Internet Freedom Foundation (IFF)** wrote to the **Parliament's Select Committee**.
2. IFF said the bill should **follow the Supreme Court's 2017 privacy judgment**, which emphasized:
   a. The use of the **least invasive methods**
   b. Applying the **proportionality standard** before taking action
3. IFF warned that without clear limits, the new powers may lead to **unchecked surveillance** and **violate citizens' privacy rights**.

The proposed changes in the Income Tax Bill, 2025 mark a significant shift in the government's approach to digital investigations. By explicitly granting tax authorities the power to override passwords and access private digital platforms, the bill extends search and seizure powers into deeply personal virtual spaces.

6. High level committee on challenges Faced by Women Leaders in Panchayati Raj Institutions

1. In **September 2023**, the Ministry of Panchayati Raj formed a **high-level committee** following a **Supreme Court order dated July 6, 2023**.
2. The committee was chaired by **Sushil Kumar**, former Secretary of Mines.
3. Its mandate was to investigate the prevalence of **proxy participation by male relatives** (often termed *Pradhan Pati*, *Sarpanch Pati*, or *Mukhiya Pati*) and recommend solutions.

Observation by the high level committee

Structural and Legal Weaknesses

1. Women leaders often lack **prior political experience**, especially at the Gram Panchayat level, making them susceptible to manipulation.
2. **Rotational reservation (5-year term)** is too short for capacity-building and long-term impact.
3. **Lack of strong deterrent laws or penalties** allows male relatives to act as de facto decision-makers with impunity.
4. Some legal provisions exist, but they are **inadequate and poorly enforced**.

Gender-Based Discrimination and Patriarchy

1. Women are frequently **bypassed or ignored** in formal and informal meetings by male peers and officials.
2. Male government staff often **prefer dealing with male ERs**, reinforcing the notion that women are figureheads.
3. **Deep-rooted patriarchal norms**—like purdah, veiling, and silence in male gatherings—are carried into Panchayat functioning.
4. These norms lead to **reduced participation and voice** of women in governance bodies like Gram Sabhas.

Socio-Economic and Cultural Disadvantages

1. Many EWRs belong to **SC/ST/Minority/Disabled categories**, facing compounded marginalization.
2. They must balance **domestic caregiving roles** with public responsibilities, creating physical and emotional burdens.
3. Due to **lack of education and societal conditioning**, they often hesitate to take independent financial decisions.
4. This leads to **dependency on husbands/male relatives**, restricting autonomy and leadership development.

Political Hostility and Coercion

1. Women representatives face **coercion, threats, and sometimes physical violence** from political rivals.
2. **No-confidence motions** are used as pressure tools to remove them prematurely.
3. **Dominant local groups** often attempt to manipulate or control women leaders for

Capacity Gaps and Lack of Support Systems

1. There is a **serious lack of tailored training** for EWRs to build leadership and governance skills.
2. **Mentorship mechanisms** are either missing or underdeveloped, leaving women leaders without guidance.
3. The absence of **continuous support** hinders their ability to transition from symbolic to substantive leadership.

True decentralization and democratic participation cannot be achieved unless women are empowered to exercise independent authority in Panchayati Raj

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Institutions. Addressing these challenges requires a multi-pronged approach — **stronger legal enforcement**, **targeted training**, **robust mentorship**, and most importantly, a **cultural shift** in attitudes towards women in leadership.

7. ECI and UIDAI to link voter records with Aadhhar

The **Election Commission of India (ECI)** will work with the **Unique Identification Authority of India (UIDAI)** to link voter records with Aadhaar.

Background and Opposition Allegations

1. Allegations were raised by Opposition parties, including the Trinamool Congress (TMC), about duplicate voter identity cards.
2. They also accused the Election Commission of manipulating electoral rolls .
3. In response, the Election Commission of India (ECI) acknowledged the issue.
4. The ECI clarified that some state Chief Electoral Officers (CEOs) had mistakenly reused alphanumeric sequences while generating EPIC numbers.
5. The ECI explained that having the same EPIC number does not mean voter fraud.
6. This is because each elector's demographic details, constituency, and polling station are different.
7. The ECI decided to take corrective action.
8. It committed to replacing all duplicate EPIC numbers within a fixed time frame.

Current Status of Aadhaar Submission

1. By 2023, **over 66 crore voters** voluntarily submitted their Aadhaar numbers to the ECI.
2. These voters and Aadhaar databases **have not yet been linked**.
3. ECI and UIDAI will now explore **technical methods** for linking records **for these 66 crore voters**.

Legal Framework for Linking

1. Linking will be done under **Sections 23(4), 23(5), and 23(6)** of the **Representation of the People Act, 1950**.
2. These sections authorize:
   a. **Electoral officers** to request Aadhaar for verification.
   b. **Voluntary submission** of Aadhaar by voters.
   c. **Protection against denial of voter registration** for not providing Aadhaar.

Amendments to Form 6B

1. Currently, **Form 6B** offers only two options:
   a. Submit Aadhaar.
   b. Declare non-possession of Aadhaar.
2. It **does not allow voters to decline voluntarily** without declaring they don't have Aadhaar.
3. The **Law Ministry will amend Form 6B** via a **gazette notification**.
4. The revised form will clarify that Aadhaar submission is **voluntary**, but voters will still need to **provide a reason** for non-submission.
5. This change aligns with the ECI's statement in **G. Niranjan vs ECI (2023)** about ensuring that forms clearly reflect **voluntary nature**.
6. The **amendment is expected before the Bihar Assembly elections** later this year.

8. Supreme Court's 2025 Ruling on Arrest Powers under CGST and Customs Acts

1. In March 2025, the Supreme Court ruled on the case *Radhika Agarwal v Union of India*.
2. The case concerned the arrest powers under the **Customs Act, 1962** and the **CGST Act, 2017**.
3. The Court held that arrest powers under these Acts are **analogous to police powers**.
4. Therefore, officials must follow **CrPC safeguards** applicable to police officers.

Mandatory Procedural Safeguards

1. Arrestee must be **produced before a magistrate within 24 hours**.
2. Arresting officer must **inform a family member or friend** about the arrest.
3. The arrestee has the **right to have a lawyer present nearby during interrogation**.

Connection to Previous PMLA Ruling

1. In *Arvind Kejriwal v Directorate of Enforcement* (2024), SC limited ED's arrest powers under the **PMLA, 2002**.

2. The same **principles were extended** to Customs and CGST officers in the present case.

Cognisable Offences and Arrest Powers

1. Under both Acts, certain offences are classified as **cognisable** (e.g., tax evasion over ₹50 lakh under Customs Act).
2. Such classification **allows arrest without a Magistrate's warrant**.
3. However, the SC clarified that this **does not allow arbitrary arrests**.

Risks of Arbitrary Use of Power

1. The Court reiterated its warning from *Kejriwal* case about **misuse of arrest powers**.
2. It emphasized that **similar misuse by GST/Customs officers** would violate **constitutional and legal rights**.

Three Essential Safeguards Required Before Arrest

1. **Material in Possession**
   a. Officer must have **evidence to support guilt**, not just suspicion.
   b. Must **record reasons in writing**.
   c. Cannot ignore **evidence that supports innocence**.
2. **Written "Reasons to Believe"**
   a. Officer must write down **why they believe** the person committed the offence.
   b. These reasons must be **based on material evidence**.
   c. Even though courts can't judge the quality of reasons, they must be **logically connected** to the case.
3. **Grounds of Arrest to be Provided**
   a. Arrestee must be **informed of the exact grounds of arrest**.
   b. This enables them to **seek bail or challenge the arrest** effectively.
   c. Without this, **legal defense becomes impossible**.

Findings on Coercion and Misuse

1. SC examined **data post-GST rollout (2017 onwards)**.
2. Found **some merit in claims** that arrest threats were used to **extract tax payments**.
3. Ruled that such **coercive practices are illegal**.

Remedies for Victims of Coercion

1. Anyone who paid taxes under arrest threats can **approach courts for refund**.
2. Departments are required to **initiate action against erring officers** involved in coercion.

Final Position of the Court

1. The Court **refused to strike down the arrest powers** under the CGST and Customs Acts.
2. Instead, it **imposed strict safeguards** to ensure **transparency, accountability, and protection of rights**.

What changes after the judgement ?

Aspect	Before Supreme Court Ruling	After Supreme Court Ruling
Nature of Arrest Powers	Arrest powers were treated as administrative or quasi-judicial, without needing to follow CrPC procedures strictly.	Treated as **analogous to police powers**, must follow **CrPC safeguards** for arrest, search, and seizure.
Presentation Before Magistrate	Not strictly enforced under GST/Customs Acts.	**Mandatory** to present arrestee before a **magistrate within 24 hours**.
Right to Inform Relatives	No consistent practice or legal requirement to inform relatives/friends.	Arresting officer must **inform a friend or family member** of the arrestee immediately.
Presence of Advocate	No guaranteed right during interrogation.	**Right to have a lawyer present in the vicinity** during interrogation reaffirmed.
Grounds of Arrest	Grounds often not communicated; arrests made without transparency.	**Arrestee must be provided grounds of arrest**, enabling them to seek bail or challenge the arrest.

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Recording Reasons to Believe	No legal requirement under GST/Customs Acts to record "reasons to believe".	Officers must **record written reasons to believe** the arrestee is guilty, based on available material.
Evidence Before Arrest	Arrests could be based on suspicion or incomplete evidence.	Officers must have **material in possession** justifying arrest; **suspicion alone is not enough**.
Use of Arrest Threats	Officials allegedly threatened arrest to force tax payments.	SC ruled that **coercing tax payments via arrest threats is illegal**; refunds and legal recourse allowed in such cases.
Accountability for Misuse	No specific action mandated for misuse of power.	Departments **must act against erring officers** if coercion or illegal arrests are proven.

By equating these powers to those of the police and mandating compliance with CrPC safeguards, the Court has strengthened protections for individuals against arbitrary and coercive actions. While the legal authority to arrest remains intact, it now comes with a clear duty of procedural transparency, accountability, and fairness. This ruling is a significant step in balancing the interests of revenue enforcement with the fundamental rights of citizens.

9. Service Charge Not Mandatory: Delhi High Court

1. In **March 2025**, the **Delhi High Court**, in the landmark case **National Restaurant Association of India & Anr. vs. Union of India & Ors.**, ruled that restaurants cannot impose mandatory service charges on food bills.
   - A **service charge** is an additional fee (typically **5–20%**) that restaurants commonly add to food bills, separate from government taxes such as GST.
   - Traditionally, this charge is meant as a **gratuity** for the restaurant staff.
2. High Court explicitly stated that such charges mislead consumers into believing they are government-imposed taxes, undermining transparency in billing.
3. The ruling reinforces guidelines issued by the **Central Consumer Protection Authority (CCPA)** in **July 2022**, significantly enhancing consumer rights and promoting transparency in commercial transactions.

Key Highlights of the Delhi High Court Judgment

1. The Court ruled that restaurants **cannot compulsorily impose service charges**. Such charges must be entirely voluntary and at the customer's discretion.
2. Restaurants cannot use terms like **"levy"** or **"service charge"** as these mislead consumers, suggesting the charges are government taxes.
3. The court upheld the guidelines issued by the **Central Consumer Protection Authority (CCPA)** in **July 2022**, as **legally binding**, not advisory.
4. Mandatory service charges are now explicitly classified as **unfair trade practices** under the **Consumer Protection Act, 2019**.
5. Claims by restaurant associations (**NRAI** and **FHRAI**) that service charges were justified by historical practice or labour agreements were dismissed due to lack of evidence.
6. Petitions by **NRAI** and **FHRAI** were dismissed, each incurring a penalty of **₹1 lakh**, payable to the CCPA for consumer welfare.

CCPA's 2022 Guidelines

1. Issuing Authority: The Central Consumer Protection Authority (CCPA), empowered under the Consumer Protection Act, 2019, issued guidelines in July 2022 to address consumer grievances regarding mandatory service charges.
2. Voluntary, Not Mandatory: Restaurants and hotels were prohibited from automatically adding service charges to food bills. Such charges must be explicitly indicated as voluntary and entirely at the customer's discretion.

3. Customers must be **clearly informed** that paying a service charge is optional. Restaurants cannot imply, directly or indirectly, that such charges are compulsory.
4. These guidelines are not merely advisory but carry statutory authority under the Consumer Protection Act. Compliance is legally binding, and violations are considered unfair trade practices.

10. Uttarakhand Passes Land Reform Bill to Regulate Non-Resident Land Ownership

1. Recently, the Uttarakhand Legislative Assembly passed a significant amendment to the land ownership law, reshaping the future of land transactions in the state.
2. The Uttarakhand (Uttar Pradesh Zamindari Abolition and Land Reforms Act, 1950) Amendment Bill, 2025, aims to protect local interests, restrict land acquisition by outsiders, and address land misuse across the hill state.

Background: Evolving Land Laws in Uttarakhand

1. Since its formation in 2000, Uttarakhand has operated under the **Uttar Pradesh Zamindari Abolition and Land Reforms Act, 1950**, albeit with several amendments tailored to the state's unique geographic and socio-economic realities.
2. The **first notable restriction came in 2003** under then Chief Minister N. D. Tiwari, who imposed limits on non-residents buying land in the hill areas.
3. This was designed to preserve the rights of local communities and safeguard the region's ecological and cultural landscape.
4. Subsequent governments modified these provisions. Notably, state government reduced the maximum permissible area for residential land purchases by non-residents from 500 square metres to 250 square metres.
5. However, in 2017, state government lifted the 12.5-acre ceiling on land acquisition for tourism, industry, and education, triggering widespread protests and accusations of facilitating land grabs.
6. In response to growing public discontent, the state government constituted a **land reform committee in 2021,** which submitted its recommendations in 2022. The 2025 amendment is a direct outcome of this process.

Current Context: Key Provisions of the Amendment Bill, 2025

The 2025 Amendment introduces sweeping changes aimed at restoring **limits on land purchases**, **tightening oversight**, and **promoting sustainable development**. Its provisions focus on **four primary** objectives:

1. **Preserving Local Interests:** Protecting agricultural and horticultural land from non-resident acquisition to preserve local identity and livelihoods.
2. **Curbing Land Mafias:** Preventing speculative and fraudulent purchases by powerful external entities.
3. **Ensuring Sustainable Development:** Regulating industrial and commercial expansion to maintain ecological balance.
4. **Strengthening Land Governance:** Centralizing land-related approvals and improving land record transparency.

Major Provisions at a Glance

1. **Ban on Non-Resident Purchases in Hill Districts:** Non-residents are now barred from purchasing agricultural and horticultural land in 11 out of Uttarakhand's 13 districts.
   - Only **Haridwar and Udham Singh Nagar**—identified as industrial hubs—are exempt, but transactions there require state government approval and land essential certificates.
2. **12.5 Acre Ceiling Reinstated:** The amendment reintroduces the original 12.5-acre ceiling on land acquisition for tourism, industrial, educational, and other purposes across the 11 restricted districts.
   - Additional land can only be obtained with prior approval from the state government.
3. **250 sqm Residential Cap:** Non-residents may purchase up to 250 square metres of land for residential use, provided they submit an affidavit stating that they or their family own no other residential land in Uttarakhand beyond this limit.

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4. **Three-Year Usage Mandate:** Land acquired for commercial, industrial, or institutional use must be utilized within three years. Failure to do so will render the transaction void, with land reverting to state ownership.
5. **Digital Transaction Records:** A dedicated digital portal will record all land transactions involving outsiders, enhancing transparency and deterring unauthorized dealings.
6. **30-Year Leasing Provision:** The law permits leasing of agricultural, horticultural, or renewable energy land for up to 30 years, raising concerns about potential loopholes for external control despite ownership restrictions.
7. **Centralized Approval Mechanism:** District Magistrates will no longer have the authority to approve large-scale land purchases; such powers are now centralized with the state government to ensure consistency and oversight.
8. **Land Use Regulation in Urban Areas:** In municipal zones, land use must conform strictly to designated categories. Violations will result in forfeiture of the land to the state.

11. The Dramatic Performances Act, 1876: A Colonial Legacy Formally Repealed

1. Recently, Prime Minister Narendra Modi, while highlighting his government's ongoing efforts to repeal **obsolete and colonial-era laws**, referred to the ***Dramatic Performances Act, 1876***—a relic of the British Raj that allowed authorities to clamp down on artistic expression under the pretext of public order.
2. Though declared unconstitutional decades ago, this law remained on the statute books until its **formal repeal in 2018.**

Historical Context: Origins in Colonial Suppression

1. The *Dramatic Performances Act (DPA), 1876* was enacted by the British colonial administration during a period marked by growing Indian nationalist sentiment.
2. The immediate backdrop was the **visit of Prince Albert Edward (later King Edward VII)** to India between **October 1875 and May 1876.**
3. During this period, various plays critical of British rule began gaining popularity. In response, the British passed repressive legislations such as the ***DPA, 1876***, the ***Vernacular Press Act, 1878***, and the ***Sedition Law of 1870*** to silence political dissent and curb freedom of expression.

Key Provisions of the Dramatic Performances Act, 1876

The Act granted sweeping powers to the colonial government:

1. **Prohibition of Performances**: It empowered the government to prohibit "any play, pantomime, or other drama" in public places if it was considered *scandalous, defamatory, seditious,* or *obscene*, or if it was likely to provoke disaffection against the state or corrupt public morals.
2. **Wide Discretionary Powers**: The Act allowed authorities to act based on mere *opinion* or suspicion, rather than evidence, making it vulnerable to misuse.
3. **Police Powers**: Magistrates were authorized to issue search warrants for venues, seize props or costumes, and arrest performers in case of prohibited acts.
4. **Licensing and Script Submission**: In designated areas, performances required prior licenses. Scripts had to be submitted in advance for approval.
5. **Penalties**: Violations of the Act could lead to imprisonment of up to three months, fines, or both.
6. **Exemptions**: Religious performances like *jatras*—a traditional folk theatre popular in Bengal, Odisha, and parts of Bangladesh—were exempted.

Legal Challenge and Judicial Scrutiny Post-Independence

1. Despite India's independence in 1947, many colonial-era laws, including the DPA, remained in effect due to **Article 372 of the Indian Constitution**.

- **Article 372** ensures that colonial laws remain enforceable until repealed or ruled unconstitutional. However, they are **not presumed constitutional**, and their continued existence often requires active defense by the state when challenged.

2. However, colonial laws **do not enjoy the presumption of constitutionality**—unlike post-independence legislation. When challenged, the burden of proof lies with the government to justify their validity under the Constitution.
3. The *Dramatic Performances Act* was rendered **inoperative** in 1956 when the **Allahabad High Court** ruled it unconstitutional in the landmark case **State vs. Baboo Lal & Ors.**
4. The ruling came after a theatre group from the **Indian People's Theatre Association (IPTA)** in Lucknow was barred mid-performance from staging a play based on **Premchand's short story *'Idgah'***. The performers continued despite the order and were prosecuted.
   - **The court ruled:** "The Dramatic Performances Act is ultra vires of the Constitution of India because its procedural part imposes such restrictions on the right of freedom of speech and expression which cannot be covered by the saving clause in **Article 19(2).**"

State-Level Adaptations and Legal Strikes

Even after the Allahabad High Court judgment, **state-level versions** of the law persisted in places like Madhya Pradesh, Karnataka, Delhi, and Tamil Nadu. These versions imposed similar restrictions on stage performances and artistic expression.

Notably, in **2013**, the **Madras High Court struck down the Tamil Nadu Dramatic Performances Act, 1954**, reaffirming the unconstitutionality of such restrictive laws.

12. Gold Smuggling in India: Laws, Loopholes, and the Ranya Rao Case

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1. Gold has long been a symbol of wealth, tradition, and investment in India. However, its high demand, coupled with steep import duties, has made gold smuggling a persistent challenge.
2. The **recent arrest of Kannada actor** Harshavardhini Ranya, alias Ranya Rao, has once again brought this issue into the spotlight, raising concerns over **regulatory lapses**, **organized crime**, and alleged police involvement.

The Case Against Ranya Rao

1. In March 2025, the Directorate of Revenue Intelligence (DRI), acting on specific intelligence, intercepted Ranya Rao at Bengaluru Airport upon her return from Dubai. Authorities discovered **14.2 kilograms of gold bars** concealed on her person.
2. Investigations revealed that Rao had **travelled to Dubai 27 times in six months**, indicating a pattern of suspected smuggling. A search of her residence led to the seizure of **gold jewellery worth ₹2.06 crore** and **₹2.67 crore in cash**, bringing the **total value of the seizure to ₹17.29 crore**.
3. A **Special Court of Economic Offences** in Bengaluru later **rejected her bail plea**, citing the gravity of the offence and possible links to an organized smuggling network.

Background: Legal Framework Governing Gold Imports

1. Before the **1990s**, the *Gold (Control) Act, 1968* tightly regulated the possession and import of gold in India.
2. It was **repealed during the economic liberalization** era, leading to a shift from restrictive control to a duty-based regime.
3. Since then, the legal framework has revolved around the ***Customs Act, 1962***, under the **Central Board of Indirect Taxes and Customs (CBIC),** Ministry of Finance. The key provisions include:

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   a. **Section 11**: Empowers the government to prohibit or restrict imports for national interest.
   b. **Section 111**: Permits confiscation of smuggled or undeclared goods.
   c. **Section 112**: Imposes fines up to the value of the smuggled gold.
   d. **Section 135**: Provides for imprisonment up to seven years if the market value exceeds ₹1 lakh.
4. **In 2003,** the Supreme Court ruled that any imported item not meeting the legal conditions is to be treated as a "prohibited good," subject to confiscation and penalties.
5. Further, under the **Baggage Rules, 2016**, individuals returning from abroad are allowed limited quantities of duty-free gold:
   a. **Men**: Up to 20 grams (₹50,000)
   b. **Women**: Up to 40 grams (₹1,00,000)
6. Customs duty is applicable on additional quantities, ranging from **3% to 10%**, based on weight and gender.
7. Those staying abroad for over six months, particularly in Dubai, can legally import up to **1 kg of gold** on payment of applicable duties.
8. In serious cases, provisions from the **Bharatiya Nyaya Sanhita (BNS), 2023**, and the **Unlawful Activities (Prevention) Act (UAPA), 1967**, may apply. These laws treat organized smuggling as a criminal enterprise or even a terrorist act if it impacts the monetary stability of the country.

Why Gold Smuggling Happens?

Several factors contribute to the surge in gold smuggling:

1. **High Import Duties**: Until recently, India levied up to 15% duty on gold imports. Even after a July 2024 reduction to 6%, the high cost of legal import continues to incentivize illegal channels.
2. **Forex and Currency Issues**: A weak rupee makes gold imports costlier, encouraging smuggling as a cheaper alternative.
3. **Cultural Demand**: India's deep-rooted cultural affinity for gold, especially during weddings and festivals, creates immense market demand.
4. **Black Money & Hawala**: Smuggled gold is often used to launder unaccounted wealth or transfer money through illegal networks.
5. **FTA Loopholes**: Gold imported duty-free into one country can be rerouted illegally into India under the guise of trade agreements.
6. **Organized Crime Syndicates**: The high profit margins make smuggling an attractive proposition for well-funded criminal groups.

Impact on the Indian Economy and Security

The consequences of gold smuggling are far-reaching:

1. **Revenue Loss**: The government loses significant customs and GST revenue. According to the World Gold Council, illegal gold imports into India hit **156 metric tons (worth ~$9 billion)** in the last year alone.
2. **Market Disruption**: The presence of untaxed gold distorts market prices and affects official trade metrics.
3. **Foreign Exchange Pressure**: Unregulated imports widen the trade deficit and strain India's forex reserves.
4. **Hawala and Terror Financing**: Funds generated through smuggling may be channeled into criminal or terrorist activities.
5. **Enforcement Burden**: The strain on customs, DRI, and border agencies is substantial, requiring continuous monitoring and intelligence operations.

The arrest of Ranya Rao has brought renewed focus on India's ongoing battle against gold smuggling. While legal frameworks exist to curb the menace, enforcement loopholes, procedural misuse, and high consumer demand continue to challenge authorities. The case underscores the need for tighter surveillance, better inter-agency coordination, and a comprehensive review of policies to balance legitimate demand with economic and national security priorities.

B. INTERNATIONAL RELATIONS

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1. PM Modi Visits Mauritius

1. Indian Prime Minister Narendra Modi visited Mauritius to celebrate the country's National Day as the chief guest.
2. Mauritius celebrates National Day on 12th March to mark its independence from British rule in 1968.
3. The same date also commemorates Mauritius becoming a Republic in 1992, completing its journey to full sovereignty.
4. The date holds added meaning as it aligns with Mahatma Gandhi's Dandi March, reflecting the Indian heritage of a majority (70 percent) of Mauritians.
5. India and Mauritius elevated their relationship to an **enhanced strategic partnership** during the Indian PM's visit.
6. Multiple agreements were signed, including on **maritime security** and **trade in local currencies**.
7. India announced its new vision for the Global South – **MAHASAGAR**.
8. India handed over a **navigational chart of St. Brandon Island** to Mauritius

India-Mauritius Joint Vision for an Enhanced Strategic Partnership

1. India and Mauritius reaffirmed their **deep-rooted historical and cultural ties**, describing their bond as **"special and unparalleled."**
2. The partnership, rooted in **kinship, shared values, language, and heritage**, has now been elevated to an **Enhanced Strategic Partnership**.
3. The new vision expands cooperation across sectors like **development, security, trade, digital transformation, education, and culture**, aligning with both countries' regional and global aspirations.

Political and Parliamentary Cooperation

1. Both sides agreed to enhance Parliament-to-Parliament collaboration.
2. They will share best practices in legislative functioning.
3. They will encourage capacity-building programs for parliamentarians and parliamentary staff.

Development Partnership

1. India has supported major infrastructure projects in Mauritius, transforming sectors like transport, housing, healthcare, and judiciary.
2. These projects include the Metro Express, the New Supreme Court Building, the ENT Hospital, 956 social housing units, and the distribution of educational tablets.
3. India's quick response after Cyclone Chido, delivering relief through Agaléga's new airstrip and jetty, was acknowledged as a strong example of its role as Mauritius's "First Responder."
4. Ongoing projects like the Renal Transplant Unit, the Forensic Science Laboratory, and the Civil Service College were appreciated.
5. Both sides pledged to ensure timely completion of these ongoing initiatives.

New Agreements for Development

1. **100 electric buses** with charging stations to be delivered.
2. **Phase II** of High Impact Community Projects to be launched.
3. Replace **100 km water pipeline** using India's first INR-denominated Line of Credit.
4. India to build a **new Parliament building** in Mauritius as a symbol of democratic solidarity.
5. Redevelopment of **Ganga Talao Spiritual Sanctuary** with Indian support.
6. Explore **new areas of development** aligned with Mauritius's national priorities.

Human Resource Development and Capacity Building

India reaffirmed its commitment to help Mauritius strengthen its human resources through:

1. **ITEC programs** and **custom training modules**.
2. Training of **500 civil servants** over five years via India's National Centre for Good Governance.

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3. Linkages between **Civil Service College, Forensic Science Laboratory, and National Archives** with Indian institutions.
4. Continued **technical expert deputation** to support Mauritius's functional needs.
5. **MoU to institutionalize training of Mauritian diplomats** at India's Sushma Swaraj Institute of Foreign Service.
6. Further training programs for **police, customs, legal, health, parliamentary, and civil officials** as per Mauritius's needs.

Space and Climate Cooperation

1. India's role in helping Mauritius develop its **first satellite** was acknowledged.
2. India Mauritius agreed to:
   a. Train **Mauritian scientists** at ISRO.
   b. Collaborate on **weather forecasting**, **wave monitoring**, and **multi-hazard emergency systems**.
   c. Renew cooperation on **ISRO's tracking station in Mauritius**.
   d. Develop tools for **disaster preparedness and climate monitoring** using ISRO and Ministry of Earth Sciences under the **QUAD framework**.

Health and Education Cooperation

1. Reaffirmed commitment to affordable, quality healthcare.
2. India launched **Jan Aushadhi Kendras** in Mauritius—its first such centers abroad—and will expand them nationwide.
3. **Cooperation on:**
   a. **Drug de-addiction** and rehabilitation via India's Narcotics Control Bureau.
   b. Digitizing Mauritius's healthcare with support for a **Digital Health Office system** and deputation of Indian specialists.
   c. Continued support for **Mauritian patients seeking treatment in India**.
   d. Setting up **AYUSH Centre of Excellence** for traditional medicine.
4. India's NCERT and Mauritius's education ministry are collaborating on **curriculum development** for schools.
5. Plan to implement **Mauritius's National Science and Technology Strategy** with India's support.

Economic and Trade Cooperation

1. India and Mauritius celebrated CECPA—India's first trade agreement with an African nation.
2. Mauritius urged Indian businesses to use it as a **gateway to Africa**, leveraging its membership in the **AfCFTA**.
3. Both sides agreed to:
   a. Hold the **second session** of the High-Power Joint Trade Committee under CECPA.
   b. Enable **trade in local currencies (INR–MUR)** to reduce reliance on third-country currencies.
   c. Finalize amendment of the **Double Taxation Avoidance Agreement (DTAA)** to align with global norms.
   d. Boost investment in **ocean economy, fintech, pharmaceuticals, and IT** to help Mauritius diversify its economy.

Digital Cooperation

1. Mauritius requested support for its **nationwide digitization**, to which India responded positively.
2. Agreements to:
   a. Implement **e-judiciary system** and **digitize archives** at the Mahatma Gandhi Institute.
   b. Strengthen **cybersecurity**, **Digital Public Infrastructure**, and **ICT training**.
   c. Explore adoption of Indian digital governance tools like **PM Gati Shakti** for Mauritius's development.

Defence and Maritime Security Cooperation

1. Mauritius thanked India for safeguarding its **Exclusive Economic Zone (EEZ)** through:
   a. Regular **deployment of Indian ships and aircraft**
   b. **Hydrographic surveys**, maritime surveillance, and joint patrols
   c. **Training and maintenance support** for Mauritius Coast Guard
2. India supported refit of **Coast Guard ships Victory, Valiant, and Barracuda** on grant basis.
3. Agreed actions:
   a. Continue **provision of defence equipment** as needed.

b. Increase **joint deployments** for maritime security.
c. Use the **new Agaléga infrastructure** more effectively.
d. Establish a **National Maritime Information Sharing Centre** in Mauritius.
e. Support Mauritius Port Authority in **port safety, marine engineering, and emergency preparedness**.
f. Launch tailored **police training and capacity-building programs**.

Regional and Multilateral Cooperation

1. India reiterated **full support to Mauritius's sovereignty over Chagos Islands**.
2. India appreciated for diplomatic efforts and personal engagement of PM Modi on the issue.
3. Both agreed to work together in:
   a. IORA
   b. Colombo Security Conclave
   c. International Solar Alliance (ISA)
   d. Global Biofuels Alliance
   e. Coalition for Disaster Resilient Infrastructure (CDRI)

Cultural and Diaspora Cooperation

1. Cultural and historical bonds reaffirmed as the **bedrock of bilateral ties**.
2. **Agreed to:**
   a. Preserve **Girmitiya records** through the Mahatma Gandhi Institute with help from India's National Archives.
   b. Engage diaspora via **Know India Program**, **Connecting Roots**, and **Pravasi Bharatiya Divas**.
   c. Promote spiritual tourism—**Char Dham Yatra**, **Ramayan Trail**, and heritage sites in India.
   d. Speed up implementation of the **labour recruitment MoU** to support mobility between both nations.

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MAHASAGAR INITIATIVE

From SAGAR to MAHASAGAR

1. **2015 – Launch of SAGAR**:
   a. During his visit to **Mauritius in 2015**, Prime Minister Narendra Modi unveiled the **SAGAR vision**, which stands for **Security and Growth for All in the Region**.
   b. This initiative focused on strengthening maritime cooperation with India's **immediate Indian Ocean neighbours**, promoting regional stability, mutual security, economic development, and disaster response.
2. **2025 – Evolution into MAHASAGAR**:
   a. A decade later, during his **2025 visit to Mauritius**, PM Modi upgraded this vision to **MAHASAGAR**, which stands for **Mutual and Holistic Advancement for Security and Growth Across Regions**.
   b. This expanded doctrine goes **beyond the Indian Ocean**, aiming to deepen India's engagement with the **entire Global South** through broader cooperation in **security, trade, capacity building, digital infrastructure, and sustainable development**

Comparison between SAGAR and MAHASAGAR initiative

Aspect	SAGAR (2015)	MAHASAGAR (2025)
Full Form	Security and Growth for All in the Region	Mutual and Holistic Advancement for Security and Growth Across Regions
Announced By	PM Narendra Modi in **Mauritius**, March 2015	PM Narendra Modi in **Mauritius**, March 2025
Scope	Focused primarily on India's **immediate maritime neighbourhood**	Broader scope including the **entire Global South and wider Indian Ocean Region (IOR & beyond)**

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Focus Areas	Maritime security, economic cooperation, disaster response, climate resilience	Mutual security, development cooperation, digital public infrastructure, trade in local currencies
Key Partners	Indian Ocean littoral states (e.g., Sri Lanka, Maldives, Mauritius, Seychelles)	African nations, island countries, and extended IOR & Global South partners
Strategic Intent	Promote India as a **net security provider** in the Indian Ocean	Position India as a **global development and security partner**, especially for the Global South
Examples of Initiatives	IFC-IOR, hydrographic surveys, joint patrols, HADR operations	AIKEYME wargame, IOS Sagar deployment, concessional loans, training civil servants, satellite support
Underlying Philosophy	Secure and cooperative maritime environment for regional stability	Shared prosperity through holistic regional cooperation in **security, growth, and governance**
New Additions	–	Tech-sharing, AI cooperation, ocean economy, climate monitoring, white shipping, satellite missions

Key Military Initiatives under MAHASAGAR

1. **EXERCISE ALKEYME**
   - **a.** **AIKEYME**, derived from Sanskrit and means "unity", stands for **Africa-India Key Maritime Engagement.**
   - **b.** It is a maritime exercise between **India and African nations** in the Western Indian Ocean Region.
   - **c.** The **objective** is to enhance maritime cooperation, joint preparedness, and interoperability.
   - **d.** The **first edition** was held from 13 to 18 April 2025.
   - **e.** It was **co-hosted by India and the Tanzania**.
   - **f.** The **Indian Navy and ten African countries** participated: Comoros, Djibouti, Eritrea, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, South Africa, and Tanzania.
   - **g.** The exercise included **two phases**: harbour phase and sea phase.
   - **h.** AIKEYME is **expected to become a biennial** event.
2. **Indian Ocean Ship (IOS) Sagar Initiative**
   - **a.** **INS Sunayna** will be deployed across the Southwest Indian Ocean.
   - **b.** The ship will have a joint crew from **India and nine partner nations**: Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Seychelles, Sri Lanka, and South Africa.
   - **c.** The deployment will include port calls at Dar es Salaam, Nacala, Port Louis, Port Victoria, and Male.
   - **d.** During the mission, joint surveillance operations will be conducted in the Exclusive Economic Zones (EEZs) of Tanzania, Mozambique, Mauritius, and Seychelles.
   - **e.** Naval officers from participating countries will undergo a two-week training program at a naval school in Kochi.
   - **f.** The training will focus on whole-ship tasks, watchkeeping, seamanship, Visit Board Search and Seizure (VBSS), and command-post drills.
   - **g.** Trainees will observe the harbour phase of Exercise AIKEYME in Dar es Salaam.
   - **h.** After the training, they will join the deployment aboard INS Sunayna.

2. New Zealand's PM visits India

1. PM Christopher Luxon visited India from **16–20 March 2025**.
2. It was his **first visit as Prime Minister**, covering **New Delhi and Mumbai**.
3. He was accompanied by **three ministers** (Tourism, Ethnic Communities, Trade) and a **high-level delegation** from government, business, diaspora, media, and cultural sectors.
4. PM Luxon delivered the **inaugural keynote at the 10th Raisina Dialogue** and paid homage at **Raj Ghat**.

Trade, Investment, and Economic Cooperation

1. Agreed to resume **FTA negotiations** for a **balanced, comprehensive, and mutually beneficial agreement**.
2. Discussions under the FTA to also include early cooperation in **digital payments**.
3. **Signed:**
   a. **Authorized Economic Operators Mutual Recognition Arrangement (AEO-MRA)** to ease customs clearance.
   b. **MoC on Horticulture** for post-harvest infrastructure and knowledge exchange.
   c. **Letter of Intent on Forestry Cooperation** to promote policy and technical dialogue.
4. Supported **direct flights** and **updated Air Services Agreement** to boost tourism and connectivity.
5. In 2023-24, total bilateral trade between India and New Zealand stood at US$ 1.75 billion.
6. New Zealand exported goods and services worth US$ 0.84 billion to India and imported US$ 0.91 billion from India.
7. India's key exports to New Zealand included clothing, fabrics, and home textiles worth $72.8 million.
8. Pharmaceuticals and medical supplies were another major export, valued at $67.5 million.
9. Refined petroleum exports from India to New Zealand totalled $52.2 million, strengthening energy trade.

Defence and Security Cooperation

1. Reaffirmed shared military history and sacrifice.
2. Welcomed progress in:
   a. **Military exercises**
   b. **Staff college exchanges**
   c. **Naval port calls** (INS Tarini and HMNZS Te Kaha)
3. Signed **MoU on Defence Cooperation** for regular engagement and maritime safety dialogue.
4. Welcomed India's joining of the **Combined Maritime Forces** and collaboration during NewZealand's **CTF-150 command**.
5. Committed to **capacity-building and officer training exchanges**.
6. NewZealand expressed interest in joining India's **Indo-Pacific Oceans Initiative (IPOI)**.
7. Discussed cooperation on **maritime heritage projects** like the **Lothal Maritime Heritage Complex**.

Science, Technology, Climate, and Disaster Management

1. Agreed to strengthen **research, innovation, and tech partnerships**.
2. Committed to:
   a. **Commercializing clean tech**
   b. Supporting **low-emission, climate-resilient growth**
3. India welcomed New Zealand 's membership in the **Coalition for Disaster Resilient Infrastructure (CDRI)**.
4. Work underway on a **MoC on Earthquake Mitigation** to enhance **preparedness and emergency response**.

Education, Mobility, and People-to-People Ties

1. Recognised potential to expand cooperation in **education, skills, and innovation**.
2. Encouraged more **Indian students to study in NewZealand**.
3. Agreed to launch **mobility negotiations** to enable smooth movement of **professionals and skilled workers**.
4. Signed a **refreshed Education Cooperation Arrangement** between education ministries.
5. Welcomed new **MoC on Sports** and announced the **"Sporting Unity" events in 2026** to mark **100 years of sporting contact**.
6. Agreed to promote cooperation in **traditional medicine**, with exchanges among research experts.
7. Welcomed growing NZ interest in **yoga, Indian arts, festivals**, and encouraged more **cultural exchanges**.

Diaspora and Community Safety

1. Acknowledged the positive role of the **Indian diaspora** (6% of New Zealand's population).
2. Agreed to ensure **safety of Indian students and communities in New Zealand**, and **New Zealanders in India**.

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Dimension	New Zealand's Pacific Reset Policy	India's Initiatives in the Pacific Ocean
Core Objective	Reinvigorate engagement with **Pacific Island Countries (PICs)**	Expand presence and partnerships in the **Indo-Pacific**, especially with PICs
Climate Resilience Focus	Address climate change, sea-level rise, and extreme weather impacts	Promote climate adaptation through **Coalition for Disaster Resilient Infrastructure (CDRI)**
Key Framework	Launched as a reset in NZ foreign policy in 2018	Envisioned under **SAGAR (2015)** and expanded via **MAHASAGAR (2025)** and **IPOI (2019)**
Multilateral Engagement	Works with **PIF**, **ARF**, and **UN frameworks**	Engages with **ASEAN**, **PIF**, **ARF**, and **IPOI**
Maritime Security Approach	Enhance regional maritime governance and surveillance capacities	Offers joint patrols, training, and **white shipping agreements** with PICs
Disaster Response	Provide rapid humanitarian and climate disaster aid in the Pacific	Leads **HADR** missions and builds **infrastructure resilience** under CDRI
Sustainable Fisheries	Strong regulatory and monitoring systems for IUU fishing	Cooperates with PICs on IUU fishing via IPOI capacity building and joint monitoring
Digital and Infrastructure Support	Supports infrastructure projects across Pacific islands	Develops **coastal and digital infrastructure**, including **early warning systems**
Strategic Cooperation with India	Joined **India's IPOI** and **CDRI** in 2025, aligning with Pacific Reset goals	Welcomes NZ's participation in IPOI; explores maritime heritage and climate-related tech sharing
Position on the Quad	Not a member but aligns with **Quad HADR, cyber, and maritime initiatives**	Active engagement with Quad partners; promotes inclusive Indo-Pacific frameworks

Combined Maritime Forces (CMF)

1. New Zealand **welcomed India's full membership** in CMF.
2. CMF is a **multinational maritime partnership** focused on ensuring global maritime **security and stability**.
3. It works to uphold the **International Rules-Based Order (IRBO)** by targeting **illicit non-state actors**.
4. CMF plays a key role in tackling **piracy, smuggling, and other maritime threats** on the high seas.
5. The coalition consists of **five task forces**, each addressing specific maritime challenges.

Roles of Task Forces under CMF

1. **CTF 150**: Secures the **Gulf of Oman** and undertakes **counter-terrorism operations**.
2. **CTF 151**: Dedicated to **counter-piracy** efforts in major **international shipping routes**.
3. **CTF 152**: Enhances **security and regional cooperation** in the **Arabian Gulf**.
4. **CTF 153**: Focuses on maritime security in the **Red Sea and Gulf of Aden**.
5. **CTF 154**: Provides **maritime security training** to build **regional naval capabilities**.

As regional dynamics shift, the **India–New Zealand partnership** is set to become a **key pillar of a resilient and inclusive Indo-Pacific architecture**.

3. Cairo Declaration for Gaza Reconstruction

1. The Cairo Declaration was announced at an emergency meeting of the Arab League on March 4, 2025.
2. **Arab League** is a regional organization of Arab countries in and around the Middle East and North Africa.
3. At this meeting, leaders agreed on a $53-billion plan to rebuild Gaza.
4. This plan is the Arab world's joint response to the humanitarian crisis caused by the Israel-Hamas conflict.
5. The success of the plan depends on a full ceasefire being put in place.

Trump's Gaza 'Riviera' plan

1. Former U.S. President Donald Trump reportedly proposed turning **Gaza into a 'Riviera-style' coastal zone**, focused on development, tourism, and real estate.
2. His idea involved **moving the Palestinian population out of Gaza**, possibly to **Egypt and Jordan**, to make space for this transformation.
3. The plan suggested that Gaza could become a **luxury area**, ignoring the political and humanitarian realities on the ground.
4. This proposal was widely **criticized** as it appeared to support **forced displacement** of Palestinians.
5. It triggered a strong **reaction from Arab countries**, who saw it as an attack on Palestinian rights and regional stability.
6. In response, Arab leaders gathered in Cairo and came up with the **Cairo Declaration**, a separate reconstruction plan that rejects forced relocation.

Historical Context and Precedents

The Cairo Declaration and its Foundations

1. The Cairo Declaration builds on previous Arab League initiatives, especially the Bahrain Declaration from May 2024.
2. It continues the Arab League's consistent position in support of a two-state solution.
3. This position was first formally expressed in the Arab Peace Initiative of 2002.

The Bahrain Declaration (May 2024)

1. The Bahrain Declaration called for an immediate ceasefire in Gaza and unrestricted humanitarian aid.
2. It reaffirmed support for a two-state solution with East Jerusalem as the capital of Palestine.
3. The declaration proposed deploying UN peacekeeping forces in Palestinian territories.
4. It condemned Israeli military actions and urged international support for Gaza's reconstruction.
5. The Arab League emphasized Palestinian unity and stronger regional cooperation for lasting peace.

The Arab Peace Initiative (2002)

1. It is a peace proposal adopted by the **Arab League in March 2002** during a summit in Beirut, Lebanon.
2. Proposed by **Saudi Arabia** and supported by all Arab member states.
3. Full normalization of relations between Arab states and Israel, in exchange for:
   a. Israeli withdrawal from all territories occupied since 1967 (West Bank, Gaza Strip, East Jerusalem, and Golan Heights)
   b. Creation of an independent Palestinian state with East Jerusalem as its capital
   c. A just solution to the Palestinian refugee issue based on UN Resolution 194
4. It was the first unified Arab offer to recognize Israel and establish peaceful ties.
5. Marked a major diplomatic shift — from confrontation to conditional peace.
6. Israel did not accept the plan.
7. It opposed full withdrawal and refugee return, fearing demographic and security threats.
8. The Arab League reaffirmed the Initiative in 2007 and 2017.
9. It remains the Arab world's official peace framework, though largely inactive due to lack of progress and changing regional dynamics.

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UN Resolution 194

1. UN Resolution 194 was passed on December 11, 1948.
2. It was adopted by the United Nations General Assembly.
3. The resolution came after the 1948 Arab-Israeli War.
4. It addressed the issue of Palestinian refugees displaced during the war.

Provisions

1. The resolution stated that refugees wishing to return to their homes should be allowed to do so.
2. This return was conditional on the refugees living peacefully with their neighbors.
3. Those who do not wish to return should be compensated for their property.
4. The resolution also called for compensation for lost or damaged property.

Implementation Mechanism

1. It established the United Nations Conciliation Commission for Palestine (UNCCP).
2. The UNCCP was tasked with facilitating peace and implementing the resolution.

Legal and Political Significance

1. Resolution 194 is not legally binding, as it is a General Assembly resolution.
2. Palestinians often cite it as the legal basis for their right of return.
3. Israel has opposed the return of refugees under this resolution.
4. Israel argues that the return would threaten the Jewish identity of the state.

Provisions of the Declaration

1. The Declaration proposes the formation of a Gaza administration committee composed of qualified Gazans.
2. It promises both financial and political support for Gaza's reconstruction.
3. The Declaration calls for the establishment of a trust fund to support the recovery process.
4. It also calls for the deployment of United Nations peacekeeping forces in Gaza and the West Bank to maintain stability.

Governance and Political Considerations

1. The Declaration emphasizes the importance of unifying Palestinian factions under the Palestine Liberation Organization (PLO).
2. It does not mention Hamas, which could allow the group to retain influence during the transition.
3. The proposed interim administration is intended to restore governance and prepare for future Palestinian elections.
4. This step is significant given the long-standing political divisions among Palestinian groups.

International Reactions and Concerns

1. Both Israel and the United States have expressed criticism of the Cairo Declaration.
2. One key concern is the lack of any explicit reference to Hamas in the Declaration.
3. There are also concerns about the future governance of Gaza under the proposed plan.
4. The success of the Cairo Declaration depends heavily on cooperation from Israel.
5. Israel has consistently opposed the PLO's involvement in Gaza's governance.

While it offers a comprehensive plan for recovery and governance, its success hinges on achieving a full ceasefire and gaining cooperation from key international actors, especially Israel. Despite criticism and political challenges, the Declaration marks a renewed regional effort to pursue justice, peace, and stability for Palestinians.

4. 10CFR810 Approval and India–US Nuclear Cooperation

1. The **US Department of Energy (DoE)** approved **Holtec International's application** under the **"10CFR810" regulations** of the US Atomic Energy Act of 1954.
2. The approval allows Holtec to transfer **"unclassified small modular reactor (SMR) technology"** to **three Indian firms**:
   a. Holtec Asia
   b. Tata Consulting Engineers Ltd
   c. Larsen & Toubro Ltd

Strategic Importance

- This move builds on recent efforts by both countries to **enhance civil nuclear cooperation**, as outlined under the **US–India 123 Civil Nuclear Agreement**.

About Small Modular Reactors (SMRs)

1. SMRs are **advanced nuclear reactors** with a generation capacity ranging from **30 MWe to 300 MWe per unit**.
2. They feature a **modular design** that allows **factory-based assembly** rather than traditional on-site construction.
3. This modularity results in:
   a. **Lower construction costs**
   b. **Faster deployment**
   c. **Greater flexibility in scaling**

Advantages of SMRs

1. **Cost-effective** and **scalable**, suitable for both grid and remote locations.
2. High **adaptability** makes them a promising option for **future nuclear energy expansion** in India and globally.

India's Long-Term Nuclear Vision

1. Target of **100 GW nuclear power capacity by 2047**.
2. Nuclear identified as a key pillar of India's **Viksit Bharat energy strategy**.
3. Aligns with goals of **energy security**, **low carbon transition**, and **reduced fossil fuel dependency**.

Nuclear Energy Mission for Viksit Bharat

1. ₹20,000 crore allocated to promote **Small Modular Reactors (SMRs)**.
2. Goal: **5 indigenously designed and operational SMRs by 2033**.
3. Proposed amendments to **Atomic Energy Act** and **Civil Liability for Nuclear Damage Act** to encourage **private sector participation**.

Hurdles India faces in importing Nuclear reactors

India faces hurdles in importing nuclear reactors due to concerns over its **civil nuclear liability law**, which allows operator recourse against foreign suppliers. Additionally, **high costs, regulatory delays, and technology transfer restrictions** deter foreign collaboration.

What is Civil Nuclear Liability?

1. It refers to **legal responsibility** for damages caused by a **nuclear accident**.
2. Ensures that **victims are compensated**, and **operators are accountable**.
3. Balances the interests of the **public, government, nuclear plant operators**, and **suppliers**.

Civil Liability for Nuclear Damage Act, 2010 (CLND Act)

1. **Applies to all nuclear installations** owned by the government or authorized operators.
2. Establishes **no-fault liability** of the operator — victims are not required to prove negligence.
3. **Liability Cap for Operator**:
   a. ₹1,500 crore (approx. USD 200 million).
   b. Beyond that, the government may pay up to **300 million SDR** (~USD 400 million) under international conventions.
4. **Right of Recourse**: The operator can seek compensation from the **supplier** if:
   a. It is explicitly mentioned in the contract.
   b. The accident was caused by **defective equipment or services**.
5. Establishes a **Nuclear Damage Claims Commission** to handle claims quickly.

India's Unique Position

1. Most nuclear liability laws globally **do not hold suppliers liable**.
2. India's law includes a **right of recourse**, which has raised **concerns among foreign suppliers** (e.g. GE, Westinghouse).
3. To ease investment fears, India created:
   a. **India Nuclear Insurance Pool** (₹1,500 crore coverage) to protect suppliers.
   b. Clear guidelines in 2016 affirming the law doesn't violate international Relevance to Private Sector Participation
4. The 2025–26 Budget proposes **amendments** to the Civil Nuclear liability and damage Act to:
   a. Encourage **private investment** in SMRs and Bharat Small Reactors.
   b. Provide **greater clarity on liability sharing** between operators and private suppliers.

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US–India 123 Civil Nuclear Agreement (Also known as the "123 Agreement")

1. Signed in **October 2008** under Section 123 of the **US Atomic Energy Act of 1954**.
2. Marked a **landmark shift** in US-India relations, ending India's nuclear isolation post-1974 nuclear tests.
3. Allowed **civilian nuclear trade** between India and the United States for the first time in over 30 years.
4. India agreed to **separate its civilian and military nuclear facilities** and place civilian reactors under **IAEA safeguards**.
5. The US agreed to:
    - Supply **nuclear fuel and technology** for India's civilian use.
    - Facilitate India's access to the **global civil nuclear market**.
6. India agreed to **continue its voluntary moratorium** on nuclear testing.
7. It paved the way for India's cooperation with other nations like **France, Russia, Japan, and Australia** in the nuclear sector.
8. The agreement required an **India-specific safeguards agreement** with the **International Atomic Energy Agency (IAEA)**.
9. India, not a signatory to the **Nuclear Non-Proliferation Treaty (NPT)**, received a **waiver from the Nuclear Suppliers Group (NSG)** in 2008 to enable international nuclear trade.

5. Global Free Speech Survey 2024

1. **It** is Conducted by **The Future of Free Speech**, an independent think tank, in **October 2024**.
2. Ranks countries based on **public support for free speech**, especially **controversial and political speech**.
3. India ranked **24th out of 33 countries**, indicating low support for protecting controversial opinions.

Global Trends

1. There has been a **decline in global support** for free speech since 2021.
2. Even democratic countries like the **United States and Japan** saw drops in support.
3. **Scandinavian countries** like **Norway and Denmark** ranked the highest.

India's Position

1. India scored **62.6**, ranking between **South Africa and Lebanon**.
2. Abstract support for free speech remains high, but **protection of controversial speech is weak**.
3. **37% of Indian respondents** said the government should restrict criticism — the **highest among all countries surveyed**.
4. In contrast, only **5% in the UK** supported such restrictions.

Discrepancies and Democratic Backsliding

1. There's a **gap between India's public support for free speech and actual protections**.
2. This trend is also observed in countries like **Hungary and Venezuela**, pointing to **democratic backsliding**.
3. There's a mismatch between what citizens believe and what governments enforce.

Perceptions vs. Reality

1. Many Indians **believe free speech has improved** over the past year.
2. However, **observers argue the opposite**, indicating a **gap between perception and reality**.

Cultural Context

1. Free speech requires not just laws but a **culture of tolerance and open debate**.
2. In India, the **erosion of support for controversial speech** is evident.
3. This weakens the **essence of true free expression** in a democratic society.

India's Atypical Case

1. Globally, **public support usually matches actual protections** of speech.
2. But in India, there is **strong public belief in free speech**, yet **low tolerance for dissent or criticism**.
3. This makes India an **outlier** among democratic nations.

Topics Covered in the Survey

1. Attitudes towards **censorship, criticism of government**, and **sensitive issues** like religion.

2. Support for free speech **drops sharply** when it comes to **offensive content or criticism of religion**.
3. Highlights the **complex and conditional nature** of free speech support.

The Global Free Speech Survey 2024 reveals that while Indians value free speech in theory, support weakens when it involves criticism or controversy. The widening gap between perception and reality, combined with low tolerance for dissent, points to a deeper cultural and democratic challenge. If left unaddressed, this erosion risks undermining the very foundations of India's democratic structure and its global image as a vibrant democracy. Strengthening legal protections alone is not enough—building a culture of open dialogue and tolerance is equally essential.

6 Raisina Dialogue

1. The Raisina Dialogue is **India's premier conference on geopolitics and geo-economics**, focused on global challenges.
2. The **10th edition** was held from **17–19 March 2025** in New Delhi.
3. PM **Narendra Modi** inaugurated the event on **17 March 2025**.
4. **New Zealand PM Christopher Luxon** was the **Chief Guest** and delivered the **keynote address**.
5. Around **3,500 participants** from **125 countries** attended in person.
6. Attendees include **ministers, ex-heads of state, military leaders, business and tech leaders, academics, and youth**.
7. The **2025 theme** is **"Kālachakra – People, Peace and Planet"**.

Themes of Raisina 2025 Dialogue

"Politics Interrupted: Shifting Sands and Rising Tides"

1. It explores **major global shifts in power and influence.**
2. It focuses on how the **rise of new actors is reshaping old relationships** and forming new ones.
3. Discussions examined the **changing dynamics of global geopolitics and the powers driving them.**
4. The dialogue looks at **how global actors have responded to complex crises** while protecting their interests.
5. It stresses the need for **strategies to minimise and manage the effects of these disruptions.**
6. **Traditional global systems and institutions are seen as outdated** in this evolving order.
7. The world faces urgent **and shared challenges** that require a **collective response**.
8. The dialogue raised key questions about forming a **new global consensus**.
9. It also considers **which alliances may endure or shift** in this unpredictable geopolitical landscape.

"Resolving the Green Trilemma: Who, Where, & How"

1. It presents climate change as both a **technical and geopolitical challenge**.
2. Although global in nature, **climate action is limited by political decisions and financial constraints**.
3. Key questions include who should act, where actions are most needed, and how they should be carried out.
4. **Many regions critical to keeping global warming** below two degrees lack sufficient resources for climate action.
5. The discussion explored how countries are balancing economic growth with climate goals.
6. It focused on meeting the **twin demands of expanding energy access and reducing carbon emissions.**
7. **Innovative finance and technology mechanisms** are being developed to target the most vulnerable areas.
8. The **gap in adaptation finance and access to technology** is already affecting lives and livelihoods.
9. **Wealthier nations** must find ways **to invest in regions** essential for climate mitigation.
10. A comprehensive approach is needed to **address adaptation, loss, and damage caused by climate change.**

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"Digital Planet: Agents, Agencies, and Absences" explores how rapid technological progress is reshaping society.

1. New technologies are transforming how we live, work, and interact with the world.
2. Unlike earlier phases, current tech advances **may reduce human autonomy** instead of increasing it.
3. **Complex technologies** are now embedded in governance, economies, and daily life, **acting with their own kind of agency**.
4. The discussions will explore both **the potential of new tech to solve global problems** and the **ethical concerns it raises**.
5. The threat of malicious actors in cyberspace prompts the need for new international cooperation on cybersecurity.
6. **Digital public infrastructure is driving inclusive growth** by improving innovation, service delivery, and financial access.
7. Fintech is rapidly **expanding and influencing how finance flows** across people, institutions, and countries.
8. Decisions about regulating fintech will shape the **future of global financial networks.**
9. **Geopolitics of technology** is becoming more **complex amid global power rivalries and data localization efforts**.
10. Governments and companies are **rethinking their tech supply chains** and data flows.
11. Artificial intelligence is transforming how we think about the **role and agency of technology.**
12. **AI** is not just a tool—it is becoming a **medium, an actor, and even a substitute for human roles in some contexts.**
13. These developments are redefining debates about **control, responsibility, and the future of human-tech interaction.**

"Militant Mercantilism: Trade, Supply Chains & the Exchange Rate Addiction" highlights trade as a new zone of global conflict.

1. The earlier trend of increasing **global economic integration is now reversing.**
2. Strategies like **derisking, decoupling, and protectionism are rising** but often overlap and blur together.
3. **Economic security** has become as important as **military security** in today's world.
4. The discussions examined the **root causes and impacts of current economic tensions**.
5. Raisina explored how to **build resilient and fair trade systems** amid rising **protectionism and nationalism**.
6. The goal is to shape a new, **inclusive framework for trade and investment.**
7. This framework should **retain the benefits of past globalisation** while addressing its flaws.
8. It must also create **opportunities for young and emerging nations** that will lead future global growth and innovation.

"Investing in Peace: Drivers, Institutions, & Leadership" focuses on global security threats, both old and new.

1. Modern wars will be shaped by **industrial capacity and rapid technological innovation**.
2. **Large-scale production of tanks and weapons** remains crucial in traditional warfare.
3. At the same time, innovations like **drones and battlefield information** systems are changing warfare dynamics.
4. The dialogue explored whether **emerging capabilities** will lead to asymmetric warfare.
5. It assessed whether **military power still depends on mass mobilisation of troops** and equipment
6. The role of non-state actors, including **pseudo-states and private militias**, was critically examined.
7. **Persistent cyber-attacks** are now a major challenge to **national sovereignty and global stability.**

8. The discussions focussed on how states are adapting their strategies to **ensure peace and security.**
9. The importance of leadership in **maintaining global order** was a key concern.
10. The 21st century demands a **guarantor of peace—possibly a collective force**—but no one has stepped up yet.
11. This theme highlights the **urgent need for leadership, institutions, and collaboration in securing a peaceful world.**

7. Chinese Government Crackdown On Neijuan

1. Chinese Premier Li Qiang addressed the National People's Congress, highlighting the government's resolve to combat 'Neijuan'.
2. The term refers to involutionary competition — a cycle of diminishing returns due to excessive competition.
3. With economic slowdown, China aims to build a sustainable business environment and respond to international criticism.

What is Neijuan?

1. Neijuan is intense, unproductive competition where increased effort leads to reduced or no benefit.
2. In business, firms engage in price wars and overproduce just to retain market share, lowering profitability.
3. For individuals, it results in long working hours and constant upskilling, without any improvement in quality of life.

Impact on Industries

1. Neijuan is especially visible in high-growth sectors like electric vehicles (EVs).
2. Companies slash prices to outperform rivals, causing unsustainable practices.
3. This leads to reduced profits and instability in the market.

Government Response

1. The Chinese government has adopted stronger measures to tackle Neijuan.
2. This reflects a shift in focus from rapid growth to sustainable development.
3. The strategy includes eliminating market fragmentation and ending local protectionism.
4. Fair competition and innovation are being promoted over harmful pricing tactics.

Policy Reforms

1. China is introducing policy reforms to manage Neijuan effectively.
2. These include stricter competition regulations.
3. Authorities are holding discussions with industry leaders to find practical solutions.
4. The goal is to encourage innovation and reduce dependence on price-based competition.

Global Tensions and Trade

1. The crackdown on Neijuan comes amid rising global trade tensions, especially with the US and EU.
2. Western countries accuse China of dumping excess industrial capacity into foreign markets, harming their local industries.
3. China rejects these claims and insists its growth is driven by innovation and genuine demand.

Future Outlook

1. The official recognition of Neijuan signals that China understands the long-term risks of unchecked competition.
2. By addressing these issues, China aims to build a more stable and balanced economic system.
3. This approach seeks to benefit both businesses and workers, ensuring long-term sustainability.

Why is China Suffering From Neijuan (Involutionary Competition):

Slowing Economic Growth

1. China's rapid growth is now tapering off.
2. With limited new market opportunities, companies compete more **intensely in existing sectors**, leading to over-effort with diminishing returns.

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Overcrowded Industries

1. Many sectors, like **electric vehicles, e-commerce, and tech**, have too many players.
2. Firms aggressively cut prices or overproduce to stay relevant, harming profitability.

Pressure to Perform

1. Companies are under pressure to **show continuous growth**, even when market conditions are not supportive.
2. This leads to **short-term strategies like price wars** and overwork, instead of long-term innovation.

Worker Competition

1. Among individuals, there's intense pressure to **work longer hours** and **constantly upgrade skills**, often without matching rewards.
2. This results in **burnout**, dissatisfaction, and stagnation in career progression.

Education and Labor Market Mismatch

1. China's population has become highly educated, but **high-quality jobs have not kept pace**.
2. This causes a surplus of skilled workers **competing for fewer desirable roles**, deepening Neijuan.

Local Protectionism and Fragmentation

1. Local governments often support **regional brands or industries**, leading to **fragmented markets**.
2. This prevents fair competition and leads to **duplication and inefficiency** across the country.

Innovation Gets Sidelined

1. Instead of focusing on genuine product or service innovation, many firms rely on **marketing tactics or price cuts** to survive.
2. This stalls **creative growth** and deepens the involution trap.

How to Tackle Neijuan

Promote Innovation over Price Wars

1. Shift the competitive focus from **cost-cutting** to **value creation**.
2. Encourage R&D, design, and quality improvement through **innovation subsidies** and **IPR protection**.

Strengthen Anti-Monopoly and Fair Competition Laws

1. Enforce **anti-trust regulations** to prevent dominance by a few firms that pressure others into unsustainable practices.
2. Discourage **predatory pricing** and ensure **open, fair markets** for all players.

Streamline Oversupply in Key Industries

1. Identify sectors (e.g., EVs, steel, real estate) with **overcapacity**.
2. Promote **industry consolidation** through mergers, exits, or state-guided restructuring to reduce unhealthy competition.

Enhance Labor Protections and Work-Life Balance

1. Introduce and enforce **regulations on working hours**, minimum rest periods, and paid leaves.
2. Promote workplace cultures that prioritize **employee well-being**, not just productivity.

Revamp Education and Employment Policies

1. Align university output with **market needs** to avoid saturation of degrees with low employability.
2. Promote **vocational training**, entrepreneurship, and **diverse career pathways**.

Encourage Market Integration

1. Break down **local protectionism** by creating a **national unified market**.
2. Let companies compete on **efficiency and innovation**, not geography or local subsidies.

Reward Long-Term Thinking in Business

1. Reform incentive structures (like stock performance, tax rebates) to support **long-term business growth** over short-term gains.
2. Encourage **patience capital** that allows companies to experiment and innovate.

Engage in Transparent Industry Dialogue

1. Hold regular consultations between government, industry leaders, and workers to **anticipate risks** and design **balanced regulations**.
2. This helps maintain market order without stifling entrepreneurial spirit.

C. SECURITY

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1. Quantum Computing and National Security

1. In an era marked by rapid technological transformations, **quantum computing** stands at the forefront of innovations that could fundamentally alter national security landscapes.
2. Recognizing this, **NITI Aayog's Frontier Tech Hub (NITI-FTH)**, in collaboration with the **Data Security Council of India**, has released a strategic paper titled ***"Quantum Computing: National Security Implications & Strategic Preparedness"***.
3. The document underlines the **urgent need for India** to adapt, invest, and prepare for a quantum future where security, intelligence, and power dynamics will be increasingly shaped by advancements in quantum technology.

What is Quantum Technology

1. Quantum technology, is an advanced field, draws its power from **principles of quantum mechanics**—a field of physics that governs the behavior of subatomic particles.
2. Unlike classical computing that processes bits as 0s or 1s, **quantum computing uses qubits** which can exist in multiple states simultaneously, thanks to phenomena such as:
   a. **Superposition** – A particle can exist in several states at once until measured.
   b. **Quantum Entanglement** – Two particles, once linked, can influence each other's behavior regardless of distance.
   c. **Interference** – Quantum states can amplify or cancel each other out, affecting the final outcome of computations.

These properties enable **quantum computers** to solve problems at a speed and scale far beyond the reach of today's most powerful supercomputers.

How Quantum computing is reshaping the National Security Paradigm?

NITI Aayog's paper highlights **five strategic domains** where quantum computing is poised to reshape national security priorities:

1. **Cryptography and Cybersecurity:** One of the most immediate threats of quantum computing lies in its ability to **break traditional encryption algorithms**—especially those **based on RSA and ECC**, which secure banking systems, military communications, and classified data.
   a. **Post-Quantum Cryptography (PQC)** is emerging as a safeguard—these are cryptographic methods designed to resist quantum attacks.
      - **Example**: The **USA's National Quantum Initiative Act (2018)** emphasizes the urgency of adopting PQC to counter future cyber threats.
   b. **India's Concern**: A transition plan to **PQC is crucial**, especially in critical sectors like finance, defense, and infrastructure.
2. **Enhanced Intelligence Gathering:** Quantum computing's superior processing power enables rapid analysis of **vast, complex datasets**, making it ideal for deciphering encrypted communication, identifying security threats, and predicting enemy movements.
   - **Example**: **NATO's 2024 strategy** includes quantum-ready defense applications like sensing, imaging, and secure communications through quantum cryptography.
3. **Secure Communications through Quantum Key Distribution (QKD)**

QKD uses the principles of quantum mechanics to **generate and distribute encryption keys** that are secure against any kind of interception or tampering.

- **Example**: **China's 2,000 km long QKD network** between Beijing and Shanghai is a global benchmark in secure quantum communication.

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4. **Military Hardware and Quantum-enabled Warfare:** Quantum technology will revolutionize military capabilities—from **materials science breakthroughs** to **quantum-enhanced AI** systems for autonomous drones, missile guidance, and surveillance systems.
    - **Example**: Quantum-powered AI systems are being developed to enable autonomous decision-making in complex battlefield environments.
5. **Economic and Geopolitical Warfare:** Quantum threats are not just physical—they could **destabilize financial systems** by breaking encryption used in digital transactions, potentially triggering large-scale economic disruptions.
    - **Example**: The U.S. National Quantum Initiative also views **quantum innovation as vital for economic security**.

Moreover, nations that secure early quantum breakthroughs will possess a **technological edge** difficult for others to match. This could lead to a **new geopolitical order** driven by quantum supremacy.

- **Example**: **China's Micius Satellite (2016)** demonstrated the world's first quantum-encrypted satellite communication, highlighting its global leadership in the domain.

Strategic Recommendations for Quantum Preparedness

NITI-FTH outlines a comprehensive roadmap for India's transition into a **Frontier Tech Nation**, with a special focus on quantum readiness:

1. **Continuous Monitoring:** Establish a **dedicated national quantum task force** to track global advancements and adversarial capabilities.
2. **Cryptographic Intelligence and PQC Transition**
    a. Conduct regular audits to identify vulnerabilities.
    b. Adopt a **risk-prioritized PQC roadmap** with POCs, certifications, and cross-sectoral information sharing.
        - **Example**: Google Chrome's trial run of post-quantum algorithms like **Kyber** in real-world browser environments.
3. **Strengthen the Quantum Workforce**
    a. Introduce **Quantum Information Science (QIS)** in higher education.
    b. Provide re-skilling and training for existing talent.
    c. Reform immigration policies to attract **global quantum expertise**.
4. **Build a Robust Quantum Ecosystem:** Take inspiration from global models:
    a. **Quantum Economic Development Consortium (QED-C)** – USA
    b. **Quantum Strategic Industry Alliance for Revolution** – Japan
5. **Foster International Collaboration**
    a. Collaborate with like-minded nations on quantum tech development.
        - **Example**: India-EU signed an *Intent of Cooperation on HPC, Quantum Technologies, and Climate Modeling* in 2022.
6. **Other Strategic Measures**
    a. Set up an **Early Warning System** for scientific breakthroughs.
    b. Implement a **Crypto Agility Framework** to quickly switch to quantum-safe algorithms.
    c. Ensure **flexible R&D funding** responsive to quantum progress.

Key Challenges in Harnessing Quantum for National Security

Despite the momentum, several **formidable challenges** must be overcome:

1. **Workforce Shortage:** There is a **severe talent gap** in the quantum sector. According to McKinsey (2022), there is only **one qualified candidate for every three job openings** in quantum-related fields.
2. **Geopolitical Competition:** There is a sharp disparity in quantum R&D investments: **China**: $15 billion, **USA**: $5 billion and **India**: $0.75 billion
   This **strategic gap** puts India at a disadvantage in the global quantum race.
3. **Technological Immaturity:** Quantum computers today are still at an experimental stage.
   Example: IBM's **433-qubit Osprey processor** faces limitations in scalability and error rates.

4. **Data Vulnerability:** Data encrypted today might be **intercepted and stored**, to be decrypted once quantum capabilities mature—a risk known as **"harvest now, decrypt later"**.

Steps Taken by India to Strengthen Quantum Capabilities

India has recognized the transformative and strategic potential of quantum technologies and has begun laying the foundation for long-term development.

1. **National Quantum Mission (2023):** Launched to **seed, nurture, and scale up R&D** and build a vibrant ecosystem in Quantum Technologies (QT). It aims to position India as a global quantum hub by 2030.
2. **Quantum-Enabled Science and Technology (QuEST) Program (2018):** An initiative by the **Department of Science and Technology (DST)** to support national quantum labs and provide infrastructure for sustained R&D.
3. **Academic and Research Hubs**
   a. **IISc Bangalore**: Hosts a center focused on quantum algorithms and error correction.
   b. **IIT Madras**: Established the Centre for Quantum Information, Communication and Computing (CQuICC).
   c. **National Mission for Quantum Frontier**: Trains students and researchers with essential quantum skills.
4. **Private Sector and Startups: QNu Labs**: Selected under the NQM, it's developing the world's first end-to-end quantum-safe heterogeneous network.
5. **C-DOT Delhi**: Developed an indigenous QKD solution and operates a **Quantum Communication Lab**.

Conclusion : Quantum as the Key to Strategic Resilience

Quantum computing is not just another technological innovation—it is a **force multiplier** in defense, intelligence, economic security, and global diplomacy. As India sets its vision for **Viksit Bharat @2047**, quantum readiness will be a cornerstone of its **strategic resilience and technological sovereignty**.

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**.

Refer Current Affairs Total (CAT) Magazine February 2025, Page 88-90 for Comprehensive Coverage of **Microsoft's Majorana 1.**

2. SIPRI Report 2020–2024: Ukraine Becomes Largest Arms Importer

1. The **Stockholm International Peace Research Institute (SIPRI)** has released its latest report on global arms transfers covering the period **2020 to 2024**.
2. The findings indicate significant changes in the global arms trade landscape, with **Ukraine emerging as the world's largest importer of major arms**, overtaking **India**, which now ranks second.

About SIPRI

1. The **Stockholm International Peace Research Institute (SIPRI)** is an independent global research institute based in **Stockholm, Sweden**, established in **1966**.
2. It focuses on research into **conflict, armaments, arms control, and disarmament**.
3. SIPRI provides comprehensive data, analysis, and recommendations to **policymakers, researchers, media**, and the **public**, and is widely respected for its annual reports on **trends in international arms transfers**.

Key Global Findings from the SIPRI Report (2020–2024)

Top Five Arms Importers (2020–2024)	Top Five Arms Exporters (2020–2024)
1. Ukraine	**1. United States** – 43% of global arms exports
2. India	**2. France**

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3. Qatar	3. Russia
4. Saudi Arabia	4. China
5. Pakistan	5. Germany
These five countries accounted for **35%** of global arms imports during the period.	The **United States** expanded its dominance with a **43% share** of global exports.
Ukraine's arms imports surged nearly 100-fold compared to 2015–2019, driven by the ongoing conflict with Russia.	**France** rose to the second position, while **Russia's arms exports declined sharply by 64%**, dropping it to third place.
	China's share of global arms exports stood at **5.9%**, slightly lower than its share in 2015–2019.

India's Position in the Global Arms Trade

India continues to be a major arms importer, ranking **second globally** in the 2020–2024 period, despite a notable decline in total imports.

1. **Decline in Imports**
   a. India's arms imports **declined by 9.3%** between **2015–2019** and **2020–2024**.
   b. The decline is attributed to the government's push for **domestic defence manufacturing** and **self-reliance** under the *Atmanirbhar Bharat* initiative.
2. **Main Arms Suppliers**
   a. **Russia** remains India's largest arms supplier, accounting for **36%** of imports.
      - This is a **significant drop** from **55% in 2015–2019** and **72% in 2010–2014**.
   b. India is increasingly sourcing weapons from:
      i. **France** – e.g., **36 Rafale jets**
      ii. **Israel**
      iii. **United States**
      iv. **Scorpene-class submarines** have also been contracted from France.
3. **Regional Context:** Four Asian countries—**India, Pakistan, Japan, and Australia**—ranked among the **top 10 global arms importers**, indicating rising defence needs and strategic competition in the Indo-Pacific region.

3. Gandiva: India's Most Advanced Air-to-Air Missile

1. India has taken a significant leap in aerial combat capability with the official renaming of its most advanced **beyond visual range (BVR)** air-to-air missile, **Astra Mk-III**, to **Gandiva**.
2. Developed by the **Defence Research and Development Organisation (DRDO)**, Gandiva represents the next evolution in the Astra missile series and showcases India's growing technological edge in air-to-air missile systems.

Context and Background

1. The renaming of Astra Mk-III to **Gandiva** symbolizes a deeper connection to India's cultural and strategic ethos.
2. In Indian mythology, **Gandiva** was the celestial bow wielded by **Arjuna** in the Mahabharata, known for its precision, power, and invincibility.
3. Similarly, the **missile version of Gandiva** is designed to deliver unmatched performance and lethal precision in modern aerial combat.
4. The missile is the latest development in the **Astra series**, following the successful deployment of **Astra Mk-I** and **Astra Mk-II**, and marks a significant technological leap in terms of propulsion, range, and speed.

Key Features of Gandiva (Astra Mk-III)

1. **Extended Operational Range**
   a. Gandiva offers a **range of 340 km** when targeting enemy aircraft flying at an altitude of **20 km**.
   b. The effective range is **190 km** when engaging targets at **8 km altitude**.
2. **Advanced Propulsion System**
   a. Gandiva is powered by a **Solid Fuel Ducted Ramjet (SFDR)** propulsion system.
   b. This **dual-fuel engine** utilizes **atmospheric oxygen as an oxidizer**, eliminating the need to carry onboard oxidizers.
3. **High-Speed Engagement Capability**
   a. Gandiva can be launched at speeds between **0.8 to 2.2 Mach**.

b. It is capable of intercepting targets moving at **Mach 2.0 to Mach 3.6**.
c. Its **sustained supersonic speed** can reportedly reach up to **Mach 4.5**, enabling rapid interception of high-speed enemy aircraft.

4. **Precision Target Neutralization:** The missile is designed to **neutralize a variety of aerial threats**, including: Fighter jets, Bombers and Military transport aircraft

The Evolution of Astra Missiles

Gandiva is the **third and most advanced iteration** in the Astra series of beyond visual range (BVR) air-to-air missiles developed by the **Defence Research and Development Organisation (DRDO)**.

1. **Astra Mk-I** was the first to enter service, featuring solid performance and a good range.
   - **Range**: 20–110 km depending on flight profile.
   - **Speed**: Up to **Mach 4.5**.
   - **Guidance**: Inertial navigation with **active radar homing** in terminal phase.
   - **Seeker**: Initially Russian, later replaced by an **indigenous RF seeker**.
   - **Warhead**: 15 kg high-explosive with proximity fuse.
   - Compatible with: **Sukhoi Su-30MKI**, soon to be integrated with **HAL Tejas**, **Mirage 2000**, and **MiG-29**.
   - Entered **limited series production in 2017**.
2. **Astra Mk-II** improved upon it with enhanced propulsion and a longer engagement range.
   - **Range**: 130–160 km based on launch altitude.
   - Shares airframe design with Mk-I.
   - Upgrades include:
     - **Dual-pulse rocket motor**
     - **Laser proximity fuse**
     - **Indigenous AESA radar seeker**

4. Tavasya: Final Krivak-Class Stealth Frigate

1. India has launched **'Tavasya'**, the last of four **Krivak-class stealth frigates**.
2. The launch took place at **Goa Shipyard Limited (GSL)**, underlining India's progress in indigenous warship construction and the gradual shift away from foreign-licensed defense platforms.

What are Stealth Frigates?

1. A frigate is a medium-sized warship used by the Navy for escorting larger vessels, patrolling, and combat operations.
2. A "stealth frigate" is designed with advanced stealth technology to minimise its radar cross-section and overall visibility to enemy detection systems, making it harder to detect by radar, visual, sonar, and infrared methods.

Background: Krivak-class frigates

1. Krivak-class frigates are a series of **multi-role warships** originally designed by Russia.
2. India operates its variant called the **Talwar-class frigates**, customised for the Indian Navy.
3. In **2016**, India signed an agreement with **Russia** for the acquisition of **four additional Krivak-class (Project 1135.6) frigates**. As per the agreement:
   a. **Two frigates** were to be **imported from Russia**.
   b. **Two frigates** were to be **built in India** at **GSL** under a **technology transfer arrangement**.

Progress So Far

1. **Russian-Built Frigates**
   a. **Tushil**: The **first frigate built in Russia**, commissioned in **December 2024**.
   b. **Tamal**: The **second Russian-built frigate**, currently **undergoing trials** and scheduled for **commissioning in June 2025**.
2. **Indian-Built Frigates**
   a. **Triput**: The **first Indian-made Krivak-class frigate**, launched in **July 2024**, expected to be **delivered in 2026**.
   b. **Tavasya**: The **second Indian-built frigate**, launched recently, and set to be **delivered by 2027**.

About INS Tavasya

1. **Tavasya** is the **second frigate** built under the **Project 1135.6 Additional Follow-on Ships** initiative.
2. It was launched at **Goa Shipyard Limited (GSL)**.
3. The name **'Tavasya'** is inspired by **Bhima's mace** from Indian mythology, symbolizing **naval strength and power**.
4. It is designed for **multi-domain warfare**, capable of performing: Surface combat, Sub-surface (underwater) operations and Air defense missions.

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5. Ashwini: Low Level Transportable Radar (LLTR)

The **Ministry of Defence (MoD)** has taken a significant step toward strengthening India's air defense network by signing a **capital acquisition contract** with **Bharat Electronics Limited (BEL)** for the procurement of the **'Ashwini' Low Level Transportable Radar (LLTR)** for the **Indian Air Force (IAF)**.

About Ashwini Radar

The **Ashwini radar** is a **Low-Level Transportable Radar (LLTR)** system designed to provide **4D surveillance**, enhancing India's capability to monitor and respond to aerial threats. It is:

1. An **active electronically scanned array (AESA)** radar.
2. Built using **state-of-the-art solid-state technology**.
3. **Indigenously developed** by the **Electronics & Radar Development Establishment (LRDE)** of **DRDO**, in collaboration with **Bharat Electronics Limited (BEL)**.

Key Features

1. **Multi-Target Tracking:** Capable of detecting and tracking a **wide range of aerial targets**, including:
   a. High-speed fighter aircraft
   b. **Slow-moving objects** such as **Unmanned Aerial Vehicles (UAVs)** and **helicopters**
2. **Instrumented Range:** The radar has an **instrumented detection range of up to 200 km**, making it suitable for long-range surveillance at low altitudes.
3. **4D Surveillance and Electronic Scanning:** Integrated with an **Identification Friend or Foe (IFF)** system.
   - Provides **electronic scanning in both azimuth and elevation**, enabling precise **four-dimensional (4D) surveillance** — covering range, azimuth, elevation, and velocity.
4. **Electronic Counter-Countermeasures (ECCM):** Equipped with **advanced ECCM capabilities**, allowing it to perform efficiently even in environments with **electronic warfare threats** or **jamming attempts**.
5. **High Mobility and Deployment Flexibility:** Designed for **rapid deployment**, the Ashwini radar is **highly mobile**, enabling swift relocation and set-up across **diverse terrains**.

6. Golden Dome: America's National Missile Defense Shield

1. The **United States** has proposed new missile defence initiative called the **Golden Dome**, a cutting-edge programme aimed at providing **nationwide protection against advanced aerial threats**, including **ballistic missiles, hypersonic weapons, and cruise missiles**.
2. The Golden Dome draws inspiration from **Israel's** successful **Iron Dome** system.

What is the Golden Dome?

1. The **Golden Dome** is a **comprehensive missile defence programme** envisioned by the United States to establish a **multi-layered shield** against various forms of missile attacks. It is designed to counter: **Ballistic Missiles**, **Hypersonic Missiles**, **Cruise Missiles** and Other **advanced aerial threats**
2. **Inspiration from Israel's Iron Dome**
   a. The concept of the Golden Dome is **inspired by Israel's Iron Dome**, a highly successful **mobile air defense system** designed to intercept **short-range rockets and artillery shells**.
   b. Iron Dome became operational in **2011** and has demonstrated high effectiveness in protecting populated areas from frequent rocket attacks.

Key Features of the Golden Dome

1. **Objective**: To develop a **nationwide, multi-layered missile defence system** capable of protecting the U.S. against **modern, high-speed, and long-range aerial threats**.
2. **System Components**:
   a. **Space-Based Sensors**: For **early detection and tracking** of incoming missiles.
   b. **Advanced Interceptors**: To destroy missiles **mid-flight**, before they reach their targets.
   c. **Integration of Ground, Naval, and Space-Based Assets**: Ensuring a **layered and flexible response mechanism**.

3. **Technology Focus**:
   a. Capable of countering **hypersonic glide vehicles**, which are **faster and more maneuverable** than traditional ballistic missiles.
   b. Designed to **detect and intercept threats at different altitudes and ranges**, using advanced technologies.

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Other Prominent Missile Defence Systems Globally

Missile/System Name	Type	Maximum Range	Interception Altitude	Interception Altitude
Prithvi Air Defence (India)	Exo-atmospheric Anti-Ballistic Missile	300 km – 2,000 km	50 km – 180 km	2006
Advanced Air Defence (India)	Endo-atmospheric Anti-Ballistic Missile	150 km	15 km – 40 km	2007
Iron Dome (Israel)	Mobile All-Weather Air Defence System	Up to 70 km	-	2011
S-400 (Russia)	Anti-Aircraft Weapon System	Up to 400 km	Up to 30 km	2007
THAAD (USA)	Anti-Ballistic Missile System	200 km	Up to 150 km	2008
Dongfeng-41 (China)	Intercontinental Ballistic Missile (ICBM)	12,000 – 15,000 km	-	2019

7. Exercises/Operations in News

Name	Type	Participants	Brief Description
VARUNA 2025	Naval (Annual)	India – France	• **Edition** – 23rd • **Location** – Arabian Sea • **Participants** – Rafale-M (French Navy) & MiG-29K (Indian Navy) • **Other Bilateral Exercises:** Shakti (Military), Varuna (Naval), Garuda (Air)
KHANJAR-XII	Joint Special Forces (Annual)	India – Kyrgyzstan	• **Edition** – 12th • **Location** – Kyrgyzstan • **Participants** – Indian Army's Parachute Regiment (Special Forces) & Kyrgyzstan's Scorpion Brigade • Aimed at enhancing cooperation in counter-terrorism and special operations in high-altitude and urban terrain

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Name	Type	Participants	Brief Description
Desert Hunt 2025	Tri-Service Special Forces (one time event)	Indian Army, Navy, Air Force	• **Conducted for the first time.** • **Participants** – Para SF (Army), MARCOS (Navy), Garud Commandos (Air Force) • **Objective** – Enhance jointmanship, coordination, and synergy among tri-service special forces
Dharma Guardian 2025	Military (Annual)	India – Japan	• **Edition** – 6th • **Location –** East Fuji Manoeuvre Training Area, Japan • **Focus –** Counter-terrorism training, UN peacekeeping drills, and bilateral army cooperation. • Last edition was conducted in Rajasthan.
Bongosagar 2025	Naval (Annual)	India – Bangladesh	• **Edition** – 5th • **Location** – Bay of Bengal • **Date –** March 2025 • **Participants – INS Ranvir** (Indian Navy) & **BNS Abu Ubaidah** (Bangladesh Navy) • **Activities –** Surface firing, tactical maneuvers, underway replenishment, VBSS drills, communication exercises, and steam past • **Objective –** Enhance interoperability and maritime security under India's SAGAR initiative
Operation Brahma	HADR Naval Operation (Emergency-based)	India (MEA, Indian Navy, Army, Air Force, NDRF, HQ IDS)	• Humanitarian response to Myanmar–Thailand earthquake (28 March 2025) • **INS Satpura** & **INS Savitri** (Eastern Command) sailed to Yangon on 29 March 2025 • **INS Karmuk** & LCU 52 (Andaman Command) joined on 30 March 2025 • Carried 52 tons of relief material (food, water, medicines) • Reaffirms India's **'First Responder'** status in Indo-Pacific

D. ECONOMY

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1. Finance Act 2025

1. Every year, the government presents a **Budget**. It tells how much money it wants to earn and spend.
2. But to **make the Budget official**, the government needs to pass a **Finance Bill**.
3. The **Finance Bill is a law** that allows the government to collect taxes and spend money.
4. It includes all the **tax changes** (like increase or decrease in income tax, GST, customs duty, etc.)
5. The government presents the Finance Bill in **Lok Sabha** (the lower house of Parliament).
6. Because it is a **Money Bill**, only **Lok Sabha can pass it**. Rajya Sabha can give suggestions, but cannot stop it.
7. It must be passed before **April 1** — when the new financial year starts.
8. After Lok Sabha passes it, and Rajya Sabha gives its suggestions, the **President signs it**.
9. Once the President signs it, it becomes a **Finance Act** (a law).
10. To summarise Finance **Bill = The legal permission to collect taxes and use money** as per the Budget.

Key Amendments In Finance Act 2025

1. Indian residents can **now indirectly invest in offshore funds** managed from India without affecting the **fund's non-resident tax status** under safe harbour rules.
2. **The 6% Advertisement Equalisation Levy (Ad EL) on** payments for online ads to foreign companies is **withdrawn for payments** received or receivable on or after 1 April 2025.
3. A **new presumptive taxation scheme** applies to foreign companies providing services or technology in electronics manufacturing and overrides older net or gross basis tax rules.
4. If there is a significant mismatch between the current and previous year's tax return, the system will **auto-adjust income or tax liability using AI-based processing.**
5. **Block assessment after a tax search** will now apply only **to undisclosed income (UDI),** not to regular income reported in previous filings. This change in block assessment will apply retrospectively from 1 *September* 2024.

Withdrawal of Advertisement Equalisation Levy (Ad El)

What is Equalisation Levy (EL)?

1. In 2016, the Indian government brought a special tax called **Equalisation Levy**.
2. It applies to **foreign digital companies** like Google or Facebook.
3. These companies earn a **lot of money from Indian users**, through ads or online sales.
4. But they don't have an office or branch in India — so they were **not paying income tax** here.
5. To fix this, India started **charging tax on the money they earn from Indian customers** — this tax is called **Equalisation Levy (EL)**.

Ad EL (Advertisement Equalisation Levy)

1. Started on **1 June 2016**.
2. If an Indian business paid a foreign company for **online ads**, it had to **deduct 6% tax** before paying.
3. Example: If a company paid ₹100 to Facebook for ads, ₹6 had to be given to the Indian government as Ad EL.
4. This was only for **advertising and marketing** services.
5. This 6% tax was called **Ad EL**.

E-com EL (E-commerce Equalisation Levy)

1. Started later in **April 2020**.
2. This tax was **2%** on **e-commerce sales** made by foreign platforms to Indian users.
3. Example: Amazon selling to Indian customers, Booking.com giving hotel bookings in India.
4. This was a **wider tax** than Ad EL — it applied to any **sale or service done online** by a foreign company.
5. It was called **E-com EL**.

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What Changed

Finance Act (No. 2), 2024:

1. This law **removed the 2% E-commerce Equalisation Levy (E-com EL)**.
2. This means: **From 1 August 2024**, foreign online platforms like **Amazon, Booking.com, AliExpress**, etc., will **no longer be charged this 2% tax** on their sales or services to Indian users.
3. Earlier, they had to pay 2% tax on any amount they earned from:
   a. Selling products to Indian users, or
   b. Providing services through websites or apps accessed in India.
4. This change was made because India is **cooperating with other countries** under a global tax reform called the **OECD BEPS 2.0 Project**.
5. This global reform has **two parts (Pillars)**:
   a. **Pillar One** – Ensures that big digital companies **pay taxes where they earn users and profits**, not just where they are based.
   b. **Pillar Two** – Sets a **minimum global tax rate** to prevent tax avoidance by shifting profits to low-tax countries.
6. So, India is **phasing out its own digital taxes** like E-com EL, to make way for this new, **unified global tax system**.

Amended Finance Bill (FB) 2025:

1. This further step **removes the 6% Advertisement Equalisation Levy (Ad EL)**.
2. This tax applied to **Indian companies** when they paid foreign companies like **Google, Meta, LinkedIn** for:
   a. Online advertisements
   b. Digital marketing services
3. Until now, Indian advertisers had to **deduct 6%** from the payment and give it to the Indian government.
4. Now, the government says:
   → For **any payment received or receivable on or after 1 April 2025**,
   → This **6% Ad EL will no longer be charged**.
5. This is also part of India's move to **align with global digital tax rules**.
6. Instead of a **special digital tax**, India will now tax these companies using its **normal income tax laws**, if they meet certain criteria (like Significant Economic Presence).

How Will They Be Taxed Now?

1. After the **withdrawal of Ad EL (6%)**, the income of foreign companies from Indian ad services will now be taxed under the **Income Tax Act**.
2. India will apply a rule called **Significant Economic Presence (SEP)** to decide whether a foreign company is taxable.

What is SEP (Significant Economic Presence)?

1. SEP means that **a foreign company can be taxed in India even if it has no physical office or branch here**
   a. If it earns a large amount of money from Indian users
   b. If it has a large number of Indian users interacting with its platform**.**

Conditions for SEP – Tax Can Apply If:

1. The company **earns more than a specified amount of revenue** from India.
2. The company has **"systematic and continuous engagement" with Indian users**, like through apps, websites, or data collection.
3. The government has **notified monetary/user thresholds** for SEP (these are updated in official notifications).

What If the Company Has No PE (Permanent Establishment) in India?

1. **PE** means a fixed place of business — like an office, factory, or branch.
2. If a company **does not have a PE**, Indian tax law would normally not apply.

New Presumptive Tax Scheme For Electronics Services/Technology

1. Foreign companies often provide **services or technology** to support **electronics manufacturing** in India.
2. If such a company had a **Permanent Establishment (PE)** in India (like a branch office or fixed place of business),
   → It was taxed on a **net basis** – that means, **after deducting expenses**, tax was applied on the net profit.

3. If the foreign company **did not have a PE**,
   → Then it was taxed on a **gross basis** – tax was applied directly on the **full amount paid** (as royalty or fees for technical services, or FTS), **without any deductions**.
4. These two methods created **complex tax calculations**, paperwork, and sometimes **disputes**.

What's Changed (After Amendment)

1. A **new presumptive taxation scheme** has been introduced for such foreign companies providing **services or technology** in **electronics manufacturing**.
2. Under this scheme, tax is calculated in a **simplified way**, based on a **fixed percentage** of income or receipts.
3. This **overrides both** of the earlier methods:
   → No need to go through **net basis** rules for PEs.
   → No need for **gross basis** rules for royalty/FTS.
4. This makes taxation **predictable and easier to comply with**.

Mismatch In Tax Return Information – Ai-Based Adjustments

1. When a person files their **Income Tax Return (ITR)**, the system compares it with the **previous year's return**.
2. If there are **major differences or mismatches** (like sudden rise/fall in income, big changes in deductions, exemptions, etc.),
3. The system will now **automatically flag** these mismatches.
4. It will then make **adjustments to your income or tax payable** based on those mismatches.
5. This is done using **AI-based technology** or **computer-aided processing** — no manual officer is needed at this stage.
6. It helps catch errors or intentional misreporting **before** assessment begins.
7. This is known as **computer-aided automated processing**.
8. It is similar to **AI-based scrutiny**, where a system checks for red flags and corrects them without delay.
9. It aims to **speed up return processing** and reduce human workload.

Change In Block Assessment For Undisclosed Income

Earlier Rule (Before Finance Act No. 2, 2024)

1. During a **search and seizure operation** (like an Income Tax raid), the tax department would investigate a person's finances.
2. It used to conduct **separate assessments** for **each year** covered in the search.
3. These assessments included both:
   → **Undisclosed Income (UDI)** – income that was hidden or not reported.
   → **Regular Income** – income that was already reported in tax returns.
4. This led to **duplicate assessments** and **extra compliance burden**.

What Finance Act (No. 2) 2024 Introduced

1. A new system called the **New Block Assessment Regime** was introduced.
2. It allowed for a **single, consolidated assessment** for **all years** covered in the search (a "block period").
3. But it still included **both UDI and regular income** in this one assessment.
4. This simplified the number of assessments but **still caused overlaps** with regular tax filings.

What Finance act 2025 Has Now Changed

1. Now, under the amended rule, the **New Block Assessment Regime** will be used **only for assessing UDI**.
2. **Regular income** will **no longer be assessed again** under this regime.
3. The change is **retrospective** – it applies from **1 September 2024** onward.
4. This ensures focus remains **only on unreported (undisclosed) income** found during searches.

Relaxation For Offshore Funds Managed From India

1. Offshore investment funds are funds that are set up outside India.
2. If such a fund was managed by a fund manager sitting in India, it could be considered as controlled from India.
3. If the control was seen to be from India, then the fund could be treated as a **resident** for tax purposes.

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4. A resident fund is taxed in India on its **entire global income**, not just on Indian income.
5. This created a big **tax problem** for funds managed from India.
6. As a result, Indian investors and fund managers avoided managing offshore funds from within India.

What's Changed

1. The new amendment changes this situation.
2. Now, even if **Indian residents invest indirectly** in such offshore funds, the fund will still be considered **non-resident**.
3. **Indirect investment** means investing through another company, trust, or financial layer.
4. This change removes the fear that **Indian linkages** will make the fund taxable in India.

Safe Harbour Protection

1. Such offshore funds can now also claim **safe harbour protection**.
2. **Safe harbour** means if the fund follows **fixed conditions**, the tax department will **not challenge** its non-resident status.
3. This gives **clarity and protection** to the fund from tax.

2. Navratna Status For IRCTC And IRFC

1. In March 2025, the Government of India conferred 'Navratna' status upon two railway public sector undertakings (PSUs):Indian Railway Catering and Tourism Corporation (IRCTC) and Indian Railway Finance Corporation (IRFC)
2. This makes IRCTC and IRFC the 25th and 26th Navratna Central Public Sector Enterprises (CPSEs) respectively.

How Navratna Status Benefits IRCTC & IRFC

1. Both companies can now **invest up to ₹1,000 crore or 15% of their net worth** in a single project **without government approval**
2. They gain **greater financial and operational autonomy**
3. They can **form joint ventures, subsidiaries, and make acquisitions or mergers** independently
4. They can also **expand globally** and form **strategic international alliances**
5. Navratna status enhances their **market credibility**, helping them **attract more investors**
6. This also gives them the ability to **compete with private sector companies** on a level playing field.

Indian Railway Catering and Tourism Corporation (IRCTC)

1. Indian Railway Catering and Tourism Corporation (IRCTC) was established on 27 September 1999.
2. It was created as a public sector undertaking (PSU) fully owned by the Government of India.
3. The company operates under the control of the Indian Railways.
4. IRCTC is the **only authorised online train ticket seller** in India
5. It is an **extended arm of Indian Railways**, also handling catering, tourism, and packaged drinking water (Rail Neer)
6. In May 2008, IRCTC was granted Miniratna status.
7. In 2019, IRCTC was listed on the National Stock Exchange (NSE).
8. After listing, the Government of India's ownership dropped to 87%.
9. The remaining 13% of shares were made available for public trading.
10. In December 2020, the government sold another 20% of its shares in IRCTC.
11. This reduced the government's holding in IRCTC to 67%.
12. In December 2022, the government further disinvested 5% of its shareholding.
13. After this, the government's ownership in IRCTC came down to 62.4%.

Indian Railway Finance Corporation (IRFC)

1. Indian Railway Finance Corporation (IRFC) is a public sector undertaking (PSU) in India.
2. Indian Railway Finance Corporation (IRFC) was founded on 12 December 1986.
3. The company is primarily engaged in raising financial resources for the expansion and operation of Indian Railways.
4. It started borrowing funds from the market during the financial year 1987–88.

5. IRFC launched its Initial Public Offering (IPO) on 18 January 2021.
6. The company got listed on the National Stock Exchange (NSE) and Bombay Stock Exchange (BSE) on 29 January 2021.
7. As per the Q3 reports for financial year 2024–25, the Government of India holds 86.36% ownership in IRFC.
8. The remaining 13.64% of the shares are held by the public.
9. Indian Railway Finance Corporation (IRFC) is a public sector undertaking (PSU) in
10. In March 2025, the Government of India granted IRFC the status of Navratna.
11. With this, IRFC became the 26th PSU to receive Navratna status.

What are Public Sector Undertakings (PSUs)?

1. Public Sector Undertakings (PSUs) are companies owned by the government in India.
2. A company is considered a PSU when the government holds 51% or more of its paid-up share capital.
3. This ownership can be by the central government, state government, or a combination of both.
4. PSUs regularly provide employment opportunities in technical and managerial fields.

Maharatna PSUs

1. Maharatna is the highest status given to top-performing PSUs.
2. These companies can invest up to ₹5,000 crore in foreign projects without needing government approval.
3. To qualify as Maharatna, a PSU must have a net profit of over ₹5,000 crore, a net worth of ₹15,000 crore, and a turnover of ₹25,000 crore in the last three consecutive years.
4. There are currently 14 Maharatna PSUs: BHEL, BPCL, CIL, GAIL, HPCL, IOCL, NTPC, ONGC, PFC, RECL, OIL India Ltd, PGCIL, SAIL, and HAL.

Navratna PSUs

1. Navratna status is granted by the Department of Public Enterprises, Government of India.
2. To become a Navratna, a company must already be a Miniratna and must have four independent directors on its board.
3. The company must also score at least 60 out of 100 on six key financial performance metrics.
4. Navratna companies are allowed to invest up to ₹1,000 crore or 15% of their net worth in a single project without government approval.
5. They can spend up to 30% of their net worth annually, not exceeding ₹1,000 crore.
6. They also have the autonomy to enter joint ventures, form alliances, and float subsidiaries abroad.
7. There are currently 25 Navratna PSUs in India.

Miniratna PSUs

1. Miniratna PSUs are divided into two categories: Category-I and Category-II.
2. These companies are financially sound but operate at a smaller scale compared to Maharatna and Navratna companies.
3. Miniratnas have limited financial and operational autonomy.
4. There are currently 51 Miniratna Category-I PSUs and 11 Miniratna Category-II PSUs.

Miniratna Category-I

1. The PSU must have **made profits continuously for the last three years**.
2. It should have a **positive net worth**.
3. It must have earned a **pre-tax profit of ₹30 crore or more** in at least one of the last three years.
4. It has **greater financial autonomy**: Can invest up to **₹500 crore** or **equal to their net worth**, **whichever is lower**, **without government approval**.

Miniratna Category-II

1. The PSU must have **made profits continuously for the last three years**.
2. It should have a **positive net worth**, just like Category-I.
3. **No ₹30 crore pre-tax profit requirement** (this is the key difference).
4. It has **lesser financial autonomy**:Can invest up to **₹300 crore** or **up to 50% of their net worth**, **whichever is lower**, **without government approval**.

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Indian Railways PSU	Function	Navratna Status Since
CONCOR	Multimodal logistics; container freight transport via rail and road; EXIM trade facilitation	July 2014
RVNL (Rail Vikas Nigam Ltd)	Execution of railway infrastructure projects: track laying, gauge conversion, electrification	2023
RITES Ltd	Engineering consultancy in transport, infrastructure, and urban mobility (India & abroad)	2023
IRCON International Ltd	Turnkey railway and highway construction; bridges, tunnels, tracks; international projects	2023
RailTel Corporation of India Ltd	Telecom and ICT services; broadband, Wi-Fi, surveillance, and digital solutions via rail network	August 2024
IRCTC	Online ticketing, catering, tourism, and Rail Neer bottled water for Indian Railways	March 2025
IRFC	Financial arm of Indian Railways; raises funds through market borrowings	March 2025

3. Donald Trump's Strategic Bitcoin Reserve Executive Order

1. United States President Donald Trump has signed an executive order to establish a **Strategic Bitcoin Reserve**.
2. The reserve will also include a **stockpile of other digital assets**.
3. This initiative was a **campaign promise** made during Trump's presidential bid.
4. The executive order states that bitcoin's **fixed supply** gives early adopters a **strategic advantage**.
5. The reserve is positioned as a **long-term asset** to strengthen the U.S. financial system.

Funding the Bitcoin Reserve

1. The reserve will be funded using **bitcoins already owned** by the Department of Treasury.
2. These bitcoins were **seized through criminal or civil asset forfeiture proceedings**.
3. Other federal agencies will assess their authority to transfer **additional bitcoin holdings** to the reserve.
4. A **White House fact sheet** notes the lack of a unified policy for managing such seized digital assets.
5. This gap has caused **accountability issues** and **missed opportunities** for value maximization.

Immediate Market Response

1. Despite the announcement, **Bitcoin's market price fell by over 4%** at the time of publishing.
2. The short-term response suggests that investors were cautious or had already priced in the news.

US Digital Asset Stockpile

1. The executive order also created a **US Digital Asset Stockpile** for non-bitcoin cryptocurrencies.
2. These digital assets are also to be sourced from **forfeiture proceedings**, not purchased afresh.
3. Trump previously named **Ethereum, XRP, Solana, and Cardano** as part of the non-bitcoin stockpile.
4. The **Treasury Secretary** may manage these assets, including **potential sales** to optimize their value.

Asset Management and Transparency

1. A **full audit and accounting** of the federal government's digital asset holdings is now mandated.
2. It is estimated that the U.S. government owns around **200,000 bitcoins**, but this has never been fully verified.
3. All federal agencies must **report their digital asset holdings** to the Treasury Secretary and the **President's Working Group on Digital Asset Markets**.

Bitcoin Reserve as Store of Value

1. Bitcoin held in the Strategic Reserve **will not be sold**.
2. It will be maintained as a **store of value**, like a digital gold reserve.
3. The Secretaries of Treasury and Commerce will develop **budget-neutral strategies** for acquiring more bitcoin.
4. These strategies must **not impose any additional cost on taxpayers**.
5. A key motivation is that **premature bitcoin sales** in the past cost taxpayers **over $17 billion**, according to the fact sheet.

Political and Market Impact

1. Since Trump's presidential victory, the **crypto market has seen renewed optimism**.
2. Trump's association with **Elon Musk**, a vocal crypto supporter, has further boosted confidence among investors.
3. Trump's choice to lead the Securities and Exchange Commission , **Paul Atkins**, is widely regarded as a **pro-crypto regulator**.

Why Donald Trump Is Establishing a U.S. Strategic Bitcoin Reserve

1. Donald Trump wants the U.S. to lead in the global digital economy.
2. He sees Bitcoin as a strategic asset due to its fixed supply of 21 million coins.
3. By creating a national Bitcoin reserve, the U.S. gains early-mover advantage in digital finance.
4. The reserve will use Bitcoin already owned by the U.S. government through forfeiture, so no new taxpayer money is needed.
5. Trump aims to avoid mistakes of past administrations that sold Bitcoin early, costing taxpayers over $17 billion.
6. This move fulfills Trump's campaign promise to be a "crypto president."
7. It appeals to crypto investors, youth, and pro-innovation voters.
8. Trump wants to create regulatory clarity instead of continuing lawsuits against crypto companies.
9. He believes supporting crypto can boost economic growth and tech leadership.
10. His administration also sees Bitcoin as a potential store of value like gold in the long term.
11. This is part of a broader plan to modernize U.S. financial policy and embrace digital assets.

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4. IRDAI Liberalizes Reinsurance: First Private License Granted to Valueattics

1. **Valueattics Re** has received IRDAI's approval to commence reinsurance operations in India.
2. It is the **first private sector reinsurer** to be granted a license in India.
3. Until now, the **only reinsurer** operating in India was the **state-owned General Insurance Corporation of India .**
4. GIC Re held a **monopoly** in the Indian reinsurance sector.
5. Reinsurers provide **insurance to insurers** (i.e., a second layer of risk protection).
6. They help manage **large-scale or catastrophic risks**, aiding the stability of the insurance market.

Reinsurance Meaning and Purpose

1. In reinsurance one insurance company transfers part of its risk to another.
2. This helps the original insurer reduce risk and retain capital.
3. The extent of risk shared is defined in the agreement.
4. Reinsurance can be understood as a financial contract.
5. It is an agreement between two insurance companies.
6. The reinsurer takes part or full risk under insurance policies.
7. The reinsurer is paid a premium by the insurance company.
8. Reinsurance works similarly to insurance policies for individuals.
9. The reinsurer's liability arises only as per the contract.
10. The liability amount is fixed according to the policy terms.
11. Reinsurance allows insurers to take on more business than their capacity.
12. Reinsurers can also buy reinsurance, known as retrocession.
13. Retrocession helps reinsurers reduce their own risk.

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How Reinsurance Works

1. Reinsurance allows insurers to pool risks from multiple policies.
2. It spreads the risk and allows handling of large claims.
3. Premiums paid by individuals are shared between insurers.
4. Example: If an insurer covers 5000 people with ₹1 Cr each and faces a ₹2 Cr claim, reinsurance helps cover the ₹1 Cr excess.
5. Reinsurance prevents financial distress for the insurer.

Types of Reinsurance

1. **Reinsurance Treaty**
   a. Covers all policies of an insurer for a fixed period.
   b. The reinsurer agrees to cover even policies not individually evaluated.
   c. This can be risky if the insurer doesn't study policies carefully.

2. Facultative Reinsurance

   a. Chosen case-by-case for individual or specific high-risk policies.
   b. Allows negotiation of terms per policy.
   c. Reinsurer can decide whether to cover full or partial policy risk.
   d. Offers more control to reinsurer for risk assessment

Regulations in India

1. Reinsurance in India is regulated by IRDAI.
2. Companies must register with IRDAI to operate.
3. Overseas reinsurance requires RBI approval.

Group Structure and Affiliation Rules

1. **Insurance Brokers and Corporate Agents Can't Be in the Same Group**
   a. **Insurance brokers** are professionals or firms who help clients (policyholders) find suitable insurance products from different insurers.
   b. **Corporate agents** usually represent a single insurance company or a limited number of insurers.
   c. IRDAI prohibits them from being part of the **same corporate group** to avoid **conflict of interest** and ensure **unbiased recommendations**.
2. **Insurer and Broker Can Be in Same Group With Conditions**
   a. If a group includes both an **insurer** and an **insurance broker**, it must **satisfy specific conditions** set by IRDAI to ensure transparency and prevent misuse of insider information or channel conflict.
   b. These conditions usually involve **firewalls**, **separate management**, and **independent operations**.
3. **TPAs (Third Party Administrators) and Insurers Can Be in the Same Group**
   a. TPAs handle health insurance claims on behalf of insurers (e.g., processing hospital bills).
   b. There are **no legal restrictions** on TPAs being part of the same corporate group as insurers, though operational independence is generally encouraged.
4. **Common Directors Allowed**
   a. **Insurers**, **intermediaries** (like brokers), and **agents** can have **shared directors** on their boards.
   b. This is allowed provided it doesn't violate **corporate governance norms** or **influence arm's-length decision-making**.
5. **Web Aggregators and Telemarketers Cannot Be Associated Parties of Insurers**
   a. Web aggregators are websites/apps that compare insurance products.
   b. Telemarketers promote and sell insurance via phone.
   c. IRDAI mandates that **they must remain independent** and **not be affiliated** with any insurer to ensure **neutrality and fair competition**

IRDAI Outsourcing Rule (2017 Regulation)

1. **Insurers and intermediaries** cannot outsource core functions (like underwriting, claims settlement, etc.) to **entities that are not registered** or approved by IRDAI.
2. This ensures **quality control**, **data protection**, and **policyholder interest**.
3. The regulation promotes **accountability** by ensuring that only **qualified and compliant entities** handle sensitive insurance functions.

With more players now entering the reinsurance space, Indian insurers will have **greater flexibility** in managing large-scale and catastrophic risks. It also enhances **financial resilience**, promotes **global best practices**, and aligns with India's broader goal of deepening its insurance market.

5. RBI's Quality of Public Expenditure (QPE) Index

Why Quality of Government Spending Matters

1. The government spends **citizens' money**, collected through taxes or borrowings.
2. So it's important to know **how wisely** that money is being used.
3. Good quality spending leads to **economic growth, better health, education, and infrastructure**.

What RBI Did

1. The **Reserve Bank of India (RBI)** studied how well the Centre and states have been spending money since **1991**.
2. It created a score called the **Quality of Public Expenditure (QPE) Index**.
3. This index shows if spending is moving toward **productive, long-term goals** or just **routine, short-term costs**.

How the QPE Index is Measured (5 Indicators)

1. **Capital Outlay to GDP Ratio**
   a. Indicates how much of the government's resources are being used to create long-term physical assets.
   b. A higher ratio shows a **strong focus on infrastructure and future growth**, which improves productivity and job creation.
2. **Revenue Expenditure to Capital Outlay Ratio**
   a. Shows whether the government is spending more on **routine operations (like salaries, pensions)** or on **productive investment**.
   b. A lower ratio means **less leakage into non-productive spending** and better financial discipline.
3. **Development Expenditure to GDP Ratio**
   a. Reflects how much the government is investing in **human capital and innovation**.
   b. A higher value means the state is focusing on **inclusive growth**, boosting health, education, and long-term welfare.
4. **Development Expenditure as % of Total Expenditure**
   a. Measures how much of the total budget is dedicated to **growth-enabling sectors**.
   b. A higher share shows the government is **prioritizing people's well-being and economic capacity** over administrative expenses
5. **Interest Payments as % of Total Expenditure**
   a. Reveals how much of the budget is used to **repay past borrowings**.
   b. A lower ratio indicates **less financial stress**, more room for fresh development spending, and **better fiscal sustainabiity**.

How the Quality Changed Over Time (RBI's 6 Phases Explained with More Detail)

Phase 1 – Post-Liberalisation (Early 1990s)

1. After the **1991 economic reforms**, India focused on **fiscal consolidation** and reducing its deficit.
2. The **Centre's spending quality improved slightly**, but this was more due to policy correction than higher development spending.
3. **States' expenditure quality declined**, as they faced pressure to cut spending and reduce borrowing.
4. **Public investment**, especially in infrastructure, **fell** because governments prioritized controlling the deficit over building assets.
5. This was a **transitional phase**, with short-term trade-offs for long-term economic stability.

Phase 2 – Late 1990s

1. This phase saw a **sharp fall in expenditure quality** at both Centre and state levels.
2. The **Fifth Pay Commission (1996–97)** led to **massive salary and pension hikes**, which raised **revenue expenditure** drastically.
3. **Interest payments rose sharply** due to accumulated government debt.
4. **Capital outlay (infrastructure)** suffered, as funds were diverted to pay salaries and service debts.
5. The **revenue expenditure to capital outlay ratio worsened**, meaning less money was going into productive assets.

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Phase 3 – Early 2000s (up to 2008)

1. This was a **golden period for fiscal discipline** and improved spending quality.
2. In **2003**, India passed the **Fiscal Responsibility and Budget Management (FRBM) Act**, which legally bound governments to:
   → Keep fiscal deficit within **3% of GDP**
   → Eliminate revenue deficit
3. At the same time, India's **economic growth surged**, which boosted tax revenue.
4. **States received more money** via **higher tax devolution** and started spending more on **education, health, and infrastructure**.
5. Both Centre and states showed **significant improvement** in the QPE index during this period.

Phase 4 – Global Financial Crisis (2008–2013)

1. In response to the **2008 Global Financial Crisis**, the Centre launched **stimulus packages** to revive demand.
2. Government spending increased sharply to **counter the economic slowdown**.
3. While this helped the economy in the short run, it led to **higher fiscal deficits** and **debt accumulation**.
4. **Quality of spending began to fall**, as a lot of money went into subsidies and welfare instead of capital formation.
5. The benefits of earlier FRBM discipline were slowly **eroded** due to rising non-productive spending.

Phase 5 – Post-2015 (GST & Finance Commission Era)

1. The **14th Finance Commission (2015)** significantly **increased the states' share in central taxes** from 32% to **42%**.
2. This gave states **more fiscal autonomy**, and many used it to improve **development spending** — especially on health, infrastructure, and education.
3. Meanwhile, the **Centre faced fiscal stress** due to:
   → **GST compensation** to states
   → Revenue shortfalls after the implementation of GST (2017)
4. As a result, the **Centre's QPE index stagnated or declined**, while **states showed improvement** in spending quality.

Phase 6 – Covid Pandemic & Recovery (2020–2025)

1. The **Covid-19 pandemic** forced governments to once again increase spending — especially for **healthcare, relief packages, and food schemes**.
2. However, unlike the GFC phase, this time there was a **strong push on capital expenditure** too.
3. From **2021 onwards**, the Centre emphasized building infrastructure under the **National Infrastructure Pipeline** and **PM Gati Shakti**.
4. This helped improve the **capital outlay to GDP ratio** and the **development expenditure share**.
5. As the economy recovered, so did the **quality of public expenditure**, thanks to targeted capital investments.
6. According to the RBI's QPE Index, **India is now at the highest levels of expenditure quality since 1991**.

Where India Stands Today

1. According to RBI's study, the **quality of government spending today is near the best level since 1991**.
2. Both Centre and states are now spending **more wisely** — more on infrastructure and development, less on routine costs.

6. Govt ends Gold Monetisation Scheme

1. The Centre has discontinued medium- and long-term deposits under the Gold Monetisation Scheme (GMS) from March 26, 2025.
2. The decision was taken due to a sharp rise in gold prices and a review of the scheme's performance.
3. Short-term deposits will continue at the discretion of individual banks based on commercial viability.
4. No new gold deposits will be accepted at designated centres or bank branches from the cutoff date.

What is the Gold Monetisation Scheme (GMS)?

1. Gold Monetisation Scheme was launched in November 2015 to make idle gold productive and reduce gold imports.
2. It aimed to bring household and institutional gold into the formal economy.
3. Gold Monetisation Scheme was a revamped version of the earlier Gold Deposit Scheme.
4. Deposits were allowed in the form of bars, coins, or jewellery (excluding stones and other metals).
5. The minimum deposit was 10 grams of gold, with no maximum limit.

Components of the Scheme

The scheme had three components: short-term bank deposits (1–3 years), medium-term government deposits (5–7 years), and long-term government deposits (12–15 years).

Interest Rates

1. Interest for short-term deposits was set and paid by banks.
2. Interest for medium- and long-term deposits was fixed by the government in consultation with RBI.
3. Medium-term deposits offered 2.25% interest and long-term deposits offered 2.5%.

Finance Ministry & RBI Clarifications

1. The Ministry confirmed the discontinuation of medium- and long-term deposits under GMS from March 26, 2025.
2. The RBI stated that existing deposits will continue till maturity and will be governed by earlier Master Directions.
3. Renewals of existing medium- and long-term deposits have also been discontinued.

Performance of the Scheme

1. A total of approximately 31,164 kg of gold was mobilised under Gold Monetisation Scheme till November 2024.
2. 7,509 kg came from short-term deposits, 9,728 kg from medium-term deposits, and 13,926 kg from long-term deposits.
3. Around 5,693 depositors participated in the scheme.
4. 1,134 kg was collected from individuals and HUFs during 2016–17 and 2017–18.
5. About 10,872 kg came from temples, trusts, mutual funds, and companies.

Status of Other Gold Schemes

1. Sovereign Gold Bonds (SGBs) were also discontinued recently by the government.
2. No new SGB tranches were announced in the Union Budget 2025–26.
3. The government cited high borrowing costs as the reason for halting SGBs.
4. SGBs were launched to promote gold investment in paper form.
5. A cut in gold import duty in Budget 2024–25 was introduced to boost physical gold demand.

Gold Price Surge

1. Gold prices rose from ₹63,920 per 10 grams on January 1, 2024, to ₹90,450 per 10 grams on March 25, 2025.
2. This represents a rise of ₹26,530 or 41.5% in just over a year.

Why High Gold Prices Made GMS and SGBs Unattractive

1. For the Government: Rising Fiscal Burden

a. **Interest payouts on gold schemes** (especially SGBs and long-term GMS deposits) are linked to both the **quantity of gold mobilized and prevailing gold prices**.

b. As gold prices increase, the **value of redemption** in SGBs rises significantly, leading to **high repayment obligations** for the government at maturity.

c. For instance, SGBs promise not only an **annual 2.5% interest** (in rupees) but also **redemption at prevailing market price of gold**. So, a 40% price surge translates into a much **higher redemption payout** than originally anticipated.

d. This makes SGBs a **"high-cost borrowing instrument"**, as admitted by the Finance Secretary.

2. For Investors: Better Profits in Physical Gold or ETFs

a. When gold prices are high, **physical gold, gold ETFs, and digital gold** become more **attractive investment options**.

b. GMS offers only **2.25–2.5% interest**, which is low compared to **market appreciation of 40%+** seen in gold prices over the past year.

c. Also, GMS requires investors to **part with physical gold** and convert it into a bank-managed asset — which is **less emotionally and culturally acceptable** during times of rising prices.

d. In high-price environments, many prefer to **hold or sell gold for instant profit**, not deposit it for low yields over 5–15 years.

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3. **For Banks: Commercial Inviability**
   a. Banks bear the cost of short-term GMS deposits, and face **risk of mismatch** between gold they lend and what they must return.
   b. When gold prices rise sharply, the **cost of hedging or sourcing gold** for redemption also increases.
   c. So, unless compensated by the government or a viable lending model exists, banks find GMS deposits **commercially unviable**.
4. **Reduced Motivation to Monetize Idle Gold**
   - Households and institutions often **hold gold as a long-term wealth asset** or religious trust holding.
   - In rising price scenarios, the **incentive to monetize (deposit or sell)** reduces, as people expect further gains or want to preserve value in gold form.

High gold prices **distort the risk-reward balance** of government-run gold schemes For the **government**, redemption becomes costlier.For **investors**, returns from schemes lag behind market gains.For **banks**, operational costs and risks rise.

7. Revised National Program for Dairy Development (NPDD)

1. The Union Cabinet approved the Revised National Program for Dairy Development (NPDD).
2. NPDD is a **Central Sector Scheme**, meaning it is fully funded by the Central Government.
3. An **additional ₹1,000 crore** has been allocated to strengthen the program.
4. The **total allocation** for the scheme during the **15th Finance Commission period (2021–22 to 2025–26)** is now **₹2,790 crore**.

Key Objectives of Revised NPDD

1. To **improve milk procurement systems**, enabling efficient collection of milk from farmers.
2. To **enhance milk processing capacity**, allowing for larger-scale production of dairy products.
3. To **upgrade quality control infrastructure**, ensuring safe and high-standard dairy output.
4. To **increase market access** for dairy farmers by reducing dependence on intermediaries.
5. To enable **better price realization through value addition**, such as converting milk into cheese, ghee, or paneer.
6. To **strengthen the dairy supply chain**, improving logistics and storage facilities.
7. To ultimately **boost rural incomes** and support **inclusive rural development**.

Structural Components of the Scheme

1. The revised NPDD has **two main components**.
2. **Component A** focuses on **infrastructure development** for dairy processing, chilling plants, cold storage, and logistics.
3. **Component B**, titled **Dairying through Cooperatives (DTC)**, promotes dairy development via cooperative models.
4. Component B is implemented in **partnership with the Japan International Cooperation Agency (JICA)**, bringing in international expertise and funding.

Expected Outcomes and Impact

1. The program aims to **establish 10,000 new Dairy Cooperative Societies** across the country.
2. These cooperatives will provide organizational support and collective bargaining power to farmers.
3. It is expected to **create 3.2 lakh employment opportunities** across the dairy sector.
4. About **70% of the jobs created are intended for women**, empowering rural women and promoting gender equity in agri-based livelihoods.

8. Cabinet Approval for Kosi-Mechi Link Project

1. The Cabinet Committee on Economic Affairs (CCEA) chaired by Prime Minister Narendra Modi approved the Kosi Mechi Intra-State Link Project.
2. The project has been included under the Pradhan Mantri Krishi Sinchai Yojana – Accelerated Irrigation Benefits Programme (PMKSY-AIBP).
3. The estimated cost of the project is ₹6,282.32 crore.
4. Central assistance of ₹3,652.56 crore has been approved for Bihar.
5. The project is targeted for completion by **March 2029**.

Project Scope and Features

1. The project involves **remodelling** the existing **Eastern Kosi Main Canal (EKMC)** up to **41.30 km**.

2. It also includes **extending the EKMC up to the Mechi river** at **117.50 km**, thus linking the Kosi and Mechi rivers.

Irrigation and Agricultural Benefits

1. The link project will provide **additional annual irrigation** in the **Kharif season** to **2,10,516 hectares**.
2. The irrigation benefit will cover four districts: **Araria, Purnea, Kishanganj, and Katihar** in Bihar.
3. It will support **agricultural productivity** and rural livelihoods by expanding assured irrigation.

Background of Kosi River

1. The Kosi River is an international river originating from Tibet.
2. It flows through Nepal in the Himalayan mountains and enters the plains of North Bihar.
3. The river is known for its unstable course, heavy sediment load, and frequent flooding.
4. These issues have historically caused severe suffering to the people of Bihar.

India–Nepal Agreement and Kosi Project

1. To address these problems, the Governments of India and Nepal signed an agreement on April 25, 1954.
2. The Kosi Project was initiated under this agreement.
3. The project includes the Hanuman Nagar barrage near the Indo-Nepal border.
4. It also includes canal headworks, the Western Kosi Main Canal (WKMC) in Nepal, and the Eastern Kosi Main Canal (EKMC) in India.

Kosi-Mechi Link Proposal

1. The current proposal involves extending EKMC up to the Mechi River, a tributary of the Mahananda River.
2. The objective is to supply irrigation water to the Mahananda basin in Bihar during the Kharif season.
3. Targeted districts include Araria, Kishanganj, Purnea, and Katihar.
4. The project depends on the monsoon pondage in Hanuman Nagar barrage.

Future Scope and Kosi High Dam

1. At present, there is no backup water storage system for this link.
2. The project may be supported in the future by the proposed Kosi High Dam.
3. The Kosi High Dam will require joint surveys and investigations by India and Nepal.

Irrigation Potential and Justification

1. The total command area of the Mahananda river basin is 4.45 lakh hectares.
2. The Kosi-Mechi link canal will irrigate 2.15 lakh hectares, excluding land already covered by other schemes.
3. It aims to transfer surplus water from the Kosi basin to the water-scarce Mahananda basin.
4. The project will divert **2,050 million cubic meters of surplus Kosi water** to the Mahananda basin.
5. It will **restore irrigation** to **1.57 lakh hectares** in the existing EKMC command area.

Background on PMKSY & AIBP

1. PMKSY was launched in **2015–16** to enhance water access on farms and increase irrigated areas.
2. The scheme promotes **on-farm water use efficiency** and **sustainable water conservation**.
3. The programme was renewed for **2021–26** with an overall outlay of **₹93,068.56 crore**.
4. Central assistance within this outlay is **₹37,454 crore**.
5. The **Accelerated Irrigation Benefits Programme (AIBP)** is a key component for creating irrigation potential through major and medium projects.

Achievements Under PMKSY-AIBP

1. Since **April 2016**, **63 projects** have been completed under PMKSY-AIBP.
2. These have created an **additional irrigation potential of 26.11 lakh hectares**.
3. Since the launch of PMKSY 2.0 in 2022, **9 new projects** have been added under AIBP.
4. The **Kosi Mechi Intra-State Link Project is the 10th project** added after the 2022 update.

9. Doubling of Tobacco Farmers' Income (2019–20 to 2023–24)

1. Between 2019–20 and 2023–24, the income of **Flue-Cured Virginia (FCV) tobacco farmers** more than **doubled**.
2. The **average price** earned by farmers rose from **₹124.00/kg in 2019–20** to **₹279.54/kg in 2023–24**.

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3. In the **2023–24 season in Andhra Pradesh**, farmers earned a **record average price of ₹288.65/kg**, with a **peak price of ₹411/kg**.
4. **Total earnings** by FCV farmers during this season amounted to **₹6,313.58 crore**.

Factors contributing to doubling of FCV Tobbaco Farmer Income

1. **IT-enabled electronic auction systems** ensuring transparency and competitive bidding.
2. **Efficient crop planning and market linkage** by the Tobacco Board.
3. **Penalty waivers** worth ₹184 crore for excess production.
4. A **strong rise in exports**, which increased by **87% in value** and **44% in volume** over five years.

India's Global Standing in Tobacco

1. India is the **2nd largest producer** of tobacco globally (after China).
2. India is the **4th largest producer of FCV tobacco** (after China, Brazil, Zimbabwe).
3. India is the **2nd largest exporter of unmanufactured tobacco by volume** (after Brazil).
4. **Tobacco exports in 2023–24** reached **₹12,005.89 crore**, up from ₹6,408.15 crore in 2019–20.
5. Export volume rose from **218.84 million kg to 315.51 million kg** over five years.

Types of Tobacco Grown in India

1. **FCV (Flue-Cured Virginia) Tobacco**
   a. Grown mainly in **Andhra Pradesh and Karnataka**.
   b. **Cured using flue (hot-air chambers)**—preserves sugar content.
   c. Used in **cigarettes**.
   d. Highly export-oriented, meets global quality standards.
2. **Burley Tobacco**
   a. Air-cured, **low in sugar**, used in **blended cigarettes**.
   b. Grown in **Karnataka and Tamil Nadu**.
3. **Natu Tobacco**
   a. Sun-cured, grown in **Andhra Pradesh**.
   b. Used in **bidi manufacturing**.
4. **Chewing Tobacco Varieties**
   a. Include **Motihari, Lalchopadia, and Pikka** types.
   b. Used in **pan masala, gutka, and raw chewing** forms.
5. **Hookah and Snuff Tobacco**
   a. Grown in small quantities in parts of **Uttar Pradesh and Bihar**.
   b. Used in **traditional consumption forms**.

Origin of Tobacco: New World Crop

1. **Tobacco is a New World species**.
2. It is native to **the Americas (especially South America)**.
3. Introduced to the **Old World (Europe, Asia, and Africa)** after the **Columbian Exchange in the 15th–16th century**.
4. In India, tobacco was introduced by the **Portuguese in the early 17th century**.
5. The main cultivated species are:
   a. **Nicotiana tabacum** – widely cultivated worldwide.
   b. **Nicotiana rustica** – used mainly in local and traditional products.

10. Electronics Component Manufacturing Scheme (ECMS)

1. **In March 2025** Ministry of Electronics and Information Technology (MeitY) notified the Electronics Components Manufacturing Scheme.
2. The scheme aims to make India a **global hub for electronics manufacturing** and strengthen the **domestic electronics ecosystem**.
3. It aims to boost Domestic Value Addition (DVA) and integrate Indian firms with Global Value Chains (GVCs).

Focus area of the scheme

1. Horizontal Scope: Benefits across consumer electronics, medical devices, automobiles, power electronics, and electrical grids.
2. Special Focus: Passive components (e.g. resistors, capacitors, connectors, sensors, relays, inductors, lenses).

3. Active components handled under India Semiconductor Mission (ISM).
4. Support for Capital Equipment: Includes tooling and precision manufacturing for electronics.
5. Inspired by Semiconductor Mission success (e.g. Applied Materials, Lam Research).
6. Players like Linde already investing in India.

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Incentive Structure (Segment-wise)

Target Segment Type	Specific Component/Sub-assembly	Nature of Incentive
Sub-assemblies	Display module, Camera module	Turnover-linked
Bare Components	Non-SMD (surface mount device) passive, Electro-mechanicals, Multi-layer PCB(printed circuit board), Li-ion cells (digital only), Enclosures	Turnover-linked
Selected Bare Components	HDI(High-Density Interconnect) / MSAP(Modified Semi-Additive Process) / Flexible PCB, SMD passives	Hybrid incentive
Supply Chain & Capex	Parts for Subassemblies ,Bare components, selected bare components, Capital goods	Capex-linked

Financial Scope

1. The total outlay for the scheme is ₹22,919 crore.
2. The scheme targets an investment of ₹59,350 crore.
3. It is expected to result in production worth ₹4,56,500 crore.

Employment Impact

1. The scheme aims to generate 91,600 direct jobs.
2. It is also expected to create many more indirect jobs, though not quantified.

Duration and Conditions

1. The scheme will run for six years, with a one-year gestation period.
2. A part of the incentive payout will be tied to the achievement of employment targets.

Sector Growth Background

1. Electronics is one of the fastest-growing global sectors with high strategic value.
2. Domestic electronics production was ₹1.90 lakh crore in 2014–15.
3. It rose to ₹9.52 lakh crore in 2023–24, with a CAGR of over 17%.
4. Electronics exports were ₹0.38 lakh crore in 2014–15.
5. They increased to ₹2.41 lakh crore in 2023–24, with a CAGR of over 20%.

Various incentive types and their significance

Incentive Type	Basis of Support	Best For
Turnover-linked	Sales/Revenue Achieved	High-output manufacturers
Capex-linked	Capital Investment Made	New plants, equipment-heavy investments
Hybrid	Capex + Turnover Combined	Long-term, high-tech, gradual-scale setups

Active vs Passive Components – Technical & Policy Comparison

Aspect	Active Components	Passive Components
Definition	Components that require external power to function	Components that do not require external power
Function	Control or amplify electric signals	Store, filter, or resist electric energy
Examples	Transistors, Diodes, ICs, LEDs	Resistors, Capacitors, Inductors, Relays, Connectors

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Signal Directionality	Often unidirectional (signal flows one way)	Generally bidirectional (can operate in either direction)
Power Source	Require power supply for operation	Do not generate or amplify signals
Complexity	More complex, used in logic processing and switching	Simpler, used in support and control functions
Role in Circuits	Used for signal processing, computation	Used for energy management and signal conditioning
Support Scheme	**India Semiconductor Mission (ISM)**	**Electronics Components Manufacturing Scheme (ECMS)**
Ministry	Ministry of Electronics and Information Technology (MeitY)	Ministry of Electronics and Information Technology (MeitY)
Key Features	Supports design & fabrication of chips, semiconductors, and microprocessors	Supports manufacturing of components like resistors, capacitors, etc. Also supports capital equipment, tooling, and precision manufacturing

Schemes by MEITY for electronics manufacturing

Production Linked Incentive (PLI) Scheme for IT Hardware

1. The Production Linked Incentive Scheme (PLI) for IT Hardware addresses cost disadvantages faced by domestic manufacturers.
2. The IT hardware sector lacks a level playing field compared to global competitors.
3. Industry estimates (by ICEA and ELCINA) show a 8.5% to 11% cost disability.
4. The cause of this disadvantage is inadequate infrastructure, domestic supply chain issues, and logistics.

Modified Special Incentive Package Scheme (M-SIPS)

1. The Modified Special Incentive Package Scheme (M-SIPS) was launched in July 2012.
2. Its purpose is to promote large-scale manufacturing in India.
3. It aims to offset the cost disability faced by ESDM industries.

Electronic Hardware Schemes

1. The Electronic Hardware Schemes support the establishment of Export Oriented Units (EOUs).

Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme

1. The Modified Electronics Manufacturing Clusters (EMC 2.0) Scheme supports the development of industrial infrastructure.
2. It promotes the setup of Ready Built Factory (RBF) sheds and Plug and Play facilities.

Conclusion

The ECMS is a major step in building a robust domestic ecosystem for **electronics component manufacturing**, ensuring **supply chain resilience**, enhancing **exports**, and aligning India with global electronics value chains.

E. Science & Technology

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1. Return of Butch Wilmore and Sunita Williams from ISS

1. In March 2025, NASA astronauts **Butch Wilmore (62)** and **Sunita Williams (59)** have returned to Earth after an unexpectedly long **286-day mission** aboard the **International Space Station (ISS)**.
2. Initially, their mission was planned for only 8 days, but their return was delayed due to issues with **Boeing's Starliner spacecraft**.
3. They were eventually brought back to Earth via **SpaceX's Crew Dragon**, which underscored the technological and health challenges associated with prolonged space travel.

Key Facts About Starliner Spacecraft and SpaceX's Crew Dragon

1. **Starliner Spacecraft**: Developed by **Boeing** under NASA's **Commercial Crew Program (CCP)**, the Starliner was designed to transport astronauts to and from **Low Earth Orbit (LEO)**, such as the ISS.
2. While it successfully took **Williams** and **Wilmore** to the ISS in 2024, propulsion issues delayed their return.
3. **SpaceX's Crew Dragon**: Crew Dragon is one of the two variants of SpaceX's **Dragon 2 spacecraft**.
4. It features a **reusable capsule** and launches atop a **Falcon 9 rocket**. Developed under NASA's **CCP**, Crew Dragon is primarily used to ferry astronauts to the ISS.
5. Another variant, the **Cargo Dragon**, is used for transporting cargo.
6. For the return of Williams and Wilmore, the **Crew Dragon spacecraft** named **Freedom** was used under NASA's **SpaceX Crew-9 mission**.

Health Implications of Space Travel

1. **Space Anemia**: This is a condition where astronauts experience a decrease in **red blood cell count** due to fluid shifts in **microgravity**.
2. This can lead to **fatigue**, **dizziness**, and increase the **cardiovascular** risks post-mission.
3. **Spaceflight-Associated Neuro-ocular Syndrome (SANS)**: This condition causes **vision impairment** due to fluid shifts in space, leading to **optic disc swelling** and **farsightedness**.
4. **Baby Feet Syndrome**: Astronauts sometimes experience hypersensitivity in the soles of their feet and difficulty walking after prolonged space missions.
5. This happens because the lack of weight-bearing activities in space causes **foot calluses to disappear**, making the skin sensitive upon returning to Earth.
6. **Bone Density Loss**: Studies show that astronauts can lose around **2% of bone density** per month in space.
7. Without proper **countermeasures** like regular exercise, this loss can lead to conditions similar to **osteoporosis**.
8. **Risks of Cosmic Radiation Exposure**: Space travel exposes astronauts to **cosmic rays** and **solar radiation**, which are not blocked by Earth's atmosphere or magnetic field.
9. This exposure can cause **DNA damage**, **genetic mutations**, and increase the risk of **cancer**.
10. Prolonged exposure in deep-space missions, such as those to **Mars** or the **Moon**, could pose even higher risks.

India's Gaganyaan Mission and Bhartiya Antriksh Station (BAS)

1. **Gaganyaan Mission**: India's **Gaganyaan Mission** aims to send three astronauts into a **400 km orbit** for a **3-day mission**, and return them safely to Earth.
2. This mission would place India alongside nations like the **US**, **Russia**, and **China** in human spaceflight.
3. The short-term goal of this mission is to demonstrate human spaceflight capabilities in Low Earth Orbit, with the long-term aim of establishing a sustained **Indian human space exploration program**.
4. **Bhartiya Antriksh Station (BAS)**: India is planning its **own space station**, the **Bhartiya Antriksh Station (BAS)**, which will orbit Earth at an altitude of **400-450 km**.

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5. The **Base Module** of the station is scheduled to launch by **2028**, with full operational capabilities by **2035**.
6. The BAS will support human spaceflight, **Earth observation**, **microgravity research**, and drive **technological innovations** in space exploration.

Refer Current Affairs Total (CAT) Magazine August 2024, Page 63-67 for Comprehensive Coverage of ***Sunita Williams and Butch Wilmore Stuck in Space and Helium's Role in Space Exploration***

2. End of ESA's Space Observatory: Gaia

In March 2025, the **European Space Agency (ESA)** officially shut down its **Gaia Space Observatory**, after it used its thrusters for the final time to drift into its "retirement orbit" around the Sun.

About Gaia Space Observatory:

1. **Name**: **Gaia** (Global Astrometric Interferometer for Astrophysics)
2. **Mission Type**: Space Astrometry Mission of ESA
3. **Launched**: 2013
4. **Location**: Gaia was positioned at Lagrange Point 2 (L2), 1.5 million kilometers from Earth, an ideal spot where the gravitational forces of Earth and the Sun balanced, allowing minimal fuel consumption and a stable observational platform.
5. **Mission Aim**: To create the most precise, three-dimensional map of the **Milky Way** galaxy.
6. **Key Achievements**:
   a. Tracked over **2 billion stars and space objects**.
   b. Equipped with three instruments: **Astrometer**, **Photometer** and **Spectrometer.**
      - These instruments helped in interpreting the location and motion of stars and other celestial bodies.

Lagrange Points:

1. Lagrange points are positions in a **two-body system** (such as the Sun and Earth) where the combined gravitational forces of the two bodies cancel out.
2. This allows a spacecraft to "park" at these points for stable observations.
3. There are five Lagrange points:
   a. **L1**: Located around **1.5 million kilometers from Earth**, providing an uninterrupted view of the Sun.
   b. **L2**: Offers an unobstructed view of the universe, perfect for long-duration space observations. It's the location of many space observatories, including the **James Webb Space Telescope**.
   c. **L3**: Positioned behind the Sun, opposite Earth, with the potential for observing the far side of the Sun.
   d. **L4 & L5**: Stable but farther from Earth, offering potential for future space missions.

Achievements of Gaia:

1. **3D Map of the Milky Way**: Gaia's data allowed scientists to create an incredibly precise three-dimensional map of our galaxy, helping researchers better understand its shape.
2. **Black Hole Discoveries**: Gaia uncovered new types of **black holes**, including one relatively close to Earth. Unlike traditional black hole discoveries, Gaia detected these through their **gravitational effects**, not light emitted by materials falling into them.
3. **Asteroid Tracking**: Gaia detected over **150,000 asteroids**, tracking their orbits and identifying potential future threats to Earth.

Aditya L1: India's first solar observatory mission positioned at L1

1. **Aditya-L1,** launched by ISRO on **September 2, 2023**.
2. It reached **Lagrange Point 1 (L1) on January 6, 2024**, after a **four-month journey covering 1.5 million km from earth.**
3. The mission carries **seven scientific instruments to study the Sun's corona, solar flares, solar wind, and space weather impacts**.
4. **Scientific Payloads (7 Instruments)**
   a. **Visible Emission Line Coronagraph (VELC) – Studies the Sun's corona.**
   b. **Solar Ultraviolet Imaging Telescope (SUIT) – Observes the Sun's photosphere and chromosphere.**

c. **Solar Low Energy X-ray Spectrometer (SoLEXS) – Measures soft X-ray emission.**
d. **Hard X-ray Spectrometer (HEL1OS) – Captures high-energy solar flares.**
e. **Aditya Solar wind Particle Experiment (ASPEX) – Studies the solar wind.**
f. **Plasma Analyser Package for Aditya (PAPA) – Measures solar particles.**
g. **Magnetometer – Observes interplanetary magnetic fields.**

5. Its **VELC (Visible Emission Line Coronagraph) instrument provides real-time solar observations, helping predict coronal mass ejections (CMEs) that can affect Earth.**
6. Aditya-L1 operates in a **halo orbit around L1, ensuring continuous, unobstructed solar observations without Earth's atmospheric interference.**
7. **Mission Duration**: Expected **5 years**
8. The mission complements **NASA's Parker Solar Probe and ESA's Solar Orbiter**, contributing to global solar research.

3. NASA's SPHEREx Telescope: Mapping the Cosmos in 3D

1. NASA has launched its newest space observatory—**SPHEREx**—aboard a **SpaceX Falcon 9 rocket** from **Vandenberg Space Force Base, California**, on **March 11**.
2. Designed to explore the origins of the cosmos and conduct an unprecedented all-sky spectral survey, SPHEREx **(Spectro-Photometer for the History of the Universe, Epoch of Reionization, and Ices Explorer)** marks a new era in **astrophysical research**.

Understanding the SPHEREx Mission

1. SPHEREx is a **two-year planned mission** that will scan the entire sky in **optical and near-infrared light**—wavelengths invisible to the human eye but essential for investigating cosmic phenomena.
2. Its core objective is to provide a **3D spectral map of the universe**, answering key questions about galaxy formation, cosmic inflation, and the availability of essential life-forming elements in our galaxy.
3. This mission was developed by NASA's **Jet Propulsion Laboratory (JPL)**.

Scientific Objectives and Goals

SPHEREx is built to tackle multiple scientific challenges:

1. **Create a full-sky 3D map** in **102 color bands**, far surpassing the color resolution of previous missions.
2. **Survey over 450 million galaxies**, including some whose light has taken **10 billion years** to reach Earth.
3. **Map over 100 million stars** in our **Milky Way galaxy**.
4. **Investigate cosmic inflation**, a rapid expansion that occurred **fractions of a second after the Big Bang**, 13.8 billion years ago.
5. **Search for biogenic molecules**—such as **carbon, hydrogen, oxygen, nitrogen, and sulfur**—in **interstellar dust clouds** and **stellar nurseries**.
6. Identify **reservoirs of frozen water** and other organic molecules in **planet-forming disks** around young stars.

The telescope's findings will **complement** ongoing research by the **James Webb Space Telescope (JWST)** and future missions like the **Nancy Grace Roman Space Telescope**.

Technology and Design

1. At the heart of SPHEREx is a **prism-like spectrophotometer** that splits light from billions of cosmic sources into **102 distinct wavelengths**.
2. This allows the instrument to determine the **composition**, **distance**, and **structure** of both near and distant cosmic objects—even those that are faint or barely detectable.
3. Its **Sun-synchronous Low Earth Orbit** enables SPHEREx to **scan the entire sky twice a year**, ensuring continual data collection and comparative analysis across time.
4. The observatory's advanced design draws on technologies from both **Earth observation satellites** and **interplanetary spacecraft**.

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4. NASA's PUNCH Mission

1. In **March 2025**, the **National Aeronautics and Space Administration (NASA)** has launched its most ambitious solar missions —**PUNCH (Polarimeter to Unify the Corona and Heliosphere)**.
2. The PUNCH mission is particularly timely, as it **aligns with the Sun's current phase** of heightened activity, making it an ideal window to capture critical solar phenomena in unprecedented detail.

Background: Why the Sun, Why Now?

The recent surge in solar missions is no coincidence—it directly aligns with the **solar cycle**, a roughly 11-year cycle during which the Sun's magnetic field flips, switching its north and south poles. This magnetic reversal significantly influences solar behavior, particularly during **solar maximum**, when sunspots, solar flares, and coronal mass ejections (CMEs) peak.

These powerful events can have major impacts on Earth, disrupting:

- Satellites and spacecraft,
- Global communication and navigation systems (e.g., GPS),
- Power grids and aviation routes,
- And even posing risks to astronauts in space.

Since **May 2022**, solar activity has remained consistently above average. **Sunspot numbers are rising**, indicating that **Solar Cycle 25 is nearing its peak**, expected between **2024 and 2025**, according to the **National Oceanic and Atmospheric Administration (NOAA)**. This makes the current time the most favorable for solar observation until the next maximum expected around **2035–2036**.

Missing this observational window could delay key scientific breakthroughs by an entire decade. This urgency is driving a flurry of solar missions launched between 2023 and 2025, including:

- **Aditya-L1** by ISRO (India), launched on **September 2, 2023**, to study solar flares, solar wind, and magnetic fields.
- **Proba-3** by the European Space Agency, launched on **December 4, 2024**, to observe solar storms using a unique formation-flying technique.
- And now, **PUNCH** by NASA, launched in **March 2025**, designed to revolutionize our understanding of the solar corona and the genesis of the solar wind.

Mission Overview: What is PUNCH?

1. PUNCH is a **first-of-its-kind heliophysics mission** comprising four identical, suitcase-sized satellites orbiting Earth in a **polar low Earth orbit**, closely aligned with the **terminator line**—the boundary between day and night.
2. This unique orbital design ensures:
   - **Continuous exposure to sunlight**, and
   - **Unobstructed views of the Sun's outer atmosphere**.
3. These four satellites will function as a **single virtual instrument**, each equipped with a camera, forming a **90° combined field of view** centered on the Sun.
4. By working together, they will provide **global, 3D imaging** of the **Sun's corona** and its transition into the **solar wind**—the stream of charged particles that continuously flows outward, shaping the **heliosphere** that envelops our solar system.

Mission Objectives: Scientific Questions PUNCH Aims to Answer

PUNCH is designed to address critical and long-standing questions in solar physics and space weather research (heliophysics):

1. How does the Sun's outer atmosphere (corona) evolve into the solar wind?
2. What structures emerge in the solar wind, and how do they form?
3. How do these dynamic solar processes influence the space environment across the solar system, including Earth?

To achieve this, PUNCH will make use of **polarized light**, a technique never before used at this scale for studying the Sun.

- As sunlight scatters off electrons in the corona and solar wind, the light becomes **polarized**—its wave orientation becomes aligned.

- By capturing this polarized light with **polarizing filters**, similar to those in sunglasses, PUNCH will be able to generate **three-dimensional maps** of solar structures.
- These high-resolution observations will help reveal how **space weather events**—like flares and CMEs—form, evolve, and propagate. Ultimately, this could improve our ability to **predict space weather** and mitigate its effects on satellites, power systems, and astronauts in space.

5. Blue Ghost Mission 1: Future of Private Moon Missions

1. In March 2025, Firefly Aerospace's *Blue Ghost Mission 1*—nicknamed **"Ghost Riders in the Sky"**—successfully landed on the Moon, marking a milestone in **commercial spaceflight**.
2. Selected under NASA's **Commercial Lunar Payload Services (CLPS)** initiative, this mission represents a key step in enabling regular, cost-effective lunar access in support of NASA's **Artemis Program**.

Background: The CLPS Initiative and Commercial Moon Landings

1. **NASA's CLPS program** is a strategic partnership with private industry aimed at **reducing the cost** and increasing the cadence of Moon missions.
2. By outsourcing delivery services for scientific and technological payloads, CLPS enables **faster deployment of instruments** critical to **lunar science and future human exploration**.
3. In February 2024, **Intuitive Machines** became the **first private company** to achieve a soft landing on the Moon with its **IM-1 mission**, the first U.S. lunar landing since Apollo 17 in 1972.
4. Firefly Aerospace has now followed suit, achieving the **first fully successful commercial Moon landing** with an upright lander.

Mission Overview: Blue Ghost Mission 1

1. Launched aboard a **SpaceX Falcon 9** rocket from Kennedy Space Center on **January 15, 2025**.
2. Blue Ghost Mission 1 **carried ten** scientific and technology payloads.
3. The lander, named **Golden**, entered lunar orbit on **February 13** and touched down on the surface on **March 2**, near **Mons Latreille** in **Mare Crisium**, a basaltic plain on the Moon's northeastern near side.
4. The mission lasted approximately **60 days**, including:
   a. **25 days in Earth orbit**
   b. **4 days in lunar transit**
   c. **16 days in lunar orbit**
   d. **346 hours (over 14 days) of surface operations**
   e. **5 hours into the lunar night after sunset**

The landing site in **Mare Crisium**—once an ancient impact basin filled by **volcanic lava 3 billion years** ago—offers a unique opportunity to study lunar geology, heat flow, and solar wind interactions.

Scientific Objectives and Payload Highlights

The mission carried ten payloads with objectives that included:

a. Measuring **heat flow from the lunar interior**
b. Investigating **plume-surface interactions**
c. Studying **crustal electric and magnetic fields**
d. Capturing **X-ray images of Earth's magnetosphere**

Additionally, the mission conducted technology demonstrations, such as:

a. **Regolith sampling and adherence testing**
b. **Dust mitigation** using electrodynamic fields
c. Evaluating **radiation-tolerant computing**
d. Testing **Global Navigation Satellite System (GNSS)** capabilities on the Moon

Strategic Importance and Future Missions

1. Blue Ghost's successful performance strengthens the commercial foundation of NASA's lunar plans. Its data and technology tests will inform future lander designs and help mitigate lunar surface risks for crewed Artemis missions.
2. The CLPS initiative continues with upcoming missions, including:
   - **IM-2 by Intuitive Machines**, featuring the **Athena** lander.
3. Firefly's contribution showcases the growing capability of U.S. private companies to execute complex lunar missions, opening the door for sustainable lunar exploration.

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6. Human Enhancement

1. The human enhancement industry was worth 125 billion US dollars in 2024.
2. It is expected to grow to 348.5 billion US dollars by the year 2033, according to a report by IMARC.

What is Human Enhancement

1. Human enhancement means making changes to the human body using natural, artificial, or technological methods.
2. These changes are made to improve a person's thinking ability or physical strength and performance.
3. Human enhancement is done through the use of drugs, hormones, implants, genetic engineering, dietary supplements, or cosmetic surgery.
4. The aim of human enhancement is not to treat illness, but to go beyond normal human limits.
5. For example, new technologies can help people become resistant to diseases like malaria, tuberculosis, and Lyme disease.

Human Enhancement: Types

1. **Physical Enhancements**
   - **a.** Prosthetics and medical implants such as bionic limbs, pacemakers, and bionic eyes help restore or improve body functions.
   - **b.** Performance-enhancing drugs are used by some people to improve physical strength or brain power.
   - **c.** Cosmetic surgeries, including plastic surgery and orthodontics, are used to change or improve physical appearance.
   - **d.** Strength training and dietary supplements are used to improve fitness, energy, and stamina.
   - **e.** Exoskeletons are wearable machines that help people gain extra strength or support while moving.
2. **Mental Enhancements**
   - **a.** Nootropics are drugs or supplements that are taken to improve brain functions like memory, focus, or learning.
   - **b.** Neurostimulation methods such as transcranial magnetic stimulation and deep brain stimulation use electric or magnetic signals to affect brain activity.
   - **c.** Cognitive training includes exercises and activities that help improve attention, memory, and thinking ability.
   - **d.** Brain-computer interfaces are systems that allow the brain to send commands directly to machines, which may help in communication or control of devices.
3. **Reproductive Enhancements**
   - **a.** Preimplantation genetic diagnosis is a method used to check embryos for genetic problems and choose those with preferred traits.
   - **b.** In vitro gamete generation is a process where sperm and eggs are created in a lab, giving more control over reproduction.
   - **c.** Reproductive cloning involves making a copy of a person using their genetic material, which could be used to create babies with chosen traits.
4. **Genetic Enhancements**
   - **a.** Gene editing technologies like CRISPR allow scientists to make specific changes to DNA to fix problems or change traits.
   - **b.** Genetic engineering is used to change a person's genes to improve features such as intelligence, health, or physical strength.
5. **Other Forms of Enhancement**
   - **a.** Virtual and augmented reality technologies are used to improve how people see or interact with their surroundings.
   - **b.** Artificial Intelligence can be used to improve human thinking, decision-making, and problem-solving.
   - **c.** Bioprinting uses 3D printing to make body parts or tissues, which can be used to repair or improve the human body.

Different Views on Human Enhancement

1. Transhumanists support the use of technology to greatly improve human abilities and to extend human life.
2. Bioconservatives believe that the natural human condition should be protected and not changed by technology.
3. Bioconservatives are concerned that changing human life too much may take away what makes us truly human.

Concerns Related to Human Enhancement

1. Access to human enhancement may not be equal, which can increase social inequality.
2. Changing basic human features can create confusion about human identity.
3. People may be forced to undergo enhancements without giving full and free consent.
4. If most people use enhancements, those who do not may face pressure or discrimination.
5. The long-term health effects of genetic and brain changes are still unknown.
6. If people live much longer due to enhancements, it may increase the pressure on natural resources and the environment.
7. Reducing genetic diversity through genetic engineering can make people more likely to get certain diseases.
8. There is a need for strong and fair rules to make sure these technologies are used safely and ethically.

Human enhancement can help improve abilities, extend life, and bring progress in many areas. At the same time, it brings serious ethical, social, and environmental concerns. To protect human values, it is important to have fair rules, equal access, and full understanding of its long-term effects.

7. World's First 'Supersolid' Created From Light

1. Recently, For the first time scientists from Italy's National Research Council have turned light into a **"supersolid".**
2. This is an important breakthrough in **the study of quantum physics and states of matter**.

What is a Supersolid

1. A supersolid is a rare state of matter that shows **properties of both** a solid and a superfluid.
2. It has a solid-like structure where particles are arranged in an ordered pattern.
3. At the same time, it can flow without any friction, just like a liquid with no resistance.
4. This strange behavior is explained by the laws of quantum mechanics.
5. The idea of **supersolids was first predicted in the 1960s** by physicists.
6. In 2017, scientists created supersolids for the first time using ultracold Bose-Einstein Condensates (BECs).
7. Supersolids can only be created at extremely low temperatures, very close to absolute zero (0 Kelvin or -273.15°C).
8. At such temperatures, atoms lose most of their energy and behave in unusual ways, forming new states like BECs.
9. While scientists cannot reach absolute zero, they can come very close under lab conditions.

Current Research on Supersolid Light

1. In the new study, researchers used a different method that uses the properties of polariton systems.
2. Polaritons are created by combining light with special particles called excitons using strong electromagnetic forces.
3. Excitons are a type of quasiparticle, which means they are not real particles but act like particles in solids.
4. Quasiparticles are used in physics to explain complex behaviors in materials by treating them as if they were single particles.

About Light

1. Light is the fastest thing known in the universe, traveling at a speed of **299,792.458 kilometers per second**.
2. Light shows both wave and particle behavior, depending on how it is observed.
3. In classical physics, a particle is a tiny object with mass and energy, while a wave spreads over space and time.
4. According to quantum mechanics, light can act like a wave or a particle at the same time, depending on the situation.

Why Making Supersolid from Light is Important

1. Creating a supersolid from light could help build more stable quantum bits (qubits), which are key for quantum computers.
2. This breakthrough may lead to new optical devices and better photonic circuits that use light for high-speed data transfer.

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3. It also opens up new areas of research in material science and quantum mechanics.
4. Learning how to control light at this level could change the way we use energy in the future.

8. North India's First Nuclear Power Project: Gorakhpur, Haryana

1. India is taking significant strides in enhancing its nuclear power capabilities, with the establishment of **North India's first nuclear power project** in **Gorakhpur**, Haryana.
2. This project will play a key role in meeting the country's growing energy demands and is a part of India's broader nuclear energy expansion plans.
3. The Gorakhpur project consists of two **twin units**, each featuring a **Pressurized Heavy Water Reactor (PHWR)**, with a combined total capacity of **2800 MW**.

What is a Pressurized Heavy Water Reactor (PHWR)?

A **PHWR** is a type of nuclear reactor that uses **Heavy Water (D2O)** as both a **coolant** and a **moderator**, with **natural uranium** as the fuel.

1. **Heavy Water**: Water that contains **deuterium**, a form of hydrogen with an additional neutron. It is used because it slows down neutrons effectively without absorbing them, making it ideal for sustaining nuclear reactions in reactors.
2. **Fuel and Moderator**: The reactor uses **natural uranium** as the fuel, which contains a mix of uranium-235 and uranium-238 isotopes. The heavy water slows down the neutrons produced during fission, allowing for a sustainable chain reaction in the reactor.

History of PHWR Development in India

1. **Introduced in the 1960s** through Indo-Canadian cooperation.
2. The first **220 MW PHWR** was built at **Rajasthan Atomic Power Station (RAPS-1)**.
3. Following **Pokhran-1** (1974), when Canada withdrew its support, India developed and standardized its own **220 MW PHWR design** indigenously.

Recent Developments in Nuclear Energy in India

1. **Nuclear Energy Mission**: The Indian government aims to deploy **100 GWe** of nuclear energy by **2047**. Currently, India has about **8.1 GW** of nuclear power installed.
2. **New Uranium Deposit**: A significant **uranium deposit** was discovered at **Jaduguda Mines**, Jharkhand, India's oldest uranium mine.
3. **Commercial Operations**: The first two units of the indigenous **700 MWe PHWR** at **Kakrapar, Gujarat** (KAPS-3 & 4) started commercial operation in FY **2023-24**.
4. **Prototype Fast Breeder Reactor (PFBR)**: The country's first PFBR (500 MWe) achieved key milestones in **2024**.
5. **ASHVINI JV**: **NPCIL** and **NTPC** formed a joint venture named **ASHVINI** to build and operate nuclear plants, including the upcoming **4x700 MWe PHWR** project at **Mahi-Banswara, Rajasthan**.

India's Three-Stage Nuclear Program

1. India's **three-stage nuclear power program** was formulated by the renowned physicist **Homi Bhabha** in the 1950s.
2. The goal is to achieve **energy security**, **independence**, and **sustainable development** through the utilization of **uranium** and **thorium** reserves.

The Three Stages of India's Nuclear Program

1. **Stage 1**: Uses **PHWRs** powered by **natural uranium-238** as fuel. The heavy water slows down the neutrons, which helps sustain the chain reaction, producing **plutonium-239** as a byproduct.
2. **Stage 2**: Involves the use of **plutonium-239** and **uranium-238** in **Fast Breeder Reactors (FBRs)**. The FBR produces more fissile material (plutonium-239) than it consumes, generating energy for the next stage.
3. **Stage 3**: Uses **plutonium-239** and **thorium-232** in advanced reactors to produce **uranium-233**, a fissile material for energy generation. **Thorium** is particularly attractive to India due to the country's large reserves (~25% of the global thorium reserves).

How the Fast Breeder Reactor (PFBR) Works

The **PFBR** is designed to produce more fissile material than it consumes, making it a **breeder reactor**.

1. **Fissile Material**: It uses **plutonium-239** (produced in stage 1) and **uranium-238** as fuel.
2. **Coolant**: **Liquid sodium** is used as a coolant in the PFBR, transferring heat to a secondary circuit. This circuit then drives turbines to generate electricity.
3. **Blanket**: The reactor's blanket is made of **thorium-232**, which, through **transmutation**, produces **uranium-233** to be used as fuel in the third stage.

Why Was the PFBR Delayed?

The development of the **PFBR** faced several challenges:

1. **Technical Difficulties**: The first test reactor, the **Fast Breeder Test Reactor (FBTR)**, faced challenges with its coolant systems and required technological advancements.
2. **Sanctions Post-Pokhran-1**: After India's nuclear test in **1974**, sanctions forced India to rely on **mixed carbide fuel** instead of enriched uranium, which hindered the reactor's performance.
3. **Delays and Costs**: The project experienced several delays, increasing the cost from the original estimate of **₹3,492 crore** to **₹6,800 crore** by 2019.
4. **Aging Workforce**: Many engineers involved in the project had retired by the time the PFBR construction began, which added to the delays.

Future Plans for PFBR and FBRs

1. The **PFBR** has a capacity of **500 MWe**.
2. In 2019, the **Department of Atomic Energy (DAE)** proposed the construction of **4 additional FBRs** with **600 MWe** capacity each.
3. These are expected to be set up in **Kalpakkam** (2 units) and other locations (2 units) by 2025.

India's Operational and Upcoming Nuclear Power Plants

As per the **Press Information Bureau** India, NPCIL currently operates **24 nuclear power reactors** across 8 sites, with a total installed capacity of **8,180 MW**.

Operational Nuclear Power Plants in India

S.No	Plant Name	State	Capacity (MW)	Units	Type
1	Tarapur 1 & 2	Maharashtra	320	2 x 160	BWR
2	Tarapur 3 & 4	Maharashtra	1080	2 x 540	PHWR
3	Kaiga 1–4	Karnataka	880	4 x 220	PHWR
4	Kakrapar 1, 2 & 3	Gujarat	1140	2 x 220, 1 x 700	PHWR
5	Kakrapar 4	Gujarat	700	1 x 700	PHWR
6	Rajasthan 1–6	Rajasthan	1180	Mixed	PHWR
7	MAPS 1 & 2	Tamil Nadu	440	2 x 220	PHWR
8	Kudankulam 1 & 2	Tamil Nadu	2000	2 x 1000	VVER
9	Narora 1 & 2	Uttar Pradesh	440	2 x 220	PHWR
10	Rajasthan-7	Rajasthan	630	1 x 630	PHWR

Reactors Under Construction

Plant Name	State	Units	Capacity (MW)	Status
Rajasthan 8	Rajasthan	1 x 700	700	Under construction
Gorakhpur 1 & 2	Haryana	2 x 700	1400	Under construction
Kudankulam 3–6	Tamil Nadu	4 x 1000	4000	Under construction

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Planned Reactors

Plant Name	State	Units	Capacity (MW)	Status
Jaitapur	Maharashtra	6 x 1650	9,900	In principle approval
Kovvada	Andhra Pradesh	6 x 1100	6,600	In principle approval
Haripur	West Bengal	6 x 1000	6,000	In principle approval
Chutka	Madhya Pradesh	2 x 700	1,400	In principle approval
Mahi Banswara	Rajasthan	4 x 700	2,800	In principle approval

Future Targets

- **2025 Budget Initiatives**: A new Nuclear Energy Mission aims to operationalize five Small Modular Reactors (SMRs) by 2033 and achieve 100 GW of nuclear power capacity by 2047.
- **Capacity Expansion**: Plans to increase nuclear capacity from 8,180 MW to 22,480 MW by 2031-32.

9. Japanese mathematician Masaki wins Abel Prize 2025

The prestigious **Abel Prize** for mathematics in 2025 has been awarded to **Japanese mathematician Masaki Kashiwara**, a renowned expert in **algebraic analysis**, **representation theory**, and **sheaf theory**.

About Abel Prize:

1. The Abel Prize recognizes **pioneering achievements in mathematics**.
2. Named after **Niels Henrik Abel**, a Norwegian mathematician (1802-1829), known for his groundbreaking contributions in multiple mathematical fields during his short life.
3. The prize was **established** by the **Norwegian Parliament** in 2002 to commemorate Abel's 200th birthday.
4. It is awarded by the **Norwegian Academy of Science and Letters**, on behalf of the **Norwegian government**.
5. **Recipients are chosen by** an expert committee appointed by the Academy, with advice from the **International Mathematical Union (IMU)** and the **European Mathematical Society (EMS)**.
6. Often regarded as the **Nobel Prize of Mathematics**, the Abel Prize was first awarded in 2003, as the Nobel Prizes do not have a category for mathematics.
7. The award includes a **monetary prize** of **7.5 million kroner** (approximately **$720,000**) and a **glass plaque** designed by Norwegian artist **Henrik Haugan**.

Abel Prize 2025 Recipient:

1. **Awarded To**: **Masaki Kashiwara**, for his **fundamental contributions** to algebraic analysis and representation theory.
2. **Key Contributions**:
   a. Kashiwara's development of the **theory of D-modules** and his discovery of **crystal bases**.
   b. His work simplified complex mathematical problems, turning intricate calculations into manageable graphs with vertices and edges.
   c. His research has solved longstanding mathematical challenges and has opened up new research avenues by connecting previously unrelated mathematical areas.

10. SwaYaan Initiative & NIDAR

1. In a bid to enhance India's capabilities in Unmanned Aircraft Systems (UAS), the **Ministry of Electronics and Information Technology (MeitY)**, in collaboration with the **Drone Federation of India (DFI)**, has launched the **National Innovation Challenge for Drone Applications and Research (NIDAR)** under the **SwaYaan** initiative.
2. This initiative aims to build human resource (HR) capacity in the field of unmanned aircraft systems, including drones, to address real-world challenges.

What is an Unmanned Aircraft System (UAS)?

1. An **Unmanned Aircraft System (UAS)**, commonly referred to as a **drone**, is a type of aircraft that operates without a human pilot onboard.
2. Instead, drones are either **remotely piloted** or capable of flying autonomously.
3. UAS is often used for various applications in sectors such as disaster management, agriculture, and surveillance.

About the SwaYaan Initiative

1. **Approved by MeitY**: July 2022.
2. **Purpose**: The initiative aims to develop human resources in the field of UAS, including drone technology and associated domains.
3. **Target**: To train **42,560 participants** through both formal and non-formal training programs.
4. **Implementation Model**: A **Hub-and-Spoke Model**, involving **30 premium institutions** like IISc, IITs, IIITs, NITs, CDAC, and NIELIT.
5. **Key Themes**: Drone Electronics, GNC (Guidance, Navigation, and Control) Algorithms Simulation, Aeromechanics, Drone Applications and Allied UAS Technologies.

Achievements of SwaYaan

1. **Over 14,000 beneficiaries** trained.
2. Launch of an **M.Tech in UAS Engineering** at IIT Kanpur.
3. Numerous minor degree programs, bootcamps, and workshops conducted.
4. **Industry engagement** through innovation challenges and collaboration meets.

National Innovation Challenge for Drone Applications and Research (NIDAR)

1. **Launched by**: MeitY in collaboration with DFI as part of the SwaYaan initiative.
2. **Aim**: To encourage students and researchers to develop autonomous drones for real-world applications.
3. **Focus Domains**:
   a. **Disaster Management**: Drones for survivor identification, communication, and parcel delivery in disaster zones (Scout & Deliver Drones).
   b. **Precision Agriculture**: Drones for monitoring crop health and delivering pesticides or nutrients with precision (Scan & Spray Drones).

Applications of Drones and Related Policies in India

1. **SVAMITVA Scheme**: Utilizes drones for village mapping and land entitlement record creation.
2. **National Highway Authority of India (NHAI)**: Drones are used to monitor construction progress of new highways.
3. **Mining Sector**: Drones are mandated for surveying mines over 50 hectares or with annual excavations of 1 million tonnes.
4. **Ministry of Agriculture & Farmers Welfare**: Provides **INR 10 lakhs subsidy** for the purchase of agricultural drones and promotes **Kisan drones** through demonstrations by agricultural institutes.
5. **State Governments**:
   a. **Jharkhand**: Drones are used for forest fire monitoring and tracking wild tuskers.
   b. **Bihar**: Drones assist in detecting illegal liquor manufacturing.
6. **Defense**: The Indian Army uses drones for **surveillance** in high-altitude border areas.

Drone Regulations in India

1. **National Counter Rogue Drone Guidelines**: Released by the Ministry of Civil Aviation in 2019, these guidelines focus on assessing and mitigating drone-related threats.
2. **Drone Rules 2021**: These rules divide Indian airspace into three zones:
   a. **Green Zone**: Low-traffic areas where drones can fly with minimal restrictions.
   b. **Yellow Zone**: Areas requiring permission for drone operations.
   c. **Red Zone**: No-fly zones unless explicitly permitted by the central government.

Global Drone Applications

1. **Australia**: Drones are used to collect **whale mucus** from water sprays for health analysis.
2. **Ghana**: Drones delivered **over 1 million COVID-19 vaccines**.
3. **NASA**: The **Ingenuity drone** successfully flew on Mars, marking a milestone in extraterrestrial drone technology.
4. **Volcano Studies**: Drones are employed to study active **volcano craters** for recent activity analysis.

The **SwaYaan initiative**, with the launch of **NIDAR**, is poised to significantly advance India's drone technology sector. By fostering innovation, training a skilled workforce, and collaborating with educational and industrial partners, the initiative aims to address pressing challenges across sectors such as **disaster management** and **precision agriculture**. As India continues to embrace drone technology, it is also taking significant steps to regulate and ensure safe, effective use of drones in various domains, strengthening its position as a leader in unmanned aircraft systems.

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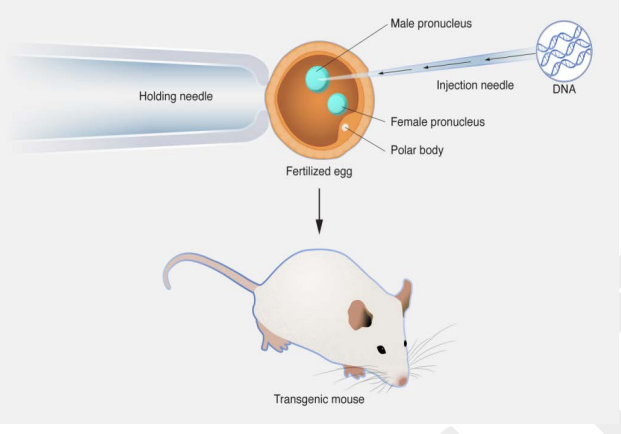
11. Transgender vs Transgenic Mice

1. A statement by U.S. President Donald Trump about spending on **"making mice transgender"** led to confusion, clarifying that the term intended was **"transgenic mice," not "transgender mice."**
2. This highlights an important concept in scientific research.

What is Transgenic

1. **Transgenic** refers to an organism or cell whose genetic material has been modified by introducing foreign DNA from another species.
2. This technique is mainly used in research, particularly in studying gene functions and diseases.



Clarification on Controversy

1. The confusion stemmed from a report by the White Coat Waste Project, which claimed funds were misused for transgender mice research.
2. However, the White House clarified that the funds were for research on gender-affirming care, which involved hormone-treated mice, not creating transgender mice.

Applications and Purpose of Transgenic Organisms

1. **Understanding Normal Physiological Processes**:
   - **Example**: Transgenic mice have been created to study metabolism and blood cell production, enhancing understanding of normal biological functions.
2. **Modeling Human Diseases**:
   - **Example**: Transgenic pigs are used to model human diseases like Alzheimer's disease for testing potential treatments.
3. **Developing New Treatments**:
   - **Example**: Transgenic zebrafish are used to accelerate drug testing and therapy development due to their fast growth and genetic similarity to humans.
4. **Production of Therapeutic Proteins**:
   - **Example**: Transgenic goats are genetically engineered to produce **human antithrombin**, a protein that helps in blood clotting disorders.
5. **Disease-Resistant Crops**:
   - **Example**: **Bt Cotton** is genetically modified to resist bollworms, offering a solution to crop protection and improving agricultural yields.

Challenges of Transgenic Organisms

1. **Ethical Concerns**:
   a. Related to **animal welfare**, including the well-being of genetically modified animals.
   b. Unintended consequences, such as genetic modifications affecting the natural balance in ecosystems.
2. **Environmental Risks**:
   a. Transgenic organisms might **disrupt ecosystems** or lead to unforeseen environmental impacts.

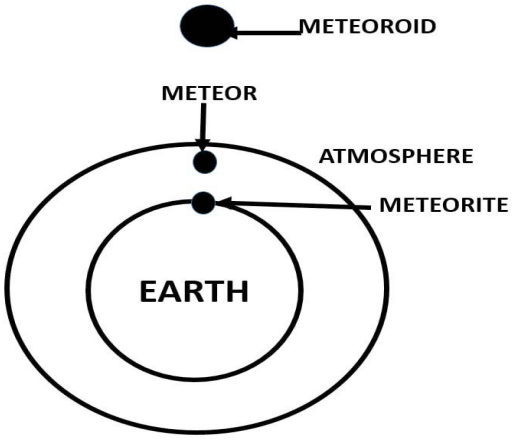
Regulation in India

1. **Rules**: The regulation of transgenic organisms in India falls under the **Environment (Protection) Act, 1986** and the **Rules, 1989**.
2. **Genetic Engineering Appraisal Committee (GEAC)**: This committee is responsible for evaluating and approving the release of genetically modified organisms (GMOs) into the environment.

12. Meteorites in Maharashtra

Scientists have officially confirmed the fall of a meteorite in **Beed district, Maharashtra**, offering a rare opportunity to study extraterrestrial material and deepening our understanding of the solar system's origins.

Understanding Meteoroid, Meteor & Meteorite



Stage	Term	Description
In Space	Meteoroid	A small rock or metallic body, typically a fragment of a planet, asteroid, or comet. Smaller than asteroids, with less water and ice than comets.
In Atmosphere	Meteor	A meteoroid entering Earth's atmosphere, glowing due to friction; popularly called a **'shooting star'**. Multiple meteors during a short span form **meteor shower**.
On Earth	Meteorite	1. A meteoroid that survives its atmospheric passage and lands on Earth's surface. Creates **impact craters** (e.g., **Lonar Lake, Maharashtra**). 2. **Types of Meteorites**: a. **Stony**, **Iron**, and **Stony-Iron** meteorites b. Typically exhibit a dark, burned exterior due to thermal ablation c. Often have a **thumbprint-like texture** on the surface

Do You Know?

1. Over **50,000 meteorites** have been found on Earth.
2. Of these, **99.8% originate from asteroids**. *(Source: NASA)*
3. *In India, the* **Geological Survey of India (GSI)** *is the custodian of all meteorite falls and finds.*

Significance of Studying Meteorites

1. **Understanding Celestial History**: Offers clues about the early solar system and planetary formation.
2. **Geological Composition**: Helps identify **mineral and geochemical composition** of planets.
3. **Origin of Life**: Some meteorites contain organic compounds, offering insights into prebiotic chemistry.

Global Meteor Observation Initiatives

Initiative	Description
NASA All Sky Fireball Network	A network of cameras to track meteors **brighter than Venus** (fireballs).
CMOR (Canadian Meteor Orbit Radar)	Radar-based system to detect **speed, direction, and location** of meteoroids.

13. Genetically-Engineered Non-Browning Bananas

1. Brown, overripe bananas often go to waste despite being edible.
2. Scientists have developed a **genetically-engineered banana** with a **longer shelf life**.
3. Developed by **Tropic**, a UK-based biotech company.

Why Do Bananas Turn Brown?

1. Bananas ripen due to the hormone **Ethylene**.
2. They produce ethylene even **after being harvested**.
3. Ethylene triggers **polyphenol oxidase (PPO),** an enzyme that causes browning.
4. Contact with oxygen breaks down yellow pigment into a **brown hue**.
5. Bruising increases ethylene production, speeding up browning.

How Was the Non-Browning Banana Produced?

1. Scientists **disabled PPO production** in bananas.
2. Scientists disabled the polyphenol oxidase (PPO) gene in bananas using a technique called gene silencing.

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3. They used a method called RNA interference (RNAi), which is like a "mute button" for specific genes.
4. This technique introduces small pieces of RNA that block the PPO gene from making its enzyme.
5. This does **not stop ripening** but prevents browning.
6. Similar technology was used in **Arctic apples** (approved in the US in 2017).
7. Also tested in **tomatoes, melons, kiwifruits, and mushrooms**.

Features of the Non-Browning Banana

1. **Longer shelf life** – remains fresh and yellow for **12 hours** after peeling.
2. Less browning from **bumps and bruises** during transport.
3. Reduces food waste and enhances **consumer appeal**.

Why Does This Matter?

1. **Bananas are highly perishable** – up to **50% of the crop** is wasted annually.
2. **UK (2017 survey):** 1.4 million edible bananas are discarded **every day**.
3. **Food waste is major contributor to greenhouse gas (GHG) emissions**.
4. Genetically-modified bananas can help **reduce CO2 emissions**.

Environmental & Economic Impact

1. **Less food waste** means that there will **be fewer emissions from landfills.**
2. Reduction in food waste from perishable banana is **equivalent to removing 2 million passenger cars annually**.
3. Economic benefits: **Lower waste, more efficient supply chains, and higher profits for farmers**.

Food Waste Crisis in India

1. **India generates 78.2 million tonnes of food waste annually** (Food Waste Index Report 2024).
2. **55 kg of food waste per capita per year** in households.
3. **This is enough to feed 377 million people**.
4. Preventing food waste can meet **26.5% of the annual staple food requirement** (207.5 kg per capita).
5. **Food waste contributes 8-10% of global greenhouse gas (GHG) emissions.**
6. **It contributes to methane emission** , a highly potent greenhouse gas, accelerating climate change.

India's Post-Harvest Losses

1. **India loses ₹1.5 lakh crore annually** due to post-harvest inefficiencies.
2. Data sourced from the **Union Ministry of Food Processing Industries (MoFPI).**
3. Major causes: **poor storage, transport, inefficient supply chains, and handling practices.**

Breakdown of Losses (Sector-Wise)

1. **Cereals (Rice, Wheat, Maize):** ₹26,000 crore
2. **Pulses & Oilseeds:** ₹18,000 crore
3. **Fruits & Vegetables:** ₹57,000 crore
4. **Onion Losses:** ₹5,156 crore
5. **Tomato Losses:** ₹5,921 crore
6. **Banana, Mango, Citrus Fruits Losses:** ₹5,777 cr, ₹10,581 cr, ₹4,347 cr respectively

Post-Harvest Losses – Key Causes

1. **Storage Challenges:** Lack of cold storage & warehouses
2. **Transport Issues:** 5-10% loss during transportation (NABCONS study)
3. **Supply Chain Inefficiencies:** Middlemen, lack of farm-to-market infrastructure
4. **Inadequate Processing Units:** Low value addition and poor handling

Government Initiatives to Reduce Losses

1. **Pradhan Mantri Kisan Sampada Yojana (PMKSY)**
   a. Supports **food processing, storage, and cold chains**
   b. Development of **mega food parks, agro-processing clusters**
   c. **1,187 projects approved** under this scheme
2. **Agriculture Infrastructure Fund (AIF)**
   - **Launched:** July 2020 (Atmanirbhar Bharat Initiative) it provides financing for :-
     a. **Cold storage facilities**
     b. **Warehouses**
     c. **Processing units**

Solutions to Food Wastage

1. Enhancing Storage and Cold Chain Infrastructure
2. Improving Food Supply Chain Efficiency
3. Food Processing & Value Addition
4. Consumer Awareness & Behavioral Changes
5. Better Understanding of Expiry Dates
6. Strengthening Government Policies & Regulations
7. Promoting Sustainable Agricultural Practices
8. Encouraging Community-Led Initiatives & Food Banks

Technologies for food waste reduction

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Scientific Method	How It Works	Impact on Food Waste Reduction
Genetic Modification (GM) & CRISPR Gene Editing	Modifies genes to improve shelf life, delay ripening, and prevent enzymatic browning (e.g., non-browning bananas, Arctic apples).	Reduces waste by keeping food fresh longer, minimizing spoilage in storage and transit.
Food Irradiation	Uses ionizing radiation (gamma rays, X-rays, electron beams) to kill bacteria, fungi, and pests, extend shelf life, and delay ripening.	Prevents spoilage, reduces foodborne pathogens, extends storage life, and minimizes post-harvest losses.
Smart Packaging & Edible Coatings	Uses antimicrobial and moisture-resistant packaging, including plant-based edible coatings to slow down spoilage.	Prevents oxidation, dehydration, and microbial contamination, reducing food spoilage.
Precision Agriculture & AI-Based Crop Monitoring	Uses AI-driven satellite imaging, IoT sensors, and drones to optimize water, pesticide, and nutrient usage, reducing pre-harvest losses.	Prevents overproduction and minimizes waste by improving yield forecasting and farm productivity.
Cold Plasma Technology	Non-thermal technology that inactivates microbes and delays food spoilage by disrupting their cell membranes.	Reduces foodborne diseases, increases safety, and extends shelf life without chemical preservatives.
Fermentation & Bio-Preservation	Uses natural fermentation to extend food life (e.g., yogurt, kimchi) and antimicrobial peptides to prevent spoilage.	Improves food longevity naturally and reduces the need for artificial preservatives.
Nanotechnology in Food Preservation	Applies nano-coatings with antimicrobial properties to increase food freshness and enhance packaging efficiency.	Enhances food safety and reduces waste caused by microbial contamination and oxidation.
Bioconversion of Food Waste	Converts food waste into biofuels, fertilizers, and alternative protein sources through microbial and enzymatic processing.	Turns waste into valuable by-products, reducing landfill waste and greenhouse gas emissions.

Implementing **scientific methods** such as **genetic modification, food irradiation, smart packaging, and AI-driven agriculture** can significantly reduce food waste by extending shelf life, improving storage, and minimizing spoilage. By integrating these technologies into the food supply chain, we can **enhance food security, reduce environmental impact, and build a more sustainable global food system**.

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F. GEOGRAPHY & ENVIRONMENT

1. Global Forest Vision 2025

1. The **Global Forest Vision 2025** outlines a comprehensive plan to address the ongoing deforestation crisis, protect biodiversity, and align global trade policies with environmental sustainability goals.
2. The report was released by the **Forest Declaration Assessment**, with the support of the **United Nations Development Programme (UNDP)**, the **Climate Land Use Alliance**, and other global partners.
3. It aims to guide global actions towards halting deforestation and enhancing forest protection, with specific goals to be achieved before the **COP30 summit** in November 2025.

About FDA :

1. The Forest Declaration Assessment (FDA) was launched in 2015 as the New York Declaration on Forests (NYDF) Progress Assessment.
   - The NYDF, is a voluntary, non-binding declaration, was adopted in 2014 at the UN Climate Summit.
2. It sets 10 goals, including halting deforestation by 2030 and restoring 350 million hectares of degraded landscapes.
3. India is not yet a signatory to the NYDF.

Objectives of Global Forest Vision 2025

1. **Forest Loss Reversal:** Provide a roadmap for governments to reverse the ongoing loss of forests and ensure long-term sustainability.
2. **Biodiversity Protection:** Safeguard biodiversity by addressing the primary drivers of forest loss, which threaten numerous species.
3. **Alignment with Trade Policies:** Ensure that international trade policies align with environmental goals, particularly by curbing deforestation-linked trade.
4. **Timely Progress for COP30:** The report provides actionable guidance to ensure measurable progress towards the **2030 zero-deforestation target** before **COP30** in November 2025.

Key Findings and Concerns

1. **Deforestation Crisis (2023 Data):** Despite commitments from over 140 governments to halt deforestation, the global forest loss continues at an alarming rate. In 2023, **6.37 million hectares** of forests were lost worldwide.
2. **Main Drivers of Deforestation:** The primary drivers of deforestation are the increasing global demand for commodities such as **palm oil, soy, beef**, and **timber**. These commodities lead to large-scale deforestation, particularly in the **Amazon rainforest**, **Southeast Asia**, and **Africa**.
3. **Deforestation and Global Trade:** Deforestation-linked products continue to enter global markets due to **loopholes** in trade policies. While some economies, such as the European Union, are implementing measures to curb such imports, the enforcement of these policies remains a significant challenge.
4. **Amazon Deforestation:**
   - **80% of Amazon deforestation** is caused by **cattle ranching** to meet global beef demand.
   - Between 2017 and 2022, **over 800 million trees** were lost due to the Brazilian beef industry.
   - This loss has devastating effects on the habitat of endangered species such as **jaguars, otters**, and several rare tree species.
5. **Palm Oil Expansion:** The expansion of **palm oil plantations** in **Indonesia** and **Malaysia** has led to significant biodiversity loss. Species like the **orangutan** and **Sumatran tiger** are increasingly at risk of extinction due to habitat destruction caused by palm oil cultivation.

Global Actions and Challenges

1. **EU Deforestation Regulation (2026):** The European Union has passed a regulation that will come into effect in **2026**, banning the import of products linked to deforestation. Companies will be required to prove that their products do not contribute to deforestation.

2. **U.S. Measures:** The United States is tightening its trade rules to combat illegal logging and deforestation. However, enforcement challenges remain in regulating global supply chains.
3. **Challenges in China and India:** Both **China** and **India** have been slower to implement regulations that would prevent the import of deforestation-linked goods. This creates a significant gap in the global efforts to curb deforestation through trade policies.
4. **Small Farmers and Technological Barriers:** One of the key challenges highlighted is the difficulty small farmers face in proving that their products are deforestation-free. Many lack the necessary **technological infrastructure** and **financial resources** to certify their supply chains as sustainable.
5. **Economic Concerns in Deforestation Hotspots:** Countries like **Brazil**, **Indonesia**, and many African nations have raised concerns about the potential negative economic impact of stricter regulations on deforestation-linked products. These nations rely heavily on the export of commodities like beef, palm oil, and timber for economic growth.

Recommendations for Action

1. **Stronger Trade Policies and Enforcement:**
   a. Governments should close existing loopholes in international trade agreements that allow the continued trade of deforestation-linked products.
   b. Major economies, particularly **China** and **India**, should adopt **deforestation-free trade laws** to prevent the import of goods linked to illegal deforestation.
2. **Support for Small Farmers and Local Economies:**
   a. To promote deforestation-free supply chains, small farmers in developing countries must receive **financial assistance** and **technical support**.
   b. **Capacity-building programs** should be implemented to help farmers adopt sustainable agricultural practices and prove that their products are deforestation-free.
3. **Enhanced Global Cooperation and Monitoring:**
   a. There is a need for greater **international cooperation** to ensure effective enforcement of trade policies related to deforestation.
   b. Strengthening **monitoring systems** to track deforestation-linked products will be crucial in ensuring accountability and transparency in global supply chains.
4. **Unified Global Action:**
   a. The **Global Forest Vision 2025** calls for a unified global response to halt deforestation. This includes aligning economic, trade, and environmental policies to achieve sustainability goals and protect critical ecosystems.

Significance for India

1. India, as one of the world's largest economies and a significant consumer of commodities like palm oil and soy, has an essential role to play in the global fight against deforestation.
2. While India is not currently as advanced in implementing deforestation-free trade regulations as the European Union or the United States, the recommendations of the **Global Forest Vision 2025** offer a framework for India to enhance its trade policies and foster sustainable agricultural practices.
3. Moreover, India's role in global biodiversity preservation, given its rich forest resources, is critical in shaping future international environmental agreements.

India and Forests

Refer Current Affairs Total (CAT) Magazine November 2024, Page 75-77 for Comprehensive Coverage of India State of Forest Report (ISFR) 2023

2. 58th Tiger Reserve: Madhav National Park

1. **Madhav National Park** in **Madhya Pradesh (M.P.)** has been declared **India's 58th Tiger Reserve (TR)**.
2. It becomes the **9th Tiger Reserve from Madhya Pradesh**, reaffirming its position as the **"Tiger State" of India**.

9 Tiger Reserves in Madhya Pradesh: Bandhavgarh, Kanha, Panna, Pench, Satpura, Sanjay-Dubri, Ratapani, Veerangana Durgavati and **Madhav**

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About Madhav National Park

1. **Location**: **Shivpuri district**, in **Chambal region**, northern fringe of Central Highlands of India.
2. **Geography**: Part of the **Upper Vindhyan Hills**.
3. **Notified as National Park**: In **1958**.
4. **Important Water Bodies**:
   a. **Sakhya Sagar**
   b. **Madhav Sagar** (located in southern part of the park)

Flora	Fauna
1. Dominated by **Northern Tropical Dry Deciduous Forests** and **Dry Thorn Forests**. 2. Major tree species: **Kardhai** (*Anogeissus pendula*).	1. **Herbivores**: Nilgai, Chital, Chinkara, Chowsinga (Four-horned Antelope), Barking Deer. 2. **Carnivores**: Leopard, Jackal. 3. **Reptiles**: Marsh Crocodile, Python.

Process of Declaring a Tiger Reserve in India

Under **Section 38V of Wildlife (Protection) Act, 1972**:

1. **Proposal** submitted by **State Government**.
2. **In-principle approval** granted by **National Tiger Conservation Authority (NTCA)**.
3. **Detailed proposal** submitted for review.
4. **NTCA recommendation** to the state after scrutiny.
5. **State Government** formally **notifies the area** as a **Tiger Reserve**.

About the Tiger (*Panthera tigris*)

Habitat: Tropical forests, mangrove swamps (like Sundarbans), grasslands, evergreen forests, and woodlands.

Features

1. Largest of all Asian big cats.
2. Excellent **swimmers**; known to **drown prey** during hunting.
3. Depend on **sight and sound** (not smell) for hunting.
4. **Nocturnal**, **ambush predators**, generally **solitary**.

Conservation Status

1. **IUCN**: Endangered
2. **CITES**: Appendix I
3. **Wildlife Protection Act (WPA), 1972**: Schedule I

Refer Current Affairs Total (CAT) Magazine November 2024, Page 77-80 for Comprehensive Coverage of Procedure for Declaring a Tiger Reserve

3. Rushikonda regained its Blue Flag certification

1. **Rushikonda Beach (Andhra Pradesh)** has regained its **Blue Flag certification**, which was previously withdrawn due to poor maintenance.
2. The development reflects India's ongoing efforts to promote **clean, eco-friendly, and sustainable coastal tourism**.

What is Blue Flag Certification?

1. **Awarded By**: **Foundation for Environmental Education (FEE), Denmark**
2. **Type**: **International eco-label**
3. **Applicable To**: Beaches, marinas, and sustainable boating tourism operators

Objective

To promote environmental awareness, sustainability, and responsible coastal tourism by maintaining high standards of cleanliness, safety, environmental education, and water quality.

Blue Flag Criteria

To receive the Blue Flag tag, a site must meet **33 stringent criteria**, categorized into four major groups:

1. Environmental Education and Information
2. Water Quality
3. Environmental Management
4. Safety and Services

Background and Global Context

1. **Origin**: The Blue Flag programme started in **France**, later institutionalized in 1987 by the **Foundation for Environmental Education in Europe (FEEE)**.
2. **Expansion**: In 2001, the programme opened to **non-European countries**. **South Africa** was the first to join outside Europe.
3. **Headquarters**: Copenhagen, Denmark
4. **Global Reach**:
   a. Present in over **50 countries**
   b. Over **4,000 beaches, marinas, and boats** certified globally
   c. **Spain** holds the highest number of Blue Flag sites

International Jury Members

1. **U**NEP (United Nations Environment Programme)
2. UNWTO (World Tourism Organization)
3. FEE (Foundation for Environmental Education)
4. IUCN (International Union for Conservation of Nature)

India and the Blue Flag Initiative

1. **Total Blue Flag** Beaches in India (as of 2025): 12
2. **First Blue Flag** Beach in India: Chandrabhaga Beach, Odisha (also Asia's first Blue Flag certified beach)
3. **Government Initiative**:
    a. **BEAMS (Beach Environment and Aesthetics Management Services)** launched under the **Integrated Coastal Zone Management (ICZM)** Project in **2018**
    b. Aims to increase Blue Flag beaches to **100 in the next 5 years**

4. AMC: India's first Urban Local Body with Climate Chapter in Budget

Ahmedabad Municipal Corporation (AMC) has become the **1st Urban Local Body (ULB)** in India to include a **separate chapter on climate** in its annual budget.

What is Climate Budgeting?

Climate Budgeting is a financial planning approach that integrates climate action into government budgets. It ensures that public funds are allocated to address climate change mitigation and adaptation.

Significance of Climate Budgeting for Urban Local Bodies

1. Supports Climate-Resilient Development
2. Reduces Urban Emissions
3. Aligns Local Action with National & Global Goals
4. Estimates Climate Finance Gaps
5. **Enables Mobilisation of Climate Finance** via innovative models

Climate Budgeting in Indian Cities:

Apart from **AMC**, the **Brihanmumbai Municipal Corporation (BMC)** has also engaged in **climate budgeting**:

1. In **June 2024**, BMC published its inaugural **Climate Budget Report** for **FY 2024-25**.
2. It allocated **₹10,224.24 crore**, accounting for **32.18%** of its total **capital expenditure budget**, to **climate-related initiatives**.

The budget primarily focuses on urban flood management, water resource conservation, and waste management.

Global Examples of Climate Budgeting

1. **Oslo, Norway:**
    a. Pioneered climate budgeting in 2017 as a tool to systematically track and reduce carbon emissions.
    b. Sets annual emission reduction targets alongside financial allocations.
    E.g., *Oslo's budget funds electric public transport, low-emission construction sites, and urban green spaces to reach net-zero by 2030.*
2. **New York City, USA:**
    a. Introduced climate budgeting in 2021, integrating sustainability into financial planning.
    b. Focuses on climate resilience, renewable energy, and emissions reduction.
    E.g., *NYC's $4 billion Green Bond program funds clean energy, flood protection, and energy-efficient public housing.*
3. **London, UK:**
    a. London's climate budget aligns with its goal of becoming a net-zero city by 2030.
    b. Invests in clean transport, energy efficiency, and climate adaptation projects.
    E.g., *the Ultra-Low Emission Zone (ULEZ) policy is funded through climate budgeting to reduce vehicle emissions.*

What other roles are played by local bodies India to promote climate action?

1. **Localised Climate Strategies:** Climate impacts vary based on geography and socio-economic conditions, making local interventions more effective.
    - ***E.g.,*** *Chennai Corporation launched a flood-resilient urban planning initiative after the severe 2021 floods.*

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2. **Disaster Preparedness & Response:** Local bodies act as first responders to extreme weather events like heatwaves, cyclones, and droughts.
   - ***E.g.,*** *Odisha's Panchayati Raj institutions played a crucial role in the Cyclone Fani evacuation (2019), which helped in minimising casualties.*
3. **Sustainable Urban Planning:** Municipal bodies integrate climate resilience into infrastructure and zoning regulations.
   - ***E.g.,*** *Surat Municipal Corporation implemented climate-proofing for housing in flood-prone areas.*
4. **Promotion of Green Energy & Mobility:** Cities encourage renewable energy adoption and eco-friendly transport solutions.
   - ***E.g.,*** *Delhi's EV policy promotes electric buses and charging infrastructure to reduce emissions.*
5. **Use of Indigenous Knowledge for Adaptation:** Local governance leverages traditional climate-resilient practices.
   - ***E.g.,*** *Zabo farming in Nagaland conserves water and enhances soil fertility in hilly terrain.*

Enhancing Climate Action Among Local Bodies:

1. **Strengthen Climate Finance Mechanisms:** Local bodies need dedicated funds for climate resilience and mitigation.
   - *E.g., In the USA, New York City's Green Bond Program raises funds for sustainable infrastructure projects.*
2. **Integrate Climate Action into Urban Planning:** Climate considerations should be embedded in zoning laws, building codes, and transportation plans.
   - *E.g., Amsterdam mandates climate-resilient infrastructure, including flood-proof buildings and water-absorbing pavements.*
3. **Capacity Building & Data-Driven Policies:** Training officials and using data analytics can improve climate responses.
   - *E.g., London's Climate Action Plan uses AI to predict urban heat islands and guide tree-planting efforts.*
4. **Community Participation & Local Innovation:** Engaging citizens and leveraging local solutions enhances effectiveness.
   - *E.g., Tokyo's "Green Curtain" initiative encourages residents to grow vertical gardens, reducing urban heat.*
5. **Public-Private Partnerships (PPP) for Sustainability:** Collaboration with industries and NGOs can accelerate climate projects.
   - *E.g., Stockholm's PPP-led smart grid project integrates renewable energy into the city's power supply.*

5. India's First-Ever Comprehensive River Dolphin Survey

1. India's first-ever comprehensive river dolphin survey has estimated a total population of **6,327 dolphins**, mainly found in the RIVER DOLPHINS **Ganga, Brahmaputra, and Indus River basins**.
2. The survey was conducted by the **Wildlife Institute of India (WII)** under **Project Dolphin (2020)**.
3. The findings are published in a report titled **'Population Status of River Dolphins in India – 2024'**.

Key Findings of the 2024 Report

1. The **Ganges River dolphin population** declined from an estimated **4,000–5,000** in the late 20th century to around **1,800 individuals**.
2. As of 2024, the **total river dolphin population** is **6,327**, comprising:
   - **Gangetic River Dolphins**: 6,324
   - **Indus River Dolphins**: 3
3. **Uttar Pradesh** has the highest population, followed by Bihar, West Bengal, Assam, Jharkhand, Madhya Pradesh, and Rajasthan. **Punjab** has the lowest, with only three dolphins in the Beas River.
4. The **Indus River Dolphin**, found only in the **Beas River** in India, has very low numbers and needs urgent protection.
5. The report identifies river dolphins as **umbrella species**; conserving them protects entire river ecosystems.

Facts About Gangetic River Dolphins

1. **Location**: Found in the Ganga, Brahmaputra, Meghna, and Karnaphuli-Sangu river systems in **India and Bangladesh**, with smaller populations in **Nepal**.

2. **India hosts 90%** of the global population.
3. **National Aquatic Animal of India**.
4. Known locally as **"Susu"**, based on the sound they make while breathing.
5. Called the **"Tiger of the Ganges"** due to their role as apex predators in river ecosystems.
6. **Protection Status**:
   - **IUCN**: Endangered
   - **Wildlife Protection Act, 1972**: Schedule I
   - **CITES**: Appendix I
7. Considered an **indicator species**, meaning their presence reflects the health of the river ecosystem.
8. Mostly **solitary**, though small groups are seen near tributary junctions.
9. **Blind**, they use **echolocation** for navigation and hunting.
10. **Color**: Grey or light brown with a possible pinkish belly.

Key Facts About Indus River Dolphins

1. Declared as **Punjab's State Aquatic Animal** in 2019.
2. Found in **Pakistan's Indus River system** and a small population in **Beas River**, Punjab.
3. Also **blind**, they use echolocation.
4. Locally called **"Bhulan"**.
5. **IUCN Status**: Endangered
6. As per the **Wildlife Protection (Amendment) Act, 2022**, the **Ganges and Indus river dolphins are two distinct species**, based on genetic and physical differences.

Threats to River Dolphins

1. **Bycatch and Intentional Killing**: Dolphins often get trapped in fishing nets or are hunted for meat and bait.
2. **Water Infrastructure**: Dams and barrages disrupt migration and divide populations, reducing genetic diversity.
   - **Example:** The **Farakka Barrage** obstructs dolphin movement in the Ganga.
3. **Water Pollution**: Industrial, agricultural, and human waste degrades river water.
   - Around **2 billion litres** of untreated sewage enters the Ganga daily.
4. **Human Activities**: Boat traffic, dredging, and noise pollution disturb dolphin behaviour.
5. **Climate Change**: Increased salinity due to rising sea levels is making river habitats unsuitable.
   - **Example**: **Sundarbans** delta is losing freshwater dolphins due to saltwater intrusion.

Indian Initiatives for River Dolphin Conservation

1. **Comprehensive Action Plan (2022–2047)**: Prepared by the Ministry of Environment, focusing on habitat conservation and dolphin protection.
2. **Development of Wildlife Habitat Scheme**: Includes Gangetic dolphin among 22 critically endangered species for financial aid.
3. **Protected Areas**:
   - Example: **Vikramshila Gangetic Dolphin Sanctuary**, Bihar.
4. **Chambal River Dolphin Conservation Zone**:
   - A 200-km stretch across Madhya Pradesh, Rajasthan, and Uttar Pradesh.
5. **National Dolphin Day**: Observed on **October 5th** to raise awareness.
6. **Guidelines for States**:
   - States asked to align with **International Whaling Commission** norms and appoint **Dolphin and Whaling Commissioners**.
7. **National Dolphin Research Centre (NDRC)**:
   - India's first, opened in **Patna, Bihar**, for focused research.
8. **Satellite Tagging**:
   - In 2024, India successfully **satellite-tagged** its first **Ganges River Dolphin** in **Assam**.

About Wildlife Institute of India (WII)

1. Established in **1982**, under the **Ministry of Environment, Forest and Climate Change**.
2. Located in **Dehradun, Uttarakhand**, adjacent to **Rajaji National Park**.
3. Provides **training, research, and advisory services** in wildlife conservation.
4. Key objectives include:
   a. Generating scientific knowledge on wildlife.
   b. Training personnel in wildlife management.
   c. Conducting research for policy and field implementation.
   d. Advising on wildlife-related challenges.

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e. Collaborating internationally on conservation efforts.
f. Developing into a regional hub for wildlife science.

5. Focus areas include **endangered species**, **biodiversity**, **forensics**, **eco-development**, **spatial modelling**, and **climate change**.

6. 7th Meeting of National Board For Wildlife (NBWL)

1. The Prime Minister of India chaired the **7th meeting of the National Board for Wildlife (NBWL)** at Gir National Park in Gujarat.
2. This was the first full-body meeting of the NBWL in over a decade.
   - The previous meeting was held in 2012, and the first one was held in 2003.

Key Highlights of the Meeting

1. The Prime Minister released the **first-ever riverine dolphin population report**, which estimated **6,327 dolphins**.
2. He also announced the start of the **16th lion population estimation** cycle, to be held in 2025. The last cycle was conducted in 2020.

About the National Board for Wildlife (NBWL)

The NBWL is a **statutory body** formed in **2003** after an amendment to the **Wildlife (Protection) Act, 1972** in 2002.

Origin :

Before NBWL, the **Indian Board for Wildlife (IBWL)** was created in 1952 as an advisory body.

1. Its first chairman was **Sri Jayachamaraja Wadiyar**, the Maharaja of Mysore.
2. IBWL played a key role in establishing the **Wildlife Protection Act, 1972**, the creation of **Gir National Park**, and declaring the **tiger as the national animal**.

Composition of NBWL

1. **Chairperson:** Prime Minister of India
2. **Vice-Chairperson:** Union Minister for Environment, Forest and Climate Change
3. **Member Secretary:** Additional Director General of Forests (Wildlife) and Director of Wildlife Preservation
4. **Other Members:**
   - Five representatives from non-governmental organisations, nominated by the Central Government
   - Ten experts from fields like wildlife conservation and ecology, nominated by the Central Government

Standing Committee

The NBWL has a **Standing Committee** that carries out delegated functions.

1. **Chairperson of Standing Committee:** Minister of Environment, Forest and Climate Change

Functions of NBWL

1. To promote the conservation and development of wildlife and forests.
2. To advise the Central and State Governments on conservation strategies and to control poaching and illegal wildlife trade.
3. To recommend the creation and management of **protected areas** like national parks and wildlife sanctuaries.
4. To assess the impact of developmental projects on wildlife and its habitat.

Concerns Related to NBWL

1. **Approval of Projects in Sensitive Areas:** The NBWL has approved projects that affect critical wildlife habitats. For example, the **Ken-Betwa river linking project**, which includes the construction of the Daudhan Dam, was approved despite the submergence of nearly **100 sq km of Panna Tiger Reserve**.
2. **Risk to Endangered Species:** Oil exploration was permitted in the **Hollongapar Gibbon Sanctuary** in Assam, which is the only habitat of India's only ape, the **Hoolock Gibbon**.
3. **Reduced Role of Experts:** Since 2014, the Standing Committee has held over 50 meetings without ensuring the required number of independent conservationists and NGO representatives.
4. **Ignoring Local Communities:** Local opposition was overlooked while clearing a **coal mining project in Hasdeo Arand forest** in Chhattisgarh, an important elephant habitat.

5. **Poor Monitoring After Project Approval:** In the last five years, NBWL cleared **718 project proposals** in wildlife areas. However, compliance certificates from states are often missing. This was highlighted in the **77th Standing Committee meeting in February 2024**.

Way Forward

1. **Ensure Expert Involvement:** The NBWL and its Standing Committee must include qualified wildlife scientists, environmentalists, and NGOs. Regular meetings with wider participation can help restore credibility.
2. **Improve Monitoring After Approvals:** User agencies should submit yearly reports on compliance. State Chief Wildlife Wardens must also submit annual certificates to the government.
3. **Involve Local Communities:** Make it mandatory to obtain **Free, Prior, and Informed Consent (FPIC)** from tribal and forest-dependent communities before project clearances.
4. **Balance Development and Conservation:** The NBWL should encourage alternatives such as rerouting roads, using tunnels, or promoting renewable energy instead of large dams or open mines.

Example: **Realignment of NH-7** in Pench Tiger Reserve using overpasses helped maintain tiger corridors.

5. **Use Scientific Tools:** The NBWL should rely on **wildlife movement data, satellite imagery, and AI-based models** to predict and reduce environmental impacts before giving clearances.

7. India became 3rd largest Biofuel Producer

India has recently become the **third-largest biofuel producer in the world**, after the United States and Brazil.

What are Biofuels?

1. Biofuels are fuels made from renewable sources such as plant materials, agricultural waste, and animal waste.
2. They are used either as a substitute for or blended with petrol, diesel, and other fossil fuels for transportation and other energy needs.

Types of Biofuels (Based on Generation):

1. **First-Generation Biofuels:** Made from food crops like sugarcane, corn, and vegetable oils. Example: Ethanol from sugarcane.
2. **Second-Generation Biofuels:** Made from non-food materials such as agricultural and forest waste. Example: 2G ethanol from paddy straw.
3. **Third-Generation Biofuels:** Produced from algae, which have high oil content and can grow in wastewater
4. **Fourth-Generation Biofuels:** Produced using advanced techniques including genetically modified plants and carbon capture technologies.

Main Types of Biofuels in Use:

1. **Ethanol:** Blended with petrol to reduce fossil fuel usage.
2. **Biodiesel:** Blended with diesel and used in vehicles.
3. **Compressed Biogas (CBG):** Used as a clean fuel for vehicles and households.
4. **Sustainable Aviation Fuel (SAF):** A cleaner alternative to regular jet fuel.
5. **Renewable Methanol:** Used in the chemical and fuel industries.

Significance of Biofuels for India

1. **Environmental Benefits:** Biofuels can reduce greenhouse gas emissions by up to 80% when compared to conventional fuels. They also help reduce stubble burning by using crop residues for fuel production. For example, Asia's first 2G ethanol plant in Haryana uses agricultural waste.
2. **Energy Security:** Biofuels reduce the need for oil imports and protect the country from global fuel price fluctuations. Between 2014 and 2024, ethanol blending saved India over ₹1.13 lakh crore in foreign exchange.
3. **Waste Management:** Biofuels help convert waste, such as municipal solid waste and animal dung, into useful energy. This supports a circular economy.
4. **Support for Farmers:** Farmers can earn extra income by selling agricultural waste or growing crops used for biofuel production. This strengthens the rural economy.

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5. **Industrial Applications:** By-products from biofuel production, such as crude glycerin, can be used in the chemical and pharmaceutical industries. Renewable methanol can be used to make plastics and other fuels.

Challenges in Biofuel Production and Use

1. **Raw Material Shortage:** The materials used to produce biofuels, such as forest and agricultural waste, are also needed by other industries like paper manufacturing. Additionally, the availability of these materials is seasonal and varies across regions.
2. **Infrastructure Problems:** There is a lack of proper storage, sorting, and processing facilities, especially in rural areas.
3. **Food vs. Fuel Conflict:** Using food crops like sugarcane for fuel production may impact food availability and prices, raising concerns about food security.
4. **High Investment Needs:** According to the International Energy Agency, India needs to invest between USD 100 to 270 billion in biofuel technologies by 2030 to meet its energy goals.
5. **High Cost of Alternatives:** Biofuels such as Sustainable Aviation Fuel (SAF) are still 2 to 10 times more expensive than regular fuels, which makes them less attractive for widespread use.
6. **Lower Energy Output:** Biofuels provide less energy than traditional fossil fuels. For example, diesel provides about 46 megajoules per kilogram, while biodiesel provides only 38 megajoules.

Government Initiatives to Promote Biofuels

1. **National Policy on Biofuels (2018, Revised 2022):** The policy widened the list of materials that can be used for biofuel production, including sugarcane juice, damaged food grains, and agricultural waste. It also promotes second-generation biofuels through financial and policy support.
2. **Ethanol Blending Programme (EBP):** As of January 2025, India has reached 19.6% ethanol blending in petrol and is expected to meet the 20% target by 2025, ahead of the original target year of 2030.
3. **Pradhan Mantri JI-VAN Yojana (2019):** This scheme supports advanced biofuel production, especially second-generation ethanol.
4. **GOBAR-Dhan Scheme:** This initiative promotes the use of animal and agricultural waste to produce biogas and compressed biogas (CBG).
5. **SATAT Initiative (2018):** SATAT aims to use agricultural and organic waste to produce CBG and organic manure, providing income for rural households.
6. **Global Biofuels Alliance (2023):** India launched this global initiative to promote international cooperation in biofuel development and technology sharing.
7. **India-Brazil Ethanol Cooperation:** India and Brazil have launched a Centre of Excellence on Ethanol to improve ethanol production through joint research and technology sharing.
8. **Other Measures:**
   a. The government has reduced the GST on biodiesel from 12% to 5% to encourage its use.
   b. Introduction of new fuel types such as E20 (20% ethanol blend) and ETHANOL 100 (pure ethanol fuel).

Conclusion

India's progress in becoming a major biofuel producer reflects its commitment to clean energy and energy independence. Biofuels offer multiple benefits, including lower pollution, reduced oil imports, and improved income for farmers. However, the sector still faces challenges such as high costs, limited raw materials, and lower energy output. To make biofuels more sustainable and efficient, India must invest in research, expand infrastructure, and strengthen international partnerships.

8. India's 2nd Gene Bank

1. In March 2025, the Government of India has announced the creation of the **2nd National Gene Bank.**
2. This bank will store **10 lakh crop germplasm** to protect food and nutritional security in the future.
3. It is part of the **Union Budget 2025–26** under the theme **"Investing in Innovations."**

What is a Gene Bank

1. A Gene Bank is a place where seeds, pollen, and plant tissues are stored to protect them from being lost.
2. These samples are used for crop improvement, research, and conserving biodiversity.

3. Gene banks help maintain genetic diversity, which is important for dealing with climate change and ensuring food security.

India's First National Gene Bank

1. It was established in 1996 by the Indian Council of Agricultural Research - National Bureau of Plant Genetic Resources (ICAR-NBPGR) in New Delhi.
2. It is the **2nd largest Gene Bank** in the world after the Svalbard Global Seed Vault in **Norway.**
3. It currently stores 4,71,561 samples from 2,157 plant species.
4. These resources are used by scientists, farmers, and companies for breeding and improving crops.

Other Gene Banks in India :

1. **Animal Gene Bank:** ICAR-National Bureau of Animal Genetic Resources (NBAGR), Haryana.
2. **Microbial Gene Bank:** ICAR-National Bureau of Agriculturally Important Microorganisms (NBAIM), Uttar Pradesh.

About National Gene Fund

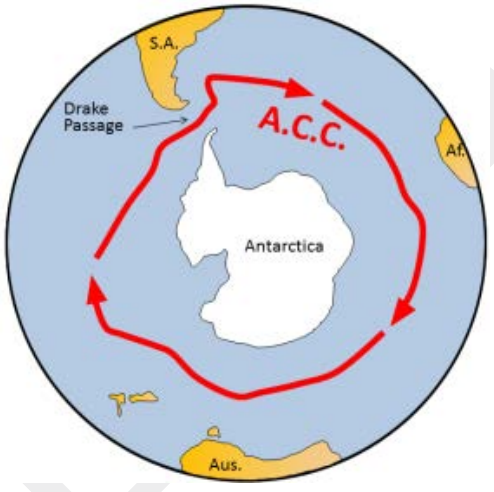
1. The fund was created under Section 45 of the Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001.
2. The fund ensures fair sharing of benefits gained from using plant genetic materials.
3. It supports the conservation of crops and promotes eco-friendly farming.
4. It also gives financial rewards to farmers and institutions that help protect plant biodiversity.

About National Bureau of Plant Genetic Resources (NBPGR)

1. It is the top institute under ICAR responsible for preserving plant genetic resources.
2. Its work includes collecting, studying, and using seeds and plant samples for sustainable farming.
3. Its main office is located in New Delhi.

9. Earth's Strongest Ocean Current Could Slow Down by 20% by 2050

1. The **Antarctic Circumpolar Current (ACC),** the **world's strongest ocean current**, is undergoing a significant slowdown due to the accelerating impacts of climate change.
2. Researchers from the **University of Melbourne** have revealed a troubling forecast: under a high carbon emissions scenario, the **ACC could slow by as much as 20% by 2050.**
3. This change could have severe and far-reaching consequences for global climate patterns, **oceanic heat distribution**, and the **fragile ecosystems of Antarctica** itself.



What are Ocean Currents?

Ocean currents are large-scale, continuous movements of seawater that flow through the world's oceans. These currents play a vital role in shaping Earth's climate, distributing nutrients, and supporting marine life. They are driven by several natural forces and can occur at the surface of the ocean or deep below.

The Role of the Antarctic Circumpolar Current

1. The **ACC flows clockwise** around Antarctica, connecting the **Atlantic**, **Pacific**, and **Indian Oceans**.
2. It is a critical component of Earth's climate system, regulating the ocean's capacity to absorb heat and carbon dioxide while preventing warm ocean waters from reaching Antarctica.
3. The current is **not just an oceanic force** but a barrier that **shields Antarctica's ice sheets** from warming waters, thereby preventing further melting and contributing to global sea level rise.
4. Unlike more well-known currents such as the **Gulf Stream**, the **ACC is less understood due to its remote location** and the challenges involved in collecting direct data from this vast, isolated region.

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5. However, its influence on global climate cannot be overstated, as it plays a central role in the global ocean **"conveyor belt,"** transporting water, nutrients, and heat around the world.

The Current Crisis: Climate Change and Ice Melt

1. A recent study published in ***Environmental Research Letters*** has shown that the **ACC is slowing down**, primarily **due to the release of** fresh, cold meltwater from the rapidly melting Antarctic ice shelves.
2. As these ice sheets disintegrate, vast quantities of fresh water are being dumped into the Southern Ocean.
3. This influx of low-salinity water is altering the density structure of the ocean, which, in turn, is weakening the forces that drive the current.
4. The ACC relies on a delicate balance of **temperature**, **salinity,** and **wind patterns** to maintain its strength. When the salinity of the ocean decreases due to the melting ice, the density of the water changes, disrupting the current's flow.
5. This shift could reduce the ACC's strength by as much as 20% by 2050, accelerating ice sheet melt and contributing to a feedback loop of warming and ice loss.

Consequences for the Global Climate

1. The consequences of a weakened ACC extend beyond the Southern Ocean. The current plays an essential role in regulating the Earth's climate by controlling how heat and carbon are absorbed by the ocean.
2. A slower **ACC would reduce the ocean's capacity to absorb excess carbon dioxide**, which would intensify global warming. Additionally, the disruption of the ACC could lead to more extreme weather patterns and climate variability in various regions around the globe.
3. As the current weakens, it may allow warmer waters to reach Antarctica, further destabilizing ice shelves and accelerating ice melt.
4. This will contribute to rising sea levels, which could displace millions of people worldwide and alter ecosystems across the globe.
5. The feedback loop of melting ice and weakened ocean currents could create a vicious cycle, wherein more warm water reaches Antarctica, causing more ice to melt, which further slows the current.

Ecological Threats: The Invasion of Foreign Species

1. The slowing of the ACC also threatens Antarctica's delicate ecosystems. The **current acts as a barrier**, **preventing invasive species** such as southern bull kelp, shrimp, and mollusks from reaching the continent.
    - These species, which thrive in warmer waters, could disrupt the Antarctic food web if they are able to cross the barrier.
    - Penguins, seals, and other native species that depend on the unique environment of Antarctica could face competition for food, and the ecosystem could suffer from this intrusion of non-native organisms.
2. The potential for invasive species to establish themselves in Antarctica highlights the fragility of the continent's ecosystems and the interconnectedness of global ocean currents and biodiversity.
3. As the ACC weakens, these invasions could become more likely, creating an additional stressor for the region's already vulnerable wildlife.

The Science Behind the Findings

1. Using **Australia's fastest supercomputer, GADI**, located at Access National Research Infrastructure in Canberra, the researchers used advanced climate simulations to project the impact of warming temperatures, melting ice, and changing wind patterns on the ACC.
2. These simulations revealed that the fresh meltwater from Antarctic ice shelves would flow north, altering the density structure of the Southern Ocean and leading to a slowdown of the ACC.

Moving Forward: The Need for Action

Require immediate and coordinated global efforts to limit greenhouse gas emissions. International collaboration and long-term monitoring of the Southern Ocean will be essential to understanding and mitigating the impacts of a changing ACC. The urgency of reducing emissions cannot be overstated, as doing so could help preserve the stability of the ACC, protect global ecosystems, and prevent further disruption to the climate system.

The slowing of the Antarctic Circumpolar Current represents a critical turning point for the Earth's climate system. If left unchecked, it could lead to accelerated global warming, rising sea levels, and ecological disruptions. However, by taking immediate action to reduce emissions and protect our oceans, there is still hope that we can mitigate these consequences and preserve the stability of the ACC for future generations. The time to act is now, before the feedback loops of climate change become irreversible.

India in Antarctica

1. India first sent scientists to Antarctica in **1981**.
2. **Key Organizations**: The **Antarctic Scientific Division** and the **Antarctic Logistics Division** manage India's Antarctic Program.
3. **Scientific Contributions**: Indian research in Antarctica covers:
   a. **Climate Change** (sea-level rise, aerosol properties, ozone concentrations).
   b. **Sea Ice Variability** and **Antarctic Haze**.
   c. **Glaciology**, **Earth Sciences**, **Biological and Environmental Sciences**.
4. **Research Support**: The **ESSO-NCPOR (National Centre for Polar and Ocean Research)** coordinates India's Antarctic research.

India's Plans for New Research Station in Antarctica

1. **Current Stations**: India has two active research stations in Antarctica — **Maitri** and **Bharti**.
   a. **Maitri**: Established 35 years ago, it is a vital facility for Indian research but is now outdated and needs reconstruction.
   b. **Bharti**: A modern station, 12 years old, offering advanced research facilities.
2. **Upcoming Plans:** India announced its plans to build a **new research station in Antarctica, Maitri-2**, at the 46th Antarctic Treaty Consultative Meeting (ATCM) in Kochi in May 2024

10. GEOLOGICAL SURVEY OF INDIA (GSI)

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1. On 4th March 2025, The **Geological Survey of India (GSI)** celebrated its **175th Foundation Day**.

About GSI

1. Established in **1851**, with **Thomas Oldham** as its first official Geological Surveyor.
   a. Initially proposed by **John McClelland** in 1846 under the East India Company.
2. **2nd oldest survey body in India** after the Survey of India (1767).
3. **1st Indian Head**: Dr. M. S. Krishnan.
4. Originally set up to **locate coal deposits** for the Railways.
5. Now functions as a **premier geoscientific institution** with international recognition.
6. **Headquarters**: Kolkata.
   a. **Regional Offices**: Lucknow, Jaipur, Nagpur, Hyderabad, Shillong, and Kolkata.
7. **Nodal Ministry**: Ministry of Mines (as an attached office).

Functions of GSI :

GSI's core functions include:

1. Creation and regular updating of **national geoscientific data**.
2. **Assessment and augmentation** of **mineral resources**.
3. **Dissemination of information**, fundamental research, and capacity building.

Operates through 5 Missions:

1. **Mission-I**: Ground, Aerial, and Marine Surveys.
2. **Mission-II**: Natural Resource Assessment (Minerals, Coal, Lignite).
3. **Mission-III**: Information & Dissemination.
4. **Mission-IV**: Fundamental & Multidisciplinary Geoscience Research.
5. **Mission-V**: Training & Capacity Building.

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Key Achievements :

1. Baseline Geoscience Data

a. Published **India's first geological map (1877)**.
b. Initiated **National Geoscience Data Repository (NGDR)**.
c. Carried out surveys like **Systematic Geological Mapping** and **National Geochemical Mapping**.

2. Mineral Resource Assessment

a. Undertaking **448 exploration projects in 2024–25**.
b. Focus on critical and strategic minerals: **Lithium, REEs, Tungsten, Potash, Graphite**, etc.

3. Geoinformatics

a. Operates **GNSS stations** for tectonic studies.
b. Developed **Bhukosh Portal** for free access to geoscientific information.

4. Geoscience & Disaster Management

a. **Seismology**: In 1899, **Richard Dixon Oldham** discovered the three types of seismic waves after the Assam Earthquake (1897).
   - Operates **Seismo-Geodetic Real-Time Data Processing Centre (SGRDPC)**.
b. **Landslides**: Nodal agency for landslide investigations.
   - Developed a **prototype Early Warning System** under the **LANDSLIP project**.
c. **Antarctic Research**:
   - Maps **Gjelsvikfjella region** from the **TROLL base (Norway)**.
   - Monitors **Dakshin-Gangotri Glacier** annually.

5. Other Contributions

a. Declares **geo-heritage sites** and **national geological monuments**.
   - Example: **National Fossil Wood Park**, Sattanur (Tamil Nadu).
b. Participated in international forums:
   - **Future Mineral Forum 2024 (Saudi Arabia)**.
   - **37th International Geological Congress (Korea)**.

11. Discovery of Two New Jumping Spider Species

Discovered in **Shendurney Wildlife Sanctuary**, located in **Kollam District, Kerala**, part of the **Western Ghats**.

About the New Spider Species

1. Belong to the **genus *Epidelaxia***.
2. This is the **first time** this genus has been recorded in **India**.
3. Earlier, *Epidelaxia* was thought to be **found only in Sri Lanka** (endemic).

About Jumping Spiders

1. Family: **Salticidae** – the **largest family of spiders**.
2. **Found mostly in tropical regions**, but also in colder areas, including the **Arctic**.

Key Characteristics

1. Can **jump up to 30 times their body length**.
2. Have **large front legs** for catching prey and **strong back legs** for jumping.
3. Unlike most spiders, they have **excellent vision**.

Vision Abilities

1. Have **8 eyes** arranged in pairs.
2. Their vision is **better than most other spiders**.
3. Can see in **red, green, and ultraviolet (UV)** light.

Behavior

1. Are **active hunters** – they hunt insects and even other spiders.
2. Do **not spin webs** to catch prey.
3. Use silk to make **"pup tents"** – small shelters for **resting and protection**.

About Shendurney Wildlife Sanctuary

1. Named after the **Chenkurinji tree**, which is **endemic** to the area.
2. Located in the **Agasthyamala Biosphere Reserve** in the **Southern Western Ghats**.

Vegetation Types

1. Tropical **evergreen forests**
2. **Semi-evergreen forests**
3. **Moist deciduous forests**

Wildlife in the Sanctuary

1. Elephants, Tigers, Leopards
2. Gaur (Indian Bison), Sambar Deer
3. Bonnet Macaque, Nilgiri Langur
4. Lion-tailed Macaque

12. United Nations World Water Development Report 2025

1. On March 22, 2025—World Water Day—UNESCO released the *United Nations World Water Development Report (WWDR) 2025* on behalf of UN-Water.
2. This year's theme, **"Mountains and Glaciers: Water Towers,"** highlights the critical role of mountain systems and alpine glaciers in sustaining ecosystems, societies, and economies across the globe.
3. Recognizing this urgency, the UN has also **designated 2025** as the **International Year of Glaciers' Preservation**, drawing attention to the increasing vulnerabilities of these essential freshwater sources amidst climate change.

Background: Global Water Trends and SDG Progress

1. Freshwater is under immense stress globally. As of 2021, agriculture accounted for **72%** of global water withdrawals, followed by **industry (15%)** and **domestic use (13%)**.
2. From 2000 to 2021, total freshwater withdrawals rose by **14%**, driven mainly by rapid economic development rather than population growth.
3. Alarmingly, **25 countries**—home to a **quarter of the global population**—face extreme water stress, and **4 billion people** experience severe water scarcity during some part of the year.
4. Despite the vision of **Sustainable Development Goal (SDG) 6**—ensuring availability and sustainable management of water and sanitation for all—progress is critically off track.
5. In 2022, **2.2 billion people** lacked access to safely managed drinking water, and **3.5 billion** lacked basic sanitation services. Rural areas suffer the greatest disparities, especially in Sub-Saharan Africa, Central and Southern Asia, and Latin America.

Mountains and Glaciers: The World's Natural Reservoirs

The report identifies mountains as Earth's **natural freshwater towers**, noting:

1. Mountains cover **24% of global land** and house **1.1 billion people**.
2. They contribute **55–60%** of the world's annual freshwater flow.
3. Major rivers—including the **Indus, Nile, Colorado**, and **Amu Darya**—derive up to **90%** of their flow from mountain sources.

Mountains also support biodiversity, with **25 of the 34 global biodiversity hotspots** located in mountain regions. Forests cover **40%** of mountain areas, providing key ecosystem services like water regulation, slope stabilization, and carbon storage.

Glacier Loss and Cryospheric Changes

The **mountain cryosphere**—including glaciers, snowfields, and permafrost—is one of the most climate-sensitive components of the planet. Key threats noted in the report include:

1. **Accelerating glacier melt** and **snow cover loss** due to global warming.
2. Rising **GLOF (Glacial Lake Outburst Flood)** risks, with **3,151 events** recorded and **$56 billion in damages** from 1985 to 2014.
3. Projected **glacier mass loss of 26–41% by 2100**.

Factors such as **dust, black carbon**, and **red algae blooms (watermelon snow)** reduce surface albedo, further accelerating melt. These changes affect streamflow, sediment loads, and disaster risks in downstream regions.

UN's Observations on Food Security in Mountain Areas

The report reveals that:

1. **648 million rural mountain residents** depend on agriculture and pastoralism.
2. **35–40%** of mountain dwellers face food insecurity.
3. **80% of crop and livestock losses** in mountain areas are caused by climate hazards.

The report highlights **Indigenous farming techniques** such as terrace farming and traditional irrigation as vital adaptation strategies. It recommends ecosystem-based adaptation (EbA) to build climate resilience.

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Human Settlements and Water Infrastructure Risks

UNESCO notes that about **two-thirds of mountain inhabitants** now live in urban or peri-urban areas. These settlements are exposed to:

1. **Landslides, floods, earthquakes**, and **GLOFs**.
2. Infrastructure challenges due to rugged terrain and high elevation.
3. Strain on water and sanitation systems due to unplanned urbanization.

The report suggests **decentralized systems**, **early warning mechanisms**, and **feasibility studies** for infrastructure to reduce disaster vulnerability.

Industrial and Energy Uses

1. Mountains support water-intensive industries including **lithium mining** and **cryptomining**, both of which increase water demand.
2. Hydropower dominates the energy sector, with **95% of global pumped storage hydropower (PSH)** located in mountain areas.
3. In **Latin America**, **85%** of hydroelectric power comes from mountain rivers.
4. However, development is constrained by elevation-related costs. Poor regulation in remote areas also leads to uncontrolled water withdrawals and pollution.
5. Sustainable approaches like **circular economies**, **green infrastructure**, and **cleaner technologies** are being promoted to reduce ecological harm.

Ecosystem Services and Environmental Significance

1. Mountain ecosystems provide crucial services such as **water regulation, carbon sequestration, flood control, and biodiversity conservation**.
2. High-altitude soils, particularly those with permafrost, store an estimated **66 petagrams of organic carbon**—around **4.5% of the global total**.
3. These ecosystems are vulnerable to degradation. Currently, **57% of global mountain areas** face intense human pressure.
4. Nature-based solutions (NbS) and ecosystem-based adaptation are now recognized as key strategies to maintain these services and mitigate climate impacts.

UN Regional Findings on Mountain Water Challenges

1. **Sub-Saharan Africa**
   a. **252 million** people live in mountain regions.
   b. Glaciers in **Mount Kenya, Kilimanjaro**, and **Rwenzori** may vanish by **2040**.
   c. High population density, deforestation, and poverty threaten water security.
2. **Europe and Central Asia**
   a. **Alpine glaciers** are shrinking rapidly, threatening water supply.
   b. River discharge from the Alps could decline by **45%** by 2100.
   c. Water-energy conflicts exist between upstream and downstream countries in Central Asia.
3. **Latin America and Caribbean**
   a. **One-third** of the region is mountainous.
   b. The **Andes** have lost **30–50% of glacier volume** since the 1980s.
   c. **85% of Latin America's hydropower** depends on mountain rivers.
4. **Asia and the Pacific**
   a. The **Hindu Kush Himalayas (HKH)**—known as the **Third Pole**—cover **5 million km²** and supply **10+ major rivers**.
   b. HKH glaciers are melting **65% faster** than before.
   c. Black carbon, heavy metals, and industrial pollution threaten the cryosphere.
5. **Arab Region**
   a. Mountains like the **Atlas** and **Mount Lebanon** supply up to **60%** of freshwater.
   b. Reduced snowfall is impacting agriculture and sanitation.
   c. **Aquifer recharge** and **water harvesting** are recommended adaptation strategies.

Recommendations on Governance and Capacity

The report stresses that **governance and finance mechanisms** in mountain water management need urgent attention:

- Only **43 of 153 countries** have operational transboundary water-sharing frameworks.

- National policies often favor lowland users, neglecting mountain-specific needs.
- **Citizen science**, **community engagement**, and **Indigenous participation** are critical.

A significant **adaptation finance gap** remains: although **$187 billion/year** is needed, only **$13.8 billion** was mobilized in 2022. The report calls for **innovative, inclusive financing models** and **mountain-specific programs** in national development plans.

The *UN World Water Development Report 2025* issues a clear warning: mountains are not just remote landscapes—they are vital, life-sustaining ecosystems whose decline will have global consequences. Their protection is crucial for ensuring **water, food, energy, and ecological security** worldwide.

The report concludes with a reminder that must guide global water policy:

"Nothing that happens in mountains stays in mountains. In one way or another, we all live downstream."

13. Life Discovered Under Antarctic Ice Shelf After A-84 Iceberg

1. A new deep-sea ecosystem was discovered under the George VI Ice Shelf (Antarctica) after an iceberg detached.
2. The exploration was part of the **Challenger 150 Initiative**, supported by **UNESCO's Intergovernmental Oceanographic Commission (IOC)** under the **UN Ocean Decade (2021–2030)**.

Key Highlights

Ecosystem Discovery

1. Found at depths of up to **1,300 meters** (Mesopelagic Zone).
2. Region had been **under 150-meter-thick ice for centuries**, completely isolated from surface nutrients.
3. Rich biodiversity despite isolation — a significant and surprising finding.

Notable Marine Species Found

1. **Icefish and Octopi** – Adapted to extreme cold and dark environments.
2. **Giant Sea Spiders** – Evolved in long-term isolation.
3. **Large Corals and Sponges** – Forming complex and stable underwater habitats.
4. **Giant Phantom Jellyfish** – Rare species reaching up to 1 meter in width.
5. **Vase-shaped Sponges** – Some possibly hundreds of years old.

What are Deep-Sea Ecosystems?

1. Marine areas **below 200 meters**, known as the **aphotic zone** (where sunlight does not penetrate).
2. Makes up **90% of Earth's marine environment**, representing the largest biome on the planet.

Key Features and Zones

Habitat Type	Key Characteristics	Notable Species
Abyssal Plains	Dark, muddy seafloor	Sea cucumbers
Marine Snow	Organic debris from surface; key food and carbon source	Base of deep-sea food web
Hydrothermal Vents	Hot, mineral-rich water; life via chemosynthesis	Yeti crabs, Tubeworms
Whale Falls	Decomposing whale carcasses forming temporary ecosystems	Hagfish, scavengers

About Ice Shelves

1. **Definition**: Ice shelves are floating extensions of land-based glaciers, formed by the accumulation and compaction of snow into ice over time.
2. **Location**: Common around Antarctica. Major examples include:
   a. Ronne-Filchner Ice Shelf
   b. Ross Ice Shelf
   c. McMurdo Ice Shelf
3. **Significance**:
   a. Act as **"buttresses"** by stabilizing grounded glaciers and slowing their flow into the ocean.
   b. Critical to understanding **sea-level rise** and **climate change impacts**.

Scientific Significance

1. **Contradicts earlier assumptions**: Previously believed that such regions lacked surface-derived nutrients essential for sustaining life.

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2. Highlights unknown or underexplored **nutrient transport mechanisms**, such as:
   a. **Ocean Currents** – May carry organic matter from distant regions.
   b. **Glacial Meltwater** – Could introduce nutrients stored in ice.
   c. **Unknown Biological/Chemical Processes** – Not yet fully understood.

Global Collaboration and Research Context

1. Part of the **Challenger 150 Initiative**, a **UNESCO-endorsed** global program under the **UN Decade of Ocean Science for Sustainable Development (2021–2030)**.
2. Aimed at exploring **deep-sea biodiversity**, especially in **least-studied ecosystems**.
3. Builds on previous findings (e.g., first evidence of bottom-dwelling life under Antarctic ice reported in 2021).
4. Enhances understanding of:
   a. Climate change
   b. Ice shelf dynamics
   c. Deep-sea ecosystem functioning

14. Kasampatty Sacred Grove – Biodiversity Heritage Site

Tamil Nadu has declared **Kasampatty Sacred Grove** (Veera Kovil) in **Dindigul district** as a **Biodiversity Heritage Site (BHS)**, recognizing its **ecological and cultural importance**.

1. It is **Tamil Nadu's 2nd BHS** after Arittapatti (2022).
2. Declared on **March 27, 2025**, under **Biological Diversity Act, 2002**
3. **1st BHS in India: Nallur Tamarind Grove**, Karnataka – declared in **2007**

Tamil Nadu's BHS Sites

Site	District	Year
Arittapatti BHS	Madurai	2022
Kasampatty Sacred Grove	Dindigul	2025

Biodiversity Heritage Sites (BHS) in India

Legal Basis

Declared under **Section 37** of the **Biological Diversity Act, 2002** by **State Governments** in consultation with local bodies.

Purpose

1. Conserve rare and endemic species
2. Protect fragile ecosystems
3. Preserve cultural, historical, and religious heritage
4. Promote community-led conservation

Criteria for Designation

1. Presence of **rare/endangered species**
2. **Ecological uniqueness**, **cultural importance**
3. Habitat of **keystone species**, fossil sites, or **ancestral crop species**

Importance of BHS

1. **Climate Regulation**: Carbon sequestration, microclimate control
2. **Sustainable Development**: Balances ecology with livelihoods
3. **Cultural Heritage**: Preserves sacred sites & traditional conservation
4. **Community Empowerment**: Locals manage with minimal restrictions

Notable BHS (State-wise)

State	Site	Significance
Karnataka	Nallur Tamarind Grove	Ancient Chola-era trees
Maharashtra	Glory of Allapalli	Ethnobotanical & historical forest
Meghalaya	Mawphlang Sacred Grove	Sacred grove with rich endemic species
Assam	Majuli Island	Largest river island with rich biodiversity
Himachal Pradesh	Shivbari Sacred Grove	Sacred grove with unique ecosystem
Kerala	Asramam, Pannivelichira	Mangrove & wetland biodiversity
Tamil Nadu	Arittapatti, Kasampatty	Historical & sacred groves
Telangana	Ameenpur Lake	300-year-old lake with migratory birds
Manipur	Dialong Village	Biodiversity-rich cultural landscape

G. Society And Culture

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1. Changing Institution of Family in India

1. The Supreme Court recently raised concerns over the erosion of family values in Indian society.
2. The Court highlighted a growing trend of litigation between parents and children over issues like property and maintenance.
3. This shift is seen as a departure from the ideal of *'Vasudhaiv Kutumbakam'* towards a *'One Person, One Family'* model.
4. In the *Samtola Devi v. State of Uttar Pradesh & Others* case, the Supreme Court interpreted the **Maintenance and Welfare of Parents and Senior Citizens Act, 2007**.
5. The Court observed that while the Act mandates maintenance for elderly parents, it does **not explicitly authorize** them to evict their children from their homes.

The Changing Family Structure in India

Aspect	Traditional Family	Contemporary Trends
Structure	Joint family setup with multiple generations cohabiting under one roof.	Predominance of nuclear families with just parents and their underage children.
Decision-Making	Elders held authority, and collective decisions were the norm.	Decision-making is becoming more equal between spouses, promoting shared responsibility.
Marriage Practices	Elders arranged marriages based on family alliances and social norms.	Rise in love marriages, live-in relationships, and recognition of same-sex partnerships.
Core Values	Focus on collectivism, interdependence, and family unity.	Shift towards individualism, privacy, and personal aspirations.

Key Factors Driving the Transformation

1. **Urbanization** has reduced space for large joint families, pushing nuclear setups in cities.
2. **Rising cost of living** in urban centres has made joint family living economically unviable.
3. **Dual-income households** demand flexibility, weakening traditional gender-based roles.
4. **Women's education and workforce participation** have challenged patriarchal family norms.
5. **Western cultural influence** has popularized personal freedom and independent lifestyles.
6. **Globalization and MNCs' work culture** promote smaller, mobile, and flexible family units.
7. **Technology** allows digital connection but reduces physical interactions and emotional depth.

Impacts of the Changing Family Model

Positive Outcomes

1. **Increased father involvement** in daily parenting beyond financial responsibilities.
2. **Stronger parent-child bonds** due to undivided attention in nuclear families.
3. **Reduction in internal family conflicts**, especially around inheritance and control.
4. **Women and youth gain autonomy**, leading to independent decision-making and empowerment.

Negative Consequences

1. **Widening generation gap** leading to conflicts rooted in differing values and habits.
2. **Dilution of traditional values**, especially respect for elders and community norms.
3. **Children in small families** may feel isolated due to lack of siblings or cousins.
4. **Elderly face loneliness**, neglect, and are at risk of physical and mental health issues.

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5. **Increased burden on public infrastructure**, such as old-age homes and childcare centers.

The Way Forward

1. **Community-based care systems** should be developed for elders, children, and the vulnerable.
   a. RWAs and Panchayats can lead by building **local social capital** and support structures.
   b. Example: Kerala's **Kudumbashree** network integrates women empowerment and elder care.
2. **Education reforms** must introduce **value-based learning and emotional intelligence** early on.
   - Teaching empathy and family values can help rebuild intergenerational understanding.
3. **Urban housing designs** should encourage **multi-generational living arrangements**.
   - Incentives for such homes can retain familial bonds in modern city environments.
4. **Broaden the legal definition of family** to include single-parent households, elderly living alone, etc.
   - This inclusive approach allows better targeting of welfare schemes and social services.
5. **Strengthen implementation** of the **Maintenance and Welfare of Parents and Senior Citizens Act, 2007**.
   a. Children must be made legally accountable for the support and dignity of their parents.
   b. **Free legal aid** for the elderly can help them protect their rights and seek redressal when needed.

2. New SDG Indicator on Minimum Dietary Diversity (MDD) Adopted

1. The UN Statistical Commission has officially adopted a new indicator for tracking **Minimum Dietary Diversity (MDD)**.
2. This inclusion expands the SDG monitoring framework to **nearly 250 indicators**, refining efforts to assess global development progress.
3. The indicator addresses a key gap in measuring **healthy dietary intake**, previously missing from the SDG system.

Institutional Oversight

1. The **Food and Agriculture Organization (FAO)** and **UNICEF** will jointly oversee and manage this newly introduced indicator.
2. It directly contributes to achieving **SDG 2 (Zero Hunger)** and supports targets of the **2030 Agenda for Sustainable Development**.

What is Minimum Dietary Diversity (MDD)?

As per **World Health Organization (WHO)** guidelines, MDD is achieved when an individual consumes at least **five out of eight key food groups** in a day. The **eight food groups** include:

1. Breast milk
2. Grains, roots, and tubers
3. Legumes and nuts
4. Dairy products
5. Flesh foods (meat, fish, poultry, liver/organ meats)
6. Eggs
7. Vitamin A-rich fruits and vegetables
8. Other fruits and vegetables

Importance of the MDD Indicator

1. **Nutritional Monitoring**: Focuses on **women (MDD-W)** and **children (MDD-C)**, the groups most at risk of malnutrition.
2. **Supports Global Health Goals**: Reinforces progress tracking under **SDG 2 – Zero Hunger** and broader health and nutrition goals.
3. **Policy Development Tool**: Assists governments in designing targeted **nutrition policies and interventions**.
4. **Program Evaluation**: Enables better **assessment of nutrition and food distribution programs**, particularly in vulnerable populations.

Status of Minimum Dietary Diversity Failure (MDDF) in India (2019-21)

1. **Widespread Nutritional Deficit**: A significant portion of Indian children suffer from MDDF, reflecting poor dietary diversity.
2. **Regional Variation**: States like **Uttar Pradesh, Rajasthan, Gujarat, Maharashtra, and Madhya Pradesh** report MDDF in over **80% of children**.

3. **Age-Specific Trends**: Around **77% of children aged 6–23 months** in India do not receive the minimum required dietary diversity.
4. **Caste-Based Disparities**:
   a. Children from **Other Backward Classes (OBCs)** have the **highest MDDF** rate at **79%**.
   b. Followed by **Scheduled Castes (77.2%)** and **Scheduled Tribes (76%)**, highlighting nutrition inequality.

3. Kirsty Coventry Becomes First Female IOC President

1. Zimbabwean former Olympic swimmer **Kirsty Coventry** has been appointed as the **first-ever female President of the International Olympic Committee (IOC)**.
2. Her election marks a significant step toward **gender representation in global sports leadership**.

About the International Olympic Committee (IOC)

1. The **IOC is an independent, not-for-profit international body** that governs the Olympic Movement worldwide.
2. It is headquartered in **Lausanne, Switzerland**, also known as **the Olympic Capital**.
3. The organization was founded during the **first Olympic Congress held in Paris in 1894**.
4. The IOC operates with the vision **"To Build a Better World through Sport."**

Structure and Funding

1. The IOC is **entirely privately funded**, ensuring autonomy and financial independence from governments.
2. Notably, it **redistributes 90% of its total revenue** to support **sports development and athlete training** at global, national, and grassroots levels.

4. From Welfare to Leadership: Changing Goals for Girls and Women

1. **Adolescent girls and women** are central to global and national development, yet they continue to face systemic barriers in education, health, legal protection, and economic participation.
2. Over the **past three decades**, global efforts like the **Beijing Platform for Action** and **national initiatives** in countries like India have aimed to dismantle these barriers and empower girls and women not just as beneficiaries of welfare, but as leaders and changemakers.

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3. As the **2030 Sustainable Development Goal (SDG) deadline approaches**, a shift from traditional welfare approaches to a model of women-led development is gaining momentum—redefining the narrative of gender equality.

Background: The Beijing Declaration and the Birth of Global Gender Goals

1. The **Fourth World Conference on Women, held in Beijing in 1995**, marked a historic moment in the global movement for gender equality.
2. The resulting **Beijing Declaration and Platform for Action (BPfA)** established a comprehensive agenda across twelve critical areas—ranging from education and health to economic empowerment and violence prevention.
3. It defined women's rights as human rights and emphasized the need to eliminate structural inequalities through inclusive policies and legal reforms.
4. **Three decades later**, this vision continues to guide global progress. The *"Girl Goals: What Has Changed for Girls?"* report, jointly released by *UNICEF, UN Women, and Plan International in 2025*, evaluates 30 years of change in the lives of adolescent girls aged 10–19, while the global "Beijing+30" Action Agenda outlines renewed commitments across six key priorities including digital access, zero violence, and climate justice.

Global Story: Progress and Persisting Barriers for Adolescent Girls

A. Legal Reforms: Expanding Rights with Incomplete Protection

1. Over **70% of countries (as of 2023)** now have gender equality laws.
2. **149 countries** guarantee **equal inheritance rights** for daughters (up from 138 in 1995).
3. However:
   a. **Child marriage is still legally allowed** in **72% of countries** due to legal exceptions.
   b. **More than half of countries** don't define rape based on lack of consent.
   c. **51%** of countries impose **workplace restrictions** on women.
   d. **Implementation gaps** continue to hinder real change.

B. Education: Access Improved, Outcomes Still Uneven

1. **Out-of-school girls** declined by **39%** (from 200 million in 2000 to 122 million in 2023).
2. Girls now **outpace boys in primary and lower secondary school enrolment**.
3. **Upper secondary completion** improved from **36% (2000)** to **61% (2023)**.
4. Challenges remain:
   a. In **Sub-Saharan Africa**, girls lag in school completion.
   b. Barriers include **menstrual hygiene issues, early marriage, caregiving roles**, and **rural inequality**.
   c. **Digital exclusion is critical—90% of girls** in low-income countries are offline; less than **2% of young women** globally are trained in advanced digital skills.

C. Economic Exclusion and the NEET Crisis

1. **48% of girls aged 10–17** in 42 countries experience **multidimensional poverty**.
2. Girls aged **15–24** are **twice as likely as boys** to be NEET (Not in Education, Employment, or Training).
3. Primary causes include **unpaid care responsibilities** and **restrictive gender norms**.
4. Solutions like Uganda's **Girls Empowering Girls** initiative (cash + mentorship) have helped keep girls in school and delay early marriage.

D. Health, Nutrition, and WASH Access: Progress with Persistent Gaps

1. **Teenage pregnancy complications** remain a top cause of death among girls aged 15–19.
2. **Adolescent birth rates** fell from **73 to 38 per 1,000** in 30 years.
3. But challenges persist:
   a. **HPV vaccination** and **reproductive healthcare** are still lacking in low-income countries.
   b. **One-third of adolescent girls** suffer from **anemia**, due to poor diet and early pregnancies.

c. Programs like India's **midday meals and iron supplements** have reduced anemia levels.
d. **Inadequate menstrual hygiene and water access** lead to school absenteeism; menstrual hygiene programs have shown positive results.

E. Protection from Violence and Harmful Practices

1. **Child marriage** rates dropped from **25% (1995)** to **19% (2023)**.
2. **FGM prevalence** declined from **47% to 34%** in high-risk countries.
3. Still, **650 million women and girls** report having experienced **childhood sexual violence**.
4. In deeply patriarchal societies, girls often **justify domestic violence**.
5. **Community-led legal literacy and awareness programs** (e.g., in **Kenya** and **Ethiopia**) have reduced harmful practices and shifted societal mindsets.

India's Parallel Journey: From Women's Development to Women-Led Development

India's gender equity journey mirrors global progress in many ways but also showcases a distinct shift from welfare-centric models to empowerment through leadership.

1. Health and Education: Steady Gains

a. **Institutional deliveries** reached **95%**; **MMR** reduced from **130 (2014)** to **97 (2020)**.
b. Programs like **Ayushman Bharat** have expanded free healthcare access.
c. **Beti Bachao Beti Padhao** improved the **child sex ratio** and promoted girl education.
d. Women now make up **43% of STEM graduates**, thanks to digital literacy drives and incentives.

2. Economic Empowerment and Digital Inclusion

a. Over **100 million women** are now linked to finance through **SHGs** under **National Livelihood Missions**.
b. Digital programs like **PMGDISHA** trained **35 million rural women** in digital skills.
c. Access to **UPI platforms** and support schemes like **Mudra Yojana**, **Lakhpati Didi**, and **Common Service Centres** fuel women's rural entrepreneurship.

3. Political and Legal Empowerment

a. The **Women's Reservation Act (Nari Shakti Vandan Adhiniyam)** ensures **33% legislative reservation**—a major inclusion milestone.
b. Legal protection has expanded through **new criminal laws** and **770+ One Stop Centres** offering psychosocial and legal support.

4. Leadership over Welfare: A New Development Paradigm

a. The earlier welfare model portrayed women as **passive beneficiaries**.
b. The new approach focuses on **women's participation, leadership, and community-led governance**.
c. Over **8 crore women** are now part of **SHGs**, managing funds, businesses, and development projects.
d. The **Deccan Development Society**, led by **5,000 Dalit and tribal women farmers**, is a successful model of **eco-feminism and sustainability**.

Challenges That Still Persist

1. Only **3% of Indian women** make **independent decisions** (NFHS-5).
2. **Unpaid domestic work** remains a heavy burden, limiting professional opportunities.
3. **Female literacy** is still at **62.3%**, well below the global average of **79.9%**.
4. **Women earn 20% less** than men for the same work.
5. **Only 15% of Indian women** have **internet access**, indicating a deep digital divide.
6. **Early marriage** remains common—**23% of women aged 20–24** were married before 18.
7. **Safety concerns** continue, with over **4.5 lakh crimes against women** reported in **2022**.

The Road Ahead: Global and National Commitments

1. The **"Beijing+30" agenda (2025)** reaffirms dedication to:
   a. Digital inclusion
   b. Ending violence
   c. Poverty eradication
   d. Leadership representation
   e. Gender-responsive peacebuilding
   f. Climate justice

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2. India's programs align with global goals under frameworks like **CEDAW** and initiatives by **UN Women**.
3. The **International Women's Day 2025 theme**, *"For ALL Women and Girls: Rights. Equality. Empowerment,"* encapsulates this global vision.

Conclusion:

Empowering Girls and Women as Architects of Change

1. The evolution from **welfare to leadership** redefines the place of girls and women in development policy.
2. While 30 years of efforts have yielded strong progress in **health, education, legal reform, and economic participation**, gaps remain.
3. True development requires **empowering the most marginalized**, not just helping them survive but enabling them to **lead and transform**.
4. Investing in girls and women is not just ethical—it is essential for **inclusive governance, sustainability, and long-term prosperity**.
5. A future that empowers girls is a future that prospers—for all.

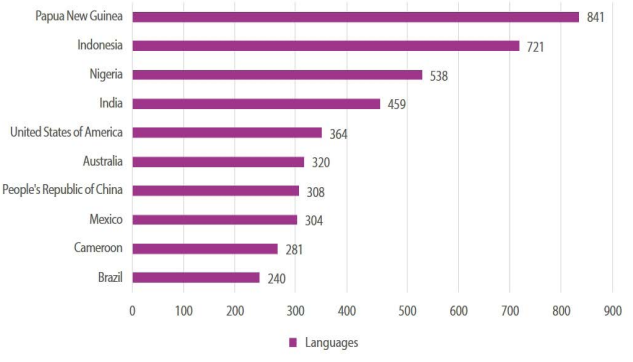
5. Languages Matter: UNESCO's Global Guidance on Multilingual Education

1. The UNESCO report **"Languages Matter: Global Guidance on Multilingual Education"** was released on **February 21, 2025**, commemorating **25 years of International Mother Language Day**.
2. The report underlines the growing importance of **linguistic diversity in education systems worldwide**.
3. It emphasizes the need for **multilingual education policies** to be integrated into **national education frameworks**.
4. A staggering **40% of the global population lacks access to education in their first language**, with the figure reaching up to **90% in some low-income nations**.
5. Addressing language-related barriers is seen as **critical for improving literacy, learning outcomes, and school retention**.
6. The report offers **evidence-based guidance** for building more **inclusive and equitable education systems**.

Key Findings of the Report

1. The world has around **7,000 spoken languages**, yet only **351** are used in formal education systems as mediums of instruction.
2. Approximately **1,500 languages are at risk of extinction by 2100**, resulting in loss of **cultural and indigenous knowledge**.
3. Due to increased migration, over **31 million displaced youth** face challenges in accessing education in a **comprehensible language**.
4. Children learning in a **familiar language** are **30% more likely** to attain reading proficiency by the end of primary school.
5. In **Mozambique**, early bilingual education boosted student learning outcomes by **15%**.
6. Globally, about **56% of children struggle with basic literacy and numeracy**, a figure worsened after the **COVID-19 pandemic**.

Figure 2 | Ten countries with the most spoken languages, 2024



What is Multilingual Education (MLE)?

1. UNESCO defines multilingual education as teaching that uses **at least three languages**: the **mother tongue**, a **national/regional language**, and an **international language**.
2. MLE improves **academic outcomes, social inclusion, and cultural sustainability**.
3. UNESCO identifies **four major models** of multilingual education:
   a. **Mother Tongue-Based Multilingual Education (MTB-MLE)** – starts with the native language and gradually introduces others.
   b. **MLE for Migrants and Refugees** – supports integration into new societies through language access.

c. **MLE for Majority Language Speakers** – encourages learning global languages for better international engagement.

d. **MLE for Endangered Languages** – aims to revitalize disappearing languages through education.

Benefits of Multilingual Education

1. **Cognitive Development** improves through exposure to multiple languages, enhancing **critical thinking and problem-solving skills**.
2. In **Ethiopia**, students taught in their mother tongue for eight years showed better performance in **secondary school**.
3. **Literacy and numeracy skills** increase when children are taught in languages they understand.
4. In **Mozambique**, bilingual education led to a **15% increase** in foundational learning achievements.
5. **Economic opportunities** grow in multilingual societies through **better employment and productivity**.
6. In **Kenya**, early literacy programs in mother tongues increased **student engagement and job readiness**.
7. Multilingual education plays a key role in **preserving biodiversity and indigenous knowledge**.
8. Countries like **Brazil and Thailand** use bilingual education to sustain **ecological and cultural traditions**.
9. Technology aids language access, with platforms like **Keyman** supporting **2,400 languages**, improving **digital learning access**.

Global Challenges in Implementation

1. Many nations have multilingual education policies but **struggle with execution and enforcement**.
2. A **shortage of multilingual teachers** and **limited teaching materials** hinder progress.
3. The **dominance of global languages** like English, French, and Spanish sidelines **local and indigenous languages**.
4. **Parental preferences** often favor dominant languages, driven by hopes for better **career opportunities**.

Challenges Specific to India

1. **NEP 2020** has introduced reforms but **implementation varies widely across Indian states**.
2. An **urban-rural divide** exists, with urban students preferring English-medium schools, while rural areas lack support for mother tongue education.
3. **Funding for multilingual programs** is inadequate, limiting **teacher training and educational resources**.
4. **Political and linguistic sensitivities** often delay or block **language-based policy reforms**.

Recommendations for Strengthening MLE

1. **Strengthen Policy Frameworks** – Enact and implement robust national policies supporting multilingual education.
2. **Expand Teacher Training** – Build capacity of educators to deliver instruction in multiple languages.
3. **Develop Quality Learning Resources** – Create multilingual textbooks and use **AI-powered translation tools**.
4. **Engage Parents and Communities** – Run awareness campaigns on the **benefits of multilingual education**.
5. **Leverage Digital Tools** – Promote multilingual apps and **e-learning platforms**, especially in remote areas.
6. **Revise Assessment Models** – Offer exams and evaluations in **multiple languages** to ensure equity.

Multilingual Education in India and NEP 2020

1. India is home to **22 scheduled languages**, **122 major languages**, and **over 19,500 dialects**.
2. The **NEP 2020** recognizes this diversity and promotes **mother tongue-based instruction** up to at least **Grade 5**, preferably till **Grade 8 and beyond**.
3. It mandates the **Three-Language Formula**, requiring students to learn at least **two Indian languages** alongside another language.
4. The policy promotes **digital content development** in various **regional languages**.
5. **Linguistic mapping and documentation** initiatives are being carried out to support **language preservation**.
6. Despite these steps, **implementation remains uneven**, affected by **urban biases** and **lack of teacher preparedness**.
7. With sustained political will and investment, **India can become a global leader in multilingual education**.

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Conclusion

1. Multilingual education serves as a bridge between **academic success, economic empowerment, and cultural preservation**.
2. The **UNESCO 2025 report** calls for urgent action to ensure that **language is no longer a barrier** to learning.
3. With the **NEP 2020** providing a strong starting point, **India must intensify efforts** in policy implementation, training, and community outreach.
4. A committed approach will help build **inclusive, accessible, and linguistically diverse education systems** worldwide.

6. Government Revives Vikramshila University

1. Vikramshila University is being revived in Bihar.
2. It was an ancient Buddhist university from the **Pala dynasty period**.
3. The **Archaeological Survey of India (ASI)** is working to conserve and develop the old site.
4. The Bihar government has identified land at **Antichak village in Bhagalpur** for setting up a new Central university.
5. The Central Government had approved **the Vikramshila project in 2015** with a sanction of Rs 500 crore.

History and Founding

1. Vikramshila University was founded in the **late 8th to early 9th century AD.**
2. It was established by **King Dharmapala** of the Pala Dynasty.
3. It was set up to **address the perceived decline in academic standards at Nalanda**.
4. The goal was to strengthen Buddhist scholarship.
5. Vikramshila was located **in Bhagalpur, Bihar,** along the Ganges River.
6. It quickly rose as **a major centre of Tantric learning** in eastern India.

Academic Contributions

1. Vikramshila University specialised in **Tantric and Vajrayana Buddhism**.
2. It focused on **occult and esoteric** Buddhist studies.
3. It also taught **Buddhist philosophy, logic, grammar, metaphysics, and tantra.**
4. The university had over **1,000 students**.
5. It had about 100 teachers.
6. Vikramshila produced scholars like Atisa Dipankara.
7. **Atisa Dipankara** played a major role in shaping **Tibetan Buddhism.**

Structure and Architecture

1. The heart of the university was a **cruciform brick stupa**.
2. Surrounding the stupa were **208 monastic cells** for student-monks.
3. The campus included shrines, libraries, and courtyards.
4. It followed the **Mahavihara architectural style.**
5. A **unique cooling system** was built to preserve manuscripts.
6. Water from a nearby reservoir was directed into the library structure to maintain cool temperatures.

Decline and Destruction

1. Vikramshila was **destroyed around 1203 AD**.
2. The destruction was carried out by **Muhammad bin Bakhtiyar Khalji**.
3. This ended Vikramshila's academic and cultural legacy.
4. The fall of Vikramshila marked the collapse of another major Buddhist institution in Eastern India.
5. Surviving scholars fled after the destruction.
6. These scholars carried Buddhist teachings to Nepal, Tibet, and Southeast Asia.

Modern Revival Efforts

1. The Government of India has announced the revival of Vikramshila through a new Central University.
2. The new university will be established near the ancient site.
3. The Bihar government has identified 202.14 acres in Antichak village for the project.
4. Land acquisition for the new university is nearly complete.
5. Simultaneously, the Archaeological Survey of India (ASI) is working to preserve the old ruins.
6. The ancient site is also being developed as a heritage and tourism destination.

Legacy and Cultural Impact

1. Vikramshila played a key role in transmitting Buddhism across Asia.
2. It had strong links to the spread of Tibetan Buddhism.
3. Vikramshila's artistic and architectural traditions influenced sculpture, stucco work, and metal art.
4. Today, the Vikramshila site stands as a symbol of India's ancient educational heritage.
5. It is also emerging as a major heritage tourism landmark.

Nalanda University

History and Founding

1. Nalanda University was founded in the **5th century CE.**
2. It was established **by Kumaragupta I** of the Gupta Empire.
3. The site was originally a **mango orchard gifted to the Buddha**.
4. Over time, it evolved into a renowned centre for Buddhist learning.
5. It attracted scholars from China, Korea, Japan, Tibet, and Southeast Asia.

Academic Contributions

1. Nalanda offered courses in Buddhist **philosophy, logic, medicine, astronomy, and metaphysics**.
2. It housed **a massive library** called **Dharmaganja**.
3. The library reportedly spanned nine floors.
4. It held **millions of manuscripts across** various disciplines.
5. Notable scholars like **Aryabhata** were linked to its intellectual tradition.
6. Chinese **scholar Xuanzang studied and taught at Nalanda**, further spreading its fame.

Structure and Architecture

1. The campus featured monasteries, temples, and courtyards.
2. It was laid out along a **north-south axis for orderly structure**.
3. The buildings were constructed in the **Kushan architectural style.**
4. Intricate carvings and inscriptions adorned the buildings.
5. **Nalanda's architectural influence** extended to **Thailand, Nepal, Myanmar, and the Malayan archipelago.**

Notable Teachers and Legacy

1. Influential figures like Nagarjuna, Dharmapala, Shantarakshita, and Atisa Dipankara taught at Nalanda.
2. These scholars played a key role in spreading Buddhism beyond India.
3. Their teachings influenced Buddhism in Tibet, China, and Southeast Asia.

Decline and Destruction

1. Nalanda began declining by the 12th century.
2. The decline was due to political instability and a drop in royal patronage.
3. In 1193 CE, Turkish invader Bakhtiyar Khilji destroyed the university.
4. The campus was burned and its vast library was set on fire.
5. This marked the end of Nalanda's flourishing academic tradition.
6. Surviving monks fled to Nepal, Tibet, and China.

Modern Revival

1. The Nalanda University Act was passed in 2010 by the Government of India.
2. This act laid the foundation for Nalanda's revival as a modern international university.
3. The revived university is located near Rajgir in Bihar.
4. Classes officially began in 2014.
5. The new university focuses on interdisciplinary research and Asian cultural studies.

Nalanda vs Vikramshila: Key Contrasts

Aspect	Nalanda	Vikramshila
Founded	5th century CE, by **Kumaragupta I** (Guptas)	8th–9th century CE, by **Dharmapala** (Palas)
Primary Focus	**Mahayana Buddhism**, philosophy, science	**Tantrayana/Vajrayana**, tantra, occult studies
Key Scholar	**Xuanzang** (China), Aryabhata (Maths/Astro)	**Atisa Dipankara** (Tibetan Buddhism)

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Library	**Dharmaganja** – vast, multi-storey manuscript archive	Library with **cooling system** to preserve texts
Reason for Creation	Create a **global Buddhist knowledge centre**	Address **decline at Nalanda**, reform learning
Modern Revival	Re-established (2010), classes since 2014	Central University announced (2025), land acquired

Nationwide Initiatives for Cultural Conservation and Educational Revival

Major Ancient Centres of Learning in India				
Institution	**Location**	**Period**	**Founder / Patron**	**Specialisation / Legacy**
Takshashila	Present-day Pakistan	6th century BCE – 5th CE	Bharata (as per Ramayana),not definitively known	Grammar, medicine, politics, military sciences
Nalanda	Rajgir, Bihar	5th – 12th century CE	**Kumaragupta I** (Gupta dynasty)	Mahayana Buddhism, philosophy, science, logic
Vikramshila	Bhagalpur, Bihar	8th – 13th century CE	**Dharmapala** (Pala dynasty)	Tantrayana Buddhism, occult studies, metaphysics
Odantapuri	Bihar (Nalanda district)	8th – 12th century CE	**Gopala** (Pala dynasty)	Buddhist learning, monastic training
Valabhi	Gujarat	5th – 8th century CE	**Bhatarka** (Maitraka dynasty)	Hinayana Buddhism, public administration
Pushpagiri	Odisha (Jajpur district)	3rd century BCE – 11th CE	**Kalinga rulers**	Early Buddhist monastic education
Sharada Peeth	Kashmir (now in PoK)	Ancient	**Lalitaditya Muktapida**(possibly)	Theology, Sanskrit, philosophy, astronomy
Somapura Mahavihara	Bangladesh (Pala Empire)	8th century CE onward	**Dharmapala** (Pala dynasty)	Major Buddhist monastery, influenced architecture of Southeast Asia

7. UNESCO Report: Education and Nutrition – Learn to Eat Well

1. UNESCO released the report *"Education and Nutrition: Learn to Eat Well"* in March 2025.
2. The launch took place during the **Nutrition for Growth (N4G) Summit in Paris**, hosted by France.
3. It is a collaborative effort of the Global Education Monitoring (GEM) Report, Research Consortium for School Health and Nutrition, and the School Meals Coalition's Education and Nutrition Writing Group.
4. The **report explores the two-way connection between education and nutrition** across the life cycle.
5. It calls for a systems-based approach to jointly improve both education and nutrition sectors.
6. The ultimate goal is to accelerate progress toward Sustainable Development Goals (SDGs), particularly SDG 2 and SDG 4.

Key Highlights of the Report

1. How Nutrition Supports Education

a. **Early nutrition is foundational** – Breastfeeding and early childhood nutrition boost brain development.

b. **Jamaica study** – Children in 1980s nutrition programmes showed better learning outcomes by age 22.

c. **School meals improve learning** – In LMICs, $100 per child leads to 0.5 more years of schooling.
d. **Academic scores rise** – Investments improve maths and reading by up to 0.20 standard deviation.
e. **Quality of meals is often neglected** – Only 93 of 187 countries had school food laws by 2022.
f. **Nutritionists are lacking** – 27% of school meal programmes operate without nutritionists.
g. **Sweden's reform** – The 1959 school meal law helped improve long-term education, including university enrolment.

2. How Education Improves Nutrition

a. **Educated mothers improve child health** – Secondary education reduces stunting and underweight cases in LMICs.
b. **Alive and Thrive in Bangladesh** – Reached 8.5 million mothers, improving child feeding practices.
c. **Mass campaigns raise awareness** – Australia's LiveLighter and U.S. Save the Food campaigns influenced diets and waste habits.
d. **Healthy food in public settings** – C40 Cities promote nutritious meals in schools and hospitals.
e. **Schools shape long-term habits** – Japan's Shokuiku links diet with culture and sustainability.

3. Formal and Non-Formal Education Are Crucial

a. **Health worker training is limited** – In 2022, only 14% of countries included infant nutrition in pre-service training.
b. **Farmer education matters** – Peer learning and hands-on training help farmers adopt climate-smart, organic practices.
c. **Universities drive change** – In Asia, Europe, and North America, higher education promotes food system thinking.
d. **Cross-sector impact in LMICs** – Bangladesh, Ethiopia, India, and Kenya are integrating this knowledge into policies.

4. Monitoring Nutrition Throughout the Life Course

a. **Data is limited beyond early years** – Most monitoring focuses on maternal and infant nutrition, neglecting school-age children.
b. **School meal monitoring is weak** – Indicators lack quality metrics and alignment with national goals.
c. **459 million children covered** – 47% of global primary school children benefit from school meals.

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Understanding the Education–Nutrition Nexus

1. **Education enables informed choices** – It equips individuals to follow healthy diets and sustainable farming practices.
2. **Nutrition enhances academic success** – Well-nourished children perform better and have improved lifelong well-being.
3. **Systems must work together** – Over 80% of school meal programmes have educational aims, but lack strong integration.
4. **Research gaps remain** – The intersection of education and nutrition is still underexplored and poorly tracked.

UNESCO Report Recommendations

1. Make Nutrition Education Lifelong and Practical

a. Embed nutrition learning from early childhood to adulthood.
b. Use both formal (schools, training) and informal (media, campaigns) education channels.
c. Focus on life skills like cooking, gardening, and food safety through engaging formats.

2. Position Schools as Hubs for Nutrition and Sustainability

a. Adopt a whole-school approach combining meals, physical activity, and classroom education.
b. Strengthen food systems by offering universal, locally sourced meals guided by nutrition experts.
c. Create food environments that promote healthy, sustainable habits through structural changes.

3. Strengthen Nutrition Through Multi-sectoral Collaboration

a. Promote alignment among education, health, and agriculture for common nutrition goals.
b. Ensure all nutrition policies have embedded education and public communication strategies.

4. Build Skilled Human Capital for Nutrition Transformation

a. Train doctors, nurses, and community workers in nutrition through pre-service and ongoing education.
b. Appoint trained nutritionists in school programmes and strengthen agricultural education.

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c. Promote interdisciplinary university education linking food systems, sustainability, and justice.

5. Monitor Education–Nutrition Links Across the Life Course

a. Track school-based nutrition initiatives and their outcomes over time.

b. Expand data collection beyond the first 1,000 days to include school-age children and youth.

c. Refine SDG 4 indicators to reflect policy goals and assess programme quality.

Conclusion

1. Nutrition and education must be advanced together through a holistic, life-course approach.
2. Their integration is critical to achieving SDG 2 (Zero Hunger) and SDG 4 (Quality Education).
3. Investments in food literacy, systems thinking, and robust monitoring will drive long-term development.

School Nutrition Programs in India

PM POSHAN Scheme

1. Centrally sponsored by the Ministry of Education, Department of School Education & Literacy.
2. Provides hot cooked meals in government and aided schools to tackle hunger and improve learning.
3. Meals meet nutritional standards – 450 kcal & 12g protein (primary); 700 kcal & 20g protein (upper primary).
4. Inclusive of pre-primary children under Bal Vatika in primary schools.
5. Aligned with ICDS schemes like Anganwadi Services and the Scheme for Adolescent Girls.
6. ₹12,500 crore allocated in the 2025–26 Budget, reaffirming commitment to nutrition and education.

Other Notable Interventions

1. **Eat Right School (FSSAI)** – Focuses on food safety and nutrition education in schools.
2. Yellow Books and activity guides for classes 1–8, available in 11 languages.
3. Linked with DIKSHA platform to reach teachers and students nationwide.
4. **Karnataka Ragi Milk (Nov 2024)** – Mid-day meals now include Ragi milk thrice weekly.
5. **Odisha Fortified Milk (Jan 2025)** – Vitamin A & D fortified milk to 44.5 lakh school children.
6. **Andhra Pradesh Extension (Jan 2025)** – Mid-day meal expanded to junior colleges, benefiting 1.5 lakh more students.

8. Swavalambini–Women Entrepreneurship Programme Launched

1. The **Ministry of Skill Development and Entrepreneurship**, in partnership with **NITI Aayog**, has launched a new initiative titled **Swavalambini – Women Entrepreneurship Programme**.
2. The programme represents a focused step towards **promoting women-led entrepreneurship across India**.

Key Features of Swavalambini Programme

1. The programme is designed as a **multi-stage movement to support and empower women in entrepreneurship**.
2. It specifically targets **female students in Higher Education Institutions (HEIs)** to build a strong pipeline of future women entrepreneurs.
3. The core objective is to equip young women with the **skills, mentorship, and resources** necessary to become successful business leaders.

Programme Structure

The initiative includes a **stepwise entrepreneurship training model** tailored for female students. It comprises four key components:

1. **Entrepreneurship Awareness Programme (EAP)**
2. **Women Entrepreneurship Development Programme (WEDP)**
3. **Dedicated mentorship support**
4. **Capacity building for faculty** to nurture and guide future entrepreneurs

Implementation Mechanism

1. The programme is being implemented by the **National Institute for Entrepreneurship and Small Business Development (NIESBUD)**.
2. NIESBUD is a premier institution under the Ministry, known for delivering entrepreneurship development programmes nationwide.

Intended Impact

1. The programme aims for a **minimum 10% of trained women participants** to successfully start their own enterprises.
2. It envisions contributing to **inclusive economic growth by boosting women-led startups and ventures**.
3. Ultimately, Swavalambini is expected to be a **catalyst for women's economic empowerment and employment generation** across the country.

H. Ethics

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1. Persuasion

1. In the current digital era, marked by the widespread use of social media, artificial intelligence, and the deep penetration of smartphones, societies are increasingly vulnerable to the rapid spread of disinformation.
2. In such a context, **persuasion emerges as a constructive and ethical tool** to positively influence people's beliefs, attitudes, and behaviors.
3. Unlike coercion or manipulation, persuasion enables informed decision-making through respectful and empathetic communication.
4. It can be particularly effective in promoting pro-social behaviors and in countering false narratives.

Definition and Concept of Persuasion

1. **Persuasion** can be defined as a **deliberate and ethical attempt to influence the beliefs, attitudes, or behaviors of individuals** through reasoning, emotional appeal, or the credibility of the communicator.
2. It is distinct from coercion, which involves force or threats, and from manipulation, which involves deception or exploitation of cognitive biases.
3. Persuasion typically involves conscious communication, often verbal and intentional.
4. It functions by establishing perceived similarities, emotional connections, or shared goals between the persuader and the audience.
5. It emphasizes the **freedom of choice** and respects the autonomy of individuals, which makes it a powerful tool in ethical communication.

Key Features of Persuasion

1. Persuasion is usually **intentional and planned**.
2. It is often **verbal and explicit**, involving dialogue or message dissemination.
3. It is **non-coercive** and **respects the autonomy** of the audience.
4. It relies on **similarity, empathy, and perceived trustworthiness** to build rapport.
5. The outcome of persuasion is ideally **voluntary acceptance or behavioral change**.

Factors Affecting Persuasion

1. **Source of the Message:** The effectiveness of a persuasive message greatly depends on the credibility, charisma, and authority of the source. If the source is perceived as trustworthy and knowledgeable, the message is more likely to be accepted.
   Example: Dr. Randeep Guleria, former Director of AIIMS Delhi, played a key role in influencing public opinion regarding COVID-19 precautions due to his medical authority and public trust.
2. **Content of the Message:** The message should be clear, relevant, unambiguous, and aligned with the values and interests of the target audience. Emotional appeals and logical arguments must be appropriately balanced.
   Example: The Swachh Bharat Abhiyan successfully used simple and relatable messages emphasizing the health and dignity benefits of sanitation.
3. **Audience Characteristics:** The beliefs, education level, cultural background, and emotional state of the audience influence how they respond to persuasive messages. Tailoring the message to the audience's context improves its effectiveness.
   Example: Financial literacy programs in rural India use pictorial aids and vernacular languages, while urban campaigns may use digital platforms and technical language.
4. **Reciprocity Principle:** People are more likely to be persuaded if they have already received something of value from the persuader. This builds goodwill and moral obligation.
   Example: The 'Give It Up' campaign encouraged the voluntary surrender of LPG subsidies by appealing to people's sense of responsibility, followed by schemes like PM Ujjwala Yojana that offered free LPG connections to the poor.

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5. **Social Proof:** When people observe that others have adopted a belief or behavior, they are more likely to follow suit. It creates a sense of collective endorsement.

   Example: The Adarsh Gram Yojana encouraged villages to adopt model development practices by showcasing successfully transformed villages.

6. **Timing and context :** Messages are more impactful when they align with the prevailing emotional or social climate.

   Example: The "Vocal for Local" campaign was launched during the COVID-19 pandemic when there was heightened awareness about economic self-reliance and local production.

Role of Persuasion in Combating Disinformation

1. **Building Trust and Reducing Resistance**

Persuasive communication works by establishing common ground, using credible and relatable messengers, and showing empathy. This helps in reducing resistance to corrective information.

- **Example**: In addressing vaccine hesitancy, involving local doctors, religious leaders, or community influencers to advocate for vaccination has proven to be more persuasive than impersonal messaging.

2. **Using Narratives to Counter False Narratives**

Instead of relying solely on statistics, persuasive strategies often include real-life stories, visuals, and emotional appeals to connect with the audience on a personal level.

- **Example**: Sharing a personal story of someone who refused COVID-19 treatment due to misinformation and later regretted it can have more emotional impact than citing scientific studies.

3. **Promoting Critical Thinking without Confrontation**

Persuasion encourages people to think critically through Socratic questioning, offering alternative viewpoints, and prompting them to evaluate sources of information themselves. This reduces defensiveness and promotes reflection.

- **Example**: Deradicalization programs often rely on respectful dialogue, where individuals are asked open-ended questions that challenge inconsistencies in extremist ideologies, prompting them to reassess their views on their own.

4. **Ensuring Sustained Engagement Over Time**

Combating disinformation requires long-term and consistent engagement. One-time fact-checks are rarely effective, whereas repeated persuasive messaging gradually replaces false beliefs.

- **Example**: Continuous public awareness campaigns about tuberculosis, HIV, or financial frauds have shown greater success over time due to sustained engagement and trust-building.

Ethical Dimensions of Persuasion

Persuasion is considered ethical when it is based on **truthfulness, transparency, and respect for autonomy**. It should not exploit cognitive weaknesses or emotional vulnerabilities for personal or political gain.

Form of Influence	Ethical Assessment
Genuine Persuasion	Ethical – respects autonomy and informed consent
Manipulation	Unethical – involves deception or misrepresentation
Coercion	Unethical – involves force, threat, or compulsion

Importance of Persuasion in Public Administration

1. **Effective Policy Implementation**: Civil servants often need to persuade citizens to adopt beneficial behaviors, such as paying taxes or using digital services.
2. **Behavioral Change Communication (BCC)**: Persuasion is a cornerstone in designing impactful awareness campaigns, such as Beti Bachao Beti Padhao, Digital India, and Jal Jeevan Mission.
3. **Crisis Management**: During disasters or pandemics, public cooperation is critical. Persuasive messaging from trusted officials can help manage fear and misinformation.
4. **Democratic Governance**: Ethical persuasion upholds democratic principles by fostering dialogue, participation, and voluntary compliance.

Supporting Ethical Theories and Thinkers

1. **Aristotle's Rhetoric**: Aristotle emphasized **ethos (credibility)**, **pathos (emotional appeal)**, and **logos (logical reasoning)** as the three essential elements of persuasion.
2. **Kantian Ethics**: According to Kant, persuasion is ethical if it treats individuals as ends in themselves and not merely as means to an end.
3. **Thaler and Sunstein's Nudge Theory**: Suggests that people can be gently guided (nudged) towards better decisions without restricting their freedom of choice, a subtle form of ethical persuasion.

Persuasion, when guided by ethical considerations, empathy, and mutual respect, is a powerful tool for public administrators, policymakers, and civil society actors. It fosters **voluntary cooperation**, builds **public trust**, and helps counteract **misinformation** in a non-coercive, democratic manner. In an age where **disinformation spreads faster than facts**, the role of **ethical persuasion** becomes more vital than ever.

2. Happiness

1. Introduction

1. The ancient Greek playwright Aeschylus once said, *"Happiness is a choice that requires effort at times."*
2. This quote gains relevance in light of India's ranking in the **World Happiness Report 2025**, where the country stands at **118th among 147 countries**, falling behind neighbours such as Nepal and Pakistan.
3. This reflects the urgent need to explore the philosophical, psychological, and policy dimensions of happiness, especially in the context of governance and ethics.

2. Defining Happiness

Happiness is commonly understood as the **subjective enjoyment of life as a whole**. It reflects the extent to which an individual perceives their life positively. Scholars classify happiness into two fundamental categories:

1. **Hedonic Happiness**: Focused on pleasure attainment and pain avoidance.
2. **Eudaimonic Happiness**: Centered on meaning, purpose, and self-actualization.

3. Philosophical Perspectives on Happiness

The pursuit of happiness has long been a subject of inquiry across Eastern and Western traditions.

Different philosophies offer diverse understandings of how happiness is attained:

Indian Philosophies	Western Philosophies
Cārvāka School: Advocates material pleasures, stating *"Yavat jivet sukham jivet"* – As long as one lives, live happily.	**Epicureanism**: Advocates moderate hedonism—freedom from physical pain and mental anxiety.
Bhagavad Gita: Promotes *Nishkama Karma* (selfless action), emphasizing duty without attachment to outcomes – *"Karmanye vadhikaraste ma phaleshu kadachana"*.	**Kantian Ethics**: True happiness arises from performing one's duty purely for its own sake.
Buddhism: Emphasizes the Middle Path, where happiness is found in mindful living – *"There is no path to happiness; happiness is the path."*	**John Locke**: The pursuit of happiness drives progress and is foundational to morality and civilization.
Bhakti Tradition: Equates happiness with devotion, love, and inner joy through spiritual connection.	**Utilitarianism (J.S. Mill)**: Calls for maximizing happiness for the greatest number, distinguishing between higher and lower pleasures.
Guru Nanak's Philosophy: Emphasizes *Santokh* (contentment) as the key to eternal happiness.	**Stoicism (Marcus Aurelius)**: Advocates focusing on what is within one's control—*"You have power over your mind—not outside events."*
Upanishadic View: Defines true happiness as *Ananda*, a blissful state of consciousness—*Sat-Chit-Ananda* (truth-consciousness-bliss).	**St. Augustine**: Believes that happiness lies in union with God, achieved through faith and divine grace.

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These varied approaches show that while some traditions link happiness to material fulfillment, others emphasize virtue, duty, or spiritual transcendence.

4. Obstacles to Happiness in Contemporary Life

In modern times, both **external** and **internal** factors impede individuals from experiencing sustained happiness:

A. External Factors

1. **Negative Social Comparisons**: Unrealistic portrayals on social media reduce self-worth, especially among youth.
2. **Lack of Social Support**: According to a 2023 global survey, 19% of young adults reported having no one they could rely on for emotional support.
3. **Financial Stress and Insecurity**: Poverty creates a "cognitive tax," reducing mental bandwidth for happiness.
4. **Substance Abuse**: Addiction to drugs and alcohol deteriorates mental and physical well-being.

B. Internal Factors

1. **Self-Doubt and Low Self-Esteem**: Persistent negative self-image can lead to anxiety, depression, and ingratitude.
2. **Inability to Live in the Present**: Overthinking and unresolved trauma cause people to dwell in the past or fear the future.
3. **Excessive Screen Time**: As per the Economic Survey 2023–24, increased screen exposure is contributing to the rise of what has been termed "The Anxious Generation."

5. Role of Civil Servants in Promoting Happiness

As public functionaries, civil servants hold the responsibility of enhancing citizen well-being. As John Adams famously stated, *"The happiness of society is the end of government."* Civil servants can promote happiness through the following measures:

A. People-Centric Governance

1. Adopting participatory models such as the **Gram Panchayat Development Plan** enhances inclusivity and responsiveness.

B. Transparency and Accountability

1. Utilizing tools such as **Right to Information (RTI)**, **e-governance**, and **social audits** helps build public trust and reduce corruption.

C. Promoting Mental and Emotional Well-Being

1. Implementation of services like **Tele-Manas**, a toll-free mental health helpline, supports citizens' emotional health.
2. Encouraging work-life balance through flexible work hours in government departments contributes to employee well-being.

D. Fostering Social Harmony

1. Organizing **interfaith dialogues**, **community celebrations**, and **awareness drives** can curb communal tensions and foster unity.

E. Integrating Happiness into Policy Frameworks

1. Adopting models such as Bhutan's **Gross National Happiness (GNH)** or establishing a **Happiness Ministry**, as seen in Madhya Pradesh, can institutionalize the pursuit of well-being as a governance goal.

6. Conclusion

While happiness may often appear elusive, it is not unattainable. Both ancient wisdom and modern psychology agree that happiness can be **cultivated through conscious effort, balanced living, and ethical choices**. Governments and individuals alike must seek to integrate **hedonic pleasures** with **eudaimonic purpose**, thus ensuring that happiness is not merely a fleeting emotion but a sustained way of life. Ultimately, the measure of good governance lies not only in economic growth but in the emotional and psychological well-being of its citizens.

3. Philanthropy: A Moral Imperative for Social Good

1. *"Service to others is the rent you pay for your room here on earth."* — Muhammad Ali
2. This quote encapsulates the ethical essence of philanthropy. In India's contemporary context, philanthropy is witnessing significant growth.
3. According to the **India Philanthropy Report 2025**, contributions from **corporate social responsibility (CSR)** spending, **ultra-high-net-worth individuals (UHNIs)**, and **a growing middle-class culture of giving** are transforming India's development landscape.
4. While philanthropy has existed across cultures and epochs, its relevance has evolved in today's world as a **strategic, ethical, and inclusive development tool**.

Philanthropy in the Modern Context

1. The term *philanthropy* literally translates to "love of mankind."
2. In modern understanding, it refers to **voluntary contributions of financial or material resources** to institutions or causes that promote **well-being, equity, and public good**.
3. **Philanthropy vs Charity**: Unlike charity, which focuses on immediate relief to individuals, **philanthropy aims at long-term, systemic transformation** that benefits entire communities.
4. It is increasingly seen as a **catalyst for innovation, policy reform, and social capital creation**.

Philosophical Basis of Philanthropy

A. Indian Ethical and Religious Thought

1. **Chanakya's Arthashastra**: Advocated that **1/6th of state revenue** be allocated to public welfare.
2. **Swami Vivekananda**: Introduced the concept of **Daridra Narayana** – serving the poor is equivalent to serving God.
3. **Mahatma Gandhi's Trusteeship Theory**: Wealthy individuals should act as **trustees of societal wealth**, using it for the collective good.
4. **Religious Traditions**:
   a. **Hinduism**: *Dāna* and *Dakshina* promote voluntary giving as a sacred duty.
   b. **Islam**: *Zakat* (mandatory giving) and *Sadaqah* (voluntary giving) emphasize social responsibility.
   c. **Buddhism**: *Bhiksha* highlights humility and the ethics of interdependence.
   d. **Sikhism**: *Langar* signifies the communal ethic of equality and shared nourishment.

B. Western Philosophical Traditions

1. **Virtue Ethics**: Generosity is viewed as a moral virtue leading to the flourishing of both giver and recipient.
2. **Kantian Ethics**: Philanthropy is a **moral duty**, not based on consequences but universal obligation.
3. **John Rawls**: Justice requires **supporting the most disadvantaged** to achieve fairness in society.
4. **Utilitarianism**: Promotes actions, like philanthropy, that **maximize collective happiness**.
5. **Libertarian Perspective**: Views philanthropy as a **voluntary moral act superior to coercive taxation**.

Multifaceted Dimensions of Philanthropy

Aspect	Philanthropic	Entrepreneurial	Customary	Spiritual / Effective Altruism
Definition	Benevolence with concern	Sustainable projects for upliftment	Inspired by tradition and culture	Giving based on evidence and maximum impact
Objective	Ameliorative	Transformational	Developmental	Ethical & rational giving

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Strategy	Responsive	Opportunity-driven	Needs-based	Results-based
Engagement	Limited	Extensive	Holistic	Informed and strategic
Major Focus	Community welfare	Equal access & innovation	Legacy & values	Long-term systemic reform

Philanthropy as a Development Tool

Philanthropy complements state functions and market mechanisms in several impactful ways:

1. **Bridging Funding Gaps:** Supplements **government expenditure**, particularly in underfunded areas like rural education and tribal healthcare.
2. **Addressing Development Deficits:** Direct intervention in poverty, nutrition, gender equity, education, and skilling.
   - **Example**: **Azim Premji Foundation**'s extensive work in public education and teacher training.
3. **Catalyzing Innovation**
4. Supports scalable, tech-driven, and community-based solutions.
   - **Example: Bill & Melinda Gates Foundation**'s role in promoting sanitation, digital health, and maternal care in India.
5. **Empowering Marginalized Groups:** Enables **social entrepreneurship**, **grassroots leadership**, and **youth-driven initiatives**.

Ethical Challenges in Philanthropy

Despite its benefits, philanthropy is not without ethical dilemmas:

1. **Elite Capture of the Social Agenda:** Large donors may skew the development narrative towards elite preferences or corporate interests, potentially undermining **democratic decision-making**.
2. **Corporate Dilemma:** Tension exists between profit maximization and social responsibility. Shareholders may view philanthropy as misuse of assets.
3. **Public Welfare Substitution:** Overdependence on philanthropic aid can allow governments to shirk their responsibility, especially in sectors like health and education.
4. **Regional and Cultural Bias**
   a. Most philanthropic funds are concentrated in urban, developed states (e.g. Maharashtra, Karnataka), leaving underdeveloped states behind (e.g. Bihar, Odisha).
   b. Religious or ideological leanings may influence allocation, undermining neutrality.
5. **Accountability and Transparency Deficits**
   a. Many NGOs receiving foreign or domestic funds do not comply with legal return filings or are opaque in fund utilization.
   b. This raises concerns about **financial integrity, misuse of funds**, and balancing **sovereignty with global cooperation**.

Philanthropy must go beyond symbolic charity to become a **moral and strategic instrument for inclusive growth and justice**. It should be grounded in **ethical principles of equity, compassion, and sustainability**.

Going forward, the next phase of giving in India must: Shift from **CSR-mandated donations** to **conviction-led philanthropy**, Broaden participation beyond elite circles to enable **democratized giving**, Be aligned with **systemic reform**, not temporary relief, Follow the principles of **effective altruism** — focusing on maximum positive impact with rational accountability.

I. ESSAY

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The Great Thing About Technology is That It Can Both Connect and Disconnect Us

"Technology is a useful servant but a dangerous master." These words by *Christian Lous Lange* capture the paradox that defines our modern existence. As technology seeps into every aspect of our lives—from how we study and communicate to how we earn, socialize, and even think—it has become both a bridge and a barrier. While it promises connection, empowerment, and convenience, it also silently erodes attention, emotional depth, and human warmth. This dual nature is most evident in the lives of today's youth, especially those preparing for demanding exams like the Civil Services.

Consider the **daily routine of a UPSC aspirant**. With the help of Telegram groups, online coaching platforms, and YouTube channels, an aspirant in a remote village can now access the same resources as someone in a metropolitan city. Current affairs PDFs, quizzes, live classes, and discussions are all just a tap away. On the surface, it seems like a technological revolution has democratized learning. But beneath this promise lies a subtle trap. Many aspirants, in their effort to stay connected, gradually find themselves *overwhelmed and mentally fragmented*. The constant notifications, comparison with others' progress, and the fear of missing out (FOMO) lead not to motivation but anxiety. They begin to lose their sense of self, their quiet focus, and even their connection with family or nature. Their minds are digitally connected, but emotionally disconnected.

"Technology is best when it brings people together"

This is not an isolated case. The paradox of connection and disconnection runs deep through **history.** When the printing press was invented, it allowed for mass dissemination of knowledge and sparked intellectual revolutions like the Renaissance. But it also challenged established authorities, caused religious fractures, and disrupted societal harmony. Similarly, the **Industrial Revolution** transformed human productivity and mobility but led to urban alienation, child labor, and the breakdown of traditional communities. *Every great technological leap has come with a shadow side*. The digital era is no exception.

Today, technology surrounds us with tools of empowerment. The internet, smartphones, AI-based platforms, and cloud computing have reshaped education, communication, governance, and healthcare. Students can watch lectures on SWAYAM or Coursera, farmers receive real-time updates through SMS, and doctors can treat patients virtually through telemedicine. Digital India has brought services like Aadhaar, DigiLocker, and CoWIN into millions of homes, making governance faster and more accessible. Remote work platforms like Zoom, Slack, and Google Meet have changed how teams operate globally. Financial inclusion has reached the grassroots through UPI, Paytm, and Jan Dhan accounts, allowing even roadside vendors to go cashless.

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Yet, *connection does not always mean closeness*. While we have more friends online, we have fewer deep conversations. While we share photos and status updates instantly, we forget the warmth of handwritten letters and face-to-face smiles. In many homes, people sit together but scroll silently on their devices. Children play games on screens, not in parks. Birthdays are marked by Instagram stories, not by shared meals and laughter. *The emotional vocabulary of human life is being reduced to emojis, memes, and voice notes.*

This digital overstimulation is also affecting mental health. Many young people feel burnt out, even without doing much physical work. The pressure to be constantly available, responsive, and updated is silently eating into their peace. The more we scroll, the less we reflect. Instead of deep, thoughtful reading, we consume short-form content that entertains but rarely enlightens. Attention spans are shrinking, while anxiety and loneliness are rising. The overuse of technology has not only *disconnected us from others* but also from ourselves.

Social media, once hailed as a space for free expression, is increasingly becoming a source of division. Algorithms show users content that aligns with their existing views, creating echo chambers. Over time, people stop engaging with opposing ideas and start believing that their version of reality is the only truth. This *polarization is dangerous* for democratic discourse. It breeds intolerance, misinformation, and in extreme cases, violence. Fake news spreads faster than truth, and political narratives become emotionally charged rather than rationally debated.

In the **economic sphere** too, while technology opens new doors, it also leaves many behind. Highly skilled individuals benefit from online freelancing platforms, digital startups, and global markets. But those without access to devices, stable internet, or digital literacy struggle to keep pace. The *digital divide* is real, especially in rural and tribal regions where technology often becomes a source of entertainment rather than empowerment. Even in cities, workers in low-skill jobs are increasingly being replaced by automation. This growing gap between the tech-savvy elite and the digitally excluded poor risks deepening social inequality.

Furthermore, technology's effect on **culture** is equally profound. Traditional games, local arts, oral histories, and rituals are slowly fading away. Influencers and global content dominate the screens of young people, pulling them away from their roots. *In this hyper-connected world, cultural disconnection is the quiet crisis.*

Yet, it is important to remember that technology itself is not to blame. A knife can feed or wound—it depends on the hand that holds it. Similarly, technology is a tool, not a destiny. Whether it connects us or disconnects us depends on our intent, awareness, and usage. A Telegram group can be a focused resource hub or a distraction center—it all depends on how we use it. A smartphone can bring you a world of knowledge or an endless loop of scrolling—it depends on your discipline.

Therefore, the real challenge is *not to reject technology, but to use it wisely and mindfully*. Governments must invest not just in digital infrastructure, but also in digital literacy. Schools and parents must teach children how to manage screen time, recognize misinformation, and maintain real-world relationships. Civic awareness campaigns should highlight the importance of mental well-being in the digital age. Equally, individuals must consciously carve out time for offline joys—reading a book, taking a walk, speaking to elders, playing a physical sport, or simply sitting quietly with one's thoughts.

In the end, the goal is balance. Let technology enhance our lives, not consume them. Let it build bridges, not walls. Let it offer speed, without sacrificing depth. *Let it serve us, not master us*. As we move into an increasingly automated and intelligent future, we must hold on to the timeless truth that while machines may run the world, it is only human beings who can give it meaning.

"Balance is not something you find; it's something you create"

J. SCHEME

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1. Anveshan Scheme May Be Extended

1. The Centre may extend Anveshan scheme to **incentivize seismic surveys of sedimentary basins** for mapping **oil and gas deposits** by another year.
2. The aim is to find new reserves to boost energy security.
3. It was launched in fiscal year 2025 (FY25).
4. It is currently set to end in fiscal year 2026 (FY26).
5. Mission Anveshan may be extended till FY27.
6. A decision on the extension is still pending.

Implementing Agencies & Activities

1. The government provides **incentives to** state-run companies like **ONGC and Oil India Ltd.**
2. These companies conduct seismic data acquisition, processing, interpretation, and mapping of oil and gas reserves.
3. The scheme continues the objectives of the **National Seismic Programme (NSP).**
4. NSP focuses on mapping hydrocarbon resources in India's sedimentary basins.

Budget & Targets

1. The scheme was approved with a budgetary outlay of ₹720 crore.
2. The duration of the budget is two years – FY25 and FY26.
3. It targets conducting **2D seismic surveys** over 20,275 line-kilometers (LKM).
4. The surveys cover **seven on-land sedimentary basins** – Ganga-Punjab, Rajasthan, Saurashtra, Deccan Synclise, Cuddappah, Krishna-Godavari, and Chhattisgarh.

Survey Types & Quality

1. The scheme also emphasizes **conducting more 3D seismic surveys**.
2. 3D surveys are technically superior and provide more accurate results.

Progress & Delays

1. ONGC's work was delayed due to litigation related to contract issues.
2. A parliamentary standing committee submitted a report on the delay in March.
3. ONGC has started experimental surveys in the Cuddapah area of Andhra Pradesh.
4. Seismic data acquisition there is expected to start soon.
5. Oil India has already gathered seismic data in the Rajasthan and Ganga-Punjab basins.
6. Oil India completed around 1,683 LKM of 2D seismic data.

Parliamentary Oversight & Recommendations

1. The House panel on petroleum and natural gas is chaired by Sunil Dattatrey Tatkare, Lok Sabha MP from Raigad, Maharashtra.
2. The panel recommended close monitoring of the scheme's progress.
3. It also urged timely completion of 2D seismic surveys.
4. The aim is to ensure data availability and interpretation in a time-bound manner.
5. Readily available geoscientific data can help attract global investors.
6. This would lead to proactive participation in India's exploration and production sector.
7. The focus is especially on deepsea and ultra-deepsea hydrocarbon exploration.
8. The panel emphasized timely release of funds to avoid delays.

2. Prime Minister Internship Scheme (PMIS)

The Prime Minister Internship Scheme (PMIS) is now open for applications with the launch of Round 2 of the pilot phase.

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Aim of Prime Minister Internship Scheme (PMIS):

The scheme aims to harness the potential of India's youth population by providing them with 12-month paid internships in top companies across India.

- Ministry of Corporate Affairs **responsible for Prime Minister Internship Scheme (PMIS):**

Beneficiaries of Prime Minister Internship Scheme (PMIS):

1. Individuals aged 21 to 24 years
2. Candidates not currently enrolled in any full-time academic program

Benefits of Prime Minister Internship Scheme (PMIS)

1. **Financial Assistance:**
   a. ₹5,000 per month
   b. One-time financial assistance of ₹6,000
2. **Real-life Experience:** 12 months of valuable work experience in India's top companies
3. **Insurance Coverage:**
   a. Covered under Pradhan Mantri Jeevan Jyoti Bima Yojana (launched on May 9, 2015)
   b. Covered under Pradhan Mantri Suraksha Bima Yojana (launched on May 9, 2015)

3. MEITY Launches Multiple Initiatives to Boost the AI Ecosystem

The Ministry of Electronics and Information Technology (MeitY) launched several key initiatives to enhance India's AI ecosystem during the anniversary celebration of the **IndiaAI Mission**.

Key Initiatives Launched

1. **AIKosha: IndiaAI Datasets Platform**: A secured platform providing access to datasets, AI models, and use cases with AI sandbox capabilities for experimentation and testing.
2. **IndiaAI Compute Portal**: Offers subsidized AI compute, storage, and network services, with access to over **10,000 GPUs** (Graphics Processing Units) that are crucial for AI computations.
   - **GPU**: A circuit used for processing graphics and videos and is essential for running AI models efficiently.
3. **AI Competency Framework**: Aims to enhance AI skills among public sector officials by providing a structured competency mapping framework.
4. **iGOT-AI for Government Officials**: An AI-powered, personalized learning platform available on **iGOT Karmayogi**, tailored for government employees.
5. **Other Initiatives**
   a. **IndiaAI Startups Global Acceleration Program**: Aims to support AI startups at the global level.
   b. **IndiaAI Innovation Challenge**: A competition to encourage innovative AI solutions.
   c. **IndiaAI FutureSkills Fellowship**: Offers fellowships to enhance skills in the AI domain.

About IndiaAI Mission

1. **Launched**: March 2024
2. **Budget**: ₹10,371.92 crore
3. **Objective**: To promote AI innovation through public-private partnerships and the establishment of advanced AI infrastructure.
   - This will be achieved by democratizing access to computing, providing capital for startups, fostering socially impactful AI projects, and promoting ethical AI development.
4. **Ministry**: MeitY (Ministry of Electronics and Information Technology)
5. **Implementing Agency**: **IndiaAI** (Independent Business Division under Digital India Corporation)

Seven Pillars of IndiaAI Mission

1. **IndiaAI Compute Capacity :** Focuses on building a scalable AI ecosystem by integrating **10,000+ GPUs** through public-private collaborations.
2. **IndiaAI Innovation Centre :** Dedicated to creating advanced AI models for India, including **Large Multimodal Models (LMMs)** and specialized foundational models.
3. **IndiaAI Datasets Platform :** A centralized hub for accessing non-personal datasets, streamlining research and providing resources for startups.
4. **IndiaAI Application Development Initiative :** Focuses on AI-driven solutions across sectors such as **healthcare**, **agriculture**, and **education**.

5. **IndiaAI FutureSkills :** Aims to increase the number of graduates and postgraduates in AI, with the establishment of **Data and AI Labs** in Tier 2 and Tier 3 cities.
6. **IndiaAI Startup Financing :** Provides funding and resources for AI startups to help them scale and grow.
7. **Safe & Trusted AI :** Ensures the responsible development and deployment of AI through ethical guidelines, responsible AI projects, and the creation of indigenous tools.

India's Key AI Models and Language Technologies

1. India has been making significant strides in the AI and language technology domain, with several government-backed initiatives and AI models aimed at improving communication, accessibility, and service delivery.
2. Some of the key AI models and technologies include **BharatGen**, **Digital India BHASHINI**, **Sarvam-1 AI Model**, **Chitralekha**, and **Hanooman's Everest 1.0**.

BharatGen

1. **Overview**: BharatGen is India's first government-funded **multimodal large language model (LLM)**. It is designed to cater specifically to the country's **linguistic**, **cultural**, and **socioeconomic** diversity.
2. **Objective**: The model aims to transform public service delivery and citizen engagement by developing foundational AI models for **language**, **speech**, and **computer vision**. BharatGen strives to make AI accessible and applicable to India's diverse population.
3. **Impact**: By focusing on multiple modalities, it addresses challenges in AI technology adoption across various sectors, enhancing the effectiveness of government services.

Digital India BHASHINI

1. **Overview**: Digital India BHASHINI is an **AI-powered language translation platform** under the **Digital India initiative**. It plays a key role in facilitating better access to government services by connecting citizens in their native languages.
2. **Objective**: The platform aims to bridge the digital language divide by providing real-time translations for digital content, ensuring that non-English speakers can access essential information.
3. **Key Feature**: It uses **crowdsourcing** through the **"Bhasha Daan"** initiative, where individuals contribute linguistic data to build **multilingual datasets**, expanding the platform's ability to support numerous Indian languages.

Sarvam-1 AI Model

1. **Overview**: Sarvam-1 is a **large language model (LLM)** optimized for Indian languages. It is designed to perform various tasks such as **language translation**, **text summarization**, and **content generation**.
2. **Applications**:
   a. **Language Translation**: Facilitates accurate and context-aware translations across multiple languages.
   b. **Text Summarization**: Helps in condensing large volumes of text into concise summaries.
   c. **Content Generation**: Assists in generating coherent and meaningful content, useful in media and educational fields.
3. **Impact**: It makes significant contributions to AI-driven linguistic tasks, enabling efficient communication and content processing in India's multi-lingual context.

Chitralekha

1. **Overview**: Chitralekha is an AI platform focused on generating and editing **audio transcripts** in various **Indic languages**.
2. **Objective**: The platform aims to enable the transcription of audio content into text, which can be edited and translated, supporting the accessibility of audio content in different languages.
3. **Applications**: It is especially useful for media, educational, and accessibility sectors, providing efficient tools for transcribing audio in multiple languages

Hanooman's Everest 1.0

1. **Overview**: **Everest 1.0** is a **multilingual AI system** developed by **Hanooman**, designed to support communication in **35 Indian languages**.

Click Here for INDEX

2. **Objective**: The system aims to facilitate effective **communication** and **accessibility** by supporting a wide range of Indian languages, catering to the linguistic diversity of the country.
3. **Impact**: By supporting 35 languages, it significantly aids in breaking down communication barriers and promoting inclusivity in digital services, government interactions, and more.

The initiatives launched by MeitY as part of the **IndiaAI Mission** are geared towards strengthening India's position in the global AI ecosystem, promoting innovation, and ensuring the responsible development and application of AI technologies.

4. Rashtriya Gokul Mission (RGM) for Livestock Sector

1. The Union Cabinet has approved the **Revised Rashtriya Gokul Mission (RGM)** to strengthen the livestock sector.
2. An **additional outlay of ₹1,000 crore** has been sanctioned for the **15th Finance Commission cycle (2021–22 to 2025–26)**.

Objectives of Revised RGM

1. Enhance **bovine productivity** and **milk production** through sustainable and advanced technologies.
2. Promote **genetic improvement** using **high genetic merit bulls** for superior breeding outcomes.
3. Expand the **Artificial Insemination (AI)** network for better breeding services across rural areas.
4. Ensure **doorstep AI services** to farmers through a robust technician network.
5. Promote **indigenous cattle and buffalo breeds** using a scientific and holistic approach.

About the Mission

1. Launched in **2014**, under the **National Programme for Bovine Breeding and Dairy Development**.
2. Implemented by the **Department of Animal Husbandry and Dairying**, under the **Ministry of Fisheries, Animal Husbandry and Dairying**.
3. It is a **Central Sector Scheme** funded with **100% central assistance**, with limited exceptions.
4. The **total outlay** is now revised to **₹3,400 crore**, up from ₹2,400 crore for 2021–26.

New Components in Revised RGM

1. **Heifer Rearing Centres**: One-time **35% capital subsidy** for 30 centers to house **15,000 heifers** in total.
2. **Support for IVF Heifers**: **3% interest subvention** on loans to farmers for purchasing **high-genetic-merit IVF heifers**.

Existing Core Components

1. Ensure availability of **high genetic merit germplasm** through **Bull Production Programmes** using **Progeny Testing** and **Pedigree Selection**.
2. Implement **In Vitro Fertilization (IVF)** technology for breed improvement.
3. Expand AI services by creating a network of **Multi-Purpose AI Technicians in Rural India (MAITRIs)**.
4. Roll out the **National Digital Livestock Mission** for real-time data on animal health and disease outbreaks.

Indigenous Breed Promotion

1. Support and conserve **elite indigenous breeds** via **Gaushalas**, **Gosadans**, and **Pinjarapoles**.
2. Establish **Gokul Grams** for conservation and development of indigenous breeds.
3. Set up **National Kamdhenu Breeding Centres** in **Andhra Pradesh** and **Madhya Pradesh** to serve as genetic repositories.

Farmer Engagement and Recognition

1. Launch a **Nationwide AI Programme** to provide **free AI services** at the farmer's doorstep.
2. Introduce awards like **Gopal Ratna** and **Kamdhenu** to incentivize indigenous cattle rearing.
3. Organize **skill development** initiatives for AI professionals and rural technicians.

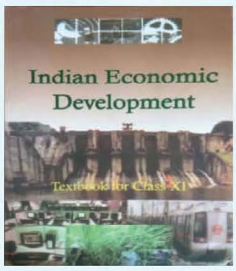
Technology and Market Access

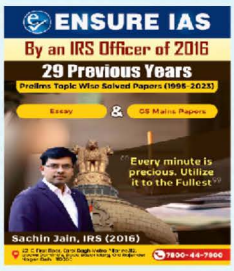
1. Promote **Advanced Reproductive Technologies** to ensure disease-free female bovines.
2. Operate **e-Pashu Haat – Nakul Prajnan Bazaar**, an e-market platform to connect breeders and farmers for **quality bovine germplasm**.

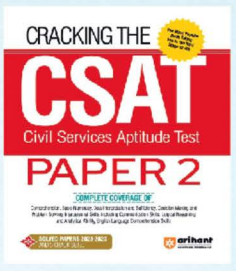
Impact of the Rashtriya Gokul Mission

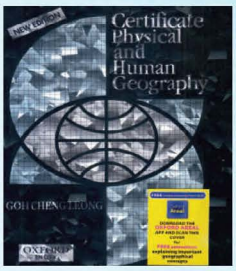
1. **Milk production** increased by **63.55%** over the last decade.
2. **Per capita milk availability** rose from **307 grams/day in 2013–14** to **471 grams/day in 2023–24**.
3. **Bovine productivity** improved by **26.34%** in the same period.

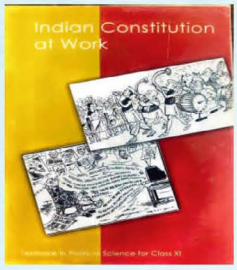
New List of Books to be provided to our classroom students since December 2023

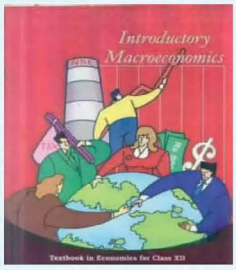


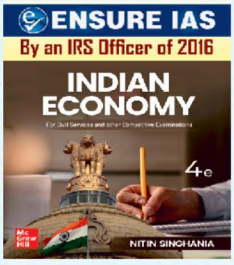


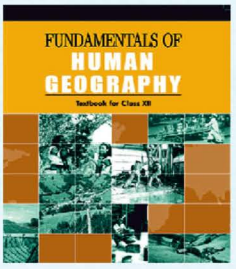


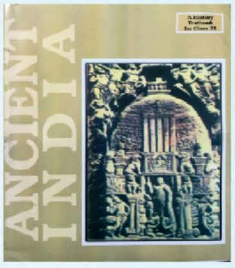


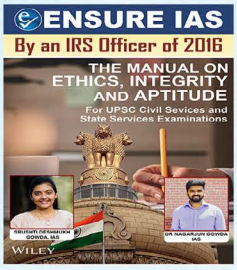


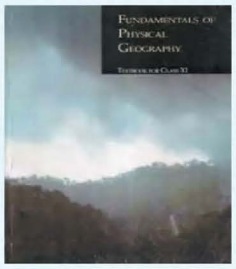


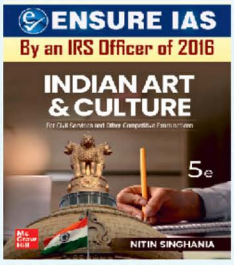


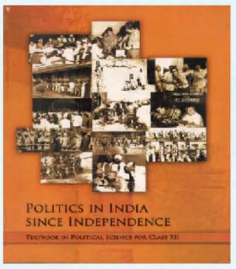


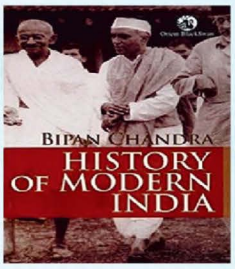


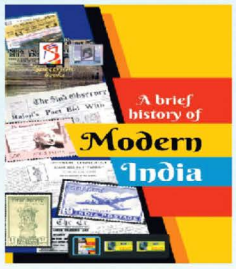


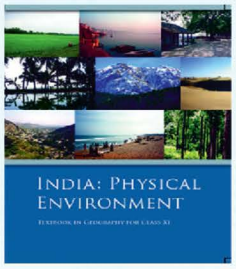


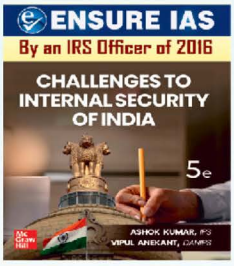


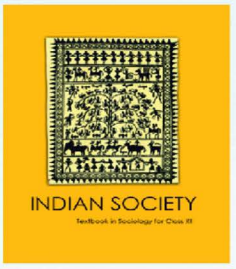


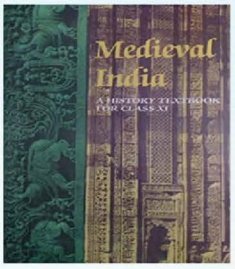


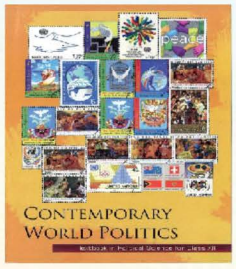


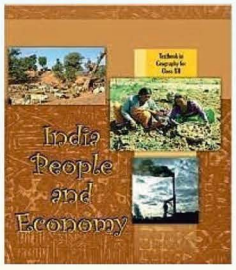


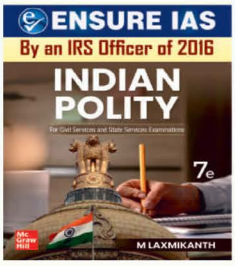


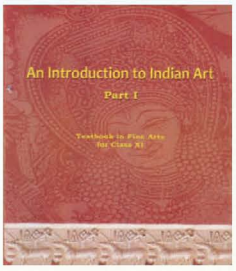


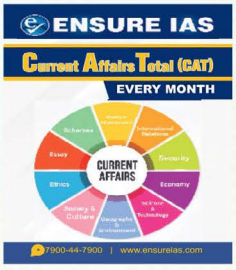












and many more .....

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