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FOR UPSC CIVIL SERVICE EXAMINATION

DECEMBER 2025






TABLE OF CONTENTS

TABLE OF CONTENTS

Mahad Satyagraha (1927)

Context: Scholars are revisiting the Mahad Satyagraha for its role in shaping India's constitutional values and human rights thinking.

What was Mahad Satyagraha?

- A non-violent protest led by Dr. B.R. Ambedkar in March 1927 at Mahad (Raigad district, Maharashtra).
- It demanded Dalits' right to use the public Chavdar water tank, which was denied due to caste discrimination.

Background

- Dalits were barred from public water sources, symbolising everyday social humiliation.
- Bole Resolution (1923): Allowed Dalits access to public places.
- Mahad Municipal Order (1926): Opened Chavdar tank to all castes, but upper castes opposed it.

Key Events

- March 20, 1927: Ambedkar led about 2,500 Dalits to the tank and drank water, asserting equality.
- Upper-caste backlash followed, including "purification rituals".
- Nov 1927: Ambedkar supported the Ambabai Temple Satyagraha.
- Dec 1927: Burning of Manusmriti to reject the ideological basis of caste system (observed as Manusmriti Dahan Din).
- 1937: Bombay High Court ruled that Dalits have the legal right to use the Chavdar tank.

Significance

- Marked the rise of a rights-based Dalit movement and political consciousness.
- A model of peaceful and democratic protest, inspired by ideals of liberty, equality, and fraternity.

Impact on the Constitution

- Became a moral foundation for constitutional values:
  - Liberty – freedom from caste oppression
  - Equality – equal civil rights
  - Fraternity – social unity (maitri / manuski)
- Influenced Articles 14, 15, and 17 (equality, non-discrimination, abolition of untouchability).

Legacy

- Shaped Ambedkar's later ideas, including "Annihilation of Caste".
- December 25 is also observed as Indian Women's Liberation Day, highlighting the role of women in social justice movements.

Karthigai Deepam & Thirupparankundram Deepathoon

Context: The Tamil Nadu government told the Madras High Court that the deepathoon (stone pillar) at Thirupparankundram hill is of Jain origin, and opposed its use for lighting Karthigai Deepam.

Background of the Case

- A Single Judge of Madras High Court allowed lighting of Karthigai Deepam at the deepathoon in addition to traditional places.
- This order was challenged by multiple stakeholders.

About the Deepathoon (Stone Pillar)

- A stone pillar linked to Jain ascetic practices, not originally meant for Hindu temple rituals.
- Location: Thirupparankundram hill, Madurai district – a site showing religious coexistence (Hindu, Jain, Islamic traditions).
- Historical Evidence:
  - Digambara Jain monks from Ujjain lived here and used the pillar to light lamps during night gatherings.
  - Similar Jain pillars are found at Samanar Hills (TN) and Shravanabelagola (Karnataka).

About Karthigai Deepam

- A major Tamil festival of lights celebrating the divine light (Jyothi) of Lord Shiva.
- The Deepam lit on Tiruvannamalai hill marks the beginning of the festival across Tamil Nadu.
- Celebrations include:
  - Lighting of earthen lamps
  - Preparation of Adhirasam
  - Large bonfires, especially at Tiruvannamalai, where Shiva is believed to appear as a pillar of fire.

Cultural Significance

- The festival shows collective participation of different communities, reflecting:
  - Communal harmony
  - Unity in diversity
  - Shared cultural heritage, in line with constitutional values of pluralism and unity.

UNESCO Intangible Cultural Heritage (ICH) Status

Context: At the 20th Session of UNESCO's Intergovernmental Committee held in New Delhi (2025):

- Deepavali (Diwali) was inscribed on UNESCO's Representative List of Intangible Cultural Heritage of Humanity.
- Italian cuisine became the first entire national cuisine to get UNESCO ICH status.

UNESCO ICH of India

- India now has 16 Intangible Cultural Heritage elements on UNESCO list, including:
- Ramlila, Kutiyattam, Vedic Chanting, Chhau Dance, Kalbelia, Sankirtana, Yoga, Kumbh Mela, Durga Puja, Garba, Nowruz, and Deepavali (2025).
- Deepavali is recognised as a "living heritage" that promotes community spirit, well-being, and generosity.

About Deepavali (Diwali)

- A festival of lights celebrated across India by diverse communities.
- Marks the end of harvest season and the beginning of a new year/new season in many traditions.
- Celebrated on the new moon day of October–November (lunar calendar).

What is Intangible Cultural Heritage (ICH)?

- Includes traditions, practices, knowledge, skills, and expressions passed from generation to generation.
- Key Features:
  - Community-recognised
  - Living and evolving tradition
  - Gives identity, continuity, and promotes cultural diversity

Italian Cuisine & UNESCO Status

- First time an entire national cuisine has received ICH recognition.
- Official Title: "Italian cooking: Between sustainability and biocultural diversity".

Why was it recognised?

- Conviviality: Emphasis on shared meals and social bonding.
- Intergenerational Transmission: Recipes and skills passed within families.
- Sustainability: Focus on seasonal food, local produce, and zero-waste cooking.
- Biocultural Diversity: Reflects regional diversity and link between food, culture, and local geography.

Piprahwa Stupa and Piprahwa Gems

Context: India stopped the Hong Kong auction of the Piprahwa Gems, calling them living spiritual heritage, and ensured their repatriation to India for public display.

About Piprahwa Stupa

- A Buddhist stupa believed to contain a portion of the ashes and bone relics of Gautama Buddha, given to his Shakya clan after his cremation (c. 5th century BCE).
- Location: Siddharthnagar district, Uttar Pradesh.
- Linked to Kapilavastu, the capital of the Shakya clan.
- Discovered in 1898 by William Claxton Peppé.
- Historical Development:
  - Original stupa built soon after Mahaparinirvana of Buddha (5th–4th century BCE).
  - Later enlarged during the Mauryan period, possibly under Emperor Ashoka.

Piprahwa Gems

- Found inside the stupa along with bone relics.
- Include gold ornaments, beads, semi-precious stones, and jewellery.
- Date back to 5th–4th century BCE, linked to early Buddhist relic worship.
- Many relics went to museums in India and abroad; some remained with Peppé's descendants.

2025 Controversy & Repatriation

- The Peppé family heirs proposed to auction the gems in Hong Kong.
- Government of India objected, calling them spiritual and cultural heritage, not private property.
- The Godrej Group acquired the gems and brought them back to India for public display.

Dowry Eradication in India

Context: The Supreme Court has recently stated that ending dowry is a constitutional and social necessity.

Supreme Court's Key Directions

- Educational Reforms: Centre and States to update school and college curricula to promote equality in marriage.
- Fast-tracking Cases: High Courts to speed up trials under IPC 304-B (dowry death) and 498-A (cruelty).
- Implementation Challenge: Existing laws like the Dowry Prohibition Act, 1961 are often poorly enforced or misused.

What is Dowry?

- A social practice where cash, goods, or property are given by the bride's family to the groom's family.
- Legally banned under the Dowry Prohibition Act, 1961, but still widely practiced.

Origins of Dowry

- Mentioned in ancient texts like Manusmriti.
- Early forms included:
  - Kanyadan (gift of bride)
  - Varadakshina (gift to groom)
  - Stridhana (gifts to bride)

Why Dowry Continues? (Key Drivers)

- Patriarchy & son preference → women seen as dependents.
- Commodification of women → marriage becomes a transaction.
- Perceived financial security for groom's family.
- Social pressure and fear of boycott.
- Low economic independence of women.
- Marriage Squeeze Theory: Fewer "suitable" grooms → higher dowry demands.
- Weak law enforcement & low conviction rates.

Impact of Dowry

- Violence & cruelty: Harassment, torture, bride burning, suicides.
- Loss of women's autonomy: Early marriage, denial of education.
- Demographic impact: Female foeticide, sex selection, family debts.
- Marital breakdown: Disputes, separation, and divorce.

Problems in Law Enforcement

- Delays and weak investigations.
- Very low conviction rate (~11–17%).
- Underreporting due to fear and social pressure.
- Misuse of laws like IPC 498A, leading to false cases and wrongful arrests.

Way Forward

- Uniform implementation of Arnesh Kumar guidelines to prevent misuse and illegal arrests.
- Strengthen Dowry Prohibition Officers with real powers and training.
- Fast-track courts for speedy trials.
- Awareness and value-based education from school level.
- Safe reporting mechanisms for victims.
- Economic empowerment of women through property rights, skills, and jobs.
- Social mindset change: Reject dowry as a "custom".

Intersex Rights in India

Context: The Supreme Court has referred a PIL to a three-judge Bench that challenges the mixing of "sex" and "gender" in the NALSA (2014) judgment.

Background: NALSA Judgment (2014)

- The NALSA v Union of India case forms the basis of India's legal framework on gender diversity.
- It treated "sex" and "gender" as the same and grouped all non-binary identities under "transgender/third gender".
- This has led to lack of separate legal recognition for intersex persons.

Who are Intersex Persons?

- Born with biological sex characteristics (genitals, chromosomes, or gonads) that do not fit typical male/female categories.
- Represents natural biological diversity, not a disease.
- Different from sexual orientation.
- Countries like Malta, Germany, and Australia legally recognise intersex persons and ban non-consensual surgeries.

About the PIL

- Filed by Gopi Shankar M, India's first openly intersex member of the National Council for Transgender Persons (NCTP).
- Highlights a category error in Indian law:
  - Sex = biological
  - Gender = social/legal identity
- Argues that intersex persons need separate legal protection, different from gender identity-based protection.

Key Issues Raised

- Forced "corrective" surgeries on intersex infants:
  - Done to fit bodies into male/female categories
  - Without informed consent
  - Often medically unnecessary, irreversible, and harmful
- No national data on such surgeries.
- Allegation: 40 such surgeries at Government Rajaji Hospital, Madurai (2022–23).

Challenges Faced in India

- No official data on intersex population.
- Never recognised as a separate category in official records.
- 2011 Census listed them under "transgender" → wrong mixing of sex and gender.
- Birth registration law forces parents to choose only male or female → causes lifelong legal problems.

Key Demands of the PIL

- Ban non-consensual sex-assignment surgeries on minors through a law.
- Separate "intersex" category in Census.
- Separate columns for sex and gender in identity documents.
- Create a central regulatory body for protection of intersex persons.
- Extend reservation benefits to the intersex community.

Right to Health in India

Context: The National Convention on Health Rights (UHC) was held in New Delhi on 11–12 December 2025, around Human Rights Day and Universal Health Coverage Day, renewing the demand to make health a legally enforceable right in India.

What is the Right to Health?

International Basis

- UDHR (Art. 25): Right to adequate standard of living including health.
- ICESCR (Art. 12): Right to highest attainable standard of physical and mental health.
- India is a signatory to ICESCR.

Holistic Meaning of Health-

Health is not just treatment. It includes:

- Clean water, sanitation, nutrition, housing
- Safe environment and workplace
- Mental and social well-being

Major Indian Initiatives Supporting Right to Health

- National Health Policy, 2017
  - Roadmap for Universal Health Coverage (UHC)
  - Target: 2.5% of GDP as public health spending
  - Focus on Primary Healthcare through Ayushman Arogya Mandirs
- Ayushman Bharat – PM-JAY
  - ₹5 lakh insurance cover per family per year
  - Covers bottom 40% population for hospitalisation
- National Health Mission (NHM)
  - Focus on maternal, child health and disease control
  - Includes Mission Indradhanush and JSSK
- PM-ABHIM
  - Strengthens public health infrastructure, labs, and surveillance

Key Challenges

- Federal Issue: Health is a State List subject, making a uniform law difficult.
- Low Public Spending: Only 1.84% of GDP (below 2.5% target).
- High Out-of-Pocket Expenditure (OOPE):
  - 39.4% of total health spending
  - ~55 million people pushed into poverty every year
  - 70% of OOPE is on outpatient care (not covered under PM-JAY)
- Unregulated Private Sector:
  - Weak control under Clinical Establishments Act
  - Medicine mark-ups of 600%–1800% reported
- Inequalities:
  - SCs, STs, minorities, LGBTQ+ and poor face access barriers
  - Large regional gaps in maternal mortality and health outcomes
- Implementation Gaps:
  - Rajasthan Right to Health Act, 2023 faced resistance from private doctors

Way Forward

- Legal & Governance
  - Enact a Central Right to Health Act to give legal force to Article 21.
  - Consider shifting Health to Concurrent List.
  - Define a Minimum Essential Health Package of free services and medicines.
- Financial & System Reforms
  - Increase public health spending to 2.5% of GDP.
  - Extend coverage to outpatient care.
  - Regulate medicine prices and boost public production.
- Human Resources & Technology
  - Improve conditions of ASHA and frontline workers.
  - Use Digital Health Mission & AI to reduce rural–urban gaps.
  - Integrate mental health via Tele-MANAS.
- Address Social Determinants
  - Link health policy with nutrition, sanitation, climate, and environment.

Ambit of POSH Act

Context: The Supreme Court has expanded the scope of the POSH Act, strengthening workplace safety for women.

Key Supreme Court Ruling

- Case: Dr. Sohail Malik vs Union of India
- Main Ruling:
  - An Internal Complaints Committee (ICC) of one department can inquire into a sexual harassment complaint against an employee of another department.

Interpretation of Section 11

- The phrase "where the respondent is an employee" is procedural, not jurisdictional.
- The word "where" means situation/condition, not physical location.
- The ICC must:
  - Conduct inquiry as per the service rules of the respondent, or
  - Follow prescribed procedure if no such rules exist.

Reasoning of the Court

- Restricting complaints only to the accused's department would:
  - Create procedural hurdles and psychological pressure on women.
  - Defeat the welfare objective of the POSH Act.
- The ICC's role is fact-finding in nature.

Important for Prelims

- Section 13: After the ICC submits its report, the employer of the respondent must act on it.
- The findings of an ICC of another department are binding.
- If the employer ignores the report, the aggrieved woman has a right to appeal.

About the POSH Act, 2013

- Enacted to give legal backing to Vishakha Guidelines (1997).

Objectives

- Prevent sexual harassment at workplace
- Provide redressal mechanism
- Ensure safe and dignified work environment

Coverage

- Applies to all women, regardless of age or employment status, in organised and unorganised sectors.

Key Provisions

- Section 2(o) – Workplace:
  - Broad definition: includes any place visited during employment, including transport provided by employer.
- Section 11 – Inquiry:
  - Inquiry to follow service rules of the respondent or prescribed procedure.
- Section 13 – Action on Report:
  - Employer must act on ICC/LCC report.

Institutional Mechanism

- Internal Complaints Committee (ICC):
  - Mandatory in organisations with 10+ employees
  - Headed by a woman + includes external member
- Local Complaints Committee (LCC):
  - Set up in every district
  - For workplaces with <10 employees or when complaint is against employer

Why this Judgment is Important

- Makes the POSH law more woman-centric and accessible.
- Removes technical barriers in filing complaints.
- Strengthens substantive justice over procedural rigidity.

WHO Guideline on Use of GLP-1 Medicines

Context: The World Health Organization (WHO) has issued its first-ever guidelines on using GLP-1 weight-loss medicines to tackle the global obesity crisis, calling obesity a chronic disease needing lifelong care.

About Obesity

- WHO Definition: BMI ≥ 30 in adults
- (BMI = weight in kg / height in m²)
- Obesity increases risk of:
  - Type-2 diabetes, heart disease, hypertension, etc.
- Global burden: Over 1 billion people are obese, including 188 million children.
- India: About 24% women and 23% men are overweight or obese (NFHS-5).

Key WHO Guidelines

1. Conditional Use in Adults
   - GLP-1 drugs can be used for long-term obesity treatment in adults (except pregnant women).
   - Based on strong evidence of weight loss and metabolic benefits.
2. Integrated Treatment Approach
   - Must be used along with lifestyle changes:
     - Diet modification
     - Physical activity and behaviour change
3. Focus on Equity
   - WHO warns that high cost and limited supply may increase health inequality.
   - Even by 2030, these drugs may reach less than 10% of those who need them.

Other WHO Suggestion

- Promote generic production and pre-qualification so international agencies can buy and supply these medicines globally.

What are GLP-1 Medicines?

- GLP-1 receptor agonists were first developed for Type-2 diabetes.
- They mimic the hormone Glucagon-Like Peptide-1, which controls:
  - Appetite, satiety, and insulin secretion
- Already included in WHO Essential Medicines List for diabetes.

How Do They Work?

- Increase insulin release and reduce blood sugar
- Reduce appetite and slow stomach emptying
- Improve metabolic health and reduce risk of heart and kidney diseases
- Lead to significant and sustained weight loss with long-term use

Uses

- Type-2 Diabetes – blood sugar control
- Obesity & Weight Loss – appetite suppression
- Heart Protection – some drugs reduce risk of heart attack and stroke

WHO Guidelines for Infertility Treatment

Context: The World Health Organization (WHO) has released its first-ever global guideline on prevention, diagnosis, and treatment of infertility, aiming to make fertility care safer, fairer, and more affordable.

Key Features of WHO Guidelines

- Comprehensive Framework: 40 recommendations covering prevention, diagnosis, and treatment.
- Health Promotion: Focus on healthy lifestyle (diet, exercise, no tobacco) to prevent infertility.
- Fertility Education: Promote early awareness for informed reproductive planning.
- Focus on Male Infertility: Notes that male infertility is under-diagnosed; recommends proper evaluation before treatment.
- Stepwise Treatment: From basic advice and timing → to IUI and IVF if needed.
- Holistic Care: Includes psychological support to deal with stress, stigma, anxiety, and depression.
- Prevention First: Strong push to prevent STIs, smoking-related infertility, etc.
- Health System Integration: Fertility care should be part of national health policy, services, and financing.
- Context-Based Adoption: Countries should adapt guidelines using a rights-based reproductive health approach.

India's Fertility Trends

- Sharp Decline in TFR: From 6.18 (1950s) → 1.9 (2021) (below replacement level).
- Future Projection: GBD 2021 estimates India's TFR may fall to 1.04 by 2100.
- NFHS Data:
  - NFHS-4 (2015–16): 2.2
  - NFHS-5 (2019–21): 2.0

Key Terms

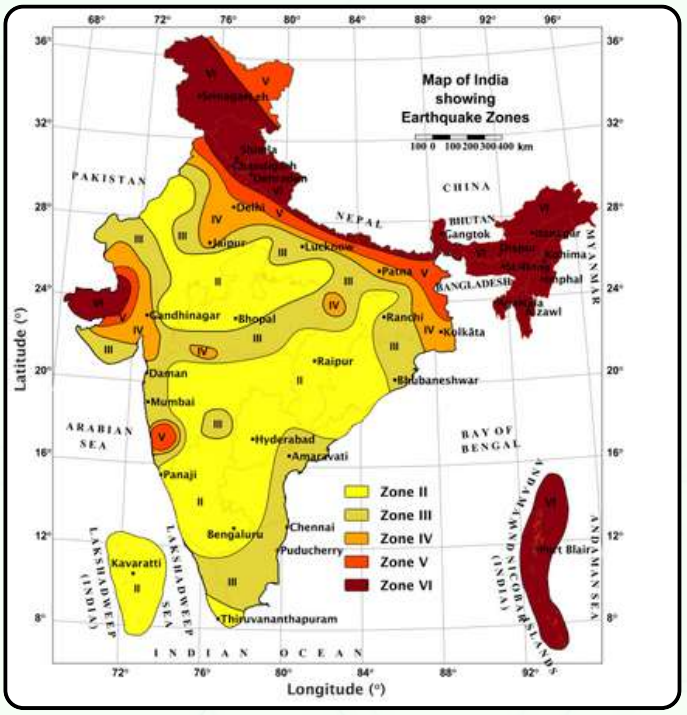
- Total Fertility Rate (TFR): Average number of children per woman (15–49 years).
- Replacement Level: 2.1 children per woman needed for population stability.
- Below Replacement Fertility: Leads to population ageing and possible population decline.

Revised Earthquake Design Code

Context : India has released an updated seismic zonation map under the revised BIS Earthquake Design Code, 2025 to improve earthquake risk assessment and building safety.

What is a Seismic Zonation Map?

- A scientific map that divides a country into earthquake hazard zones based on risk and intensity.
- Used for:
  - Building codes
  - Urban planning
  - Disaster preparedness
- Published by the Bureau of Indian Standards (BIS).



Key Features of the Revised Zonation Map

1. Introduction of Zone VI (Highest Risk Zone)
   - New Zone VI added for very high seismic risk areas.
   - Entire Himalayan belt (J&K–Ladakh to Arunachal Pradesh) placed in Zone VI.
2. Expanded Seismic Coverage
   - 61% of India's landmass now in moderate-to-high risk zones (earlier 59%).
   - 75% of India's population lives in seismically active regions.
3. Boundary Rule Change
   - Towns lying on the border of two zones will be classified in the higher-risk zone.
   - Ensures zoning is based on geological risk, not administrative boundaries.
4. Scientific Basis (PSHA Method)
   - Map prepared using Probabilistic Seismic Hazard Assessment (PSHA).
   - Considers:
     - Ground shaking with distance
     - Tectonic settings
     - Rock/lithology characteristics
5. New Mandatory Safety Norms
   - Safety rules made compulsory for:
     - Parapets, ceilings, façades
     - Overhead tanks, HVAC systems, etc.
   - Applies when these components exceed 1% of total building load.
6. Himalayan Rupture Modelling
   - Recognises that earthquakes along Himalayan Frontal Thrust (HFT) can propagate southwards.
   - Threatens foothill cities like Dehradun and other densely populated areas.
7. Exposure Mapping (PEMA Method)
   - New map integrates:
     - Population density
     - Infrastructure concentration
     - Socio-economic vulnerability
   - Uses Population Exposure Mapping and Analysis (PEMA).

Annual Lightning Report 2024–25

Context: According to the Annual Lightning Report 2024–25, lightning causes more deaths in India than any other natural disaster.

About the Report
- Published by:
  - Climate Resilient Observing Systems Promotion Council (CROPC)
  - India Meteorological Department (IMD)

What is Lightning?
- Lightning is a sudden electrical discharge between:
  - Clouds, or
  - Cloud and ground
- It occurs during thunderstorms and is often accompanied by heavy rain, strong winds, and sometimes hail.
- It is a fast, localised, and highly deadly phenomenon, making it difficult to predict and manage.

Key Findings of the Report

1. Sharp Rise in Lightning Events
- 400% increase in lightning strikes between 2019 and 2025.

2. Emerging and Shifting Hotspots
- New hotspots seen in Rajasthan, Gujarat, and Delhi.
- States with highest lightning deaths:
  - Madhya Pradesh
  - Bihar
  - Himachal Pradesh
- Rajasthan and Gujarat are also witnessing rising lightning activity.

3. High Fatalities
- Over 3,500 deaths reported in Madhya Pradesh and Bihar (2014–2025).

4. District-Level Vulnerability
- 207 districts identified as highly vulnerable to lightning strikes.
- Detection and warning systems are weak in rural, hilly, and mountainous regions.

Atmospheric Electricity
- Refers to electrical phenomena in the atmosphere, including:
  - Lightning
  - Thunderstorms
  - Electrical potential difference between Earth and atmosphere

Why is Lightning Increasing?

1. Role of Climate Change
- Global warming increases atmospheric instability.
- Warmer air holds more moisture, leading:
  - More intense thunderstorms
  - Cloudbursts and more lightning events

2. Role of Geography
- Rocky regions like:
  - Western Ghats
  - Uttarakhand's limestone hills
- These areas attract higher atmospheric electricity, causing frequent lightning.

Southern Ocean Carbon 'Anomaly'

Context: A 2024–25 study has explained that the Southern Ocean's unusual carbon behaviour is temporary, caused by increased surface freshening and ocean stratification.

Southern Ocean: Key Facts

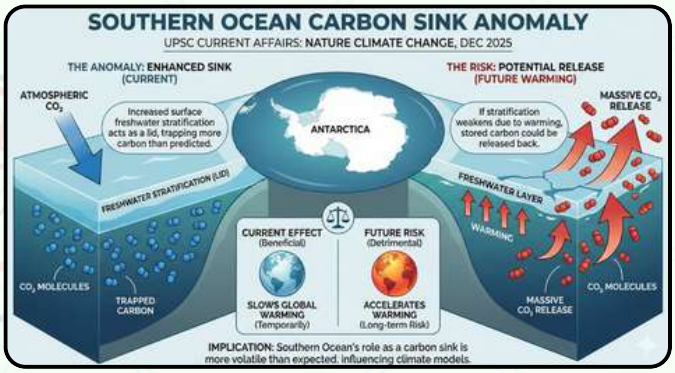
- Surrounds Antarctica up to 60° South latitude
- Only ocean that circles the globe without land interruption
- Coldest ocean with large seasonal sea-ice cover
- Covers 25–30% of global ocean area
- Absorbs about 40% of oceanic uptake of human-emitted CO_2

What is the Carbon "Anomaly"?

- The Southern Ocean acts as a major carbon sink.
- Climate models predicted it would absorb less CO_2 due to warming and stronger winds.
- But since the early 2000s, it has been absorbing more CO_2 than expected.
- This unexpected extra absorption is called the Southern Ocean carbon anomaly.

What Earlier Models Predicted?

- Due to:
  - Stronger westerly winds
  - Poleward shift of winds
  - Increased upwelling of deep carbon-rich water
- The ocean should have:
  - Released more CO_2
  - Weakened its role as a carbon sink



Findings of the New Study (Nature Climate Change)

- Stronger winds are indeed pushing carbon-rich deep water upward (≈40 m since 1990s).
- This should increase CO_2 release — but it hasn't happened yet.

Why? Freshwater "Lid" Effect

- Surface waters have become fresher due to:
  - More rainfall
  - Melting glaciers
  - Sea-ice changes
- Freshwater is lighter, so it forms a stable layer (stratification) on top.
- This creates a "lid" that:
  - Traps carbon-rich water 100–200 m below the surface
  - Prevents CO_2 from escaping into the atmosphere

Why is the Anomaly Temporary?

- Since mid-2010s, surface waters are becoming saltier again in some areas.
- The freshwater lid is weakening.
- Stronger winds may soon break it, causing:
  - Sudden release of trapped CO_2
  - Weakening of the Southern Ocean as a carbon sink

Viksit Bharat Guarantee for Rozgar and Ajeevika Mission (Gramin) Bill, 2025

Context: Parliament has passed the VB-G RAM G Bill, 2025, replacing the MGNREGA, 2005 to redesign rural employment from a demand-driven welfare scheme to an asset-oriented development mission.

Key Provisions of the New Law

- Work Guarantee Increased: From 100 days to 125 days per rural household.
- New Funding Pattern (CSS):
  - 60:40 Centre–State for most states
  - 90:10 for NE & Himalayan states/UTs
- Allocation Model Changed:
  - Replaces demand-driven labour budget with state-wise normative allocation fixed by the Centre.
- 60-Day Work Suspension:
  - States may pause works during peak sowing/harvesting to prevent labour shortage in agriculture.
- Focus on Strategic Assets:
  - Works aligned to Viksit Bharat National Rural Infrastructure Stack:
    - Water security
    - Core rural infrastructure
    - Livelihood assets
    - Climate resilience
- Digital Mandate:
  - Compulsory use of GIS, PM Gati Shakti layers, AI audits.
- Unemployment Allowance Retained:
  - Payable if work not given within 15 days.

Why the Government Changed MGNREGA?

- Rural Poverty Decline: From 25.7% (2011–12) to 4.86% (2023–24).
- Systemic Leakages Persist:
  - Fake works, fund misuse (₹193 crore in 2024–25), NMMS bypass.
- Poor Asset Quality:
  - Spending often failed to create useful or durable assets.

Significance of the New Scheme

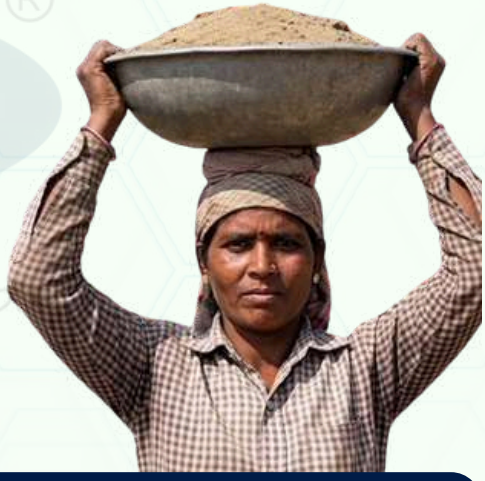
- Stronger Income Support:
  - 125 days = 25% higher earning potential, boosts rural demand and reduces distress migration.
- Climate-Resilient Asset Creation:
  - Focus on water & livelihoods (e.g., Mission Amrit Sarovar).
- Support to Agriculture:
  - 60-day pause ensures farm labour availability during peak seasons.
- Social Justice:
  - Continued focus on SC/ST assets and women's participation.
- More Predictable & Transparent:
  - Hyperlocal planning + 99.94% e-payments + real-time monitoring.

Major Concerns & Criticism

- Weakening of Right to Work:
  - Normative allocation ends open-ended demand guarantee (Jean Drèze).
- Higher Burden on States:
  - 60:40 sharing may cost states ₹50,000+ crore.
- Centralisation:
  - National templates, GIS/AI planning weaken Panchayat & Gram Sabha autonomy.
- Income Insecurity:
  - 60-day forced break may hurt landless labourers & women.
- Forced Labour Market Push:
  - Workers may be compelled to work in private farms, affecting wage bargaining.
- Digital Exclusion Risks:
  - Aadhaar, biometrics, tech failures may cause payment delays & exclusion.
- Dilution of Legacy:
  - Dropping "Mahatma Gandhi" name seen as symbolic dilution of rights-based approach.

Way Forward

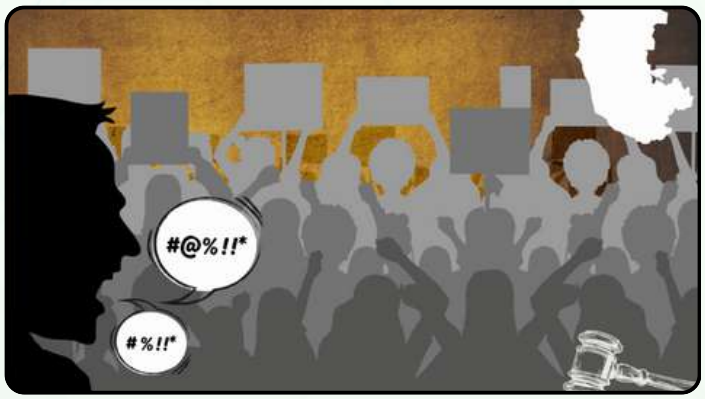
- Flexible Funding:
  - Create a Contingency Fund for sudden demand surges.
- Better Planning + Social Audits:
  - Use PM GatiShakti but retain independent audits.
- Link with Skilling:
  - Gradually move workers to higher productivity jobs (global best practices).
- Phased Rollout:
  - Start with pilot projects.
- Parliamentary Panel Suggestion:
  - 150 days work and ₹400/day wage.



Karnataka Hate Speech & Hate Crimes (Prevention) Bill, 2025

Context

- First state-level law in India specifically addressing hate speech and hate crimes.
- Aims to curb speech or acts targeting groups based on identity markers (religion, caste, gender, sexual orientation, language, place of birth, disability, tribe).



Key Provisions

1. Definition
   - Hate Speech: Publicly spoken, written, electronic, or visual expression intended to create hatred, enmity, or ill-will against a group.
   - Hate Crime: Acts promoting, propagating, or inciting hate speech; includes circulation and publication of such content.
2. Penalties
   - Cognisable & non-bailable offences.
   - Imprisonment: 1–10 years.
   - Fine: Up to ₹1 lakh for repeat offenders.
3. Victim Support
   - Compensation based on severity of harm.
4. Digital Takedown
   - Authorities can order social media platforms to block or remove hateful content.
5. Organisational Liability
   - Individuals in control of organisations can be held accountable for hate-related acts.
6. Exemptions
   - Does not apply to content in public interest, or used in science, literature, art, education, heritage, or religious purposes.

Need for the Law

- Protect Human Dignity: Safeguards Article 14 & 21 rights.
- Preserve Social Fabric: Prevents communal violence, discrimination.
- Maintain Public Order: Prevents incitement to real-world clashes.

Challenges

1. Legal & Constitutional
   - No precise statutory definition; relies on colonial-era IPC/BNS laws.
   - Low conviction rate (~20%).
   - Vague laws risk chilling free speech (Article 19(1)(a)).
2. Digital & Enforcement
   - Social media spreads hate instantly.
   - Anonymous/offshore posting creates jurisdiction issues.
   - Lack of political will can hinder action against powerful offenders.
3. Societal & Political Risks
   - Hate speech often targets marginalized communities.
   - Political rhetoric normalizes divisive speech.

Way Forward

- Legislative Clarity
  - Narrow definition focused on incitement to violence, not mere offense.
  - Proportional penalties depending on severity.
- Institutional Strengthening
  - Judicial oversight for police takedowns/arrests.
  - Dedicated anti-hate crime units and fast-track courts to improve convictions.
- Social & Educational Measures
  - Media literacy campaigns to combat misinformation.
  - Counter-speech initiatives to promote reasoned, constructive dialogue.

Supreme Court Ruling on Illegal Immigrants

Context

- Case: Habeas Corpus petition concerning missing Rohingya migrants.
- Observation: Illegal immigrants cannot claim the right to reside or State benefits; resources must prioritise citizens.

Key Observations

1. No Enforceable Rights
   - Illegal entrants/overstayers are treated as "intruders" under the Citizenship Act, 1955.
   - Cannot claim:
     - Right to reside or settle
     - Access to welfare benefits
2. Citizens Must Be Prioritised
   - Public resources are limited; priority goes to Indian citizens, especially vulnerable groups.
3. Limited Applicability of Fundamental Rights
   - Article 19 (freedom of speech, movement, residence) applies only to citizens.
   - Illegal immigrants retain:
     - Article 14: Equality before law, non-arbitrariness
     - Article 21: Right to life and personal liberty
   - Golden Triangle Doctrine: Articles 14, 19, 21 ensure fairness and non-arbitrary State action.
4. Humane Treatment
   - Detention/deportation allowed.
   - Torture, degrading treatment, or custodial abuse is prohibited.

Legal Framework

Law	Key Provision
Citizenship Act, 1955	Bars illegal migrants from citizenship
Passport (Entry into India) Act, 1920	Criminalises unauthorised entry
Registration of Foreigners Act, 1939	Mandates registration of foreigners
Foreigners Act, 1946	Regulates stay, detention, deportation

- **Definition:** Illegal migrant = foreigner entering without valid documents **or** overstaying.

Refugees & International Law

- India not a signatory to 1951 UN Refugee Convention/1967 Protocol.
- Non-refoulement (customary law) protects life and liberty; read into Article 21.
- No national refugee law; refugees legally treated like illegal migrants.

Supporting Arguments for SC Stand

- National Security: Porous borders = infiltration, trafficking, terrorism.
- Economic & Welfare Stress: Resources must serve citizens; undocumented labour affects wages.
- Institutional Balance: Immigration/deportation = executive domain; courts avoid policy overreach.
- Social Cohesion: Unregulated migration can strain infrastructure, fuel tensions.

Critical Concerns

- Risk of deporting persecuted groups (e.g., Rohingyas).
- Lack of formal Refugee Status Determination (RSD).
- Long-term detention may violate Article 21 (Sunil Batra, 1978).
- Humanitarian image of India may be affected.

Way Forward

1. Enact Comprehensive Refugee & Migration Law distinguishing refugees from illegal migrants.
2. Establish an independent RSD Authority.
3. Codify detention standards: time limits, legal aid, judicial review.
4. Strengthen borders via Comprehensive Integrated Border Management System (CIBMS).
5. Improve diplomatic coordination with neighbours and UNHCR.
6. Plan for climate-induced displacement.

PESA Mahotsav

Context:

- Organised by the Ministry of Panchayati Raj at Visakhapatnam, Andhra Pradesh.
- Marks PESA Day on 24 December, reinforcing tribal autonomy under PESA, 1996.

Highlights:

- Mascot: Krishna Jinka (Blackbuck), symbolising tribal resilience and connection with nature.
- Theme: "Utsav Lok Sanskriti Ka" – emphasises tribal culture as the foundation of governance.
- Cultural Assertion: Indigenous games like Chakki Khel, Mallakhamba, Pithool, Gedi Doud showcased.
- Capacity Building: Tribal-language training materials in Santhali, Gondi, Bhili, Mundari.
- Policy Progress: 9 of 10 Fifth Schedule States framed PESA Rules; only Odisha pending

Panchayats (Extension to Scheduled Areas) Act, 1996 (PESA)

Objective:

- Extend Part IX of the Constitution to Scheduled Areas with tribal-specific modifications (Article 243M(4)(b)).
- Gram Sabha Supremacy: Apex body in governance; responsible for land, forests, water, culture, and social norms.

Significance:

1. Democratic Inclusion: Integrates tribal governance into constitutional decentralisation.
2. Participatory Governance: Development decisions are consent-based, not top-down.
3. Environmental Sustainability: Tribes recognised as primary custodians; community-led conservation promoted.
    - Example: Niyamgiri Judgment (2013) upheld Gram Sabha authority over resource decisions.
4. Economic Self-Reliance: Control over Minor Forest Produce (MFP), minor minerals, local markets.

Challenges in Implementation

- Weak Enforcement: Dependent on State PESA Rules; excludes tribals outside Scheduled Areas.
- Institutional Conflicts: PESA Gram Sabhas vs Community Forest Resource Committees (FRA, 2006).
- Fiscal & Administrative Gaps: Limited financial autonomy for Gram Sabhas.
- Underutilisation of Fifth Schedule Safeguards: Governors rarely use Paragraph 5 powers.
- Low Awareness: Limited tribal-language legal literacy reduces Gram Sabha assertiveness.

Way Forward

- Legal & Constitutional Reinforcement:
    - Governors to actively use Paragraph 5 powers.
    - Harmonise laws like LARR, 2013 and MMDR Act with Gram Sabha consent requirements.
    - Clarify roles of Gram Sabhas vs Community Forest Committees.

- Fiscal Autonomy:
  - Empower Gram Sabhas to collect local taxes, royalties.
  - Ensure predictable fund flows from Central/State Finance Commissions.
- Accountability & Oversight:
  - Annual PESA Implementation Reports in State Legislatures.
  - Social audits and independent evaluations for Gram Sabha decisions.
- Capacity Building:
  - Continuous legal literacy campaigns in tribal languages.
  - Technical/legal training to prevent elite capture and amplify marginalized voices.
- Global Best Practices:
  - Learn from indigenous governance models in Latin America and Australia to balance development with tribal identity.

Drug Menace in Indian Sport

Context:

- As per WADA 2025 report, India leads global doping violations for the third consecutive year.
- Raises concerns over credibility amid bids for 2030 Commonwealth Games and 2036 Olympics.

Implications:

1. Reputational Risk: IOC may question India's governance and readiness to host major events.
2. Psychological Impact: "Win-at-all-costs" culture creates anxiety, identity crises, and moral dilemmas for athletes.
3. Economic Deterrence: Sponsors see Indian sports as high-risk, affecting funding for schemes like TOPS.

About Doping

Definition:

- Use of banned substances or methods (e.g., anabolic steroids, EPO, gene doping) to gain unfair advantage.
- Governed by Strict Liability Principle – athlete is responsible regardless of intent.

Common Types & Purposes:

Category	Examples	Purpose
Anabolic Steroids	Testosterone, Stanozolol	Muscle mass & strength
Blood Doping	EPO, transfusions	Endurance (O_2 delivery)
Stimulants	Amphetamines, cocaine	Alertness & aggression
HGH	Somatotrophin	Recovery & muscle growth
Diuretics	Furosemide	Rapid weight loss / masking
Beta-blockers	Propranolol	Tremor control (shooting, archery)

Emerging Threats:

- SARMs and peptide hormones: marketed as "safe supplements," short detection windows.

Reasons for High Doping in India

1. Socio-Economic Pressure:
   - Sports seen as pathway to jobs, income, and social mobility.
   - Cash prizes and incentives make risk-reward ratio skewed.
2. Systemic Complicity ("Entourage Effect"):
   - Coaches, support staff, and clubs normalize doping.
   - Young athletes often unaware of violations.
3. Awareness & Education Gaps:
   - NADA outreach limited, language barriers, and poor understanding of Strict Liability.
4. Unregulated Supplements:
   - Contaminated or spiked products in nutraceutical market.
5. Institutional & Technical Challenges:
   - Reactive testing, limited NDTL capacity, delayed results.
   - Focus on In-Competition testing; Out-of-Competition doping often missed.

Way Forward

1. Legislative Reforms:
   - Target coaches, doctors, and facilitators, not just athletes.
   - Criminalise trafficking of PEDs; protect minors.
2. Cultural Shift:
   - Move from medal-centric to values-based sports culture.
   - Integrate anti-doping literacy into school and grassroots programs.
   - Introduce Integrity Index for National Sports Federations.
3. Technological Advancements:
   - Intelligence-led testing and data-driven strategies.
   - Universalise Athlete Biological Passport (ABP).
   - Develop certified, safe recovery supplements (including scientifically validated Ayurvedic options).
4. Institutional Accountability:
   - Independent audits of NADA testing plans.
   - Decentralised labs in premier institutions (IITs, AIIMS) to reduce testing backlogs.

Allahabad HC Rules Live-In Relationships as Legal

Context:

- The Allahabad High Court affirmed the right of consenting adults in live-in relationships to state protection, recognizing their fundamental rights irrespective of marital status.

Key Observations of the Court

1. Not Illegal: Cohabitation without marriage is not a criminal offence.
2. Constitutional Right:
   - Right to choose a partner and cohabit is protected under Article 21 (Right to Life and Personal Liberty).
3. State Protection:
   - The State has a constitutional duty to protect the life and liberty of all citizens, including those in live-in relationships.
4. Protection of Women:
   - Protection of Women from Domestic Violence Act, 2005 applies to women in "relationships in the nature of marriage," even without formal marriage.
5. Moral vs. Legal:
   - While live-in relationships may be socially debated, individual liberty prevails over moral policing.

Legal Background in India

- Supreme Court Precedents:
  - Live-in relationships are not illegal, even if socially unacceptable.
- Domestic Violence Act, 2005:
  - Provides protection without requiring marital status.
- Right to Privacy & Personal Choice:
  - Courts cannot interfere with the personal choices of consenting adults.

Significance:

- Reaffirms constitutional protection of adult autonomy.
- Aligns High Court rulings with Supreme Court jurisprudence.
- Strengthens legal safeguards for women in non-marital cohabitation.
- Clarifies that social disapproval cannot override fundamental rights.

Sabka Bima Sabki Raksha (Amendment of Insurance Laws) Bill

Context:

- Passed by Parliament to modernize India's insurance sector, amend three key laws (Insurance Act, 1938; LIC Act, 1956; IRDAI Act, 1999) and achieve "Insurance for All by 2047."

Key Institutions Affected

Institution	Role / Changes
IRDAI	Apex regulator; empowered with recovery, approvals, SOPs
LIC	Greater operational autonomy; can expand & restructure globally
GIC Re	State-owned reinsurer; easier entry for foreign reinsurers
Private insurers	More foreign investment, regulated by IRDAI

Key Changes Introduced

1. FDI and Market Access
   - FDI raised to 100% in Indian insurance companies (from 74%).
   - Foreign reinsurers: Net Owned Funds requirement reduced from ₹5,000 crore → ₹1,000 crore.
2. Regulatory Strengthening (IRDAI)
   - Recovery Power: IRDAI can recover wrongful gains by insurers/intermediaries (similar to SEBI).
   - Lifetime Registration for insurance intermediaries → no periodic renewals.
   - Share Transfer Approval Threshold raised from 1% → 5% of paid-up capital.
3. Governance & SOPs
   - Clear Standard Operating Procedures (SOPs) for regulation-making.
   - Transparent criteria for penalties.
4. LIC Autonomy
   - Can open new zonal offices without government approval.
   - Can restructure overseas operations per local laws.
5. Sectoral Impact
   - Strengthens IRDAI as apex regulator.
   - Promotes insurance penetration and accessibility.
   - Facilitates greater foreign participation and global competitiveness.

Significance:

- Financial Inclusion: Supports "Insurance for All by 2047."
- Global Integration: Attracts foreign investment, aligns with international norms.
- Governance: Streamlined regulatory and operational mechanisms.
- Sectoral Growth: Encourages competition, innovation, and modern insurance practices.

Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Bill, 2025

Context:

- Passed by Parliament, replacing the Atomic Energy Act, 1962 and the Civil Liability for Nuclear Damage Act, 2010.
- Signals a major policy shift to expand nuclear power generation and allow private sector participation under government oversight.

Key Provisions

1. End of Monopoly
   - Private companies can now operate nuclear power plants, previously restricted under the Atomic Energy Act.
   - Core nuclear functions (nuclear material production, heavy water, waste management) remain with DAE.
2. Foreign Direct Investment (FDI)
   - Up to 49% FDI allowed in selected nuclear activities.
   - Aims to attract technology and capital into the sector.
3. Liability & Legal Changes
   - Civil liability law recalibrated to cap equipment suppliers' liability.
   - Operator insurance structured via Indian Nuclear Insurance Pool (₹1,500 crore per incident).
   - Specialised nuclear tribunal established for dispute resolution.
4. Regulatory Oversight
   - Government retains supervisory control over private operators.
   - Ensures safety, security, and traceability of sensitive nuclear materials.

Challenges & Concerns

1. Safety & Liability – Need strong safety protocols; past high liability deterred investment.
2. Security Risks – Sensitive nuclear tech requires strict monitoring and traceability.
3. Project Timelines – Nuclear plants take 8–10 years; requires risk-sharing and funding incentives.
4. Governance & Regulation – Transition from state monopoly demands robust regulatory and accountability frameworks.

Significance

- Encourages private and foreign participation, bringing investment, technology, and efficiency.
- Aligns with India's energy security and decarbonisation goals.
- Marks a paradigm shift in nuclear governance while retaining state control over core strategic functions.

Significance of Private Sector Participation

Aspect	Impact
Resource Mobilisation	Reduces government fiscal burden; expands domestic & global capital access
Technology & Innovation	Introduces advanced reactor designs, construction techniques, operational efficiencies
Energy Security	Diversifies nuclear ecosystem; strengthens supply chains and manufacturing capacity
Low-Carbon Goals	Supports industrial decarbonisation & long-term sustainable energy strategy

Challenges & Concerns

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- Marks a paradigm shift in nuclear governance while retaining state control over core strategic functions.

Right to Disconnect Bill, 2025

Context:

- A Private Member's Bill introduced in the Lok Sabha to establish statutory protections for employees against work-related communication outside office hours.
- Seeks to address occupational stress and promote work-life balance in the digital age.

What is the Right to Disconnect?

- Legal right of employees to disconnect from work communications after official working hours.
- Rooted in human rights principles: Article 24, UDHR — "Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay."

Global Examples:

Country	Law/Provision	Key Feature
France	El Khomri Law, 2017	First country to recognize the right; mandates employers respect after-hours disconnection
Australia	Fair Work Amendment, 2024	Employees may ignore after-hours communication unless refusal is unreasonable (e.g., emergencies)
Spain	Organic Law 3/2018, Art. 88	Guarantees right to turn off devices outside work hours

Key Provisions of the Bill

1. Right to Disconnect
   - Employees can decline work communications beyond official hours.
   - Employers cannot penalize or retaliate against employees exercising this right.
2. Employees' Welfare Authority
   - A statutory body to oversee enforcement of the right.
   - Conducts baseline studies on after-hours communication usage.
   - Provides guidance to organizations on work-hour management.
3. Overtime Compensation
   - Work beyond standard hours must be compensated at enhanced rates per statute or collective bargaining.
4. Consultation Requirement
   - Firms with >10 employees must engage with workforce representatives/unions to set work-hour rules and overtime terms.
5. Work-Life Balance Initiatives
   - Digital detox centers and counseling services for mental health.
   - Encourages corporate investment in stress management and wellness programs.
6. Penalties for Non-Compliance
   - Financial sanctions: 1% of total employee wages for violations.
   - Ensures enforcement and organizational accountability.

Significance

- Protects employees from digital burnout and occupational stress.
- Encourages a healthy work-life balance, improving productivity and mental well-being.
- Establishes India among progressive nations recognizing modern labor rights in the digital era.

Health Security se National Security Cess Bill

Context:

- Introduced by Finance Minister Nirmala Sitharaman as a Money Bill in Lok Sabha.
- Proposes a cess on machines used in pan masala manufacturing to raise funds for health security initiatives.

Cess: Key Features (Article 270)

- Definition: A specific levy imposed for a defined purpose (e.g., health, education).
- Scope: Calculated on total tax + surcharge; collected into Consolidated Fund of India but spent only for designated purposes.
- Center-State Sharing: No obligation for mandatory sharing, but the Bill proposes partial allocation to states for health programs.

Key Provisions of the Bill

1. Levy on Machines
   - Applies to all machinery or processes used in pan masala production.
   - Includes fill-and-seal machines, packing machines, and manual processes.
2. Self-Declaration & Returns
   - Manufacturers must self-assess cess liability.
   - Monthly returns are required; interest applies to delayed payments.
3. Penalties & Offences
   - Undeclared machines or processes.
   - Failure to register or pay cess.
   - Tampering with seized goods.
4. State Allocation
   - Portion of cess revenue shared with states for health awareness programs and health-related schemes.
5. Audit & Recovery
   - Authorized officers can audit manufacturers to verify cess payments.
   - Recovery proceedings may be initiated for unpaid cess, interest, or penalties.

Scope & Applicability

- Target Goods: Selected demerit goods posing health risks, e.g., pan masala.
- Exclusions: Essential goods are exempt.
- Liability: Falls on anyone owning or controlling the machines/processes used in manufacture.

Significance

- Links health concerns with fiscal policy, creating a dedicated fund for health security.
- Encourages manufacturers to reduce production of high-risk products.
- Provides financial support to states for health-related schemes, enhancing public health infrastructure.

Non-Scheduled Drugs

Context:

- Parliamentary Standing Committee on Chemicals and Fertilisers highlighted unregulated pricing of non-scheduled drugs, leading to excessive profiteering and high patient costs.
- Urged Department of Pharmaceuticals (DoP) and NPPA to frame a new policy urgently.

What are Non-Scheduled Drugs?

- Pharmaceutical products not listed in any schedule of the Drugs and Cosmetics Act or the National List of Essential Medicines (NLEM).
- Not subject to government price control; manufacturers can set Maximum Retail Price (MRP) independently.
- No approval from NPPA required for pricing.

Issues Identified

1. Excessive Markups
   - Margins between Price to Stockist (PTS) and MRP as high as 600%, 1200%, 1800%, making treatments unaffordable.
2. Lack of Pricing Transparency
   - NPPA/government cannot access critical pricing data like PTS, preventing monitoring of profit margins.
3. Limited Price Control
   - Price regulation applies only to NLEM drugs.
   - Non-scheduled drugs can have disproportionately high MRPs.
4. Trade Margin Rationalisation (TMR)
   - Concept: Cap and regulate profit margins across the supply chain to ensure affordability.
   - Delayed Implementation: Piloted successfully for cancer drugs, but not formalized as permanent policy.

Key Recommendations of the Committee

1. Trade Margin Rationalisation Policy
   - Draft a TMR policy for all non-scheduled drugs, not only emergency medicines.
   - Make TMR statutory and permanent to prevent unjustified price inflation.
2. Real-Time Pricing Database
   - Collect data from manufacturers, distributors, hospitals for better transparency.
3. Online Sales Oversight
   - Monitor e-pharmacies and online platforms selling drugs at steep discounts to ensure authenticity.
4. High-Cost Medical Devices
   - NPPA & DoP to review pricing of devices like stents to make them affordable.

Regulatory Mechanisms

1. National Pharmaceutical Pricing Authority (NPPA)
   - Independent authority under DoP, enforces Drugs (Prices Control) Order (DPCO).
2. Drugs (Prices Control) Order, 2013
   - Fixes ceiling prices for scheduled drugs using NLEM.
3. National Pharmaceutical Pricing Policy (NPPP), 2012
   - Ensures essential medicines are available at reasonable prices through structured pricing.

Narco Tests

Context:

- The Supreme Court (2025) held that forced or involuntary narco-analysis tests are unconstitutional, setting aside a Patna HC order in Amlesh Kumar v. State of Bihar.
- The ruling reaffirms the Selvi v. State of Karnataka (2010) guidelines.

Narco-Analysis Test

- Definition: Forensic technique where suspects are given psychoactive drugs (e.g., sodium pentothal) to lower inhibition and extract information.
- Purpose: Investigative tool used when voluntary cooperation is lacking.

Key Supreme Court Observations

1. Violation of Selvi Guidelines
   - Non-consensual narco tests violate constitutional rights.
   - Information obtained without consent is inadmissible in court.
2. Voluntary Narco Test
   - A suspect may volunteer for testing under Section 253 of BNSS at the defence stage.
   - There is no indefeasible right to undergo the test.
3. Unconstitutionality of Forced Tests
   - Any narco test without free and informed consent is invalid.
4. Evidentiary Restrictions
   - Results of involuntary tests cannot be used as evidence.

Constitutional Safeguards

1. Article 20(3) – Protection against self-incrimination.
   - No person can be compelled to testify against themselves.
2. Article 21 – Right to life and personal liberty.
   - Non-invasive tests require procedure established by law, ensuring procedural fairness.
3. Other Articles under Article 20
   - 20(1): Protection against ex-post facto laws.
   - 20(2): Protection against double jeopardy.

23rd India–Russia Annual Summit

Context:

- Russian President Vladimir Putin visited India for a two-day state visit.
- Summit marked 25 years of the 2000 Strategic Partnership declaration.
- Joint statement emphasized continuity, resilience, and expansion of bilateral cooperation.

Key Outcomes

1. Strategic Partnership
   - Special & Privileged Strategic Partnership reaffirmed.
   - Focus on trust, convergence, and global stability.
2. Trade & Economy
   - Adoption of Programme 2030.
   - Push for India–Eurasian Economic Union (EAEU) FTA.
   - Bilateral trade target: USD 100B by 2030.
   - National currency settlements and improved logistics promoted.
3. Energy Cooperation
   - Oil, gas, petrochemicals, LNG/LPG infrastructure, and coal gasification.
   - Long-term fertilizer supply agreements.
   - Nuclear energy expansion: Kudankulam, VVER-1200 reactors, small modular reactors, floating nuclear plants.
4. Connectivity Corridors
   - Strengthening INSTC, Chennai–Vladivostok Maritime Corridor, and Northern Sea Route.
   - Enhancing railway technology cooperation.
5. Defence & Military-Technical Cooperation
   - Shift to co-development, co-production, and joint R&D under Make-in-India.
   - Joint military exercises (INDRA) and manufacturing of spares for Russian-origin systems.
6. Nuclear & Space Cooperation
   - Joint nuclear equipment manufacturing and ISRO–Roscosmos collaboration.
   - Discussions on second NPP site and human spaceflight programs.
7. Labour Mobility
   - Agreements for safe, formal deployment of Indian skilled and semi-skilled workers (≈500,000).
8. Tourism & People-to-People Exchanges
   - 30-day e-tourist visa and group tourist visa for Russian citizens.
   - Initiatives for student exchanges, vocational training, and cultural collaborations.
9. Multilateral Alignment & Global Governance
   - Russia supports India's UNSC permanent seat and BRICS chairship 2026.
   - Joint initiatives in UN, G20, SCO, IBCA, ISA, and CDRI.
10. Counter-Terrorism & Regional Security
    - Zero tolerance for terrorism.
    - Coordinated approaches on Afghanistan, Middle East stability, and climate change.

Pillars of Cooperation

Pillar	Key Points
Defence & Security	Largest share of India's imports; focus on modernization and co-production
Energy	35–40% of India's crude imports from Russia; cooperation in LNG, Arctic energy, nuclear tech
Trade & Economy	Bilateral trade reached **$68.7B FY24–25**; exports $4.9B, imports $63.8B
Technology & Innovation	AI, quantum computing, shipbuilding, railway modernization
Multilateral Coordination	UN, G20, SCO, BRICS; reform-oriented global governance support

Challenges

- Sanctions & Payment Restrictions: Hinders rupee–ruble trade and investment.
- Trade Imbalance: Imports of oil, coal, and fertilizers exceed exports.
- Defence Delivery Delays: S-400 and other projects impacted.
- China Factor: Russia-China closeness requires strategic balancing.
- Tech Export Scrutiny: Compliance pressure from Western nations.
- Logistical Gaps: Delays in INSTC and Chennai–Vladivostok corridor.

Way Forward

1. Trade & Economic Diversification
   - Expedite India–EAEU FTA, enhance Indian exports (pharma, IT, engineering).
2. Joint R&D & Industrial Collaboration
   - AI, green hydrogen, semiconductors, aerospace; innovation fund under Skolkovo.
3. Financial Infrastructure & Payment Mechanisms
   - Expand UPI–MIR integration, digital trade settlements.
4. Connectivity & Logistics
   - Operationalize INSTC & CVMC to cut freight costs (~30%).
5. Arctic & Far East Engagement
   - Resource access and economic partnership expansion.
6. People-Centric Diplomacy
   - Student exchanges, vocational programs, IIT campus in Russia.
7. Balanced Strategic Autonomy
   - Maintain robust India–Russia ties while balancing Western and Indo-Pacific relations.

India–Oman Relations

Context:

- Indian PM visited Oman as part of a three-nation tour (Jordan, Ethiopia, Oman).
- Marked 70 years of diplomatic relations (since 1955).
- PM conferred with Order of Oman by Sultan Haitham bin Tarik.

Historical & Geostrategic Significance

- Civilisational Roots: Trade since Harappan times; Lothal-Dholavira connected with Magan (Oman).
- Strait of Hormuz: Oman critical for India's energy security.
- Maritime Security: Tri-service exercises (Al-Najah, Eastern Bridge, Naseem-al-Bahr).
- Operation Sankalp (2019): Protected Indian merchant vessels in Gulf crises.
- Duqm Port (2018): Logistics, basing, and turnaround access for Indian Navy.

Key Outcomes of the Visit

1. Comprehensive Economic Partnership Agreement (CEPA)
- Landmark Free Trade Agreement (FTA) signed.
- Oman: Zero-duty access on ~98% of Indian exports (textiles, engineering, pharma, gems & jewellery).
- India: Reciprocal concessions on ~80% of tariff lines (primarily Omani petrochemicals and fertilizers).
- CEPA is India's second in the Gulf (after UAE, 2022); Oman's first bilateral FTA since 2006.

2. Services & Labour Mobility
- 127 services sub-sectors opened to Indian professionals (IT, healthcare, education, business services).
- Quota for Indian intra-corporate transferees increased from 20% → 50%.

3. Maritime & Strategic Cooperation
- Joint Vision Document on Maritime Cooperation adopted.
- Continued strategic access to Duqm Port near the Strait of Hormuz.

4. Sectoral & Innovation Initiatives
- MoUs: Millet cultivation, agri-food innovation, higher education, maritime heritage.
- Oman–India Innovation Bridge: Targeting 200 startups in 2 years.
- 5-in-5 Green Energy Target: Green Hydrogen, Green Ammonia, Solar Parks, Energy Storage, Smart Grids.
- Agri Innovation Hub: Strengthening Oman's food security with Indian agri-tech solutions.

5. Strategic & Defence Ties
- Strengthened defence cooperation, including Jaguar aircraft spares supply to IAF.
- PM awarded First Class of the Order of Oman (Civil) for strategic trust.

Economic & Trade Cooperation
- Bilateral Trade: USD 10.613B (FY 2024–25); Oman is India's 3rd-largest GCC export destination.
- Imports: Petroleum products, urea, polymers, chemicals, metals.
- Exports: Mineral fuels, chemicals, iron & steel, cereals, ships, apparel.
- Energy: India is second-largest destination for Omani crude exports.
- Connectivity: Oman part of India–Middle East–Europe Economic Corridor (IMEC).

People-to-People Ties
- Indian diaspora ~700,000, contributing to economy and bilateral goodwill.

Challenges
- Regional Security Volatility: Conflicts in Gulf impact shipping lanes.
- Overdependence on Oil: >70% of imports from Oman are crude/urea/petrochemicals.
- Omanisation Policy: Employment quotas for nationals may restrict Indian professionals.
- Slow Connectivity Projects: MEIDP pipeline stalled due to sanctions and high costs.

- China's Footprint: Strategic competition in Gulf of Oman.
- Duqm Geopolitics: Indian Navy access could be perceived as signalling, increasing regional sensitivities.
- Implementation Gaps: Regulatory alignment and customs delays slow economic gains.

Way Forward

1. Operationalize CEPA: Full FTA implementation by Q1 2026; eliminate tariffs and secure diaspora employment.
2. Duqm as Maritime Security Hub: Develop MDA & HADR capabilities, MRO facilities for Indian Navy.
3. 5-in-5 Green Energy Roadmap: Accelerate green projects aligning Oman Vision 2040 & India's Viksit Bharat 2047.
4. Digital Public Infrastructure (DPI): UPI integration with Oman for Local Currency Settlement (LCS).
5. Knowledge & Innovation Corridor: Offshore IIT/IIM campuses; India–Oman Agri Innovation Hub.
6. Strategic Connectivity via IMEC: Oman as gateway; redistribution hub for Indian goods to GCC & East Africa.

Conclusion

- The 2025 visit strengthened India–Oman ties into a Modern Strategic Synergy.
- CEPA, maritime agreements, and innovation initiatives ensure inclusive economic growth, energy security, and Indian Ocean strategic presence.

India – New Zealand Free Trade Agreement (FTA)

Context:

- India and New Zealand concluded FTA negotiations aimed at doubling bilateral trade within five years.
- Includes trade, investment, agriculture, services, education, and workforce mobility provisions.

Key Highlights

1. Trade & Investment

- Bilateral trade expected to double in five years.
- New Zealand commits USD 20 billion investment in India over 15 years (similar to EFTA model).
- Dedicated Health & Traditional Medicine Annex — New Zealand's first such agreement with any country.

Key Highlights

1. Trade & Investment

- Bilateral trade expected to double in five years.
- New Zealand commits USD 20 billion investment in India over 15 years (similar to EFTA model).
- Dedicated Health & Traditional Medicine Annex — New Zealand's first such agreement with any country.

2. Tariff Liberalisation

Aspect	Details
New Zealand Exports	95% of tariffs eliminated or reduced
Indian Exports	100% of tariff lines in NZ zero-duty access
Indian Tariff Liberalisation	70.03% of tariff lines covered (95% of trade)
Exclusions	29.97% of tariff lines, mainly sensitive sectors
Sensitive Sectors	Dairy, sugar, edible oils, onions, pulses; animal products (except sheep meat), arms & ammunition; selected metals (copper, aluminium), gems & jewellery

3. Agriculture & Allied Sectors

- Indian farmers gain better access for fruits, vegetables, coffee, spices, cereals, processed foods.
- Cooperation in:
  - Agricultural Productivity Partnership
  - Centres of Excellence
  - Access to New Zealand's advanced agri-technologies
- Targeted measures for horticulture: honey, kiwifruit, apples to support sustainable growth.

4. Services Trade

Country	Market Access	MFN Treatment
New Zealand	118 sectors	139 sectors
India	106 sectors	45 sectors

5. Student Mobility & Education

- First-time Student Mobility Annex with another country.
- Key provisions for Indian students:
  - No numerical caps on enrollment
  - Work 20 hours/week during study
  - Post-study work visas: Up to 3 years for STEM Bachelor's graduates
    - 4 years for Doctoral graduates

6. Temporary Employment & Workforce Mobility

- Temporary Employment Entry (TEE) Visa:
  - Quota: 5,000 Indian professionals at any given time
  - Maximum stay: 3 years

Three-Nation Tour of Indian PM Narendra Modi

Context:

- PM Narendra Modi visited Jordan, Ethiopia, and Oman as part of a three-nation diplomatic tour, focusing on strengthening political, economic, and strategic ties.

1. Jordan Visit

- Occasion: 75th anniversary of India–Jordan diplomatic relations; two-day visit at the invitation of King Abdullah II.
- Key Agreements & Outcomes:
  a. Five MoUs signed in areas including renewable energy and cultural exchange.
  b. Trade Goal: Target to increase bilateral trade to $5 billion (2024 trade at $2.3 billion).
  c. Political Ties: Commitment to sustained high-level engagement.
  d. Regional Connectivity: Jordan's location identified as strategic for enhancing logistics and private-sector collaboration.

2. Ethiopia Visit

- Occasion: PM addressed a joint session of Ethiopian Parliament; conferred with 'Great Honor Nishan of Ethiopia'.
- Key Outcomes:
  a. Strategic Partnership: India–Ethiopia relations elevated to Strategic Partnership status.
  b. MoUs/Agreements:
    - Cooperation in UN Peacekeeping Operations Training
    - Mutual administrative assistance in customs matters
    - Establishment of a Data Centre at Ethiopia's Ministry of Foreign Affairs
  c. Broader Cooperation Areas: Health security, digital public infrastructure, clean energy.
  d. Education & Health Support: Upgrade of Mahatma Gandhi Hospital in Addis Ababa; doubling scholarships for Ethiopian students.

3. Oman Visit

- Occasion: Coinciding with 70th anniversary of India–Oman diplomatic ties (1955); PM awarded Order of Oman by Sultan Haitham bin Tarik.
- Key Outcomes:
  a. Comprehensive Economic Partnership Agreement (CEPA):
    - Oman granted zero-duty access on ~98% of Indian exports; India offered reciprocal concessions on ~80% of lines.
  b. Services & Labour Mobility: 127 services sub-sectors opened; quota for Indian intra-corporate transferees increased from 20% → 50%.
  c. Maritime & Strategic Cooperation: Joint Vision on maritime security; continued Indian Navy access to Duqm Port.
  d. Sectoral Agreements: Agriculture, higher education, maritime heritage, innovation hubs, and green energy projects.
  e. Defence & Strategic Partnership: Strengthened defence ties, including supply of Jaguar aircraft spares.

India Re-Elected to IMO Council (2026–27)

Context:

- India has been re-elected to the International Maritime Organization (IMO) Council for the 2026–27 biennium, securing the highest number of votes.

About the International Maritime Organization (IMO)

- UN Specialized Agency: Responsible for ensuring safety, security, and environmental protection in global shipping.
- Established: 1948 (Geneva Conference), came into force in 1958.
- Headquarters: London.
- Members: 176 Member States + 3 Associate Members.
- World Maritime Day: Celebrated every last Thursday of September to highlight shipping and maritime importance.

India and IMO

- Early Membership: India joined in 1959 by ratifying the IMO Convention.
- Council Participation: India has consistently served on the IMO Council, except for 1983–84.
- Significance of Re-election: Reflects India's credibility and influence in global maritime governance.

Role of IMO

1. Regulatory Framework: Develops universally adopted rules for safe, secure, and efficient shipping.
2. Environmental Protection: Prevents marine pollution from ships and promotes sustainable shipping practices.
3. Legal Oversight: Addresses liability, compensation, and maritime traffic regulations.

Significance for India:

- Strengthens India's voice in global maritime safety, trade, and environmental standards.
- Supports India's vision of becoming a maritime hub and Blue Economy leader.

'Pax Silica' Initiative

Context:

- The United States has launched Pax Silica, a strategic coalition of "trusted allies" to build a secure, resilient, and innovation-driven silicon and AI supply chain.
- India is not part of the inaugural group, despite its participation in other tech initiatives like iCET.

Meaning of the Term

- Pax: Latin for peace, stability, and long-term prosperity (akin to Pax Romana / Pax Americana).
- Silica: Refers to silicon, a key element in semiconductors and AI technologies.
- Symbolism: The initiative emphasizes that control over silicon and chip supply chains is central to global stability and power in the AI era.

About Pax Silica

- Objective: Build a trusted, innovation-driven silicon and AI supply chain covering:
  - Critical minerals and energy inputs
  - Advanced semiconductor manufacturing
  - AI infrastructure and digital technology
  - Logistics for technology deployment
- Technology Focus: Securing strategic technology "stacks" – hardware, software, AI models, and digital infrastructure.
- Inaugural Members (9): US, Japan, South Korea, Singapore, Netherlands, UK, Israel, UAE, Australia.

Rationale

1. Counter China: Limit China's dominance in critical minerals, rare earths, and semiconductor supply chains.
2. Reduce Strategic Vulnerabilities: Address risks from concentrated and fragile supply chains.
3. Alliance-Based Economic Order: Build a trusted coalition of like-minded countries in AI and digital economy sectors.

Significance for India:

- India's exclusion highlights the geopolitical and technological challenges in the global semiconductor and AI supply chain.
- Underlines the importance for India to strengthen domestic semiconductor capabilities and diversify tech partnerships.

Rupee Depreciation & Its Impacts

Context:

- Over the past year, the Indian Rupee (INR) weakened ~7%, from ₹83.4 to ₹89.2, amid a record trade deficit and global tariff shocks.
- This depreciation shifts the Rupee from overvalued to undervalued, improving export competitiveness.

Key Concepts

Rupee Depreciation:
- Fall in INR value against major currencies (especially USD).

Real Effective Exchange Rate (REER):
- Weighted average of INR against major trading partners, adjusted for inflation.
- REER fell from 108.1 (Nov 2024) to 97.5 (Oct 2025), indicating undervaluation.
- Used by RBI to guide managed float policy.

Managed Floating Exchange Rate:
- Exchange rate determined by market but RBI intervenes to contain volatility.

Drivers of Rupee Depreciation

External Factors:
- Strong USD due to high US interest rates and safe-haven demand.
- Capital outflows by FPIs/FIIs (~₹38,000 crore withdrawn Nov 2024–Jan 2025).
- Global uncertainties: geopolitical tensions, supply chain disruptions.

Domestic Factors:
- High import dependence: crude oil, electronics, chemicals, gold.
- Persistent Current Account Deficit (CAD).
- Inflation differential: domestic inflation higher than US reduces real value.

Trade & Growth:
- Weak export growth (merchandise & IT).
- Rising global commodity prices.
- Delays in FTAs and high US tariffs.

Policy & Market Sentiment:
- RBI interventions: ~$50B sold to stabilise Rupee.
- IMF reclassification of India's exchange rate regime to "crawl-like arrangement".
- Higher hedging costs indicating anticipated depreciation.

Negative Impacts of Rupee Depreciation
- Higher import costs: Crude, electronics, fertilizers, gold → imported inflation.
- Debt servicing burden: ECBs/FCCBs more expensive in INR.
- Investor confidence erosion: Sharp depreciation triggers FPI outflows.
- Socio-economic strain: Low-income households face rising cost-of-living; middle class impacted by education/medical costs.

Positive Impacts (Strategic Benefits)
- Boosts exports: Undervalued Rupee makes Indian goods/services globally cheaper.
- Enhances remittances: Increases INR value of $125+ bn inflows.
- Strengthens tourism & services: Inbound tourism, education, medical travel gain.
- Corrects overvaluation: REER moves to equilibrium, improves BoP sustainability.
- Attracts cost-effective FDI: Indian assets cheaper in dollar terms.
- Absorbs trade shocks: Helps mitigate impact of US tariffs or redirected Chinese imports.

Macroeconomic Trade-offs

- Impossible Trinity: RBI cannot simultaneously have fixed exchange rate, free capital flows, and independent monetary policy.
- Fiscal discipline crucial: High fiscal deficit can erode benefits of depreciation.
- Depreciation risks: Panic-driven fall, weak fundamentals, global shocks, or populist policies can trigger crises.

Way Forward

- Continue managed float with active RBI intervention.
- Push export diversification (PLI, FTAs).
- Reduce import dependence (energy, electronics, green hydrogen).
- Promote Rupee-denominated trade (e.g., with Russia, UAE).
- Ensure fiscal-monetary coordination to maintain structural stability.
- Boost digital & financial services exports to leverage competitive Rupee.

Historical Evidence

- 1991 crisis: Depreciation led to export boom in late 1990s.
- 2013 Taper Tantrum: 20% Rupee fall boosted exports 2014–16.
- 2022–23: Depreciation helped India remain resilient, becoming 5th largest exporter globally (2024).

India's Creator Economy

Context:

- A BCG report highlights rapid growth of India's digital creator economy and its impact on consumer behavior.
- Expected to influence $1 trillion in consumer spending by 2030.
- Currently, creators shape 30% of consumer decisions, affecting $350–400 billion in spending.

What is the Creator Economy?

- Digital ecosystem where individuals create and share content online.
- Allows direct engagement with audiences, unlike traditional media.
- Also called the Orange Economy.

Key Components:

1. Platforms: YouTube, Instagram, Twitch, X (Twitter), etc.
2. Monetization: Ad revenue, sponsorships, affiliate marketing.
3. Community Engagement: Thrives on direct interaction between creators and followers.

India's Creator Economy

- Scale: Over 80 million creators (influencers, bloggers, artists, digital creators).
- Market Size:
  - 2023: USD 976 million
  - 2030: Expected USD 3,926 million
  - CAGR: ~45% by 2028
- Employment Contribution: ~8% of India's workforce; higher than Turkey (1%), Mexico (1.5%), South Korea (1.9%), Australia (2.1%).
- Government Support:
  - AVGC Task Force (Animation, Visual Effects, Gaming, Comics)
  - $1 billion Creative Economy Fund

Significance:

- Drives consumer spending, employment, and digital innovation.
- Positions India as a global hub for digital creativity.

National Strategy for Financial Inclusion (NSFI) 2025–30

Context:

- RBI released the NSFI 2025–30 to strengthen universal, affordable, and sustainable financial access.
- Financial Inclusion Index rose to 67 in 2025, with 55.98 crore beneficiaries under PMJDY.
- World Bank (Global Findex 2025): 89% of adults in India now hold accounts, reflecting deepening inclusion.

Panch Jyoti – Five Pillars of NSFI

1. Universal Access to Affordable Financial Services
   - Savings, credit, insurance, pensions, and payments for households and micro-enterprises.
   - Emphasis on quality, safety, and long-term economic security.
2. Gender-Sensitive & Resilience-Focused Inclusion
   - Prioritize women-led financial access and literacy.
   - Enhance financial resilience of vulnerable communities.
3. Integration of Livelihoods, Skills & Inclusion
   - Connect financial services with skill development and employment programs.
   - Promote entrepreneurship and sustainable income mobility.
4. Financial Education as Behavioural Transformation
   - Build savings habits, responsible credit use, insurance uptake, and prudent financial planning.
   - Special outreach for first-time users, youth, and micro-entrepreneurs.
5. Strong Consumer Protection & Grievance Redressal
   - Strengthen customer confidence via robust grievance mechanisms, data protection, and transparency.
   - Critical for rural and semi-urban digital payments expansion.

Core Vision

- Ecosystem Approach: Holistic model for last-mile delivery of financial services.
- Effective Usage: Focus on not just access, but productive and sustained use by households and micro-enterprises.
- Five Strategic Goals (Panch Jyoti): Supported by 47 action points.

Key Government Initiatives Supporting NSFI

- PMJDY: Functional bank accounts for all households with access to deposits, withdrawals, RuPay cards, overdraft, and DBT.
- JAM Trinity (Jan Dhan–Aadhaar–Mobile): Integrates bank accounts, digital ID, and mobile tech for seamless financial service delivery.
- PMMY: Collateral-free loans to micro and small enterprises to enhance formal credit access.
- PMJJBY: Low-cost life insurance coverage for bank account holders.
- Business Correspondent (BC) Model: Branchless banking through trained agents in unbanked areas.

Monetary Policy Committee (MPC) & Goldilocks Economy

Context:

- RBI's MPC recently cut the repo rate by 25 bps to 5.25%, citing a favorable inflation environment and steady economic growth.
- The economy is described as a "Goldilocks phase", i.e., balanced growth, controlled inflation, and low unemployment.

Goldilocks Economy – Key Features

- Moderate economic growth without triggering inflation.
- Low unemployment, indicating healthy job creation.
- Inflation under control, staying within manageable levels (below RBI's target).
- Provides a favorable environment for sustainable investment and consumption.

MPC Key Decisions

1. Repo Rate Cut: 25 bps reduction to 5.25% to support growth.
2. Growth & Inflation Projections:
   - FY26 GDP growth: upgraded to 7.3% (from 6.8%).
   - CPI Inflation: revised down to 2% (from 2.6%).
3. Liquidity Measures:
   - Open Market Operations (OMO): ₹1 lakh crore purchase of government securities.
   - USD/INR Forex Swap: $5 billion 3-year buy-sell swap in Dec to manage forex liquidity.
4. Policy Stance: Neutral, maintaining flexibility to support growth while keeping price stability.

Basic Animal Husbandry Statistics (BAHS)

Released by: Ministry of Fisheries, Animal Husbandry & Dairying on National Milk Day, Nov 26

Milk Production
- Global Rank: 1st
- Total Production: 247.87 million tonnes (3.58% growth)
- Per Capita Availability: 485 g/day (up from 319 g/day in 2014–15)
- Top States:
  - Uttar Pradesh – 15.66%
  - Rajasthan – 14.82%
  - Madhya Pradesh – 9.12%
  - Gujarat – 7.78%
  - Maharashtra – 6.71%
- Contribution of Top 5 States: 54.09%

Egg Production
- Global Rank: 2nd
- Total Production: 149.11 billion eggs (4.44% growth)
- Per Capita Availability: 106 eggs/year (up from 62 eggs/year in 2014–15)
- Top States:
  - Andhra Pradesh – 18.37%
  - Tamil Nadu – 15.63%
  - Telangana – 12.98%
  - West Bengal – 10.72%
  - Karnataka – 6.67%
- Contribution of Top 5 States: 64.37%

Meat Production
- Global Rank: 4th
- Total Production: 10.50 million tonnes (2.46% growth)
- Species Contribution: Poultry meat – 5.18 million tonnes (~50%)
- Top States:
  - West Bengal – 12.46%
  - Uttar Pradesh – 12.20%
  - Maharashtra – 11.57%
  - Andhra Pradesh – 10.84%
  - Telangana – 10.49%
- Contribution of Top 5 States: 57.55%

Wool Production
- Total Production: 34.57 million kg (2.63% growth)
- Top States:
  - Rajasthan – 47.85%
  - Jammu & Kashmir – 22.88%
  - Gujarat – 6.22%
  - Maharashtra – 4.75%
  - Himachal Pradesh – 4.30%
- Contribution of Top 5 States: 85.98%

Key Takeaways:
- India maintains global leadership in milk (1st) and egg (2nd) production.
- Poultry meat dominates meat production.
- Rajasthan and UP remain top contributors in milk and wool production respectively.
- Per capita availability of milk and eggs has steadily increased, reflecting improved nutritional access.

New GI-Tagged Products of Tamil Nadu

Context: Five products from Tamil Nadu, including Woraiyur Cotton Sari and Thooyamalli Rice, have received Geographical Indication (GI) tags, taking the total GI-tagged products of the state to 74.

New GI Products (2025)

1. Woraiyur Cotton Sari (Tiruchirappalli)
   - Handwoven in Manamedu using cotton yarn from Coimbatore and Rajapalayam.
   - Uses traditional natural dyes from Jayamkondam, giving unique colour and authenticity.

2. Kavindapadi Nattu Sakkarai (Erode)
   - Traditional unrefined sugar made by crushing local sugarcane and slowly evaporating the juice.
   - Linked to fertile lands irrigated by the Lower Bhavani Project canal.

3. Thooyamalli Rice (Tamil Nadu)
   - A traditional sambha-season rice variety (135–140 days); name means “pure jasmine”.
   - GI application supported by Tamil Nadu Marketing Board and NABARD Madurai.

4. Namakkal Makkal Pathirangal / Kalchatti (Namakkal)
   - Soapstone cookware famous for excellent heat retention and ancient usage.
   - GI tag secured after renewed application by Namakkal Stone Products Manufacturers (2022).

5. Ambasamudram Choppu Saman (Tirunelveli)
   - Handcrafted wooden toys and utensils made for over 200 years.
   - Crafted using local woods like Manjal Kadamba, teak, and rosewood.

Ponduru Khadi Gets GI Tag

Context: Ponduru Khadi, a traditional hand-spun and handwoven cotton fabric from Ponduru village, Srikakulam district (Andhra Pradesh), has been granted a Geographical Indication (GI) tag.

About Ponduru Khadi

- A heritage khadi fabric known for its fine texture, durability, and natural finish.
- Made from indigenous short-staple hill cotton (also called Punasa / red cotton), which is naturally pest-resistant.
- Cultivated using chemical-free, eco-friendly farming practices.

Unique Traditional Production Process

- Special Ginning Technique: Cotton is ginned using the jawbone of the Valuga fish — a practice unique to Ponduru.
- Manual Processing: Cotton is cleaned, carded, and converted into slivers, traditionally stored in dried banana stems.
- Hand Spinning & Weaving:
  - Spun using a rare single-spindle charkha with 24 spokes.
  - Woven on traditional handlooms.
  - Ponduru is the only place in India where this 24-spoke single-spindle charkha is still in use.

Socio-Economic Significance

- A village-based cottage industry with many artisans working from home.
- The GI tag will help in protecting traditional knowledge, boosting artisan livelihoods, and promoting sustainable textiles.

Hindu Rate of Growth

Context:

- The Prime Minister stated that the term “Hindu rate of growth” wrongly portrayed India as inherently unproductive, even though India showed reasonable growth before and after economic reforms.

What is the Hindu Rate of Growth?

- The term was coined by economist Raj Krishna (1982).
- It refers to India's low GDP growth of about 3–3.5% per year during 1950s to late 1970s.
- The term criticised economic policy failures, not Indian culture or religion.

Main Characteristics

- Low but Stable Growth:
  - India grew at around 3.4% annually (1956–1975) with little variation even during wars and political changes.
- High Population Growth:
  - Population grew at nearly 2% per year, reducing per capita income growth to about 1.9%.
- Licence–Permit Raj:
  - Heavy government controls on industry, imports, and investment limited competition and productivity.

Nature of the Economic System Then

- State-dominated economy with big role of public sector in steel, power, transport, etc.
- Inward-looking import substitution model with high tariffs and quotas.
- Weak market incentives led to slow industrial growth and poor technological upgradation.

Why the Term is Considered Misleading

- The slow growth was due to policy and structural constraints, not because of any cultural or civilisational factors.
- Post-1991 reforms showed that India's growth potential was always strong.

SC's Redefinition of the Aravalli Range

Context: The Supreme Court has kept in abeyance its earlier order that accepted a restrictive definition of the Aravalli Hills, following strong concerns from environmentalists about its impact on the fragile ecosystem.

Background

- Earlier, the SC had limited Aravallis to:
  - Hills above 100 m height, and
  - Hill clusters within 500 m of each other.
- This caused concern in Rajasthan, Haryana, Delhi and Gujarat, as many ecologically important hillocks would be excluded.
-

Latest Supreme Court Order

- Stayed its own November order on Aravalli definition.
- New expert committee to re-examine how Aravallis should be defined.
- No new or renewed mining leases in Aravalli areas without SC permission.
- Notices issued to Centre and Aravalli states in a suo motu case.
- Reaffirms the Precautionary Principle in environmental protection.

Why Aravallis Are Ecologically Critical

- Barrier against desertification & pollution:
  - Stops the Thar Desert from expanding eastward and reduces dust storms in Delhi-NCR.
- Water security lifeline:
  - Recharges 20–30% groundwater of NCR and is the source of rivers like Luni, Sabarmati, Banas, Chambal.
- Biodiversity hotspot:
  - Hosts 22 wildlife sanctuaries and 4 tiger reserves and acts as a key wildlife corridor.
- Climate regulator:
  - Works as a green lung and carbon sink, helping India's climate commitments.

Key Concerns

- 100-metre definition problem:
  - May exclude nearly 90% hillocks, breaking the natural desert-shield.
  - FSI suggests slope-based (>3°) criteria instead of height alone.
- Mining pressure:
  - 31 hills already disappeared in Rajasthan due to illegal mining.
- Threat to 'Gair Mumkin Pahar':
  - Reclassification may open them to real estate and urban encroachment.
- Wildlife conflict & social impact:
  - Loss of corridors pushes wildlife into cities; mining has caused silicosis and displacement.

Major Protection Initiatives

- Judicial action: Freeze on mining leases and strict scrutiny of activities.
- Aravalli Green Wall Project (2025):
  - 5-km wide green buffer from Gujarat to Delhi, inspired by Africa's Great Green Wall.
- Tech monitoring:
  - ISRO's Bhuvan, drones, and AI to track illegal mining.
- Sustainable alternatives:
  - Promotion of M-Sand, recycled C&D waste, and geopolymer concrete.

Way Forward

- Use scientific criteria: height + slope + vegetation + landscape continuity using GIS mapping.
- Notify Management Plan for Sustainable Mining with strict No-Go zones.
- Focus on native species rewilding and restore wildlife corridors.
- Declare critical groundwater recharge zones and expand johads and check dams.
- Promote green livelihoods and payment for ecosystem services.

Supreme Court Links CSR to Ecosystem and Species Protection

Context:

- The Supreme Court has ruled that Corporate Social Responsibility (CSR) is not just voluntary charity but includes a constitutional duty to protect the environment and wildlife.

Constitutional Basis

- The Court brought corporations under Article 51A(g) of the Constitution.
- Article 51A(g): Duty to protect forests, lakes, rivers, wildlife and show compassion to living creatures.
- CSR spending on environment = fulfilment of constitutional obligation, not charity.

About the Great Indian Bustard (GIB)

- Scientific name: Ardeotis nigriceps
- One of the heaviest flying birds and a flagship species of grassland ecosystems.
- Indicator species: Its survival reflects grassland health.
- Distribution: Mainly in Rajasthan, and small populations in Gujarat, Maharashtra, Karnataka, Andhra Pradesh.
- Conservation Status:
  - Wildlife Protection Act, 1972: Schedule I
  - CITES: Appendix I
  - IUCN: Critically Endangered

Key Observations of the Supreme Court

- Corporations have a fundamental duty to protect the environment and prevent species extinction.
- Corporate responsibility must go beyond shareholders to include the ecosystem.
- Companies cannot claim to be socially responsible while harming nature.
- CSR is not charity, but a responsibility.
- Polluter Pays Principle:
  - If corporate activities (mining, power projects, infrastructure) damage habitats, the company must pay for species recovery.
  - CSR funds should be used for in-situ and ex-situ conservation.
- In GIB areas, power producers must behave as “guests in the bird’s habitat.”

Why This Judgment Is Important

- Makes environmental protection a legal duty of companies, not optional CSR.
- Strengthens species protection, polluter pays principle, and eco-centric governance.
- Sets a precedent for linking business activity with ecological responsibility.

Other Directions by the Court

- Revised Priority Areas for GIB:
  - Rajasthan: 14,013 sq km
  - Gujarat: 740 sq km
- Priority Area: Critical habitat zone for focused protection and monitoring.
- Conservation Measures:
  - Immediate implementation of in-situ and ex-situ conservation
  - Long-term study on climate change impact on GIB
- Power Corridor:
  - Allowed up to 5 km wide, located at least 5 km south of Desert National Park (Rajasthan).

CITES CoP20

Context: The 20th Conference of Parties (CoP20) to CITES concluded in Samarkand, Uzbekistan. It marked the 50th anniversary of CITES and was the first CoP held in Central Asia.

About CITES (Convention on International Trade in Endangered Species)

- Also called the Washington Convention.
- A multilateral treaty to ensure that international trade in wild plants and animals does not threaten their survival.
- Drafted after a 1963 IUCN resolution.
- Opened for signature: 1973
- Came into force: 1 July 1975
- Legally binding on member states (they must make domestic laws).
- Secretariat: Geneva, Switzerland (administered by UNEP)
- Members: 185 Parties
- India joined: 1976

Role of IUCN

- Founded: 1948
- World's largest and oldest global conservation network.
- Publishes the IUCN Red List of Threatened Species.
- Played a key role in the origin of CITES.

CITES Appendices

- Appendix I:
  - Species threatened with extinction
  - Trade permitted only in exceptional cases
- Appendix II:
  - Species not yet threatened, but trade must be strictly regulated
- Appendix III:
  - Species protected in at least one country
  - Other countries help control trade

Conference of Parties (CoP)

- Supreme decision-making body of CITES
- Held every 2–3 years
- Functions:
  - Reviews species status
  - Uplists / downlists / delists species in Appendices
  - Sets global wildlife trade policies
  - Reviews implementation and compliance
  - Strengthens fight against illegal wildlife trade

Key Highlights of CoP20

- Venue: Samarkand, Uzbekistan
- Special: 50 years of CITES; first CoP in Central Asia
- Decisions:
  - ~50 proposals reviewed
  - 77 species added to CITES Appendices

Prelims Quick Facts Box

- CITES Secretariat: Geneva
- Administered by: UNEP
- Total Parties: 185
- India joined: 1976
- CoP20 location: Samarkand, Uzbekistan
- IUCN Red List ≠ CITES Appendices (different purposes)

India's Role

- India successfully opposed the EU proposal to list Guggul.
- Argument: Insufficient scientific population data to justify listing.

Why CoP20 is Important

- Strengthens global wildlife trade regulation
- Expands international protection to more species
- Shows growing role of science-based conservation diplomacy

R&D Roadmap for Carbon Capture, Utilization and Storage (CCUS)

Context: India has launched its first-ever R&D Roadmap for Carbon Capture, Utilization and Storage (CCUS) to support deep decarbonisation of hard-to-abate sectors and achieve Net Zero by 2070.

What is CCUS?

CCUS refers to a group of technologies that:

- Capture CO_2 from industrial sources or directly from air,
- Transport it,
- Either Utilise it for productive purposes or Store it permanently underground.

🎯 Objective: Prevent CO_2 from entering the atmosphere and reduce global warming.

Three Stages of CCUS

1. Carbon Capture
   - Capturing CO_2 from industrial gas streams.
   - Technology depends on CO_2 concentration and end-use.
2. Carbon Utilization
   - Converts CO_2 into useful products like:
     - Green urea
     - Dry ice
     - Carbonated beverages
     - Building materials
     - Chemicals
3. Carbon Storage
   - Long-term storage in:
     - Saline aquifers
     - Depleted oil & gas reservoirs
     - Other stable geological formations

Why India Needs CCUS?

- India is the 3rd largest CO_2 emitter (~2.6 Gt/year).
- Climate Commitments:
  - Reduce emissions intensity sharply
  - Net Zero by 2070
- Limits of Renewables:
  - Sectors like steel, cement, fertilizers, thermal power are hard-to-abate.
- 👉 CCUS is essential for:
  - Reducing unavoidable emissions
  - Low-carbon industrial transition

About the CCUS Roadmap

- Prepared by the Department of Science and Technology (DST).
- Focuses on building:
  - Skilled manpower
  - Regulatory & safety frameworks
  - Shared CCUS infrastructure

Three-Phase R&D Framework (2025–2045)

Phase 1 (2025–2030): Foundation & Pilots

- Fundamental research
- Pilot-scale demonstration projects
- Mapping CO_2 storage potential
- Indigenous technology development

Phase 2 (2030–2035): Industrial Integration

- Integrate CCUS with steel, cement, power, fertiliser sectors
- Develop:
  - Regulatory standards
  - Monitoring & safety protocols
  - Transport infrastructure (pipelines, hubs)

Phase 3 (2035–2045): Commercial Scale-Up

- Large-scale deployment
- CCUS hubs & clusters
- Market mechanisms & carbon economy integration

Strategic Importance for India

- Enables deep decarbonisation
- Supports energy security + industrial growth
- Helps meet NDCs, Net Zero & Paris targets
- Positions India as a leader in climate technologies

Sponge-Associated Microbes in Tackling Metal Pollution

Context: A recent study by Bose Institute (DST) found that freshwater sponges of the Sundarban delta can act as effective bioindicators of toxic metal pollution and also help in natural detoxification of polluted waters.

Key Findings of the Study

1. Bioindicator Potential
- Freshwater sponges accumulate much higher levels of:
  - Arsenic (As)
  - Lead (Pb)
  - Cadmium (Cd)
- 👉 Therefore, they act as reliable bioindicators of heavy metal pollution.

2. Strong Bioaccumulation Ability
- Sponges act as natural absorbents and concentrate toxic metals in their tissues.
- Especially useful for Gangetic plain, where heavy metal contamination is widespread.

3. Role of Sponge-Associated Microbes
- Microbial communities inside sponges are:
  - Distinct from surrounding water bacteria
  - Shaped by sponge species and habitat, not random colonisation.

4. Functional Microbial Adaptations

Sponge-associated microbes are enriched with genes for:
- Metal ion transport
- Heavy-metal resistance
- Antimicrobial resistance

👉 These microbes do not just tolerate pollution, they actively detoxify contaminated environments.

What Are Freshwater Sponges?
- Belong to Phylum Porifera
- Simple multicellular animals living in:
  - Lakes, ponds, slow rivers, streams, canals
- Filter feeders → pump large volumes of water to trap:
  - Bacteria, protozoa, organic debris
- Host rich microbial communities, making them ecologically important.

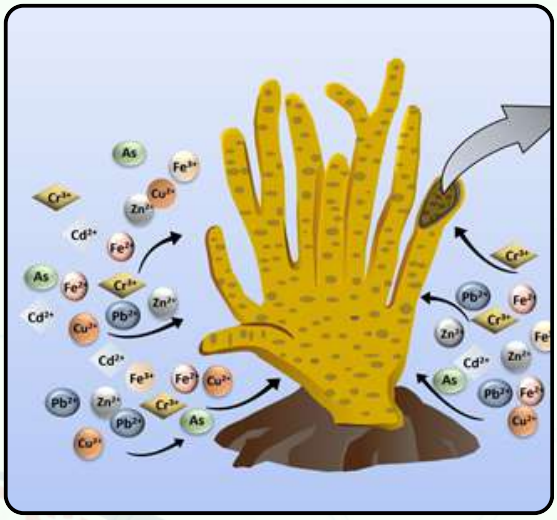
Key Biological Features of Sponges
- ❌ No true tissues or organs
- ✅ Porous body (Porifera = pore-bearer)
- ✅ Body has canals and chambers
- ✅ Skeleton made of spicules:
  - Usually silica (or spongin)
  - Shape helps in species identification (DST)

How Do Sponges Feed?

- Water enters through small pores (ostia)
- Choanocytes (flagellated cells) trap food particles
- Filtered water exits through large opening (osculum)
- A single sponge can filter litres of water per day, improving water clarity.

Sponge-Associated Microbes (Sponge Holobiont)

- A complex community of:
  - Bacteria, archaea, fungi, etc.
- They live inside sponge tissues in close symbiosis
- Together, sponge + microbes = Holobiont



Nature of Symbiosis (Mutualism)

Sponge Provides:

- Protected habitat
- Constant nutrient-rich water flow

Microbes Provide:

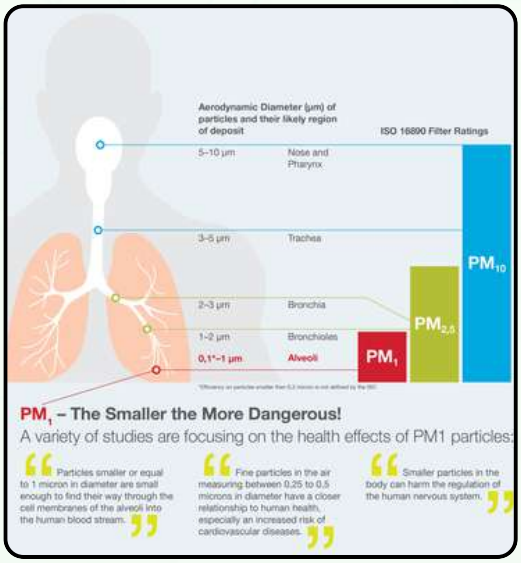
- Detoxification of pollutants
- Nutrient cycling
- Chemical defence
- Metabolic support

Why This Study Is Important for India?

- Offers low-cost, nature-based solution for:
  - Monitoring heavy metal pollution
  - Bioremediation of contaminated freshwater
- Highly relevant for:
  - Ganga basin
  - Sundarbans
  - Industrial & mining-affected regions

PM1 (Particulate Matter 1.0)

Context: Despite strong scientific evidence that PM1 (particles <1 micron) is far more harmful than PM2.5, India currently has no regulatory standards or routine monitoring for PM1.



- Recent studies suggest PM1 levels in Delhi may be underestimated by ~20% (~50 µg/m³), significantly understating health risks.

What is PM1?

- Definition: PM1 refers to particulate matter with diameter < 1 micron (µm).
- Ultrafine Nature: Due to extremely small size, PM1 can:
  - Bypass nasal and lung defence mechanisms
  - Penetrate deep into lungs
  - Enter bloodstream and even cross biological barriers.

Sources of PM1

- Vehicular exhaust (especially modern engines)
- Industrial emissions
- Biomass and waste burning
- Construction activities
- Re-condensed metal vapours

Because of their tiny size, PM1 particles remain suspended for long periods and are easily inhaled.

Chemical & Toxic Profile

- Carries heavy metals and carcinogens such as:
  - Lead (Pb), Cadmium (Cd), Nickel (Ni), Chromium (Cr)
- High surface-area-to-volume ratio → absorbs more toxic chemicals than PM2.5.

Why is PM1 More Dangerous than PM2.5?

1. Deep Physiological Penetration

- Enters:
  - Alveoli → bloodstream → vital organs
- Can reach:
  - Heart, brain, placenta

2. Severe Health Impacts

- Causes:
  - Systemic inflammation
  - Oxidative stress
  - Cellular and DNA damage
- Linked to:
  - Heart disease, stroke, asthma, COPD, lung cancer, neurological disorders

Relation with PM2.5

- PM1 constitutes ~50% of PM2.5 mass concentration
- Hence, it is a major but invisible and unregulated component of fine particulate pollution.

Regulatory Gap in India

- India's air quality standards cover:
  - PM10 and PM2.5
- ❌ No standards, no routine monitoring, no public reporting for PM1
- This leads to:
  - Underestimation of actual health risk
  - Weak evidence base for policy intervention

Why PM1 is a Policy Blind Spot

- Invisible in AQI reporting
- Not included in NCAP targets
- Monitoring infrastructure mostly not designed for PM1
- Yet most toxic and most penetrative fraction of air pollution

Annual Ground Water Quality Report

Context: The Central Ground Water Board (CGWB) has reported that Delhi's groundwater is among the most polluted in India, with dangerous levels of uranium, lead, nitrate, fluoride and salinity.

Key Findings

1. Toxic Metals in Delhi's Groundwater
   - Many samples exceed BIS drinking water standards.
   - Contaminants include uranium, lead, nitrate, fluoride and high salinity.
2. Lead Contamination
   - Delhi ranks 1st in India in lead-contaminated groundwater.
   - 9.3% of pre-monsoon samples exceed BIS limits.
3. Uranium Contamination
   - Delhi ranks 3rd (after Punjab and Haryana).
   - 13–15% of samples exceed safe limits.
   - North-West India (Punjab, Haryana, Delhi, Rajasthan, UP) is a major hotspot.
4. Fluoride
   - 18% of samples nationwide exceed safe limits.
   - Mainly geogenic (natural) in origin.
   - Rajasthan shows the highest fluoride contamination.
5. Nitrate — Most Widespread Pollutant
   - 25% of samples in India exceed safe limit (45 mg/L).
   - Main causes:
   - Excessive fertiliser use
   - Sewage and animal waste infiltration
6. Salinity (EC)
   - In Delhi, 33.3% samples exceed permissible salinity limits.
7. Irrigation Quality (SAR & RSC)
   - 34.8% samples in Delhi exceed safe SAR levels.
   - 51.1% samples exceed RSC limit → severe alkalinity and soil fertility risk.

<u>Health Impacts of Major Contaminants</u>

- Uranium: Cancer risk, kidney damage
- Lead: Brain damage, developmental problems in children
- Nitrate: "Blue baby syndrome" in infants
- Fluoride: Dental & skeletal fluorosis
- Arsenic: Skin damage, cancer risk
- Manganese: Neurological problems
- Salinity & Sodium: Heart problems, soil degradation

UN Environment Assembly Adopts India's Wildfire Plan

Context: The 7th United Nations Environment Assembly (UNEA-7) concluded in Nairobi, Kenya, adopting 11 major environmental resolutions.

Among them, India's resolution on strengthening global wildfire management was adopted unanimously.

About UNEA-7

- Venue: UNEP Headquarters, Nairobi (Kenya)
- Nature: World's highest decision-making body on environment
- Membership: All 193 UN member states
- Theme: "Advancing sustainable solutions for a resilient planet"
- Next Session: UNEA-8 in 2027 (Nairobi)

Why Wildfires Are a Global Concern

- Wildfires are no longer seasonal or local events.
- Climate change, prolonged droughts and land-use pressure have turned them into a permanent global risk.
- Projected rise in extreme fire events:
  - +14% by 2030
  - +30% by 2050
  - +50% by 2100

India's Wildfire Management Resolution

- Core Idea- Shift from reactive firefighting to proactive prevention and preparedness.

Key Action Points

- Strengthen early-warning systems and fire-risk mapping
- Expand satellite-based monitoring and community alert systems
- Promote ecosystem restoration to improve resilience
- Strengthen the Global Fire Management Hub (run by UNEP & FAO)
- Improve access to climate finance for integrated fire-management plans

Why It Matters

- Protects:
  - Forest-dependent communities
  - Biodiversity
  - Critical carbon sinks
- Helps countries adapt to climate change and reduce disaster losses.

New Ramsar Sites in India

Context: The Ramsar Convention on Wetlands has designated:

- Siliserh Lake (Rajasthan) and
- Kopra Reservoir / Kopra Jalashay (Chhattisgarh)

as Wetlands of International Importance, taking India's total Ramsar sites to 96.

⭐ Kopra Reservoir becomes the first Ramsar site of Chhattisgarh.

About Ramsar Convention

- Adopted in 1971 at Ramsar (Iran)
- Focus: Conservation and wise use of wetlands
- India is a contracting party since 1982
- Wetlands designated are called Ramsar Sites / Wetlands of International Importance

SILISERH LAKE (RAJASTHAN)

Location & Background

- Located in Paitpur, Alwar district, Rajasthan
- Man-made lake in the buffer zone of Sariska Tiger Reserve
- Constructed in 1845 by Maharaja Vinay Singh
- Formed by constructing an embankment on a tributary of the Ruparel River
- Lies in a semi-arid region → critical water source for wildlife

Ecological Importance

- Supports species like:
  - Egyptian vulture
  - Tiger
  - Indian pangolin
  - Leopard
- Supports >1% of the biogeographic population of Black Stork (Ciconia nigra)
- → qualifies under Ramsar criteria

KOPRA JALASHAY / KOPRA RESERVOIR (CHHATTISGARH)

Location & Features

- Located in Chhattisgarh
- A reservoir in the upper catchment of the Mahanadi River
- Large open water spread with shallow, nutrient-rich backwaters
- Ecologically highly productive wetland

Avifaunal Importance

- Supports 60+ migratory bird species
- Important for: Nesting, Feeding, Stopover during migration

Key Species

- River Tern
- Greater Spotted Eagle (Aquila clanga) – Vulnerable
- Egyptian Vulture (Neophron percnopterus) – Endangered

Threats

- Siltation
- Invasive alien species
- Intensive agriculture in surrounding areas

Kerala: India's Butterfly Capital

Context: A new scientific study has confirmed that Kerala has the highest butterfly diversity in India, especially in the Western Ghats biodiversity hotspot.
The findings are published in ENTOMON, a quarterly journal of the Association for Advancement of Entomology.

Key Findings

- 🦋 Total species in Kerala: 328
- 🌿 Western Ghats endemics: 41 species
- 📊 Share in Western Ghats diversity: Kerala hosts almost the entire butterfly diversity of the Western Ghats (337 species)
- 🛡️ Protected species: 70 species are protected under the Wildlife (Protection) Act, 1972
- 🌍 IUCN Red List: 22 species from Kerala are Red-listed
- 🔁 Migratory species: 36 migratory butterfly species, making Kerala an important migration corridor

Butterfly Families Found in Kerala (6)

1. Nymphalidae – Brush-footed butterflies (largest group)
2. Lycaenidae – Blues, Hairstreaks, Coppers
3. Hesperiidae – Skippers
4. Papilionidae – Swallowtails
5. Pieridae – Whites and Yellows
6. Riodinidae – Metalmarks

New Scientific Discovery

- A new subspecies discovered:
- 👉 Tajuria maculata sureshi
- Named in honour of naturalist and wildlife filmmaker Suresh Elamon

Conservation Importance

- Highlights Kerala's critical role in butterfly conservation in the Western Ghats
- 🦋 Aralam Butterfly Sanctuary (Kannur district):
  - India's first butterfly sanctuary
  - Dedicated exclusively to butterfly conservation

India's First Deep Brain Stimulation (DBS) Workshop for Parkinson's

Context

- AIIMS, New Delhi hosted India's first advanced national workshop on Deep Brain Stimulation (DBS).
- Aim: To build national capacity for treating Parkinson's disease and other movement disorders using device-assisted therapies.

What is Deep Brain Stimulation (DBS)?

Definition

- A neurosurgical procedure in which electrodes are implanted in specific brain regions to deliver targeted electrical impulses.

How it Works

- Electrodes are connected to a pacemaker-like device called Implantable Pulse Generator (IPG) placed under the chest skin.
- The system:
  - Modulates abnormal neural circuits
  - Corrects dysfunctional brain signalling causing motor symptoms

Applications of DBS

- 🧠 Parkinson's disease (main indication)
- ✋ Essential Tremor
- 🌀 Dystonia
- 🧩 Obsessive-Compulsive Disorder (OCD) – FDA approved

2025 Technological Milestone: Adaptive DBS (aDBS)

- ✅ FDA approval in February 2025
- 🧠 It is a closed-loop system:
  - Automatically adjusts stimulation in real time
  - Based on patient's own brain signals
- 📡 Example: Medtronic BrainSense technology

Advantages of DBS

- ✔️ Reversible
- ✔️ Non-destructive
- ✔️ Highly programmable (wireless tuning)
- ✔️ Useful when drugs stop working effectively

Limitations

- ❌ Invasive surgery
- ❌ High cost
- ❌ Not a cure — only symptom control

Parkinson's Disease: Quick Revision

Background
- First described by James Parkinson (1817) as "Shaking Palsy"
- A chronic, progressive neurodegenerative disorder

Pathology
- Caused by degeneration of dopamine-producing neurons in the substantia nigra
- Dopamine is essential for smooth, coordinated movement

Causes / Risk Factors
- 🧬 Genetic mutations
- 🎂 Aging
- ☠️ Environmental toxins (pesticides, heavy metals)

Demographics
- 👴 More common in men than women

Treatment Strategy
- 💊 First line: Levodopa and other drugs
- 🧠 When drugs cause motor fluctuations → DBS becomes critical

Nanoplastics and Human Health

Context
- A study by the Institute of Nano Science and Technology (INST), Mohali (under DST) found that nanoplastics from single-use PET bottles pose serious health risks to humans.

What are Nanoplastics?
- Extremely tiny plastic particles usually smaller than 1 micrometre (1 µm).
- Formed by the breakdown of larger plastic waste like bottles, bags, and food packaging.

Sources of Nanoplastics
- ♻️ Fragmentation of PET bottles, carry bags, packaging
- ☀️ Degradation by sunlight, heat, and mechanical wear
- 🏭 Industrial processes: manufacturing, recycling, shredding, poor disposal

How Do Nanoplastics Enter the Body?
- Through:
  - 🍽️ Food
  - 💧 Drinking water
  - 🌫️ Air
  - 📦 Contact with plastic packaging

Health Impacts of Nanoplastics

1. Accumulation in Body
   - Can enter and build up in tissues due to their very small size.
2. Gut Microbiome Damage
   - Disrupt beneficial gut bacteria → weakens:
     - Immunity
     - Metabolism
     - Mental health balance
3. Cellular-Level Damage
   - Causes:
     - ⚠️ Oxidative stress
     - 🧬 DNA damage
     - 🔥 Inflammation
     - 🔄 Metabolic disturbance
4. Blood-related Effects
   - Can damage red blood cells (RBCs) → hemolysis → reduced oxygen transport
5. Systemic Risk
   - Can cross biological barriers and affect multiple organs over long-term exposure.

Why This is a Serious Concern? (Prelims + Mains)

- Nanoplastics are:
  - ❗ Invisible
  - ❗ Bioactive
  - ❗ Hard to remove
  - ❗ Capable of long-term internal damage

Superkilonova

Context

- Astronomers have observed a possible superkilonova about 1.3 billion light-years away — a rare and extremely powerful cosmic explosion showing features of both supernova and kilonova.

🔹 1 light-year = distance travelled by light in one year ≈ 9.46×10^{12} km

How is it Formed?

- Normal Kilonova Process
  - Two neutron stars collide →
  - Heavy elements (gold, platinum, etc.) are thrown out →
  - Their radioactive decay produces bright optical and infrared light = kilonova
- In Superkilonova
  - ⚡ Extra energy source (e.g., fallback matter onto the merged object)
  - Makes the explosion: Brighter, Hotter, Longer-lasting

What is a Superkilonova?

- A superkilonova is a hypothetical, ultra-energetic explosion that is more powerful and longer-lasting than a normal kilonova.
- It is linked to the merger of two neutron stars.

Key Features

- 🌟 Very High Brightness – due to extra heating of ejected matter
- 🔵 Bluer Light – higher temperature shifts radiation to blue side
- 🔁 Two-Stage Behaviour – starts like a kilonova, later looks like a supernova

Alternative Explanation (New Model)

- A massive star explodes first as a supernova →
- Forms two neutron stars →
- They later merge, causing a very bright kilonova-like event

Why is it Important?

- 🌌 Explains unusual bright space explosions that don't fit existing categories
- 🧪 Improves understanding of heavy element formation (gold, platinum, etc.)
- 🔭 Opens new research area in studying extreme cosmic events

DHRUV64 – India's Indigenous 64-bit Microprocessor

Context

- India recently launched DHRUV64, the country's first fully indigenous 1.0 GHz, 64-bit dual-core microprocessor.

Technical Architecture

- Type: 64-bit dual-core processor
- Base: RISC-V open-source architecture
  - Free, open-source instruction set (no licensing costs)
  - Enables communication between hardware and software
- Clock Speed: 1.0 GHz
- Fabrication: Third chip under the Digital India RISC-V (DIR-V) Programme

Prelims Fact

DHRUV64 = 1 GHz, 64-bit dual-core, RISC-V, fully indigenous microprocessor

Development History

Chip	Year	Institution	Purpose
SHAKTI	2018	IIT Madras	First indigenous RISC-V processor
AJIT	2018	IIT Bombay	Low-power applications
THEJAS32	2025	C-DAC, Malaysia	Early DIR-V chip
THEJAS64	2025	SCL Mohali, India	Predecessor to DHRUV64
VIKRAM	2025	ISRO-SCL	Strategic space missions
DHRUV64	2026	C-DAC, India	High-performance & strategic applications

Key Features

- High performance & reliability: Out-of-order execution, advanced fabrication
- Strategic Applications: 5G, IoT, Industrial Automation, Automotive Systems
- Technological Sovereignty: Reduces reliance on foreign processors
- Scalable & Open-source: Enables growth of India's indigenous microprocessor ecosystem

Significance

- Boosts self-reliance in Electronics System Design & Manufacturing (ESDM)
- Ensures secure and advanced computing for strategic sectors
- Encourages innovation in domestic hardware development
- Eliminates IP licensing costs, supporting long-term deployment

Doppler Weather Radars (DWR) in India

Context

- India has 47 Doppler Weather Radars, covering 87% of the country, aiding real-time tracking of cyclones, heavy rainfall, and snowfall.

What are Doppler Radars?

- Radars that use the Doppler effect to measure speed and direction of moving weather targets (rain, wind).
- Function: Emit radio waves → detect frequency shift in reflected signals → calculate motion.

Advantages Over Conventional Radars

- Detect movement of weather targets, not just presence.
- Track phase shift between transmitted and received signals.
- Measure speed and direction of rain/storm (toward or away from radar).

Doppler Effect

- Definition: Change in frequency/wavelength of waves due to relative motion between source & observer.
- Towards observer: Frequency ↑ (waves compress)
- Away from observer: Frequency ↓ (waves stretch)
- Applications: DWR, astronomy (red/blue shift), medical ultrasound, speed guns.

Typical coverage: ~500 km per radar.
Managed by India Meteorological Department (IMD).

Prelims Fact

DWR = Radar + Doppler effect → measures motion of rain & wind, crucial for forecasting extreme events.

Types of Doppler Radars in India

Radar Band	Coverage	Use Case
S-band	Long-range	Weather monitoring, cyclones
C-band	Medium	Cyclone tracking, rainfall measurement
X-band	Short	Thunderstorms, lightning, local storms

- Typical coverage: ~500 km per radar.
- Managed by India Meteorological Department (IMD).

Anjadip (ASW Shallow Water Craft)

Context

- The Indian Navy has inducted 'Anjadip', the third of eight Anti-Submarine Warfare Shallow Water Crafts (ASW SWC).

About Anjadip

- Type: Shallow water warship for Anti-Submarine Warfare (ASW) operations.
- Built by: Garden Reach Shipbuilders and Engineers (GRSE), Kolkata (PSU).
- Size: ~ 77 metres long.
- Propulsion: Largest Indian naval warship powered by waterjets → enables high manoeuvrability in shallow waters.

Combat & Surveillance Capabilities

- Equipped with:
  - Advanced lightweight torpedoes
  - Indigenously developed anti-submarine rockets
  - Shallow-water sonar systems for detection & tracking of submarines
- Operational Roles:
  - Coastal anti-submarine operations
  - Low-intensity maritime missions
  - Mine-laying operations

Indigenisation

- Over 80% indigenous content, strengthening Atmanirbhar Bharat in defence.

Name Origin

- Named after Anjadip Island, located off the coast of Karwar, Karnataka.

ASW Shallow Water Craft (SWC) Programme

- Objective: Strengthen coastal and shallow-water anti-submarine warfare capability where large warships are less effective.
- Total vessels planned: 8 ASW SWCs for the Indian Navy.

Chimonobambusa manipurensis Bamboo Fossil

Context

- A 37,000-year-old fossil of thorny bamboo Chimonobambusa manipurensis was discovered in Chirang River deposits, Manipur.
- It provides Asia's earliest evidence of bamboo defence mechanisms during the Ice Age.

Why is this Discovery Important?

1. Earliest Evidence of Defence Mechanism
   - Confirms that thorniness (anti-herbivore defence) existed in bamboo during the Ice Age.
   - Shows that bamboo had already evolved protective adaptations against grazing animals.
2. Palaeoclimatic Significance
   - During the Pleistocene Ice Age (2.6 million – 11,700 years ago):
     - Bamboo became extinct in colder regions like Europe.
     - But Northeast India acted as a climatic refugium, allowing bamboo to survive and evolve.

About Chimonobambusa manipurensis

- Type: Thorny, woody bamboo species.
- Key Feature: Defensive thorn-bearing nodes.
- Habitat:
  - Humid, shaded, moderately cool regions
  - Riverbanks and montane forests
- Uses:
  - Handicrafts, fencing, tools, traditional construction (due to strong culms)
- Distribution:
  - Northeast India, Myanmar, Southwest China, Southeast Asia
  - Indicates adaptation to the Indo-Burma biodiversity region

Nupi Lan Day (Manipur)

Context

- On the 86th Nupi Lan Day, the President of India paid tribute in Imphal, highlighting Manipur's historic women-led resistance against colonial economic exploitation.

About Nupi Lan Day

- Observed on: 12 December every year in Manipur
- Purpose: To commemorate the Second Nupi Lan (1939)
- Meaning of Nupi Lan: "Women's War" in the Meitei language
- It symbolises women's leadership in anti-colonial mass movements in Manipur.

What is Nupi Lan?

Nupi Lan refers to two historic women-led uprisings against British colonial rule:

First Nupi Lan (1908)

- Against:
  - Forced labour (Lallup system)
  - Colonial administrative oppression

Second Nupi Lan (1939) — More Significant

- Causes:
  - Large-scale export of rice from Manipur
  - Price rise and scarcity
  - Exploitation by Marwari traders under British patronage
- Leadership:
  - Led by Manipuri women, especially from Khwairamband Bazar (Ima Market)
- Major Events:
  - Thousands of women demanded a ban on rice exports
  - Direct confrontation with British authorities
  - Faced repression and clashes with colonial forces
- Impact:
  - Movement expanded from economic protest to:
    - Political demands
    - Administrative and constitutional reforms in Manipur

Why It Is Important

- One of India's earliest mass women-led political movements
- Shows:
  - Economic nationalism
  - Grassroots resistance
  - Women's role in freedom struggle in Northeast India

PRELIMS FACTS

Date: 12 December
Place: Manipur
Led by: Market women (Ima Keithel)
Issue: Rice export, price rise, colonial exploitation
Language: Meitei ("Nupi Lan" = Women's War)

Mahaparinirvan Diwas

Context

- The Prime Minister of India paid homage to Dr. B.R. Ambedkar on the 70th Mahaparinirvan Diwas.

About Mahaparinirvan Diwas

- Observed on: 6 December every year
- Purpose: To commemorate the death anniversary of Dr. B.R. Ambedkar
- Significance:
  - Remembers Ambedkar's struggle for social justice, equality, and dignity
  - Highlights his role as the chief architect of the Indian Constitution
  - Reinforces values of fraternity, inclusiveness, and constitutional morality

What Does 'Mahaparinirvan' Mean?

- Origin: A Buddhist term meaning the final nirvana after death, i.e., complete liberation from the cycle of birth and rebirth.
- Connection with Ambedkar:
  - Dr. Ambedkar embraced Buddhism in 1956
  - He saw Buddhism as a path to freedom from caste oppression and social injustice
  - He was inspired by Buddha's ideals of rationality, compassion, and moral responsibility

Why It Matters

- Symbolises Ambedkar's moral and philosophical legacy
- Inspires commitment to:
  - Social equality
  - Constitutional values
  - Inclusive nation-building

Cyclone Ditwah

Context

- Cyclone Ditwah rapidly intensified over the Bay of Bengal and is expected to move towards the Tamil Nadu coast.

About Cyclone Ditwah

- Type: Tropical cyclonic system
- Region of Formation: Southwest Bay of Bengal

IMD Alerts

- The India Meteorological Department (IMD) upgraded the warning from Orange to Red Alert for delta and north coastal districts.
- Red Alert Meaning:
  - Extremely heavy rainfall exceeding 20 cm in 24 hours (Nov 28–29).

Origin of the Name "Ditwah"

- Proposed by: Yemen
- Meaning: "Lagoon"
- Named after: Detwah (Ditwah) Lagoon on Socotra Island, Yemen, known for its unique coastal ecosystem.

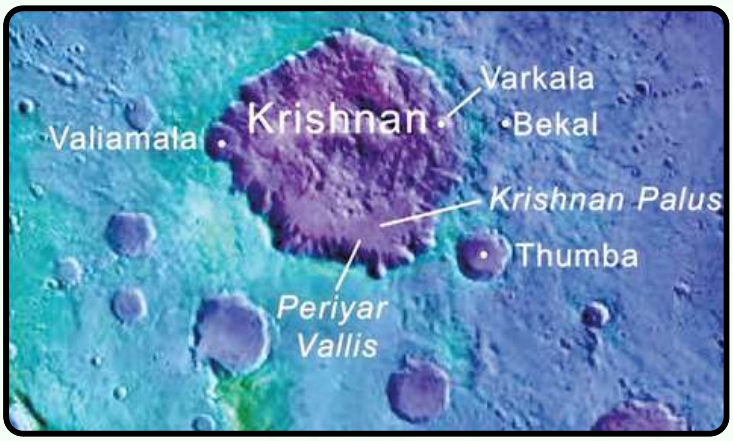
Why It Matters

- Highlights the increasing intensity of tropical cyclones in the Bay of Bengal.
- Important for disaster preparedness and coastal management.

Valiamala Crater (Mars)

Context

- The International Astronomical Union (IAU) has approved names of several Martian landforms after Kerala locations, including Valiamala Crater.



About Valiamala Crater

- Location: Xanthe Terra region, Mars
- Scientific Importance:
  - The region is known for ancient glacial and river (fluvial) landforms, identified through IIST-led research.

Geological Significance

- Shows evidence of:
  - Past glaciation
  - Flowing water activity
- Indicates that Mars once had a dynamic and wetter climate.
- Lies near other newly named features:
  - Krishnan Crater
  - Krishnan Palus
  - Periyar Vallis

About the International Astronomical Union (IAU)

- Role: Global authority for naming celestial bodies and landforms.
- Established: 1919
- Headquarters: Paris, France
- Nature: International non-governmental scientific organisation.
- Members: 62 national members
- India joined: 1948

Sanchar Saathi App

Context:

- The Union Minister for Communications clarified that using the Sanchar Saathi App is not mandatory. Users are free to install, use, or delete it like any normal app.

About Sanchar Saathi Initiative:

- It is a telecom security programme launched by the Department of Telecommunications (DoT) under the Ministry of Communications.
- Objective: To prevent cyber fraud, stop misuse of SIMs, block stolen phones, and protect user identity.
- It works through a single portal and mobile app for citizen services.

About Sanchar Saathi App:

- It helps users check the genuineness of their mobile phone (IMEI).
- Allows reporting of fraud calls/messages and stolen devices.
- Aims to make telecom services safer and more secure for citizens.

Census 2027

Context:

- The Union Cabinet has approved ₹11,718 crore for conducting Census 2027, which will be India's first fully digital census and will include nationwide caste enumeration.

About Census:

- A census is the official counting and collection of data on population, economy, and social conditions.
- First attempt: 1872 (Lord Mayo) | First complete census: 1881 (Lord Ripon)
- First post-Independence census: 1951 under the Census Act, 1948.

About Census 2027:

- It will be India's 16th census and 8th since Independence.
- It will be the world's largest digital data collection exercise.
- Fully digital and paperless: Data will be collected using mobile apps, web portals, geo-tagging, and self-enumeration.
- Key platforms:
  - CMMS Portal: Real-time monitoring of census operations.
  - Census-as-a-Service (CaaS): Provides clean, usable data for policymaking.

Phases of Census:

- Phase I (2026): House Listing & Housing Census – collects data on houses, amenities, and assets (no personal details).
- Phase II (2027): Population Enumeration – collects data on age, education, occupation, religion, language, migration, and caste.

Caste Enumeration:

- For the first time since 1931, detailed caste and sub-caste data including OBCs will be collected.

Conducted By:

- By the Registrar General and Census Commissioner, India, with around 30 lakh field workers.