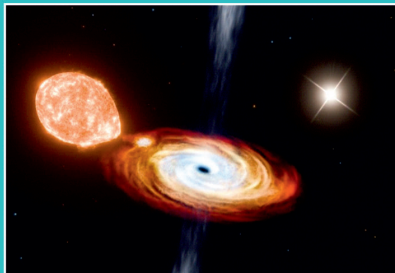




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Chapter-
1

HISTORY & CULTURE

Shahi Jama Masjid in Sambhal

Context:

The Supreme Court of India has directed a temporary halt to the survey of the Shahi Jama Masjid in Sambhal, Uttar Pradesh, amid claims by Hindu petitioners that it was built on a demolished Hindu temple.



About Sambhal Mosque:

- **Construction:** Built during the reign of Mughal Emperor Babur (1526–1530) by his general, Mir Hindu Beg.
- **Architecture:**
 - Positioned on a hill in Sambhal.
 - Features a square mihrab hall with a dome, surrounded by arches.
 - Constructed with stone masonry and plaster, similar to the Budaun mosque.
 - Historical Repairs: Renovated during the reigns of Jahangir and Shah Jahan in the 17th century.
- **Cultural Beliefs:**
 - Local Hindu tradition claims it incorporates remnants of a Vishnu temple.
 - Believed to be linked to Kalki, the tenth avatar of Vishnu.
 - Historical Debate: Some scholars suggest earlier Tughlaq-era origins, with modifications by Babur.

Great Stupa at Sanchi

Context:

The two-day Mahabodhi Mahotsav is being held at the Great Stupa at Sanchi, Madhya Pradesh, a UNESCO World Heritage Site.

- The event includes religious ceremonies honoring the relics of Lord Buddha's chief disciples, Sariputra and Maudgalyayana, highlighting the cultural and spiritual significance of Sanchi Stupa.



About Sanchi Stupa:

- **Historical Significance:** Commissioned by Emperor Ashoka in the 3rd century BCE and later expanded by Shunga and Satavahana rulers.
- **Architectural Features:**
 - o Large hemispherical dome (Anda) symbolizing the universe.
 - o Chatras (umbrella structures) on top, signifying royalty and divine protection.
 - o Harmika (balcony) atop the dome representing the abode of the gods.
 - o Medhi stores relics and serves as the base of the stupa.
 - o Toranas: Four elaborately carved gates depicting Buddha's life events and Jataka tales, pointing to four cardinal directions.
 - o Vedica: Railings enclosing the stupa for sacred protection.
 - o Paradakshinapatha: Pathways for circumambulation by devotees.
 - o Symbolism: Early Buddhist aniconism; Buddha represented through symbols like footprints, wheels, or empty thrones rather than direct depictions.
 - o Inscriptions: Includes Ashokan Lion Capital and inscriptions in Brahmi and Kharosthi scripts.
 - o UNESCO Status: Declared a World Heritage Site in 1989.

ISKCON

Context:

The Dhaka High Court declined a suo motu order to ban ISKCON in Bangladesh, citing government action already taken.



About ISKCON:

- Full form: International Society for Krishna Consciousness.
- Founder: C. Bhaktivedanta Swami Prabhupada.
- Founded In: New York City, USA.
- **Year:**
 - o Aim: To promote Krishna Consciousness and devotional service to Krishna as the Supreme Godhead.
- **Features:**
 - o Largest branch of Gaudiya Vaishnavism, rooted in 16th-century India.
 - o Emphasizes chanting the Hare Krishna Mahamantra.
 - o Engages in public bhakti practices like Sankirtan, yoga seminars, and festivals.
 - o Runs social initiatives, including free food distribution, schools, eco-villages, and hospitals.

Siddi Community

Context:

Rhythm of Dammam spotlights the marginalized Siddi community, descendants of African slaves brought to India centuries ago, through the lens of 12-year-old Jayaram Siddi, played by Chinmaya Siddi.

About the Siddi Tribe:

- **Descendants:** Primarily of Bantu peoples from East Africa, brought to the Indian subcontinent through the slave trade, as well as soldiers, sailors, and merchants.

History:

1. First arrived at Bharuch port in 628 AD with Arab merchants.



2. Later brought as slaves by Arab conquerors, Portuguese traders, and Deccan Sultanates.
3. Prominent historical figures include Malik Ambar and Jamal-ud-Din Yaqut.
 - Distribution in India: Concentrated in Karnataka, Goa, Gujarat, Maharashtra, Andhra Pradesh, and Tamil Nadu, often in rural or forested areas.

Features:

1. Diverse religions—Muslims, Hindus, and Christians.
2. Unique cultural practices like the use of dammam, duf, and gumte instruments, and shared rituals like ancestor worship.
3. Languages include Konkani, Urdu, Marathi, and regional dialects.

Brihadeeswarar Temple

Context:

The Sadhaya Vizha, celebrated in Thanjavur, Tamil Nadu, commemorates the birth anniversary of Raja Raja Chola I, a visionary Chola emperor known for his administrative acumen, and monumental contributions to architecture and culture.

About Brihadeeswarar Temple (Rajarajeswaram)

- Location: Thanjavur, Tamil Nadu, part of the UNESCO “Great Living Chola Temples.”
- Era: Built in 1009 CE by Raja Raja Chola I, it is the largest and tallest Indian temple.

Design:

- Features a massive 70-meter pyramidal vimana with an octagonal dome-shaped stupika.
- Two large gopuras adorned with intricate sculptures.
- Sanctum houses a two-storey lingam of Lord Shiva.
- Cultural Significance: Repository of Tamil inscriptions detailing rituals, gifts, and the temple’s construction overseen by Raja Raja Chola himself.
- Artistry: Painted murals, sculptural narratives, and stucco figures (added later during the Maratha period).



Other Chola Temples:

- Gangaikonda Cholapuram (by Rajendra I).
- Airavatesvara Temple (by Rajaraja Chola II).

Māori Group

Context:

New Zealand’s parliament briefly paused as Māori Party MPs performed a haka to protest the Treaty Principles Bill, opposing changes to the 184-year-old Treaty of Waitangi.

About Māori Group:

- Origin: Indigenous Polynesian people of New Zealand (Aotearoa) who migrated from East Polynesia between 1320-1350.
- Cultural Development: Over centuries in isolation, the Māori developed a distinctive culture, including language, mythology, crafts, and performing arts.
- Treaty of Waitangi: Signed in 1840 with the British, it established coexistence but has been a source of ongoing political and economic redress.
- Population: Māori are the second-largest ethnic group in New Zealand, following European New Zealanders (Pākehā), with over 170,000 Māori living in Australia.



About Haka:

- Definition: A ceremonial dance in Māori culture expressing pride, strength, and unity.
- Origin: Traditionally an ancient war dance performed by both men and women.
- Purpose: Used for social functions, celebrations, welcoming guests, or as a war cry/challenge.
- Expression: Involves vigorous movements, rhythmic chanting, foot-stomping, and body-slapping.

Guru Nanak

Syllabus: Bhakti Movement

Context:

Guru Nanak Jayanti or GURPURAB is being celebrated with religious fervour across India and the world today. This year marks the 555th birth anniversary of Guru Nanak Dev Ji.

About Guru Nanak Dev:

- Birth: Born in Talwandi (now Nankana Sahib, Pakistan) in 1469.
- Founder of Sikhism: Initiated a new faith emphasizing equality and devotion to one God.
- Revolutionary Leader: Challenged caste discrimination, idol worship, and ritualistic practices.
- Death: Passed away in 1539 at Kartarpur, Punjab.
- Legacy: His teachings are enshrined in the Guru Granth Sahib, the holy scripture of Sikhism.



Teachings of Guru Nanak Dev:

Oneness of God and Humanity:

- Guru Nanak Dev emphasized the concept of Ek Onkar Satnam – “There is One Creator, One Truth.”
- He believed that God resides in everyone and that all humans are equal, irrespective of caste, creed, religion, or gender.

Equality and Brotherhood:

- Guru Nanak advocated for a casteless and egalitarian society. He introduced practices such as:
- Langa: Community kitchen offering free meals, symbolizing equality.
- Pangat: Eating together without distinctions of caste or social status.
- Sangat: Collective worship and decision-making.

Honest Living and Hard Work (Kirt Karni):

- He urged his followers to earn an honest livelihood through physical or mental labor while upholding moral and ethical principles.

Sharing and Community Service (Vand Chakna):

- Guru Nanak encouraged his followers to share their earnings and resources with the needy.
- He institutionalized Dasvandh (donating one-tenth of one's income) to support community welfare and uplift the less fortunate.

Spirituality with Responsibility (Naam Japna):

- He emphasized Naam Japna – meditating on God's name – as a way to stay connected to the divine while fulfilling worldly responsibilities.
- Guru Nanak taught that spirituality and worldly duties go hand in hand and should not be viewed as separate pursuits.

Rejecting Ritualism and Blind Faith:

- He opposed ritualistic practices, idol worship, and pilgrimages without purpose.
- He taught that true devotion comes from within through love, selflessness, and ethical living.

Gender Equality:

- Nanak stressed that men and women are equal before God. He declared, “Why call her inferior, who gives birth to kings?”
- He uplifted women’s status by encouraging their participation in spiritual and social activities.

Social Justice and Environmental Harmony:

- Guru Nanak viewed the world as God’s creation and encouraged people to live harmoniously with nature.
- He criticized exploitation and oppression, advocating for justice and fair treatment of all.

Relevance of Guru Nanak Dev’s Teachings

- Social Equality: His principles of egalitarianism can inspire the fight against caste and gender discrimination.
- Justice and Sharing: Encourages creating a just society through honest work and sharing resources.
- Environmental Harmony: His belief in the oneness of creation aligns with modern environmental ethics.
- Peace and Tolerance: His teachings on universal brotherhood promote communal harmony in a diverse world.
- Women’s Empowerment: His respect for women highlights the importance of gender equality in contemporary society.

Conclusion:

Guru Nanak Dev’s teachings transcend time, offering lessons on equality, compassion, and responsibility. His vision of a harmonious and inclusive society is a guiding light for addressing modern societal challenges.

Tumaini Festival

Context:

The Tumaini Festival, an annual event held since 2014 at Malawi’s Dzaleka Refugee Camp, celebrates the resilience and culture of refugees through music, art, and crafts.



About Tumaini Festival:

- Founded: 2014, by Menes La Plume, a Congolese poet.
- Purpose: To create a unique platform for cultural exchange, showcasing resilience through music, art, and crafts.
- Visitors: Thousands from Malawi and nearby countries, including South Africa and Zimbabwe.
- Significance: Builds connections and breaks stereotypes by humanizing the refugee experience, allowing people to share common experiences and celebrate cultural diversity.
- 2024 Event: Organized by the camp's youth, many of whom were born in the camp, reflecting local pride and ownership.

About Dzaleka Refugee Camp:

- Location: Near Lilongwe, Malawi, originally established on a former prison site.
- Established: 1994, following regional conflicts, particularly in Africa's Great Lakes region.
- Capacity: Originally designed for 10,000 refugees but now houses over 60,000.
- Populations: Primarily from DRC, Rwanda, Burundi, Ethiopia, and Somalia.
- Role: The camp has become a focal point for humanitarian efforts and cultural exchange, aiming to uplift and empower its residents despite challenging conditions.



Chapter- 2

POLITY

75 Years of Indian Constitution

Syllabus: Polity

Context:

On November 26, 2024, India celebrates the 75th anniversary of the adoption of its Constitution. This moment serves as a reminder of the historic contributions made by the Constituent Assembly and the enduring framework that has guided the world's largest democracy toward justice, equality, and progress.

Background of the Indian Constitution:

- Government of India Act, 1935: Laid a basic constitutional framework but was rejected by the Indian National Congress for perpetuating British control.
- Cabinet Mission Plan, 1946: Proposed a Constituent Assembly with representatives from Congress, the Muslim League, and princely states.

Constituent Assembly:

- First session: December 9, 1946.
- Chaired by Rajendra Prasad, with Dr. B. R. Ambedkar heading the Drafting Committee.
- Draft completed in 1949 with 243 articles and 13 schedules.
- Experts like N. Rau (constitutional advisor) and S. N. Mukherjee (chief draftsman) provided critical assistance.

Framework of the Indian Constitution:

- Parliamentary System: Aligns with India's traditions and ensures collective responsibility.
- Federal Structure: Balances central and state powers, granting greater authority to the Union.
- Comprehensive Design: Details roles for the legislature, executive, and judiciary.

Fundamental Rights and Directive Principles:

- Fundamental Rights safeguard individual freedoms.
- Directive Principles of State Policy (DPSPs) aim for socio-economic justice.

Key Achievements of India's Constitution in 75 Years:

- **Democratic Foundation:**
 - Established a sovereign, socialist, secular, and democratic republic.
 - Ensures checks and balances among the executive, legislature, and judiciary.
- **Protection of Rights:**
 - Guarantees Fundamental Rights, promoting equality and social justice.
 - Enabled landmark judgments like Kesavananda Bharati (1973) upholding the Basic Structure Doctrine.
- **Social Transformation:**
 - Facilitated affirmative action, including reservation policies for marginalized communities.
 - Empowered women with 33% reservation in local bodies and recent legislation for Lok Sabha and Vidhan Sabhas.
- **Economic Reforms:**
 - Enabled LPG (Liberalization, Privatization, Globalization) reforms under a constitutional framework.
 - Encouraged policies balancing development with constitutional principles.
- **Civic Responsibility:**
 - Strengthened civic literacy and responsibilities through movements like Digital India and environmental safeguards.

- **Independent Institutions:**

- o Maintained the autonomy of bodies like the Supreme Court, Election Commission, and CAG.

Threats to Constitutional Values:

- **Decline in Press Freedom:**

- o Ranked 159th in World Press Freedom Index 2024.
- o Increasing censorship and intimidation of dissent.

- **Erosion of Individual Rights:**

- o Alleged misuse of laws like UAPA and sedition laws.
- o Cases such as Stan Swamy and Umar Khalid highlight rights violations.

- **Weakened Parliamentary Debates:**

- o Decline in debates and discussions; 2023 Budget passed without discussion.
- o Criminalization and Corruption in Politics:
- o Over 46% of MPs in 2024 Lok Sabha have criminal cases.

- **Corporate-Driven Policies:**

- o Allegations of policies prioritizing corporate interests over citizens' rights, e.g., labor reforms and environmental clearances.

Way Forward:

- **Limit State Power:** Strengthen institutional checks to prevent overreach.
- **Enhance Democratic Values:** Democracy must emphasize accountability and free speech beyond elections.
- **Uphold Directive Principles:** Policies must align with socio-economic goals outlined in DPSPs.
- **Judicial Independence:** Safeguard judiciary's autonomy for upholding constitutional morality.
- **Parliamentary Reforms:** Revive debates, discussions, and oversight mechanisms in Parliament.
- **Civic Engagement:** Promote constitutional literacy and citizen participation in governance.

Conclusion:

India's Constitution remains a beacon of democratic values and social justice. By addressing emerging challenges, safeguarding institutions, and fostering inclusivity, the nation can ensure that the Constitution continues to guide its progress for generations to come.

Women in the Constituent Assembly

Context:

The Indian Constitution, a monumental framework for governance, was shaped by the contributions of 299 members of the Constituent Assembly, including 15 remarkable women from diverse backgrounds.

About Women in the Constituent Assembly:

Ammu Swaminathan (1894-1978)

- **Background:** Hailed from Palakkad, Kerala; married Subbarama Swaminathan.
- **Contributions:** Advocated for gender equality and spoke on the Hindu Code Bill despite male-dominated ridicule.

Annie Mascarene (1902-1963)

- **Background:** Born in Travancore, Latin Christian family; academic brilliance led her to law.
- **Contributions:** Advocated for universal adult franchise and a strong Centre while promoting local government autonomy.

Begum Qudsia Aizaz Rasul (1909-2001)

- **Background:** From a royal family in Punjab; opposed purdah after marriage.
- **Contributions:** Opposed separate electorates for religion and debated Muslim upliftment and Indian nationalism.
- **Post-independence:** Elected to the Rajya Sabha; promoted women's hockey.

Dakshayani Velayudhan (1912-1978)

- Background: First Dalit woman graduate in science; Pulaya community.
- Contributions: Opposed separate electorates, emphasizing nationalism and equality.

Renuka Ray (1904-1997)

- Background: Born in Pabna, now Bangladesh; studied at LSE after meeting Gandhi.
- Contributions: Advocated for Hindu Code Bill, women's rights to inheritance, and opposed women's reservation as a barrier to growth.

Preamble

Syllabus: Polity

Context:

The Supreme Court dismissed petitions challenging the inclusion of "socialist" and "secular" in the Preamble of the Indian Constitution, added through the 42nd Amendment during the Emergency in 1976.

Case and Its Judgment:

- **Case Names:**
 1. Dr. Balram Singh v. Union of India
 2. Dr. Subramanian Swamy v. Union of India
 3. Ashwini Upadhyay v. Union of India

Judgment Highlights:

- The Supreme Court upheld the inclusion of "socialist" and "secular," affirming their consistency with the Constitution's basic structure, as established in *Kesavananda Bharati v. State of Kerala* (1973) and *S.R. Bommai v. Union of India* (1994).
- The Court clarified that the amendment power of Parliament extends to the Preamble under Article 368.
- It dismissed the petitions as flawed and lacking a legitimate cause after 44 years since the 42nd Amendment.

Preamble Amendment:

- The Preamble of the Indian Constitution was revised only once through the 42nd Amendment Act of 1976, following the Sardar Swaran Singh Committee's recommendations.
- Passed in 1976 during the Emergency by the Indira Gandhi government.
- This amendment introduced the terms Socialist and Secular between Sovereign and Democratic, while Unity of the Nation was updated to Unity and Integrity of the Nation.
- While the 44th Amendment (1978) reversed many Emergency-era changes, it retained these terms.

Meaning of "Socialist" and "Secular":

- **Socialist:** Represents a welfare state ensuring economic and social justice, reducing inequalities, and promoting collective well-being without eliminating private enterprise.
- **Secular:** Implies equal treatment of all religions without favor or discrimination, ensuring religious freedom while maintaining the state's neutrality in religious matters.

Reasons Behind Inclusion:

1. **Strengthening Constitutional Values:** To emphasize principles already embedded in the Constitution's framework (e.g., Fundamental Rights, Directive Principles).
2. **Addressing Emergency-Era Criticism:** To project India's commitment to inclusivity and equality during politically challenging times.
3. **Global Alignment:** Align India with modern states that prioritize democratic socialism and secularism.

Socialist and Secular Programs by the Government:

- **Socialist Initiatives:**
 - o MGNREGA: Guaranteeing rural employment.
 - o Public Distribution System (PDS): Food security for all.

- o Right to Education (RTE): Ensuring free and compulsory education.
- o Awas Yojana: Housing for economically weaker sections.
- **Secular Initiatives:**
 - o Minority Welfare Programs: Scholarships and skill development for minorities.
 - o Places of Worship Act, 1991: Protecting the religious character of sites.
 - o Special Courts for Communal Violence: Ensuring justice and harmony.
 - o Constitutional Safeguards: Equal religious rights under Articles 25-28.

Limitations and Challenges:

- Misuse of Secularism: Politicization of the term for electoral gains.
- Economic Inequality: Persistent income gaps challenge socialist goals.
- Religious Intolerance: Increasing communal tensions hinder secular ideals.
- Implementation Issues: Inefficient delivery mechanisms for welfare programs.

About Preamble:

- **Features of the Preamble:**
 - o Introduction to the Constitution: Provides a concise overview of the philosophy and objectives of the Indian Constitution.
 - o Core Values: Highlights the commitment to sovereignty, socialism, secularism, democracy, and a republican form of government.
 - o Guaranteed Ideals: Ensures justice (social, economic, and political), liberty (thought, expression, belief, faith, and worship), equality (status and opportunity), and fraternity (national unity and dignity).
 - o Guiding Principle: Reflects the aspirations and ideals of the people, acting as the moral and philosophical essence of the Constitution.
- **Components of the Preamble:**
 - o Source of Authority: Declares that the Constitution derives its power from the people of India.
 - o Nature of the State: Defines India as a Sovereign, Socialist, Secular, Democratic, and Republic entity.
 - o Objectives: Establishes justice, liberty, equality, and fraternity as the goals.
 - o Date of Adoption: Specifies November 26, 1949, as the date of adoption.
 - o Preamble as an Integral Part of the Constitution:
 - o Berubari Union Case (1960): Initially ruled that the Preamble is not part of the Constitution but could aid in interpretation.
 - o Kesavananda Bharati Case (1973): Reversed the earlier view, declaring the Preamble an integral part of the Constitution and pivotal for interpreting its provisions.
 - o LIC of India Case (1995): Reaffirmed the Preamble's status as part of the Constitution, though not enforceable in courts.

Conclusion:

The inclusion of “socialist” and “secular” in the Preamble underscores India’s commitment to justice, equality, and inclusivity. While challenges persist, these principles remain pivotal in guiding India’s democratic journey. Strengthening their practical implementation will uphold the vision of the Constitution.

One Nation One Subscription

Context:

The Union Cabinet has approved the One Nation One Subscription (ONOS) scheme to provide universal access to international scholarly research articles and journals.

- This initiative aligns with the vision of Atmanirbhar Bharat and Viksit Bharat@2047, fostering a robust research and development culture in India.

About One Nation One Subscription (ONOS):

- Ministry: Department of Higher Education, Ministry of Education.
- Central Sector Scheme: 6,000 crore allocated for 2025–2027.
- Aim: To provide access to top-quality international research journals to government higher education institutions (HEIs) and central government R&D institutions.

- **Key Features:**

- o Coverage of 30 major international publishers and nearly 13,000 e-journals.
- o Access for 6,300 government HEIs and R&D institutions benefiting 8 crore students, faculty, and researchers.
- o Entirely digital process coordinated by INFLIBNET under UGC.
- o Promotes interdisciplinary and core research, especially in tier-2 and tier-3 cities.
- o Aligned with NEP 2020 and supported by Anusandhan National Research Foundation (ANRF).

Comptroller & Auditor General

Syllabus: Polity

Context:

During the 4th Audit Diwas event in New Delhi, Lok Sabha Speaker Shri Om Birla highlighted the critical role of the Comptroller & Auditor General (C&AG) in promoting accountability, transparency, and good governance.

About Comptroller and Auditor General of India (CAG):

Basics:

- **Independent Constitutional Office:** Established under Article 148, CAG ensures accountability in public financial administration.
- **Guardian of Public Purse:** Oversees the entire financial system at both Central and State levels.
- **Appointment and Tenure:**
 - o Appointed by the President by warrant under his hand and seal.
 - o Holds office for six years or until age 65, whichever is earlier.
 - o **Salary and Service Conditions:** Determined by Parliament and charged upon the Consolidated Fund of India.
 - o **Non-Eligibility for Further Office:** Post-retirement, the CAG cannot hold office under Central/State Governments.

Relevant Articles:

- Article 149: Parliament defines CAG's duties and powers.
- Article 150: Determines the format of Union and State accounts on CAG's advice.
- Article 151: CAG reports submitted to the President and laid before Parliament.
- Article 279: Certifies net proceeds of taxes, binding on the government.

Powers and Duties of CAG:

- **Audit Financial Transactions:** Audits expenditures from the Consolidated, Contingency, and Public Accounts of India and states. Also examines receipts, debts, and remittances of the government.
- **Scrutiny of Revenue:** Ensures effective rules for revenue assessment, collection, and allocation.
- **Audit of Local Bodies:** Audits transactions of local authorities and government-funded bodies upon request.
- **Formulation of Accounts:** Advises the President on the format for maintaining Union and State accounts.
- **Reporting to Legislatures:** Submits audit reports to the President (Centre) and Governors (States) for legislative scrutiny.
- **Public Accounts Committee Role:** Acts as a guide and advisor to PAC, assisting in scrutinizing government expenditures.

Challenges and Issues:

- **Limited Powers:** Cannot enforce compliance for timely information.
- **Ambiguity in Scope:** Lack of clarity on auditing Public-Private Partnerships (PPPs) and power distribution companies.
- **Secret Service Expenditure:** Cannot audit such expenditures; relies on administrative certifications.
- **Delays in Reporting:** Significant reduction in CAG reports over recent years.
- **Conflict of Interest:** Appointment process influenced by the Executive, raising transparency concerns.
- **Single-Member Structure:** Debate on converting the CAG into a multi-member body for better decision-making.

Recommendations for Reform

- **Expand Audit Scope:** Include PPPs, Panchayati Raj Institutions, and government-funded societies.
- **Strengthen Appointment Process:** Create a collegium-style mechanism for CAG selection.
- **Enhance Powers:** Amend the CAG Act of 1971 to include punitive measures for non-compliance.
- **Timely Access to Information:** Mandate access to records within seven days; penalize undue delays.
- **Transparency and Independence:** Adopt international best practices to ensure independence in selection and functioning.
- **Capacity Building:** Equip CAG to audit emerging areas like SDGs and Goods and Services Tax (GST).

Conclusion:

The CAG is indispensable for ensuring financial accountability and transparency in governance. Strengthening its powers and operational framework will enhance its effectiveness, fostering public trust in fiscal administration.

Aligarh Muslim University Case

Syllabus: Polity

Context:

The Supreme Court's verdict in the Aligarh Muslim University (AMU) case reaffirmed that institutions of national importance can retain their minority character under Article 30 of the Constitution.

- The ruling resolves debates on the coexistence of “national” and “minority” traits in institutions.

What is a Minority Institution?

- **Constitutional provisions:**
 - o Article 30(1): Grants minorities the right to establish and administer educational institutions of their choice.
 - o Article 28: Restricts religious instruction in institutions maintained by state funds but allows it in minority institutions.
- **Legal provisions:**
 - o National Commission for Minority Educational Institutions Act, 2004: Provides legal recognition and safeguards for minority educational institutions.
 - o Supreme Court Interpretation: Recognizes the rights of religious and linguistic minorities.

Judgement on Aligarh Muslim University Case:

- **Holistic Outcome:**
 - o National and Minority Coexistence: Institutions of national importance can also hold minority status, and these attributes are not mutually exclusive.
 - o Fundamental Rights: Article 30(1) rights cannot be subservient to parliamentary declarations under Entries 63 and 64.
 - o Preservation of Rights: Establishing and administering institutions must remain vested with the minority community to uphold constitutional guarantees.
- **Significance:**
 - o Protects the dual identity of institutions like AMU.
 - o Strengthens the autonomy of minority institutions in India.

Previous Cases and Verdicts on Minority Institutions:

- **St. Stephen's College v. University of Delhi (1992):** Affirmed that minority institutions have the right to set their admission policies but must adhere to national standards for quality education.
- **T.M.A Pai Foundation v. State of Karnataka (2002):** Laid down guidelines for determining minority status and the extent of autonomy in administration.
- **Pramati Educational and Cultural Trust v. Union of India (2014):** Exempted minority institutions from the Right to Education (RTE) Act's reservation provisions.

Criteria for Classification as Minority Institution:

- **Establishment and Administration:** The institution must be established and administered by a religious or linguistic minority.

- Genesis and Intent: Purpose must predominantly benefit the minority community.
- Administration: Need not be exclusively managed by the minority but should reflect minority interests.
- Funding Sources: Minority status is unaffected by state aid or contributions from other communities.
- Historical Context: Institutions established pre-Constitution can claim minority status.

NOTE: Key criteria for determining an educational institution's entitlement to minority rights protection under Article 30(1) of the Indian Constitution were explicitly discussed in the judgment.

Role of Minority Institutions in India:

1. Promoting education: Minority institutions ensure access to quality education for disadvantaged groups.
E.g. St. Xavier's College (Kolkata), Jamia Millia Islamia (New Delhi).
1. Cultural Preservation: Act as hubs for preserving linguistic and religious diversity.
E.g. Aligarh Muslim University, Gurukul Kangri Vishwavidyalaya.
1. Fostering inclusivity: Contribute to nation-building by integrating marginalized communities.
E.g. Madrasas providing secular education alongside religious studies.
1. Skill development: Equip minorities with skills for socio-economic upliftment.
E.g. Vocational programs at Christ University (Bengaluru).

Conclusion

Minority institutions in India play a pivotal role in preserving cultural identity while contributing to educational and social equity. The Supreme Court's judgment reinforces the balance between national integration and constitutional protection of minority rights.

Electronic Voting Machine

Context:

During the Haryana Assembly elections, Congress raised concerns about EVM battery life discrepancies, questioning why some EVMs showed 99% charge after polling.

About Electronic Voting Machine (EVM):

- Purpose: Portable device for conducting elections to the Parliament, State Legislatures, and local bodies, enabling electronic voting over traditional paper ballots.
- **Key Features:**
 - o Voting capacity: Records up to 2,000 votes for efficient election handling.
 - o Secure storage: Encrypted memory ensures confidentiality of votes.
 - o Backup power: Alkaline batteries enable use in remote areas without electricity.
 - o Multilingual options: Supports multiple languages for voter accessibility.
 - o Audit trail (VVPAT): Voters can verify their votes with a paper trail for audit purposes.
 - o Development: Designed by the Election Commission's Technical Experts Committee, manufactured by Bharat Electronics Limited (BEL) and Electronics Corporation of India Limited (ECIL), both Indian PSUs.

About EVM batteries:

- Battery type: EVMs and VVPATs use non-rechargeable alkaline batteries chosen for reliability and a five-year shelf life.
- Voltage display: The 99% indicator reflects a voltage range (8.2V to 7.4V) rather than exact charge. Actual percentage only appears below 7.4V.
- Choice rationale: Alkaline batteries were selected for their stable performance in extreme temperatures and gradual power decline, ensuring uninterrupted function.
- Power use: EVMs consume minimal power, remaining disconnected from networks, unlike mobile phones, which ensures battery longevity.

Illegal Sand Mining

Context:

Villagers from Assam and Meghalaya, particularly along areas with ongoing inter-state boundary disputes, have united against illegal sand mining that threatens the local ecosystem, livelihoods, and road infrastructure.

About Rivers in news:

- Kolong River (Assam)
- Location: Morigaon district, Assam
- Joins: The Brahmaputra River
- Significance: The Kolong is a major tributary of the Brahmaputra and is impacted by sand mining activities in Morigaon, affecting the local ecosystem and road conditions.
- Dudhnoi (Manda) River (Meghalaya-Assam border)
- Location: Along the Assam-Meghalaya border, especially near Nokmakundi and surrounding villages
- Joins: Eventually joins the Brahmaputra River
- Significance: It is a primary site for illegal sand mining in the North Garo Hills region, leading to erosion and water scarcity for cultivation.
- Kulsi River (Assam)
- Location: Kamrup district, Assam
- Joins: Flows into the Brahmaputra River
- Significance: The Kulsi is a habitat for the endangered Gangetic dolphin, with illegal sand mining contributing to habitat loss and ecosystem disruption.
- Morakolohi River (Assam)
- Location: Chamaria area, near Puthimari village, Kamrup district, Assam
- Joins: Feeds into the Brahmaputra system
- Significance: A hotspot for high-speed sand extraction using pump motors, affecting the river's sustainability and endangering aquatic species.

Corporate Social Responsibility

Syllabus: Governance

Context:

India, the first country to mandate Corporate Social Responsibility (CSR), has seen over 1.84 lakh crore invested through CSR from 2014 to 2023. With agriculture employing nearly half of the workforce and contributing 16.73% to GDP, interest in directing CSR funds toward agricultural sustainability is rising.

About Corporate Social Responsibility (CSR):

- Definition: CSR involves corporate initiatives focused on societal, environmental, and economic development, enabling companies to positively impact communities.
- **CSR Framework in India:**
 - o Legal Basis: Governed by Section 135 and Schedule VII of the Companies Act, 2013, and Companies (CSR Policy) Rules, 2014, which outline eligibility criteria, implementation, and reporting requirements for CSR activities.
- **Criteria for CSR: Mandatory for companies meeting any of the following:**
 - o Net worth of 500 crore or more,
 - o Annual turnover of 1,000 crore or more,
 - o Net profit of 5 crore or more.
 - o Such companies are required to allocate 2% of their average net profits from the past three years toward CSR.
 - o Penal Provisions: If a company fails to meet CSR obligations, it faces fines ranging from 50,000 to 25 lakh. Responsible officers may face imprisonment (up to three years), fines between 50,000-5 lakh, or both.
- **2019 Amendment:**
 - o Prior to 2019, unspent CSR funds could be carried forward to the next fiscal.
 - o Post-amendment, unspent funds must be transferred to a specified Schedule VII fund by the end of the fiscal year and utilized within three years, failing which, they must be deposited in a government-specified fund

CSR Contribution to Agriculture:

- Employment significance: Agriculture employs 47% of India's workforce, far above the global average.
- Economic role: Contributing 16.73% to GDP, agriculture is central to India's economic growth and sustainability.
- Focus on Sustainability: Corporates are increasingly supporting sustainable agricultural practices, including climate action and resource conservation, through their CSR funds.
- CSR initiatives: Corporates increasingly support agriculture through CSR, focusing on projects like grain banks, farmer education, sustainable irrigation, and water conservation.

Challenges:

- Tracking issues: Lack of specific classification for agriculture-related CSR efforts complicates tracking and monitoring.
- Sector overlap: CSR activities in agriculture often fall under multiple categories in Schedule VII, diluting agriculture-specific reporting.
- Inadequate reporting focus: Current CSR reports lack dedicated attention to agriculture, limiting accurate assessment of impact on agricultural sustainability.
- Ambiguity in Schedule VII: Broad categories under Schedule VII result in a mix of activities, affecting transparency and the potential to track agriculture-specific CSR contributions effectively.

Way Ahead:

- Designate Agriculture as a Separate CSR Sector: Define agriculture clearly within CSR guidelines to ensure more targeted and transparent funding.
- Revise Reporting Framework: Shift to a sector-based reporting structure to enhance accuracy in fund allocation and impact tracking for agricultural projects.
- Identify Critical Issues: Recognize key sustainability challenges in agriculture to direct CSR funds toward the most pressing areas for improvement.
- Encourage Sustainable Practices: Leverage CSR to drive sustainable agricultural practices, such as conservation, water management, and agroforestry, to support India's environmental goals.

Conclusion:

To enhance CSR's impact on agriculture, India should refine its reporting framework by designating agriculture as a distinct sector, promoting transparency, and focusing funds on specific sustainability challenges. This approach aligns CSR with national priorities, better supports farmers, and advances sustainable agriculture.

Chapter-3

GEOGRAPHY

Color Coded Alerts for Cyclone

Context:

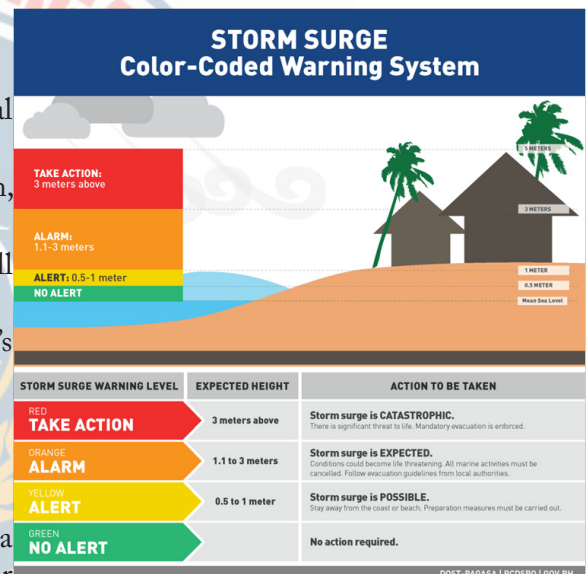
Cyclone Fengal is expected to make landfall near Puducherry on Saturday afternoon, bringing heavy rainfall and strong winds to several districts in TamilNadu and Puducherry.

About Color-Coded Alerts of IMD:

- Green (All is well): Indicates no severe weather; no action required.
- Yellow (Be Aware): Warns of potential disruptions due to moderately bad weather; advises caution.
- Orange (Be Prepared): Highlights the likelihood of extremely bad weather with significant disruptions to transport, power, and daily life.
- Red (Take Action): Signals certainty of hazardous weather posing risks to life, demanding urgent action and preparedness.

Cyclone Warning Stages:

- Pre-Cyclone Watch (72 hours): Early alert of a potential cyclone, issued by the Director General of Meteorology.
- Cyclone Alert (48 hours): Details the storm's location, direction, and areas likely to be affected.
- Cyclone Warning (24 hours): Includes specific landfall details, expected intensity, and safety advisories.
- Post-Landfall Outlook (12 hours): Predicts the storm's inland movement and associated adverse weather impacts.



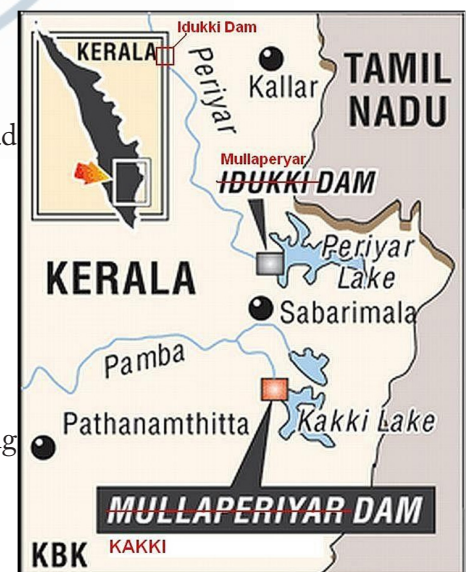
Pennaiyar River

Context:

The Supreme Court has asked the Union government to produce a report from the Negotiation Committee addressing the Pennaiyar river water dispute between Tamil Nadu and Karnataka.

About Periyar River:

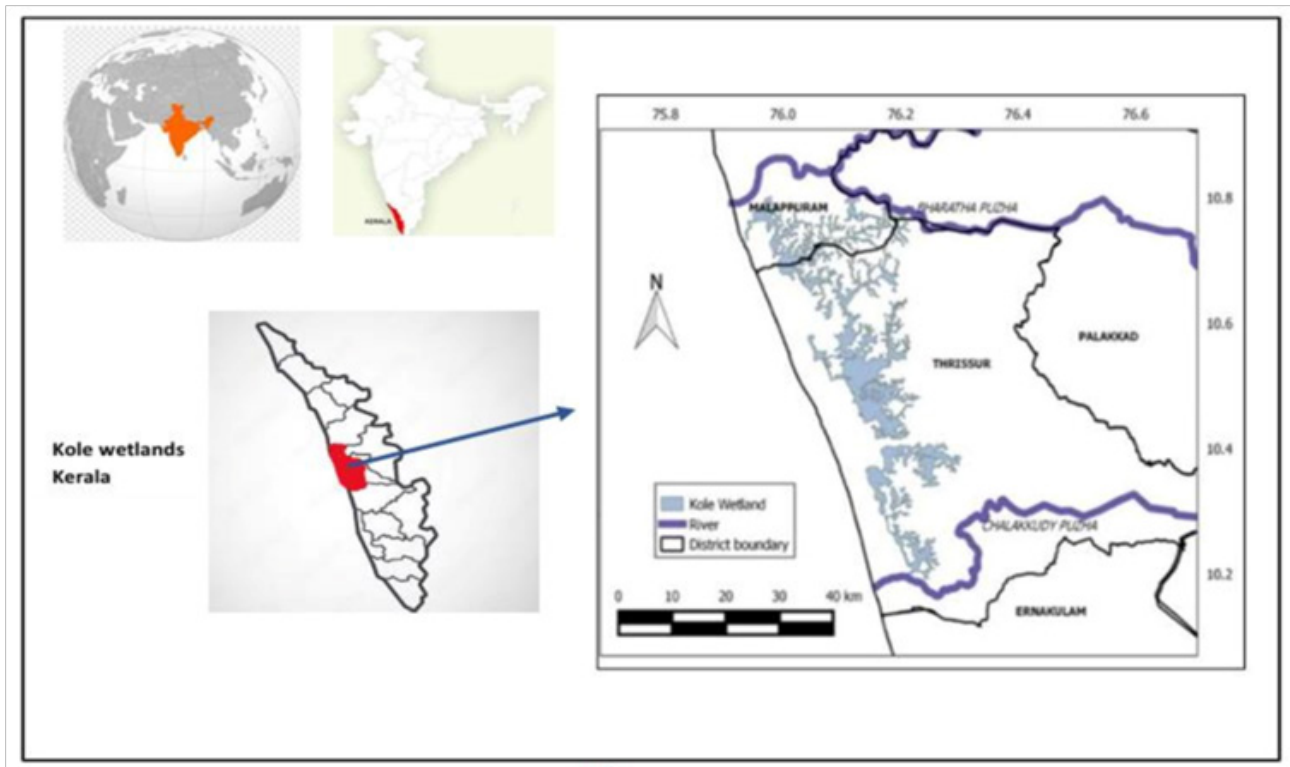
- Origin: Sivagiri Hills, Western Ghats.
- Flow: Passes through the Periyar National Park, flows into Vembanad Lake, and empties into the Arabian Sea.
- Tributaries: Muthirapuzha, Mullayar, Cheruthoni, Perinjankutti.
- Significance:
 1. Provides drinking water for major towns and Kochi city (via Aluva).
 2. Powers Kerala's Idukki Dam, generating significant electricity.
 3. Supports 25% of Kerala's industries along its banks.
- Unique Feature: One of Kerala's few perennial rivers, sustaining agriculture, industry, and biodiversity.



Thrissur-Ponnani Kole Wetlands

Context:

The Eastern Imperial Eagle (*Aquila heliaca*), a rare and vulnerable bird of prey, was recently sighted in the Pulluzhi kole wetlands, a Ramsar-protected area in Kerala.



About Eastern Imperial Eagle:

- **Scientific Classification:** Member of the family Accipitridae; subfamily Aquilinae.
- **Habitat:** Found in old forests, mountain and riverine forests, and isolated tall trees for nesting.
- **Range:** Breeds in southeastern Europe, West, and Central Asia; migrates to northeastern Africa, Middle East, and South/East Asia in winter.
- **Physical Features:**
 - o Large eagle with a wingspan of 1.76 to 2.2 m and length between 68 to 90 cm.
 - o Reverse sexual dimorphism: females larger than males.
 - o Golden crown and nape, grey base to the tail, white “braces” on scapulars.
 - o Keen eyesight, strong legs with curved talons for prey capture.
 - o Conservation Status: Listed as Vulnerable on the IUCN Red List.

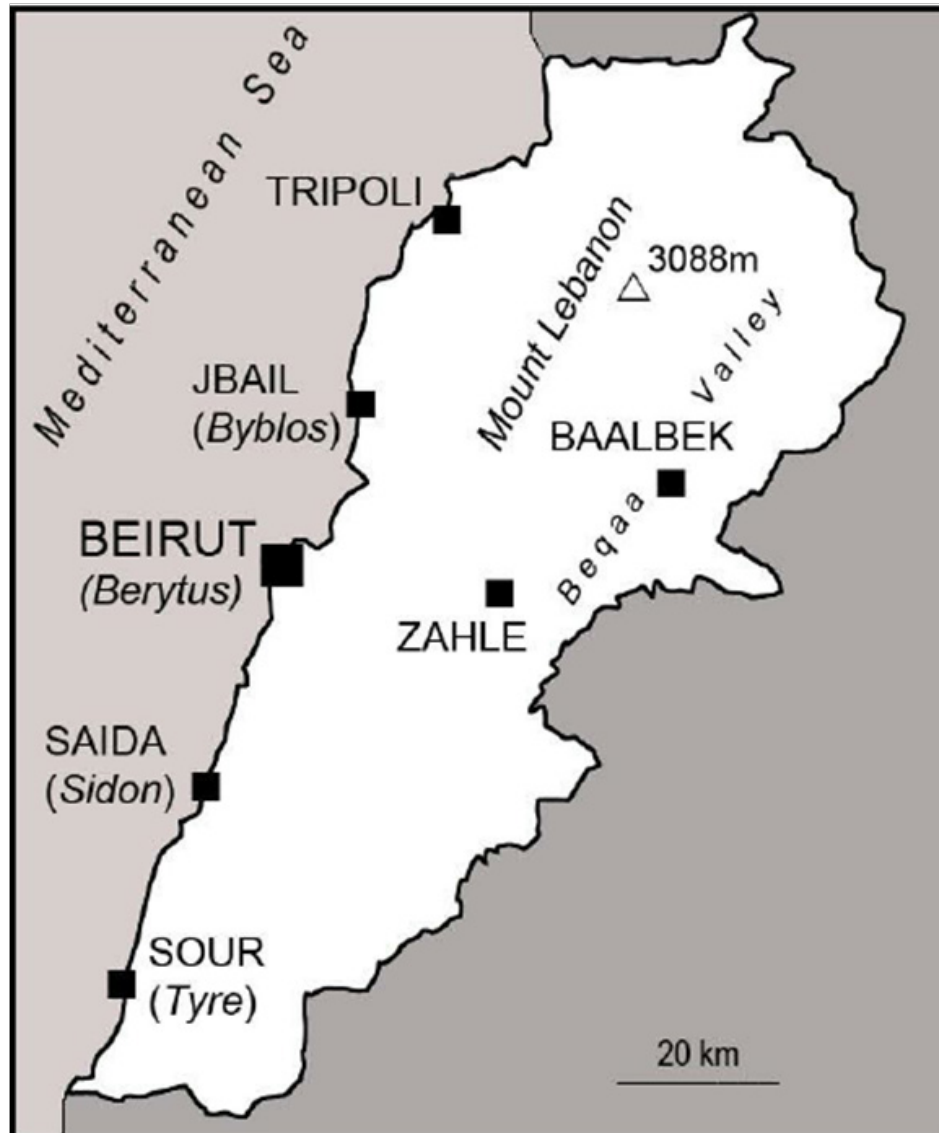
About Thrissur-Ponnani Kole Wetlands:

- **Location:** Spreads across Thrissur and Malappuram districts in Kerala, India.
- **Area:** Covers 13,632 hectares (33,690 acres).
- **Significance:**
 - o Provides 40% of Kerala’s rice requirement.
 - o Acts as a natural drainage system for Thrissur city, Ponnani city, and surrounding districts.
 - o Part of the Central Asian Flyway, supporting migratory bird species.
 - o Boundaries: Lies between Chalakudy River (South) and Bharathappuzha River (North), extending to Ponnani Taluk.
 - o Hydrological Network: Connects to Enamavu River, Canoli Canal, Chettuva River, and flows into the Arabian Sea.
 - o Soil Fertility: Enriched by alluvium soil deposited by Kechery and Karuvannoor rivers during monsoons.

UNESCO Sites in News

Context:

Hundreds of cultural professionals, including archaeologists and academics, called on the United Nations to safeguard war-torn Lebanon’s heritage in a petition ahead of a crucial UNESCO meeting.



About UNESCO Places in News:

- Baalbek (Lebanon)
 - o Ancient Roman ruins located in eastern Lebanon, designated a UNESCO World Heritage Site.
- Tyre (Lebanon)
 - o A Phoenician city in southern Lebanon, known for its historical harbor and Roman ruins.
- Anjar (Lebanon)
 - o An early Islamic city featuring Umayyad ruins, located in the Beqaa Valley.
- Bakhmut (Ukraine)
 - o Historic sites in this city face threats amid ongoing conflict with Russia.
- Lviv (Ukraine)
 - o A UNESCO World Heritage city, known for its medieval and Renaissance architecture, threatened by the Ukraine-Russia conflict.

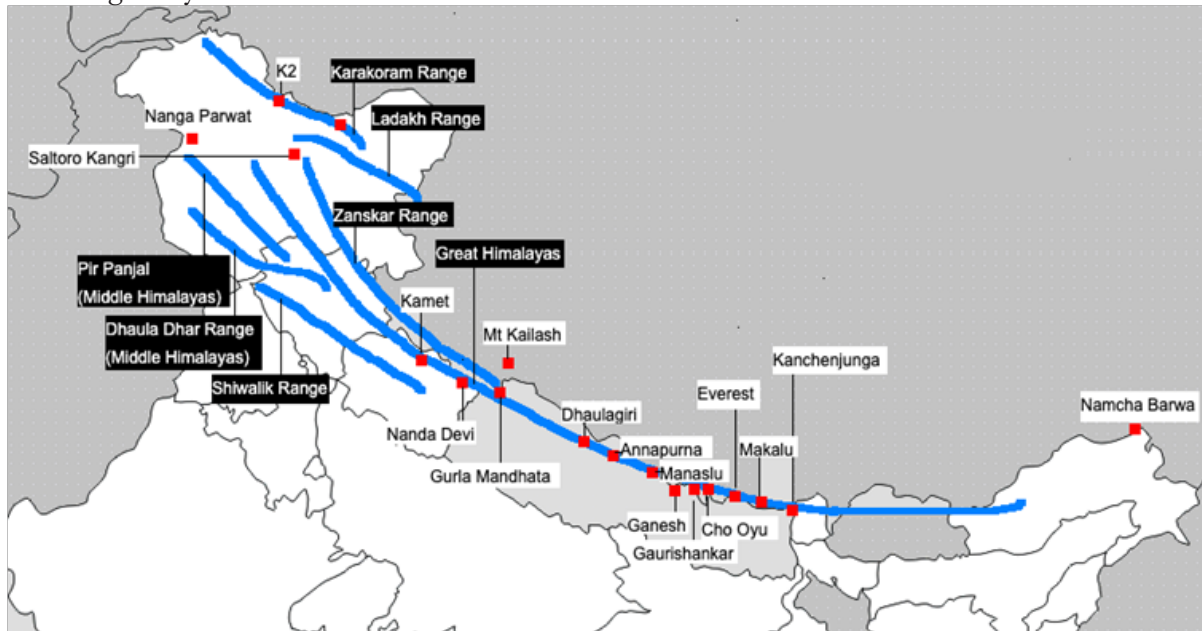
About Hague Convention, 1954:

- Background: Adopted under UNESCO after observing the large-scale destruction of cultural heritage during armed conflicts.
- Objective: To safeguard cultural property such as monuments, archaeological sites, art, manuscripts, and scientific collections.
- Scope: Applies during armed conflict as well as in peacetime to ensure preparation for potential threats.
- Symbol: Introduced the “Blue Shield” emblem for marking and identifying cultural heritage sites.
- India’s Role: India is a signatory to the convention and actively supports its implementation.

Mount Annapurna

Context:

Annapurna Base Camp (ABC), located at the base of Annapurna-I, has witnessed a record-breaking influx of tourists following this year's Dashain festival.



About Mount Annapurna:

- Location: Situated in the Annapurna Range of Gandaki Province, north-central Nepal.
- Elevation: Stands as the world's tenth-highest peak, reaching 8,091 meters above sea level.
- Conservation: Encompassed within the Annapurna Conservation Area, covering 7,629 square kilometers.
- Nickname: Often called the "Killer Mountain" due to its high fatality rate among climbers attempting to summit.

Urbanisation

Syllabus: Urbanisation

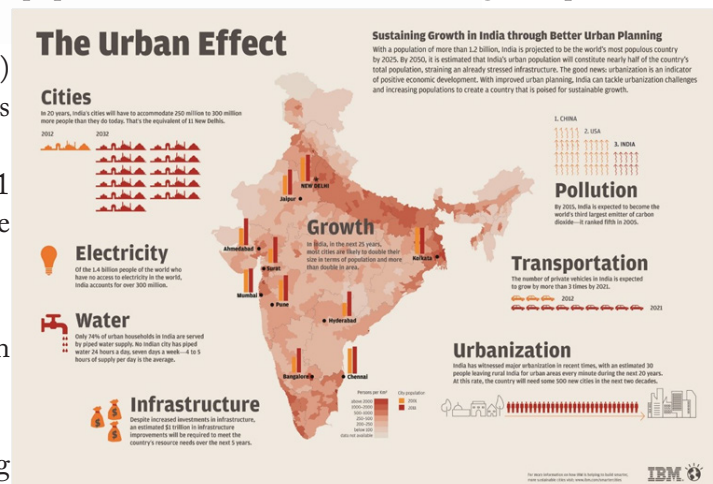
Context:

World Cities Day is observed on October 31, highlighting urban challenges and opportunities worldwide.

- This year's theme, "Youth Climate Changemakers: Catalysing Local Action for Urban Sustainability," reflects the focus on sustainable urban growth led by younger generations.

Definition and Present Status of Urbanisation:

- Definition: Urbanisation refers to the increase in population within urban areas, leading to expansion and development.
- Urban Population: About 40% (500 million) of India's population now lives in urban areas (World Bank, 2023).
- Urban Growth Rate: Grew from 27.7% in 2001 to 31.1% in 2011, with a 2.76% annual rate (Census 2011).
- Regional Distribution:
 - o Maharashtra: 8 million (13.5% of urban population).
 - o Uttar Pradesh: 4 million.
 - o Tamil Nadu: 9 million (Ministry of Housing and Urban Affairs).
 - o Shift to Medium Towns: Growth focus is shifting from Tier-1 cities to mid-sized towns due to factors like employment and lifestyle (ADB, 2019).



- o Global Context: India contributes significantly to the global urban population of 4.7 billion (57.5%) with projections to double by 2050 (UN).
- o Housing Demand: Shortfall of 18.78 million urban housing units, mostly affecting low-income groups (Ministry of Housing and Urban Affairs, 2012-27).

Types of Urbanisations:

- Natural urbanisation: Growth within urban populations due to natural birth rates.
- Migration-driven urbanisation: Influx of people from rural to urban areas seeking better job opportunities, services, and lifestyle.
- Peripheral urbanisation: Expansion of cities into surrounding rural areas, forming peri-urban regions.
- Economic urbanisation: Driven by industrialisation, business hubs, and employment opportunities.

Challenges in Urbanisation:

- Environmental issues: Air pollution and urban heat islands; 9 of the 10 most polluted cities globally are in India (World Air Quality Report, 2023).
- Inadequate housing: Around 40% of urban Indians live in slums, with an estimated housing shortfall of 18.78 million units.
- Water scarcity: Cities like Bengaluru and Chennai face recurring water crises due to poor management.
- Traffic and mobility: Congestion costs are rising, with cities like Bengaluru seeing average peak traffic speeds as low as 18 km/h.
- Waste management: India generates 62 million tons of waste annually, with only 20% treated (CPCB).

Government Initiatives:

- Smart Cities Mission: Developing sustainable and citizen-friendly urban infrastructure.
- AMRUT: Improving basic services in cities, including water supply, sanitation, and public transport.
- Pradhan Mantri Awas Yojana-Urban (PMAY-U): Aiming to address housing shortages in urban areas.
- Swachh Bharat Mission-Urban: Promoting cleanliness and waste management.
- Deen Dayal Antyodaya Yojana – National Urban Livelihoods Mission (DAY-NULM): Aims at poverty reduction and livelihood opportunities in urban areas.

Way forward:

- Environmental initiatives: Adoption of the “Sponge City” concept to manage rainwater and reduce urban flooding.
- Digital urban planning: Implementation of urban digital twins for data-driven urban governance.
- Smart water management: Use of technology to detect and manage water distribution efficiently.
- Cybersecurity for Urban Systems: Protecting critical urban digital infrastructure from cyber threats.

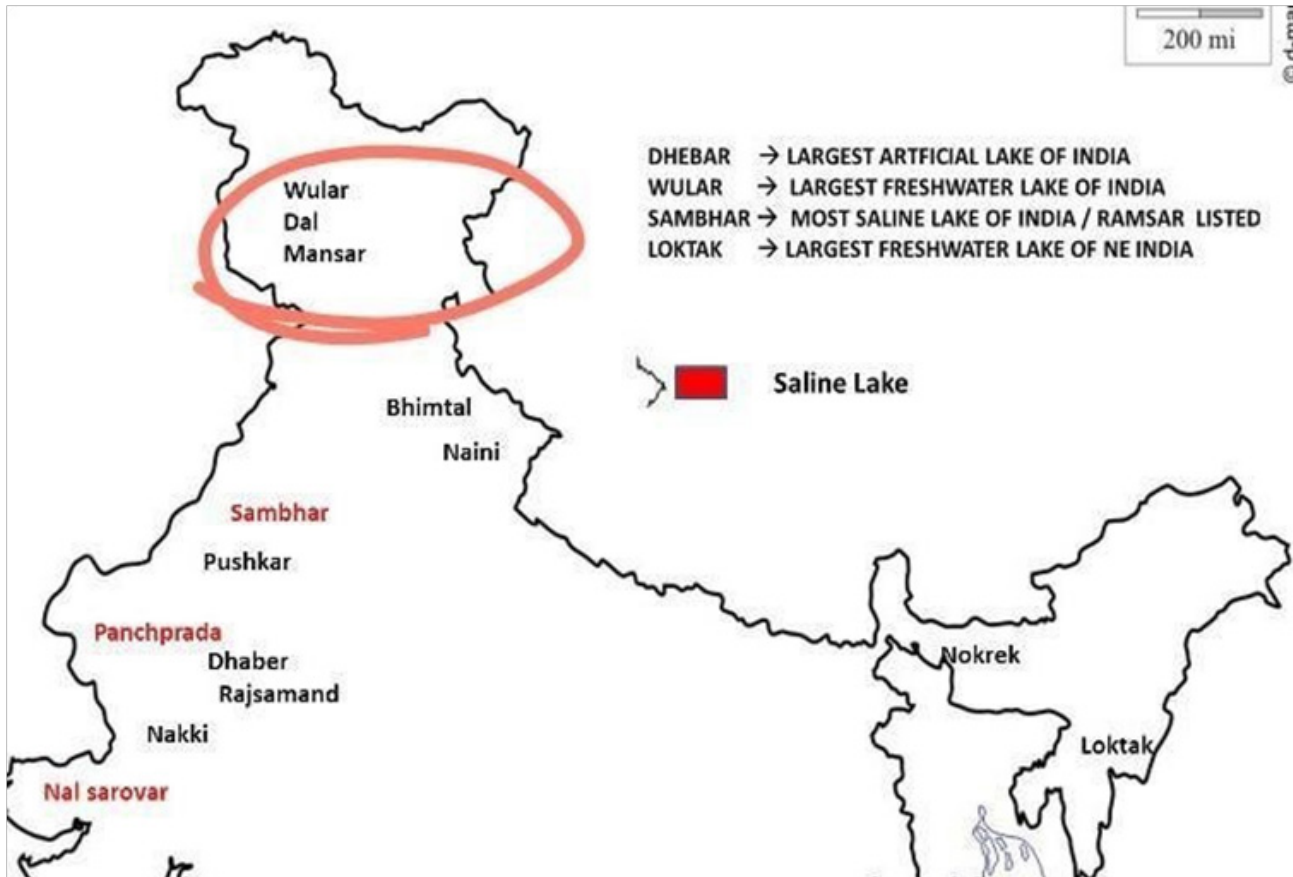
Conclusion:

India's urbanisation must align with the SDG Goal 11 for sustainable cities and NITI Aayog's Urban Transformation Strategy, emphasizing inclusive growth, resilience, and sustainable infrastructure. Through multi-level planning and technological integration, India can work towards achieving urban sustainability and inclusivity in line with global standards.

Dal Lake

Context:

In a historic event, 150 women participated in the first-ever traditional shikara boat race on Dal Lake in Srinagar, breaking societal norms and showcasing their strength.



About Dal Lake:

- Location: Situated in Srinagar, Jammu and Kashmir, surrounded by the Pir Panjal mountains.
- Nicknames: Known as the “Jewel in the crown of Kashmir” and “Srinagar’s Jewel.”
- Size and Structure: The lake spans 18 square kilometers, part of a natural wetland of 21.1 square kilometers, including floating gardens.
- Floating Gardens: Called “Raad” locally, these bloom with lotus flowers during July and August.
- Basins: Divided into four basins—Gagribal, Lokut Dal, Bod Dal, and Nagin (often considered a separate lake).
- Shoreline: Extends 15.5 kilometers with Mughal gardens, parks, houseboats, and hotels along the boulevard.
- Floating Market: Known for its vibrant floating market where vendors sell goods from wooden shikaras.
- Depth: Varies from 6 meters at the deepest point to 2.5 meters at the shallowest.
- Winter Freeze: Temperatures can drop to -11°C in winter, causing parts of the lake to freeze.
- Islands: Includes three islands, with Char Chinari (Four Chinars) and Sone Lank (Gold Island) being notable for their historical and scenic significance.

Chapter- 4

ENVIRONMENT

Air Pollution Crisis

Syllabus: Environment

Context:

Delhi's persistent air pollution crisis has highlighted the severe impact of air pollution on public health, the environment, and socio-economic conditions, emphasizing the urgency for collective measures to mitigate this issue.

What is Air Pollution?

Air pollution refers to the contamination of the atmosphere by harmful substances, such as gases, particulates, and biological molecules, which pose risks to human health, ecosystems, and climate stability.

Categorization of Pollution:

- Primary Pollutants: Emitted directly into the air (e.g., carbon monoxide, sulfur dioxide).
- Secondary Pollutants: Formed through chemical reactions in the atmosphere (e.g., smog, ground-level ozone).

Sources of Air Pollution:

- Industrial Emissions: Burning fossil fuels for energy and manufacturing processes.
- Vehicle Emissions: Exhaust from automobiles contributes to urban air pollution.
- Domestic Combustion: Burning wood, coal, or biomass for cooking and heating.
- Agricultural Practices: Stubble burning and fertilizer use release harmful chemicals.
- Natural Sources: Dust storms, forest fires, and volcanic eruptions.

Impacts of Air Pollution:

- **Health:**
 - Respiratory diseases (asthma, bronchitis).
 - Cardiovascular issues and reduced life expectancy.
 - Cognitive impairments, especially in children.
- **Environment:**
 - Damage to ecosystems and biodiversity.
 - Acid rain affecting soil and water quality.
 - Contribution to climate change through greenhouse gases.
- **Economy:**
 - Increased healthcare costs.
 - Reduced agricultural productivity.
 - Property and infrastructure damage.

Government Measures:

1. Legislative Steps:

- National Clean Air Programme (NCAP): Targets reducing air pollution by 20-30% by 2024.
- Pollution Under Control (PUC) Certificate: Mandatory for vehicles.

2. Technological Interventions:

- Adoption of CNG for public transport in Delhi.
- Encouragement of electric vehicles and renewable energy sources.

3. Awareness Campaigns:

- Promoting individual actions like tree plantation and reduced vehicle usage.

4. Infrastructure Development:

- Installation of air quality monitoring systems.
- Development of green belts in urban areas.

Role of Multinational Cooperation:

- **Shared Solutions:** Transboundary pollution necessitates collaborative efforts among South Asian nations.
- **Technology Sharing:** Exchange of air pollution mitigation technologies.
- **Policy Coordination:** Joint regulations to control industrial and vehicular emissions.
- **Global Initiatives:** Participation in frameworks like the Paris Agreement and Climate Action Plans.

Way Ahead:

- **Stronger Implementation:** Enforcing stricter regulations and penalties for non-compliance.
- **Public Participation:** Encouraging citizen-driven initiatives like carpooling and waste composting.
- **Sustainable Practices:** Promoting renewable energy and efficient waste management systems.
- **Regional Collaboration:** Developing joint air quality management plans with neighboring countries.

Conclusion:

Addressing air pollution demands a comprehensive, multi-faceted approach involving government policies, technological innovation, and global cooperation. Only through concerted efforts can we ensure clean air and a sustainable future.

Asiatic Lions

Source: IE

Context:

Asiatic Lions, with their entire population of 674 residing in Gujarat, exemplify a unique model of human-wildlife coexistence driven by cultural, economic, and legal factors.

Why Asiatic Lions Are Only Found in Gujarat?

- **Historic Habitat Shrinkage:** Asiatic Lions, once widespread from the Middle East to India, are now confined to Gujarat's Gir Forest due to hunting, habitat loss, and poaching.
- **Legal Protection:** Gir National Park and nearby areas ensure strict legal safeguards for the lions.
- **Cultural Acceptance:** Gujarat's Maldhari herders revere lions due to cultural ties and income from wildlife tourism.
- **Abundant Prey Base:** Old livestock and carrion outside protected areas sustain the lions.
- **Lack of Translocation:** Supreme Court orders to relocate lions to Madhya Pradesh remain unimplemented due to political and logistical challenges.

About Asiatic Lion (*Panthera leo persica*):

- **Distribution:**
 - Historically ranged from southwest Asia to northern India.
 - Currently found only in Gir National Park and surrounding areas in Gujarat, India.
- **Protection Status:**
 - IUCN Red List: Endangered
 - CITES: Appendix I
 - Wildlife Protection Act (India): Schedule I
- **Physical Characteristics:**
 - Slightly smaller than African lions; males weigh 160–190 kg, females 110–120 kg.
 - Distinct fold of skin along the belly, less developed mane, and visible ears in males.
 - Fur varies from tawny to sandy-grey with a silvery sheen in some lights.
 - Larger tail tuft and less inflated auditory bullae compared to African lions.
- **Habitat and Behavior:**
 - Adapted to dry deciduous forests and savannas.
 - Preys on deer, antelope, and livestock; scavenges on carrion.
 - Coexists with humans in Gujarat through cultural tolerance and conservation measures.

Biomedical Waste

Syllabus: Conservation, environmental pollution and degradation.

Context:

HIV epidemic and incidents like the “Syringe Tide” highlighted the hazards of improper biomedical waste disposal, prompting global and national reforms to safeguard public health and the environment.

Historical Background

1. HIV Epidemic (1983): Identification of HIV by Luc Montagnier and Robert Gallo triggered global fear and stigma, emphasizing the risks of medical waste.
2. Syringe Tide (1987): Beaches in the U.S. were polluted with medical waste, sparking public outrage and highlighting the need for regulatory action.
3. India's Scenario: The first HIV case in India (1986) and lack of biomedical waste legislation exposed gaps in waste management.

Outcomes of Global and National Responses:

United States:

1. Medical Waste Tracking Act (1988): Categorized hospital waste as hazardous, enforcing systematic handling and disposal protocols.
2. Transparency and Accountability: Benchmarked regulatory frameworks for other nations.

India:

1. Judicial Interventions: Supreme Court in Dr. B.L. Wadehra vs. Union of India (1996) criticized Delhi's waste mismanagement, prompting nationwide action.
2. Biomedical Waste (Management and Handling) Rules (1998): First regulation recognizing biomedical waste as hazardous, empowering pollution control boards.
3. Amendments and Updates: Strengthened protocols in 2016 and integrated technology advancements in 2020.

Key Features of India's Biomedical Waste Management:

1. Waste Segregation and Color-Coding:

- Mandated segregation of waste at the source into distinct categories.
- Use of color-coded containers (yellow, red, blue, white) for easy identification and handling.

2. Treatment and Disposal Technologies:

- Implementation of advanced waste treatment methods:
- Incineration: For infectious and pathological waste.
- Autoclaving and Microwaving: For disinfection of sharps and other categories.
- Chemical Disinfection: For liquid waste like blood and contaminated fluids.
- Adoption of deep burial in rural and resource-limited areas where incineration is not feasible.

3. Occupational Safety for Healthcare Workers:

- Provision of personal protective equipment (PPE) for handling hazardous waste.
- Regular training programs to ensure adherence to safety protocols.
- Immunization against diseases like Hepatitis B for workers handling infectious waste.

4. Monitoring and Compliance Mechanisms:

- Empowerment of Central and State Pollution Control Boards to monitor waste generation and disposal.
- Requirement for healthcare facilities to obtain authorization and submit annual reports on waste management practices.
- Surprise inspections and audits to ensure compliance with the rules.

5. Mandatory Reporting and Record-Keeping:

- Healthcare facilities must maintain records of waste generated, treated, and disposed of.
- Use of barcode tracking systems in some states to enhance accountability.

6. Common Biomedical Waste Treatment Facilities (CBWTFs):

- Establishment of shared facilities to treat biomedical waste from smaller healthcare units, reducing individual facility costs.

Limitations in Biomedical Waste Management in India:

- Inadequate Infrastructure:** Limited number of biomedical waste treatment facilities, especially in rural and remote areas, leading to unsafe disposal practices.
- Weak Enforcement and Compliance:** Poor adherence to segregation and disposal protocols, coupled with lax monitoring and enforcement by authorities.
- Occupational Hazards:** Insufficient training and lack of personal protective equipment (PPE) expose healthcare workers and waste handlers to health risks.
- Low Public Awareness:** Limited knowledge among the public and informal waste handlers about the dangers of biomedical waste leads to unsafe handling practices.
- Inefficiency in Common Treatment Facilities:** Uneven distribution and overburdening of CBWTFs hinder effective waste management in certain regions.

Way Ahead:

- Strengthen Infrastructure in Rural Areas:** Establish additional Common Biomedical Waste Treatment Facilities (CBWTFs) in underserved regions to reduce unsafe disposal practices.

Eg: Tamil Nadu's model of CBWTFs catering to multiple smaller healthcare units can be replicated nationwide.

- Enhance Monitoring and Accountability:** Implement real-time tracking systems using barcoding and GPS to ensure compliance.

Eg: Kerala's Integrated Biomedical Waste Management Monitoring System (IBMWMS) effectively tracks waste from generation to disposal.

- Improve Capacity Building and Occupational Safety:** Regular training for healthcare workers, mandatory use of PPE, and immunization for waste handlers to reduce exposure risks.

Eg: Mumbai's municipal hospitals incorporate safety training and PPE provision into their biomedical waste protocols.

- Promote Technological Innovations:** Encourage eco-friendly technologies like plasma pyrolysis and waste-to-energy plants for treating non-recyclable waste.

Eg: AIIMS, New Delhi, employs advanced autoclaving and disinfection methods to minimize environmental impact.

- Raise Public Awareness and Community Participation:** Conduct campaigns to educate the public and informal waste handlers on biomedical waste risks and proper disposal.

Eg: Expand the Swachh Bharat Abhiyan to include biomedical waste awareness drives, building on its sanitation success.

Conclusion:

The HIV epidemic and incidents like the Syringe Tide marked a turning point in biomedical waste management globally. India's legislative and policy reforms since the 1990s highlight the potential to address challenges through sustained effort. While gaps persist, the progress reflects the criticality of leveraging crises for long-term solutions.

Menace of Microplastic

Syllabus: Environment

Context:

As the world moves toward the finalization of the Global Plastics Treaty, reducing microplastic pollution has become an urgent priority, demanding a multi-pronged approach involving regulations, innovative technologies, and global cooperation.

What are Microplastics and Their Classifications

- Definition:** Plastics less than 5 mm in diameter, formed through fragmentation or intentionally manufactured for specific uses.

- **Classifications:**

1. Primary Microplastics: Manufactured for commercial use, such as microbeads in cosmetics, plastic pellets, and synthetic fibers.
2. Secondary Microplastics: Formed from the breakdown of larger plastics, such as water bottles, due to solar radiation, ocean waves, and mechanical forces.

Applications of Microplastics

1. Medical and Pharmaceutical: Used in drug delivery systems due to their ability to absorb and release chemicals effectively.
2. Industrial: Utilized in air-blasting technology and in producing synthetic textiles.
3. Personal Care Products: Found in exfoliating agents like facial scrubs, toothpaste, and other cosmetics.

Impacts of Microplastics:

1. On the Environment:

- Soil Degradation: Reduces soil quality, alters chemical properties, and disrupts water retention and nutrient cycles.
- Aquatic Pollution: Bioaccumulates in marine organisms and contributes to toxic chemical leaching into water bodies.

2. On Animals:

- Trophic Transfer: Microplastics consumed by smaller organisms are passed through the food chain, affecting higher predators.
- Reproductive and Growth Impacts: Causes stunted growth, reduced fertility, and cell damage in aquatic and terrestrial species.

3. On Humans:

- Health Risks: Linked to oxidative stress, inflammation, DNA damage, and disruptions in metabolism and reproduction.
- Organ Accumulation: Detected in the brain, lungs, placenta, and even heart tissues, increasing risks of stroke, heart attacks, and immune disorders.

Measures Taken:

- **Global Level:**

- o UNEA Resolution: Mandated the creation of the Global Plastics Treaty to combat plastic pollution, including microplastics.
- o New Zealand Microbead Ban (2017): Banned sale and manufacture of products containing microbeads.

- **India Level:**

- o Plastic Waste Management Rules (2016, 2018, 2024): Provides frameworks to manage and reduce plastic waste.
- o Ban on Single-Use Plastics: Nationwide ban on items like plastic straws and cutlery to reduce plastic pollution.
- o India Plastics Pact: Encourages industries to minimize plastic use and enhance recycling practices.

Measures to Mitigate Microplastics:

- Innovative Technologies: Develop advanced filtration systems like electrocoagulation for wastewater treatment to remove microplastics.
- Regulating Production: Ban microbeads and control the use of secondary plastic sources in consumer products.
- Recycling and Waste Management: Promote efficient recycling systems and reduce overall plastic production.
- Awareness Campaigns: Educate industries and consumers about the impact of microplastics and encourage sustainable alternatives.
- Standardized Monitoring: Implement global protocols for detecting and assessing microplastic concentrations in the environment.
- Best Practice: The EU's REACH Regulation (2023) bans intentionally added microplastics in products like detergents, cosmetics, and fertilizers, aiming to reduce their environmental and health impacts.

Conclusion

Microplastics represent a global challenge with significant risks to ecosystems, wildlife, and human health. While efforts like the Global Plastics Treaty and national policies are steps in the right direction, a collective approach involving innovation, regulation, and public awareness is crucial to mitigate this threat and protect our environment.

Global Peatland Hotspot Atlas, 2024

Context:

The Global Peatland Hotspot Atlas, 2024, published by UNEP's Global Peatlands Initiative, provides actionable insights for their conservation and sustainable management, placing them at the heart of global environmental discussions.

About The Global Peatland Hotspot Atlas, 2024:

- Published by: UNEP under the Global Peatlands Initiative.
- **Aim:**
 - Provide data and insights into the global state of peatlands.
 - Highlight threats and opportunities for conservation and sustainable management.
 - Bridge the gap between science and policy for informed decision-making.
- **Key Insights:**
 - Updated hotspot maps intersecting data on biodiversity, climate change, and land use.
 - Identifies 488 million hectares of peatlands globally, with 12% highly degraded.
 - Peatlands emit 1,941 Mt CO₂e per year due to human activity.

About Peatland:

What is Peatland?

- Peatlands are unique wetland ecosystems characterized by waterlogged conditions that slow the decomposition of plant material, leading to the formation of peat soils.
- These ecosystems consist of both the organic-rich soil (peat) and the wetland vegetation thriving on the surface.
- **Distribution of Peatlands:**
 - Found in nearly all countries, peatlands cover at least 3% of the Earth's land surface.
 - The Congo Basin hosts the largest known tropical peatland, discovered in 2017.
- **Significance of Peatlands:**
 - Carbon Storage: Peatlands store more carbon than all the world's forests combined, acting as a natural buffer against climate change.
 - Climate Regulation: They provide a cooling effect by sequestering atmospheric carbon.
 - Water Management: Regulate and purify water supplies, supporting human consumption and ecosystems.
 - Biodiversity: Provide habitats for rare and endangered species of flora and fauna.
 - Cultural Importance: Preserve archaeological and cultural heritage due to their waterlogged conditions.
 - Livelihoods: Support local communities through ecosystem services and resources.

Tracking Stubble Burning

Context:

Stubble burning in Punjab and Haryana heavily pollutes NCR air. While satellites monitor fires, farmers burning outside detection windows raise concerns about tracking methods and government measures.

About Satellites Used to Track Stubble Burning:

- **NASA Satellites:**
 - Aqua (2002) and Suomi-NPP (2011) with MODIS and VIIRS instruments detect fires via visible and infrared imaging during overpasses at 1:30 p.m. and 1:30 a.m. local time.
 - Ozone Mapping and Profiler Suite measures aerosol levels to assess smoke impact on air quality.
- **South Korea's GEO-KOMPSAT 2A:**
 - Provides continuous geostationary observations to capture fires missed by Aqua and Suomi-NPP.

- **European Space Agency's Sentinel II:**
 - o Offers burnt area data every five days.
- **Indian Satellites:**
 - o INSAT-3DR: Tracks fire activity but with coarse resolution, limiting accuracy.
 - o RESOURCESAT Series: LISS-3, LISS-4, and AWiFS sensors detect fires with varying spatial resolutions.

COP 29 – Outcome

Syllabus: Environment

Context:

The 29th UN Climate Change Conference (COP29) concluded in Baku, Azerbaijan, focusing on scaling up climate finance, adaptation, and global cooperation to combat climate change.

Outcomes of COP29:

1. Climate Finance:

- New Collective Quantified Goal (NCQG):
- Triple climate finance for developing countries to USD 300 billion annually by 2035.
- Scale finance from public and private sources to USD 1.3 trillion annually by 2035.

2. Carbon Markets (Article 6 of the Paris Agreement):

- Finalized frameworks for country-to-country trading of carbon credits (Article 6.2).
- Operationalized the Paris Agreement Crediting Mechanism (Article 6.4), ensuring environmental and human rights safeguards.
- Supported capacity-building for least developed countries to participate in carbon markets.

3. Transparency:

- 13 countries submitted their Biennial Transparency Reports (BTRs) under the Enhanced Transparency Framework.
- UNFCCC organized #Together4Transparency, promoting transparent climate action with 42 events.

4. Adaptation:

- Baku Adaptation Roadmap launched to expedite National Adaptation Plans (NAPs).
- Established a support program for NAP implementation in least developed countries (LDCs).
- High-level dialogues emphasized financing and technical support for adaptation.

5. Indigenous Peoples and Local Communities:

- Adopted the Baku Workplan and renewed the Local Communities and Indigenous Peoples Platform (LCIPP) Facilitative Working Group.

6. Gender and Climate Change:

- Extended the Lima Work Programme on Gender and Climate Change for another 10 years.
- Mandated a new Gender Action Plan to be developed by COP30.

7. Civil Society and Inclusivity:

- Over 55,000 attendees, including civil society, Indigenous Peoples, youth, and businesses.
- Strengthened Action for Climate Empowerment (ACE) for integrating public engagement into national climate policies.

8. Global Climate Action:

- Showcased real-world solutions under the Marrakech Partnership for Global Climate Action.
- Launched the 2024 Yearbook of Global Climate Action, emphasizing non-Party stakeholder contributions.

9. Forests and REDD+:

- UK pledged £3 million to enhance REDD+ transparency and implementation for halting deforestation by 2030.

10. Nationally Determined Contributions (NDCs):

- Stronger climate plans (NDC 3.0) due in 2025, covering all greenhouse gases and sectors.
- UK and Brazil committed to ramping up climate action in their updated NDCs.

India's Initiatives at COP29:

- **Resilient Infrastructure:** Highlighted CDRI and IRIS initiatives for disaster-resilient infrastructure and SIDS adaptation.
- **Industrial Decarbonization:** Co-hosted LeadIT Member Meet with Sweden; promoted hydrogen-based solutions and CO2 capture.
- **SIDS Adaptation Finance:** Advocated finance unlocking and disaster-resilient support for SIDS.
- **Solar Energy Leadership:** Promoted solar adoption with ISA, targeting a 20-fold increase by 2050.
- **Gender-Inclusive Action:** Showcased women-led clean energy solutions and gender-inclusive climate policies.
- **LeadIT Summit:** Reaffirmed commitment to heavy industry decarbonization under the Paris Agreement.

Limitations of COP29:

- **Inadequate Finance:** Funding commitments termed “too little, too distant”, failing to meet immediate needs.
- **Private Sector Dependency:** Heavy reliance on non-guaranteed private contributions.
- **Unmet Emission Goals:** Insufficient pledges to meet the 1.5°C target, with global emissions rising in 2023.
- **Geopolitical Conflicts:** Disputes over CBAM and unfair procedural practices highlighted mistrust.

Way Ahead:

- **Strengthen Finance:** Ensure binding, timely, and grant-based funding mechanisms.
- **Boost Cooperation:** Improve negotiation fairness and address trade disputes in separate forums.
- **Accelerate NDCs:** Expand Nationally Determined Contributions (NDCs) to include all sectors.
- **Focus on Adaptation:** Increase support for LDCs and SIDS with dedicated resources.
- **Science-Driven Action:** Align decisions with scientific assessments and expand renewable energy.

Conclusion:

COP29 achieved critical milestones in scaling up climate finance, operationalizing carbon markets, and advancing adaptation and transparency. While significant progress was made, challenges remain, necessitating stronger global efforts at COP30 and beyond.

Climate Change Performance Index (CCPI), 2025

Context:

The Climate Change Performance Index (CCPI) 2025 evaluates the climate protection performance of 63 countries and the EU, collectively responsible for over 90% of global greenhouse gas emissions.

About Climate Change Performance Index (CCPI), 2025:

- **Origin:** First published in 2005.
- **Published by:** Germanwatch, NewClimate Institute, and Climate Action Network.
- **Aim:** To monitor and compare climate mitigation efforts and enhance transparency in climate policies globally.
- **Indicators Used:**
 1. GHG Emissions
 2. Renewable Energy
 3. Energy Use
 4. Climate Policy
- **Top Ranking Countries:**
 - o No country received an overall very high rating.
 - o Denmark holds its 4th-place ranking in this year's CCPI and is again the highest-ranked of all countries surveyed. (No nation made it top 3)

India's Performance in CCPI 2025:

- **Overall Rank:** 10th, among the highest performers.
- **Overall,** only 22 of the 64 surveyed CCPI countries (including the EU) are on track, while 42 are lagging. India and the United Kingdom are two that are on track.

- **Category Ratings:**
 - o GHG Emissions: High
 - o Energy Use: High
 - o Climate Policy: Medium
 - o Renewable Energy: Low
- **Strengths:**
 - o Rapid renewable energy expansion, particularly in large-scale solar power projects.
 - o Introduction of energy efficiency standards and electric vehicle deployment.
 - o Low per capita emissions and energy use despite being the most populous country.
- **Challenges:**
 - o Heavy reliance on coal with slow phase-out progress.
 - o Limited inclusion of sectors like transport, housing, and water in climate targets.

Centrifugal Process & Uranium Enrichment

Context:

Iran announced plans to launch advanced centrifuges in response to a censure resolution by the UN's International Atomic Energy Agency (IAEA), escalating tensions over its nuclear program.

About Centrifugal Process:

- **Definition:** Centrifuges spin uranium gas at high speeds to enrich uranium by increasing the concentration of the fissile isotope U-235.
- **Uses:** Low-enriched uranium (LEU) is used for nuclear reactors, while highly enriched uranium (HEU) can be used for nuclear weapons.
- **Efficiency:** Advanced centrifuges enrich uranium faster and require fewer machines compared to older designs.
- **Origins:** Iran's centrifuge program began in the 1980s using designs and components acquired from A.Q. Khan's proliferation network.
- **International Concerns:** The process raises fears of nuclear weapons development due to its dual-use nature.

About Uranium Enrichment:

- **Definition:** Enrichment is the process of increasing the proportion of U-235 isotope in uranium to make it suitable for use in nuclear reactors or weapons.
- **Natural Uranium Composition:** Contains 0.7% U-235 (fissile isotope) and 99.3% U-238 (non-fissile).
- **Purpose:** Enhances U-235 concentration from 0.7% to 3-5% for standard nuclear reactors (LEU) or up to 20% for specialized reactors (HALEU).
- **Fission Process:** U-235 undergoes nuclear fission to produce heat for energy generation in reactors.
- **Methods of Enrichment:** Isotope separation techniques like gas centrifuges and gaseous diffusion are commonly used.

Ranthambore Tiger Reserve

Context:

The recent conflict between tigers and villagers near the Ranthambore Tiger Reserve in Rajasthan highlights the challenges of human-wildlife coexistence.

- Overcrowding, habitat overlap, and inadequate management have led to tragic incidents, emphasizing the need for balanced conservation strategies and human safety measures.

About Ranthambore Tiger Reserve (RTR):

- **Location:** Situated at the confluence of the Aravallis and Vindhyas, near Sawai Madhopur, Rajasthan.
- **Area:** Covers 1,411 sq. km, making it one of northern India's largest tiger reserves.
- **History:** Former royal hunting grounds of Jaipur's Maharajas; designated a Project Tiger Reserve in 1973.
- **Geography:** Includes steep rocky hills, Padam Talab, Raj Bagh Talab, rivers Chambal and Banas, and the Great Boundary Fault.
- **Flora:** Tropical dry deciduous forests and thorny landscapes dominated by Dhok trees and grasslands.
- **Fauna:** Home to Bengal tigers, leopards, sloth bears, striped hyenas, marsh crocodiles, and over 250 bird species.
- **Tourism Significance:** A popular destination for wildlife enthusiasts, contributing significantly to local livelihoods.

Paris Agreement

Context:

Argentina, under President Javier Milei's leadership, is reconsidering its commitment to the Paris Agreement, citing philosophical disagreements and a re-evaluation of its climate strategies.

About Paris Agreement:

- **Adoption:** Signed in 2015 by 195 countries to address global climate change.
- **Goals:**
 - o Limit global temperature rise to well below 2°C, with efforts to cap it at 1.5°C above pre-industrial levels.
 - o Enhance countries' abilities to adapt to climate impacts.
 - o Ensure nations commit to updated and ambitious Nationally Determined Contributions (NDCs) every five years.
 - o Framework: Non-binding yet cooperative, focusing on shared but differentiated responsibilities.

Withdrawal process:

- **Eligibility:** A country can withdraw after three years of the treaty's entry into force for that party (since 2016).
- **Notification:** Written communication to the UN's Office of Legal Affairs.
- **Timeline:** Withdrawal becomes effective one year after the notification is received.
- **Participation:** Until withdrawal takes effect, the country remains bound by the treaty.

Argentina's Position and Contribution to Global Warming:

- 24th largest global emitter of GHGs.
- Significant reserves of shale gas and shale oil, contributing to fossil fuel exports.
- A major agricultural producer, influencing methane emissions through livestock.

Cayirhan Coal Mine

Context:

Nearly 500 miners have locked themselves in the Cayirhan coal mine near Ankara, Türkiye, protesting the privatization of the mine and associated thermal power plant.

About Cayirhan Mine:

- **Location:** Situated on the outskirts of Ankara, in Ankara Province, Türkiye.
- **Grade of Coal:** Produces lignite, a low-grade coal primarily used for power generation.

Significance:

- Supplies the adjacent 620 MW Cayirhan coal-fired power station.
- Integral to Türkiye's energy production and local employment.
- Subject of environmental and economic scrutiny due to proposed extensions and concerns over inefficiency and pollution.

Ashtamudi Lake

Context:

Kerala's Ashtamudi Lake, a Ramsar site, faces ecological threats from pollution and habitat degradation, with recent fish deaths from algal blooms endangering biodiversity and local livelihoods.

More about news:

- **Issues:**
 - o **Pollution:** Sewage discharge, plastic dumping, and illegal waste disposal are rampant.
 - o **Encroachments:** Illegal constructions block water flow and degrade habitats.
 - o **Microplastics:** High levels of pollution detected in fish, shellfish, and sediments, impacting the aquatic ecosystem.
 - o **Water Hyacinth:** Spread of invasive plants limits fishing activities.

- **Algal Bloom Impact:**

- o Overloading of nutrients causes oxygen depletion, suffocating aquatic species.
- o Streptococci and E. coli contamination points to severe sewage pollution.
- o Leads to significant economic losses for fishers and cage farmers.

About Ashtamudi Lake:

- Location: Situated in Kollam district, Kerala; named for its eight interconnected arms (“Ashtamudi”).

Significance:

- Second-largest Lake in Kerala.
- Designated as a Ramsar Wetland of International Importance in 2002
- Major source of livelihood for local fishers.
- Hydrology: Fed by the Kallada River, connects to the Arabian Sea through the Neendakara estuary.
- Historical Importance: A key port city during the 14th century; noted in the travel records of Moroccan explorer Ibn Battuta.
- Biodiversity: Rich in mangrove species, including endangered ones like *Syzygium travancoricum* and *Calamus rotang*.

Technologies to Resolve Stubble Burning

Syllabus: Science and Technology, Air Pollution

Context:

Stubble burning, especially in northern India, contributes significantly to air pollution and haze during October and November. Despite government measures, the practice persists due to economic and operational challenges faced by farmers.

Stubble Burning

- Stubble burning is the deliberate setting of fire to crop residue after the harvest, predominantly in Punjab, Haryana, and Uttar Pradesh.
- Farmers burn paddy straw as a quick and economical way to prepare fields for the next crop cycle, especially for wheat sowing.

Reasons for Stubble Burning:

- Short Crop Cycles: Limited time between paddy harvest and wheat sowing.
- Economic Constraints: High cost of alternative residue management techniques.
- Lack of Awareness: Farmers lack knowledge about sustainable practices.
- Inadequate Mechanization: Limited availability of crop residue management machinery.
- Policy Implementation Gaps: Ineffective enforcement of regulations and insufficient incentives.

Consequences of Stubble Burning:

- Air Pollution: Emission of fine particulate matter (PM2.5, PM10), CO2, CO, and other pollutants.
- Health Hazards: Increased respiratory diseases and reduced visibility.
- Soil Degradation: Loss of essential nutrients and organic matter.
- Climate Impact: Contributes to greenhouse gas emissions.
- Economic Costs: Burden on public health systems and loss of soil fertility.

Technologies to Resolve Stubble Burning:

Large-Scale Technologies:

- Direct Combustion: Burns rice straw in controlled environments to generate heat for cooking and industrial purposes.
- Pyrolysis and Gasification: Converts rice straw into syngas or bio-oil with high heating value through controlled heating.
- Biochar Production: Produces biochar as a soil conditioner to enhance fertility and reduce greenhouse gas emissions.

- **Power Generation:** Uses biomass-based power plants to convert rice straw into electricity, supporting rural energy needs.
- **Pellet Production:** Compresses rice straw into compact, energy-dense pellets suitable for fuel and easy transportation.
- **Biofuels:** Processes rice straw into bioethanol, biogas, and other renewable fuels, reducing reliance on fossil fuels.
- **Paper Production:** Utilizes rice straw's high cellulose content as a sustainable raw material for pulp and paper production.

Small-Scale Technologies:

- **Composting:** Converts rice straw into nutrient-rich organic compost for agricultural use.
- **Mushroom Cultivation:** Uses rice straw as a substrate for cultivating edible mushrooms, offering a cost-effective farming option.
- **Silica Extraction:** Extracts silica particles from rice straw for use in industrial applications like construction and electronics.
- **Fodder for Ruminants:** Enhances the digestibility of rice straw for use as animal feed through physical or chemical treatments.
- **As an Adsorbent:** Applies rice straw to remove heavy metals and toxins from contaminated water, improving water quality.
- **Soil Incorporation:** Incorporates rice straw into the soil to improve fertility, moisture retention, and aeration.

Conclusion:

Stubble burning remains a significant environmental challenge in India. Sustainable technologies and alternative uses for crop residue, coupled with robust policies and farmer awareness, can mitigate its adverse effects. A multi-stakeholder approach involving farmers, industries, and governments is essential for long-term solutions.

China and Renewable Energy

Syllabus: Renewable energy

Context:

China, the largest greenhouse gas emitter and a renewable energy leader, plays a pivotal role in global climate action. Reducing its emissions is vital but poses challenges for renewable energy supply chains and global transitions.

China's Status in Solar Power:

- **Global Leader:** China dominates over 80% of global solar panel manufacturing and 60% of wind turbine production.
- **Renewable Growth:** Added 300 GW of renewable energy capacity in 2023, nearly meeting its 1,200 GW renewable energy target six years ahead of schedule.
- **Cost Competitiveness:** Solar PV production costs in China are 10–35% lower than in India, the US, and Europe.

China Paradox:

- **Necessity of Emission Reductions:** Needs to reduce emissions by 66% by 2030 to comply with the Paris Agreement 1.5°C target.
- **Reliance on Fossil Fuels:** Despite renewables growth, coal still generates over half of China's electricity, supporting industries like solar and wind manufacturing.
- **Impact on Global Supply Chains:** Reducing emissions too rapidly could disrupt China's fossil fuel-dependent manufacturing processes, slowing renewable energy deployment globally.

Unique Advantages of China in Renewable Energy:

- **Cost Leadership:** Solar PV manufacturing costs are 10–35% lower than in India, the US, and Europe.
- **Manufacturing Dominance:** Controls over 80% of global solar panel and 60% of wind turbine production.
- **Integrated Supply Chain:** Monopoly across all steps of the solar PV supply chain, from raw materials to finished products.
- **Scale of Production:** Massive industrial scale enabling economies of scale and competitive pricing.
- **Government Support:** Proactive policies and subsidies driving renewable energy growth and exports.
- **Technological Edge:** Advanced manufacturing techniques and extensive R&D in clean energy technologies.

Impact of China's Emission Reductions and Transition to Renewables:

- **Impact on China:**
 - Industrial Slowdown: Rapid fossil fuel phase-out could hinder manufacturing, including renewable energy equipment.
 - Economic Challenges: Strain on industries heavily dependent on coal and fossil fuels.
- **Impact on India:**
 - Supply Chain Vulnerability: India's solar module imports (85% from China) could face disruptions, affecting its renewable energy goals.
 - Rising Costs: Dependence on Chinese imports makes it vulnerable to cost escalations in solar PV and wind equipment.
- **Impact on the World:**
 - Global Renewable Targets: Reduced Chinese production might delay the global renewable energy tripling target by 2030.
 - Dependency Risks: Highlights the need for diversifying supply chains and reducing over-reliance on China for critical technologies.

India's Potential as a Competitor to China:

- Ambitious Goals: Aims to achieve 280 GW of solar energy out of 500 GW of renewable capacity by 2030.
- Domestic Manufacturing Push: Current annual solar module manufacturing capacity of 15 GW, with plans to scale up.
- Government Support: Policies and subsidies to promote renewable energy and reduce import dependence.
- Geographical Advantage: High solar insolation and vast land availability for renewable energy projects.

Conclusion:

While China's emission cuts are vital for global climate goals, they pose risks to renewable energy supply chains. Diversifying production and enhancing India's manufacturing capacity are critical to reducing global dependency on China and ensuring a balanced energy transition.

El Cajas National Park

Context:

El Cajas National Park, located in the highlands of Ecuador near Cuenca, has been severely impacted by wildfires exacerbated by a prolonged and severe drought.

- The Ecuadorian government has declared a 60-day national emergency to address the raging forest fires, which threaten not only the park's ecological integrity but also its critical water resources.

About El Cajas National Park:

- Location: Highlands of Ecuador, 30 km west of Cuenca in Azuay province.
- Area: Spans 285.44 km² with altitudes between 3100m and 4450m.
- Declared: National Park status granted on November 5, 1996.
- Topography: Features páramo vegetation, jagged hills, valleys, and about 270 lakes and lagoons, with Luspa as the largest lake.
- Rivers: The Tomebamba and Yanuncay rivers originate here, contributing to the Amazon basin. Western drainage connects to the Pacific Ocean.
- Highest Point: Cerro Arquitectos (4450m).

High-Performance Buildings

Syllabus: Climate resilient infrastructure.

Context:

High-Performance Buildings (HPBs) are essential for achieving sustainable living in the face of climate change, rising urbanization, and energy demands. Designed to conserve resources, enhance energy efficiency, and withstand extreme weather, HPBs represent the future of sustainable construction and urban resilience.

High-Performance Buildings:

- Definition: HPBs are designed to optimize energy efficiency, reduce resource consumption, and provide resilience against unpredictable climatic conditions.

Need:

- Carbon Emissions: Buildings account for 28% of global energy-related emissions; in India, the sector contributes 20% of national emissions.
- Urbanization: India's urban population is projected to reach 600 million by 2030, increasing the demand for energy-efficient infrastructure.
- Global Goals: Meeting the UN's goal of a 30% energy efficiency improvement in buildings by 2030 requires immediate action.

Integrative Design:

- Encourages collaboration among architects, engineers, and building owners to achieve measurable performance goals.
- Uses digital modeling for predicting outcomes and refining designs before construction, ensuring operational efficiency and cost-effectiveness.
 - Example: Passive design strategies optimize natural sunlight and thermal mass to reduce heating and cooling needs.

Sustainable Materials:

- Prioritize materials with low embodied carbon and high recycled content.
- Use low-emission materials to enhance indoor air quality by minimizing volatile organic compounds (VOCs).
 - Example: Indian Institute of Human Settlements (IIHS) uses lifecycle assessments to choose durable materials for its Bengaluru campus.

Energy Efficiency:

- Passive Strategies: Utilize natural light, building orientation, and thermal mass to minimize reliance on mechanical systems.
- Active Strategies: Employ energy-efficient HVAC systems, smart technologies, and renewable energy sources to achieve net-zero energy goals.
 - Example: Infosys Hyderabad campus uses radiant cooling systems and daylighting controls to reduce energy use.

Water Conservation

- Efficient Fixtures: Low-flow faucets and dual-flush toilets conserve water.
- Reuse Systems: Rainwater harvesting and wastewater recycling for irrigation and sanitation.
 - Example: Infosys campuses recycle 100% of wastewater using advanced treatment systems.

Handling Climate Risks

- Incorporate climate-resilient features like flood protection, durable materials, and renewable energy systems.
- Ensure passive survivability to maintain habitability during power outages.
 - Example: Infosys Crescent building in Bengaluru uses advanced cooling systems and consumes far less energy than standard office buildings.

India's Initiatives for Energy-Efficient Buildings:

- Eco-Niwas Samhita: A code for energy-efficient residential buildings.
- Energy Conservation Building Code (ECBC): Sets energy performance standards for commercial buildings.
- Energy Conservation (Amendment) Act, 2022: Aims to improve energy efficiency across sectors.
- NEERMAN Awards: Recognizes innovation in energy-efficient buildings.
- Green Rating for Integrated Habitat Assessment (GRIHA): Promotes sustainable building practices.

Limitations:

- Operational Neglect: Focus on initial costs often overlooks long-term operational efficiency.
- Diverse Typologies: Energy efficiency varies across building types, complicating standardization.
- Split Incentives: Mismatch in benefits between owners and tenants reduces support for energy-efficient upgrades.
- Loss of Indigenous Knowledge: Over Reliance on foreign technologies sidelines cost-effective local solutions.
- Fragmented Systems: Lack of integration between design, construction, and operations reduces overall building performance.

Conclusion:

High-Performance Buildings are indispensable for sustainable urbanization and achieving global energy goals. Despite limitations, India's initiatives are fostering progress. As practices become more widespread, HPBs can set benchmarks for future-ready, climate-resilient construction.

Oriental Pied Hornbill**Context:**

In Mayong village, Morigaon district, Assam, a unique community-driven conservation initiative has established an ideal habitat for the oriental pied hornbill, showcasing exemplary efforts in biodiversity conservation.

About Mayong Village Initiative:

- Community conservation: Villagers collectively support the nesting and breeding of oriental pied hornbills, ensuring their safety and well-being.
- Plantation drive: Fruit-bearing trees like banana and papaya have been planted extensively to provide natural food sources for the hornbills.
- Sacred connection: Hornbills are revered as harbingers of peace and prosperity, fostering a harmonious relationship with the community.

About Oriental Pied Hornbill:

- **Scientific name:** *Anthracoceros albirostris*
 - o Two other common names for this species are Sunda pied hornbill (convexus) and Malaysian pied hornbill.
- **IUCN Status:** Least concern
 - o Habitat: Found in subtropical or tropical moist lowland forests across the Himalayan foothills, northeast India, and Southeast Asia.
 - o Role in Ecosystem: Known as 'forest engineers' for dispersing seeds of tropical trees, contributing to forest health.
 - o Diet: Omnivorous, feeding on fruits, insects, shellfish, small reptiles, mammals, and bird eggs.
 - o Characteristics: Smallest and most common of the Asian hornbills; adaptable and widespread across its range.

Thai Sacbrood Virus**Context:**

Research found that pathogen spillover from managed honey bees to wild pollinators poses a serious threat, with shared habitats facilitating disease transmission and endangering pollinator ecosystems.

About Thai Sacbrood Virus:

- Impact on Bees: Devastated 90% of Asiatic honey bee colonies in South India (1991–1992) and reemerged in Telangana in 2021.
- Symptoms: Kills larvae, preventing colony growth and reproduction.
- Geographical Spread: Reported in India, China, and Vietnam.
- Host Range: Less virulent in western honeybees but significantly threatens Asiatic honeybees (*Apis cerana indica*).
- India hosts more than 700 bee species, including four indigenous honey bees Asiatic honey bee (*Apis cerana indica*), giant rock bee (*Apis dorsata*), dwarf honey bee (*Apis florea*), and the stingless bee (*sp. Trigona*).

- Western honey bees were introduced in India in 1983 to increase the country's honey yield.
- Transmission: Unclear pathways; likely through shared habitats or migratory routes of managed bees.

Additional information:

- Pathogen Spillover: Occurs when pathogens jump from one species (e.g., managed honeybees) to another (e.g., wild pollinators) due to shared habitats.
- Pathogen Spillback: Happens when pathogens from wild species return to infect the original host species (e.g., managed honeybees), often in more virulent forms.

Other Diseases Impacting Butterflies:

- Ophryocystis elektroscirrha (OE): A protozoan parasite that infects monarch butterflies, leading to wing deformities and shortened lifespans.
- Nosema: A fungal disease that affects butterfly reproduction and energy levels.
- Baculovirus: Impacts caterpillar stages, causing high mortality rates.
- Viral Polyhedrosis: Targets larvae, disrupting metamorphosis and development.
- Bacterial Infections: Pathogens like *Serratia marcescens* can infect butterflies, particularly in captive populations.

Graded Response Action Plan

Context:

To address the worsening air quality in Delhi NCR, the Commission for Air Quality Management (CAQM) has invoked Stage III of the Graded Response Action Plan (GRAP).

About Graded Response Action Plan (GRAP):

What is GRAP?

- A framework of emergency measures aimed at preventing the further deterioration of air quality in Delhi NCR.
- Approved by the Supreme Court in 2016 following the M.C. Mehta vs. Union of India case.
- Initially implemented by the Environment Pollution (Prevention and Control) Authority (EPCA); now managed by CAQM since 2021.
- **Implementation:**
 - Based on real-time AQI data and meteorological forecasts by IITM and IMD.
 - GRAP measures are incremental, requiring compliance with measures from all lower stages as air quality worsens.
- **New Revised GRAP:**
 - Came into effect on October 1, 2023, across NCR.
 - Strengthened to handle AQI deterioration during winter.

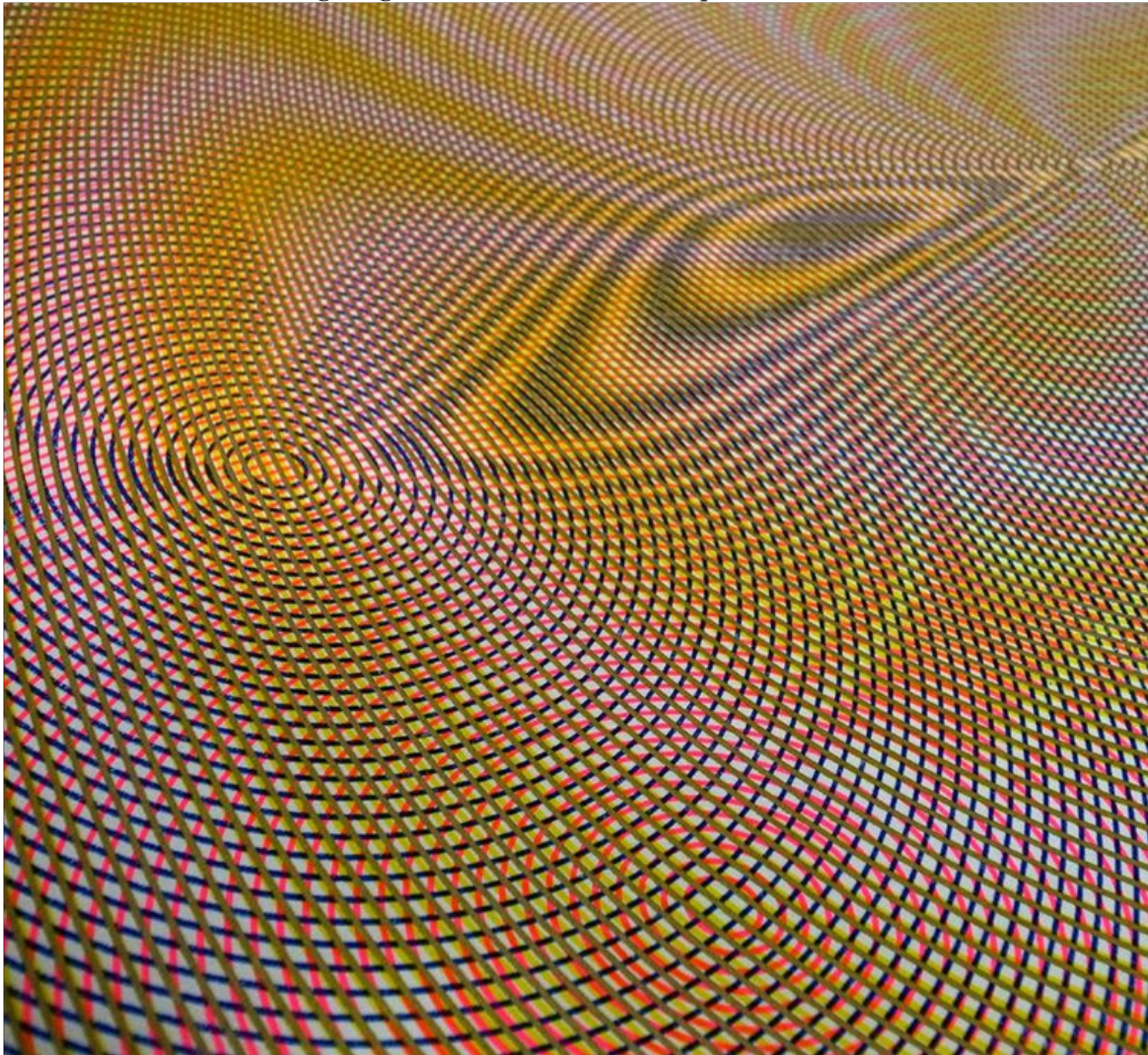
Revised GRAP Stages:

Stage	AQI Range	Actions
Stage I – Poor	201-300	Enforce orders on overaged diesel/petrol vehicles by NGT/SC.
Stage II – Very Poor	301-400	<ul style="list-style-type: none"> – Targeted actions at pollution hotspots. – Regulate diesel generator operations.
Stage III – Severe	401-450	<ul style="list-style-type: none"> – Restrict BS III petrol and BS IV diesel light motor vehicles (LMVs). – Consider suspending physical classes up to Class V.
Stage IV – Severe+	> 450	<ul style="list-style-type: none"> – Ban entry of LCVs from outside Delhi unless they are EVs, CNG, or BS-VI diesel (except essential services). – Close educational institutions and non-essential commercial activities. – Implement odd-even traffic rules for vehicles.

New Moiré Superconductor

Context:

Scientists have discovered superconductivity in twisted bilayer tungsten diselenide ($tWSe_2$), a new moiré material made from semiconductors, marking a significant advancement in quantum materials research.



About New Moiré Superconductor:

- What it is: A moiré material formed by twisting two layers of tungsten diselenide ($tWSe_2$) by a small angle, creating a unique electronic structure with flat energy bands.
- Material Used: Twisted bilayer tungsten diselenide ($tWSe_2$), a semiconductor.

Properties and Features:

1. Exhibits superconductivity at -272.93°C with zero resistance.
2. Driven by strong electron-electron interactions and half-band filling.
3. Robust superconducting state with a coherence length 10 times longer than other moiré materials.
4. In typical materials, electrons gain or lose kinetic energy when they move across different energy levels, which affects their speed and momentum. But in moiré materials the electrons experience very little variation in energy

Significance:

1. Demonstrates stable superconductivity in semiconductors, paving the way for future quantum materials.
2. Offers insights into unique electron interactions and electronic structure changes in twisted 2D layers.
3. Opens avenues for semiconductor-based quantum applications.

Antibiotic Contamination in Milk

Context:

Antibiotic contamination in milk affects 180 million Indians daily, despite regulations. Unregulated antibiotic use, low awareness, and fragmented milk collection systems drive this issue, posing health risks and impacting dairy processing.

About Contamination Found in Milk:

- **Source of Contamination:**

1. Antibiotic residues from treatments like mastitis control.
2. Contaminated feed and improper veterinary drug use.
3. Mixing contaminated milk during collection.

- **Health Impacts:**

1. Antimicrobial resistance (AMR) and allergic reactions.
2. Disorders in intestinal flora.
3. Economic loss due to compromised dairy product quality.

- **Antibiotics Detected:**

- o Beta-lactams (e.g., penicillin), aminoglycosides (e.g., gentamycin), tetracyclines, macrolides (e.g., erythromycin), quinolones, sulphonamides.



Dark Tourism

Context:

Amid the ongoing war in Ukraine, the concept of dark tourism has gained traction, with visitors exploring war-torn locations like the destroyed Irpin bridge and tank graveyards.

About Dark Tourism:

- **Definition:** Visiting locations associated with death, tragedy, or suffering, such as battlefields, disaster zones, or memorials.
- **Origins:** Defined by John Lennon and Malcolm Foley as the interpretation of inhuman acts for visitors.
- **Popular Sites:** Auschwitz (Poland), Chernobyl (Ukraine), Ground Zero (USA), Hiroshima Peace Memorial Park (Japan).
- **Types:**
 1. Disaster Tourism: Focused on areas affected by major disasters.
 2. War Tourism: Visits to conflict zones or post-war regions.
- **Controversy:**
 - o Positive View: Acts as a form of memorialization, education, and awareness.
 - o Criticism: Seen by some as unethical or profiting from human suffering.
 - o Emerging Market: Increasing popularity in countries like Ukraine due to global attention and curiosity.



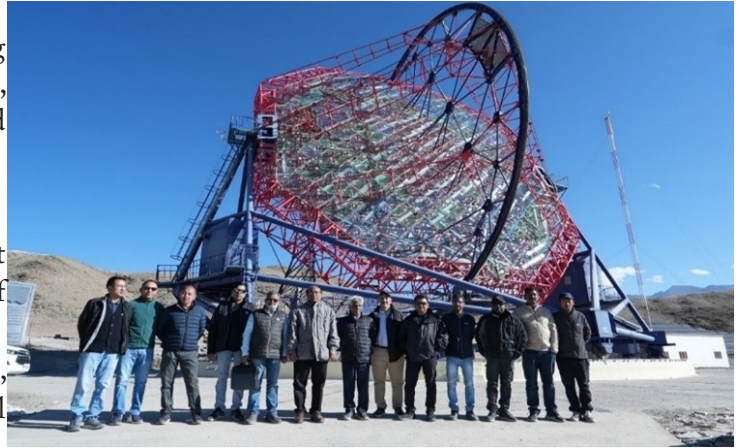
Gamma Rays

Context:

The MACE telescope, the world's highest imaging Cherenkov telescope, was inaugurated in Hanle, Ladakh, on October 4 to study cosmic gamma rays and advance high-energy astrophysics research.

About Gamma Rays:

- Definition: Gamma rays are the shortest wavelength and highest energy form of electromagnetic radiation.
- Sources: Produced by pulsars, supernovae, black holes, gamma-ray bursts, and potential dark matter particle interactions.
- Properties: Energy > 100,000 eV, hazardous to living cells, and blocked by Earth's atmosphere.
- Detection: Indirectly observed on Earth using Imaging Atmospheric Cherenkov Telescopes (IACTs) like MACE.
- Cherenkov Radiation: Faint blue light emitted when gamma rays interact with atmospheric molecules, creating electron-positron showers.



About the MACE project:

- Location: Hanle, Ladakh, at an altitude of ~4,300 m, making it the highest imaging Cherenkov telescope in the world.
- Development: Indigenously built by Bhabha Atomic Research Centre (BARC) with support from ECIL and other Indian partners.
- Objective: To study high-energy gamma rays and contribute to the understanding of the universe's most energetic phenomena, such as supernovae, black holes, and gamma-ray bursts.
- Technology: Uses Cherenkov imaging technology to detect cosmic rays and observe high-energy astrophysical events.
- Significance: Enhances India's cosmic-ray research capabilities and strengthens its position in multi-messenger astronomy on a global scale.

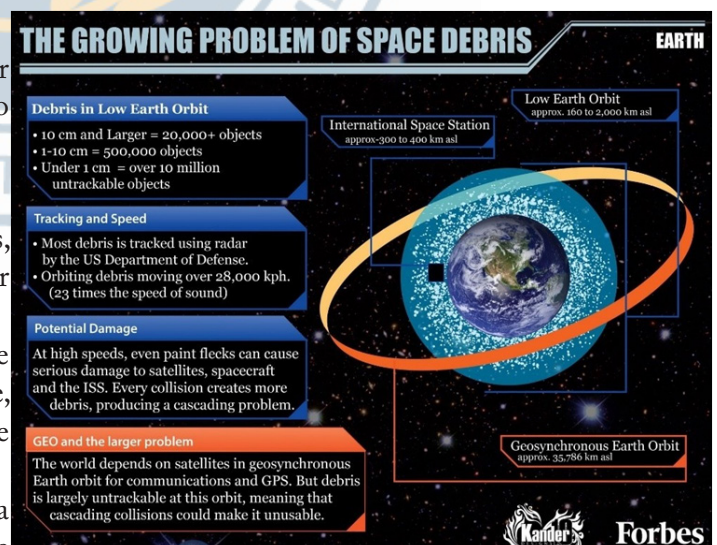
Space Junk and Its Impact

Context:

The exponential growth in satellite launches, with over 10,000 active satellites in orbit today, is contributing to space junk pollution.

About Space Junk and Its Impact:

- Definition: Space junk includes defunct satellites, rocket stages, and other debris left in orbit or disintegrated during re-entry.
- Pollutants Released: Burning satellites release aluminum, nitrogen oxides, carbon monoxide, and black carbon, which accumulate in the stratosphere.
- Ozone Layer Threat: Aluminum oxide acts as a catalyst for ozone depletion, counteracting the success of the Montreal Protocol that reduced CFCs.
- Stratospheric Changes: Pollutants like copper and other metals can alter atmospheric chemistry and promote cloud formation.
- Climate Impacts: Soot particles absorb solar energy, potentially warming the atmosphere and disrupting natural climate patterns.
- Long-Term Ripple Effects: Alterations in the upper atmosphere may indirectly harm ecosystems, weather patterns, and human health on Earth.



Impacts of Social Media on Democracy

Syllabus: Science and Technology

Context:

Social media has revolutionized communication and information dissemination globally. While it fosters democratic values by empowering voices and facilitating debates, it also poses challenges through misinformation, hate speech, and monopolistic control.

Social Media and Its Types:

- Definition: Social media platforms allow users to create, share, and interact with content online.
- **Types:**
 - o Social Networks: Platforms like Facebook, LinkedIn for connections.
 - o Microblogging sites: Platforms like X (formerly Twitter) for quick updates and news sharing.
 - o Media sharing platforms: Instagram, YouTube for visual and video content.
 - o Discussion forums: Reddit, Quora for topic-based discussions.

Recent Examples of Social Media Impacting Democracy:

1. US Elections: X and Facebook played significant roles in spreading political campaigns and misinformation during elections.
2. Palestine conflict: social media brought real-time updates about the situation, showcasing atrocities and fostering global awareness.
3. Sri Lanka riots: Lack of local content moderation on Facebook exacerbated the spread of hate speech.
4. Farmer Protests in India: social media amplified protests, leading to global attention and support.

Positive Impacts of Social Media on Democracy:

- Enhanced political participation: Empowers citizens to engage in discussions and hold governments accountable.
E.g. Youth-led campaigns during climate protests.
- Global connectivity: Enables sharing of ideas and real-time updates across borders.
E.g. Ukraine-Russia conflict updates mobilized international aid.
- Amplification of Marginalized Voices: Offers a platform for underrepresented groups to voice concerns.
E.g. #MeToo movement started global conversations about gender justice.
- Transparency and Accountability: Brings government actions under public scrutiny.
E.g. Social media whistleblowers exposing corruption.

Negative Impacts of Social Media on Democracy:

- Spread of Misinformation: Unverified content can manipulate public opinion.
E.g. Fake news during COVID-19 led to vaccine hesitancy.
- Polarization and Echo Chambers: Algorithms amplify like-minded content, reinforcing biases.
E.g. Partisan political debates in the US.
- Hate Speech and Extremism: Platforms fail to control harmful content.
E.g. Rohingya crisis in Myanmar exacerbated by Facebook posts.
- Monopolistic control: Ownership by individuals or corporations affects neutrality.
E.g. Elon Musk's influence on X.
- Censorship: Governments can suppress dissent by manipulating platform policies.
E.g. Internet shutdowns during protests in authoritarian regimes.

Suggested measures:

- Strengthen moderation: Increase local-language moderators to manage hate speech and misinformation.
E.g. Facebook should hire moderators fluent in regional languages.

- Regulate algorithms: Make algorithms transparent to prevent the amplification of harmful content.
- Promote decentralized platforms: Encourage platforms like Mastodon and Bluesky to reduce monopolistic influence.
- Legal safeguards: Enact stringent laws to prevent misuse of social media for spreading fake news.
- Media literacy: Integrate information verification techniques in school curriculums.
- Independent oversight: Set up international bodies to monitor the neutrality of platforms.

Conclusion:

Social media is a powerful tool for democracy, amplifying voices and enabling transparency. However, its potential to harm through misinformation and monopolistic control necessitates regulation, decentralization, and education to ensure it serves democratic ideals responsibly.

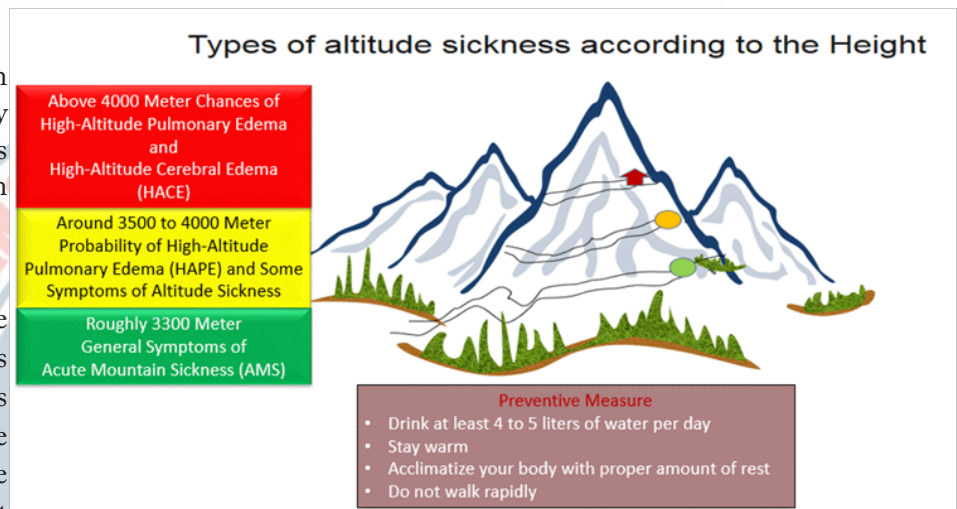
High-Altitude Sickness

Context:

The recent death of a trekker in Uttarakhand due to respiratory failure highlights the critical dangers posed by high-altitude sickness in the Himalayas.

What is High-Altitude Sickness?

- Definition: High-Altitude Sickness, also known as Acute Mountain Sickness (AMS), occurs when the body struggles to acclimatize to low oxygen levels at elevations above 8,000 feet (2,400 meters).
- Types:
 - HAPE: High-Altitude Pulmonary Edema (fluid in lungs).
 - HACE: High-Altitude Cerebral Edema (fluid in brain).
 - Symptoms: Headache, nausea, fatigue, shortness of breath, confusion, and, in severe cases, coma.



Why Does It Happen?

- Low Oxygen Levels: Reduced oxygen in the air leads to hypoxia in body tissues.
- Physiological Strain:
 - Hyperventilation increases breathing rate.
 - Thicker blood due to increased red blood cell production strains the heart.
 - Rapid Ascent: Climbing too quickly without acclimatizing exacerbates risks.

Preventive and Mitigative Measures:

- Gradual Ascent:
 - Rest every 3-4 days at altitudes above 3,000 meters.
 - Avoid sleeping elevation increases of more than 500 meters per day.
- Medications:
 - Acetazolamide: Enhances acclimatization.
 - Dexamethasone: Reduces severe inflammation.
 - Nifedipine: Preventive for those prone to HAPE.

Long-Range Hypersonic Missile

Context:

India successfully tested its first long-range hypersonic missile, marking a significant milestone in defence technology and joining a select group of nations capable of developing advanced hypersonic weapons.



About India's First Hypersonic Missile:

- **Features**
 - Mach 6 Speed: Travels six times the speed of sound, reducing enemy reaction time.
 - Long Range: Covers over 1,500 km for deep-strike missions.
 - Mid-Flight Manoeuvrability: Combines ballistic missile speed with cruise missile agility to evade defences.
 - Multi-Payload Capacity: Can carry conventional or nuclear warheads.
 - Advanced Tracking: Precision targeting ensured by cutting-edge multi-domain monitoring systems.
 - Indigenous Design: Fully developed by DRDO, showcasing India's self-reliance in advanced defence technology.
- **Capabilities:**
 - Strategic Deterrence: Enhances defence readiness and border security.
 - Multi-Domain Use: Adaptable for land, air, and naval platforms, including ship-targeting.
 - Defence Evasion: Overcomes modern missile defence systems with speed and agility.
 - Precision Strikes: Pinpoint targeting of critical enemy assets with minimal collateral damage.
 - Applications: Multiple uses across Army, Navy, and Air Force; naval version aimed at destroying enemy warships with precision at long ranges.
 - Developmental Background: Builds upon the Hypersonic Technology Demonstrator Vehicle (HSTDV) project initiated in 2019.
 - Global Context: Positions India alongside major military powers like China, Russia, and the US in hypersonic weapon technology.

In Depth Analysis: 6G

Syllabus: Science and Technology

Context:

India aims to become a global leader in 6G technology by 2030 through the Bharat 6G Mission. The initiative builds on the success of 5G deployment, covering 98% of districts in just 21 months.



Features of 6G Technology:

- Terahertz (THz) Frequencies: 6G will use waves in the THz range, capable of carrying significantly more data than 5G.
- Massive MIMO: Supports numerous devices and connections using multiple antennas for better data transmission and reception.
- Network Slicing: Enables creating smaller, specialized networks for distinct traffic types, like video streaming or automation.
- Enhanced Security: Employs advanced encryption and authentication methods to safeguard sensitive data and applications.
- Ultra-Reliable Low Latency Communication (URLLC): Ensures extremely low latency, supporting mission-critical applications like industrial automation and VR/AR.
- Integrated Intelligent Reflecting Surfaces (IIRS): Enhances signal strength and quality in areas with poor reception.
- High-Speed Data Transfer: Enables faster communication and data rates over hundreds of GHz or THz frequencies.

Steps taken by the government on 6G:

1. Bharat 6G Vision and Strategy:

- Vision Statement: Design, develop, and deploy 6G technologies for secure, intelligent, and pervasive connectivity globally.
- Core Principles: Affordability, sustainability, and ubiquity, aligned with the national vision of Atmanirbhar Bharat (self-reliant India).
- **Goals:**
 - o Facilitate R&D in 6G technologies through startups, companies, and universities.
 - o Develop affordable 6G telecom solutions.
 - o Enable global IP and patent contributions from India.
 - o Enhance quality of life through transformative applications.

2. Technology Innovation Group (TIG) on 6G:

- Established on November 1, 2021, to develop a roadmap for 6G in India.
- Constituted six task forces focusing on:
 - Multidisciplinary solutions.
 - Spectrum management.
 - Devices and networks.
 - International standards.
 - Funding for R&D.

3. Bharat 6G Alliance:

- A collaboration of domestic industry, academia, and research institutions.
- Focuses on 5G advancements, 6G product development, and patent generation.
- Aligns with global alliances like the Next G Alliance (US), 6G Flagship (Finland), and South Korea's 6G Forum.

Applications of 6G Technology:

Application Area	Description
Healthcare	Enables real-time patient monitoring with AI-connected devices and intelligent ambulances.
Agriculture	Uses IoT and AI for predictive systems, crop health monitoring, and optimized irrigation.
Defense & Internal Security	Enhances surveillance, dynamic battlefield communication, and unmanned operations using advanced localization.
Disaster Response	Provides instant, high-volume communication and precision networks for emergency coordination.

Transportation	Facilitates urban air mobility and intelligent traffic management with ultra-low latency.
Education	Supports remote learning with high-speed video transfer and immersive AR/VR-enabled classrooms.
Metaverse	Enables 3D holographic displays and seamless virtual interactions with ultra-reliable connectivity.
Industrial Automation	Powers smart factories with real-time data transfer and xURLLC (Ultra Reliable Low Latency Communications) for enhanced operational efficiency.
Smart Cities	Enhances IoT connectivity for efficient urban infrastructure and real-time monitoring.
Entertainment & Media	Improves streaming quality, gaming experiences, and immersive content delivery with higher bandwidth.
Environmental Monitoring	Facilitates real-time data collection from sensors for better resource management and conservation.

Challenges associated with 6G technology:

- Technical complexity: Advanced components and subsystems increase the complexity of development and deployment.
- Infrastructure deployment: Requires massive investment and regulatory support for infrastructure upgrades.
- Spectrum allocation: Limited spectrum availability poses challenges for allocation amid competing demands.
- Security concerns: High-speed data transmission increases vulnerability to cyber-attacks, necessitating robust security measures.
- Standardization issues: Achieving global consensus on standards for interoperability can be time-consuming and contentious.
- Global collaboration: Ensuring international cooperation among stakeholders for technological and regulatory alignment.

Conclusion:

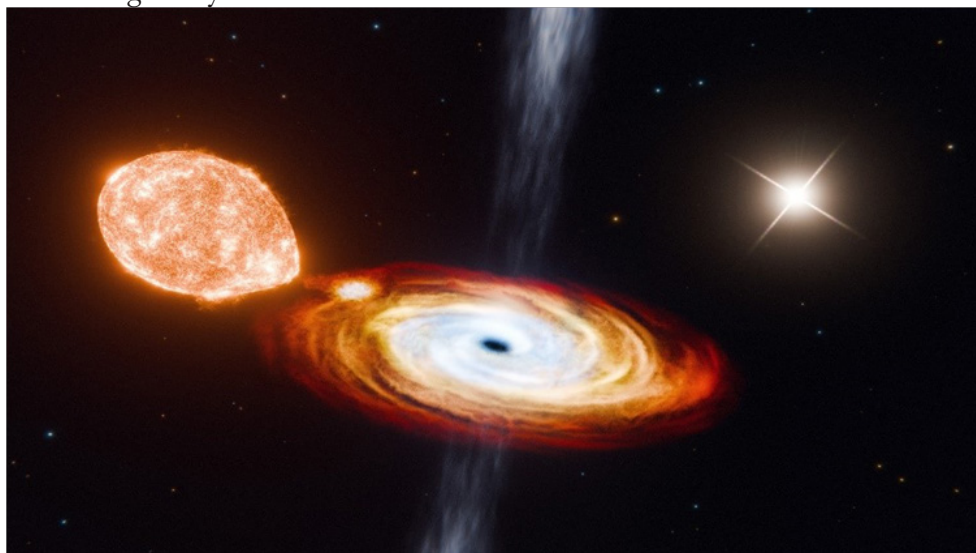
India's 6G mission embodies a forward-looking approach to digital innovation, ensuring the nation remains a global technology leader. Through strategic investments, international collaborations, and inclusive policies, India can harness 6G to drive socio-economic growth and global connectivity.

Black Hole Triple System

Syllabus: Science and Technology

Context:

For the first time, scientists have discovered a rare “black hole triple” system located around 8,000 light years away in the constellation of Cygnus. This unique configuration comprises a black hole consuming a nearby star, with another distant star orbiting the system.



About Black Hole Triple

- **Definition:** A “black hole triple” system consists of a black hole with two companion stars. In the discovered system, one star orbits the black hole closely, while the second star is positioned at a far greater distance, orbiting every 70,000 years.
- **Discovery:**
 - o The black hole, named V404 Cygni, was identified by researchers while examining a repository of astronomical observations.
 - o Located in the constellation Cygnus, V404 Cygni has a mass approximately nine times that of the Sun.
 - o The presence of gravitational interactions among the two stars confirmed the system’s triple configuration.
- **Significance:**
 - o Challenges traditional theories: The discovery questions the conventional understanding of black hole formation, which typically involves a supernova explosion that ejects nearby stars.
 - o Direct collapse formation: V404 Cygni is thought to have formed through a “direct collapse” or “failed supernova,” where the star collapsed into a black hole without an explosive event.
 - o Retention of nearby stars: This gentler formation process enabled the black hole to retain its nearby stars, which would have been ejected in a supernova scenario.
 - o Implications for binary systems: This finding suggests that some known binary black hole systems could have originally been triple systems, with the black hole later consuming one of its companions.



Chapter- 6

ECONOMY

Dairy Sector Performance

Context:

The Department of Animal Husbandry and Dairying (DAHD), under the Ministry of Fisheries, Animal Husbandry & Dairying, celebrated the National Milk Day 2024 at Manekshaw Centre, New Delhi.

About Dairy Sector Performance:

Category	Performance Details
Milk Production (2023-24)	239.3 million tonnes, a 3.78% increase over 2022-23 estimates.
Compound Annual Growth Rate	5.62% (milk), 6.8% (eggs), 4.85% (meat) over the last 10 years.
Per Capita Milk Availability	459 grams/day (India) vs. 323 grams/day (global average) in 2022-23.
State Rankings (Milk)	Uttar Pradesh (16.21%), Rajasthan (14.51%), Madhya Pradesh (8.91%), Gujarat (7.65%).
Egg Production (2023-24)	142.77 billion, with Andhra Pradesh leading at 17.85%, followed by Tamil Nadu (15.64%).
Meat Production (2023-24)	10.25 million tonnes; poultry accounts for 48.96%, followed by buffalo and goat meat.
Global Position	1st in milk production (24% global share); 2nd in egg production.

PAN 2.0

Context:

A day after the Cabinet Committee on Economic Affairs approved PAN 2.0, the Income Tax Department issued a detailed clarification on the project.

About PAN:

- Origin: Introduced in 1972; revamped in 1995 for improved tax compliance.
- Department: Issued and managed by the Income Tax Department under the Central Board of Direct Taxes (CBDT).
- Aim: To link individuals and entities with their tax-related transactions, ensure transparency, and streamline tax compliance.

Comparison of PAN and PAN 2.0:

Aspect	PAN	PAN 2.0
Introduction Year	1972 (revamped in 1995)	2024 (Planned Upgrade)
Issuance System	Hosted on multiple platforms	Unified portal for all PAN/TAN services
Application Process	Partially online with paper-based options	Fully online, paperless process
QR Code	Introduced in 2017, basic validation	Enhanced dynamic QR code with real-time data
Updates/Corrections	Fee-based updates	Free updates for details like name, DOB, address
Data Security	No centralized data vault	Mandatory PAN Data Vault for enhanced cybersecurity
Business Identifier	PAN used for tax-related activities	Unified business identifier for multiple systems

Grievance Redressal	Limited, through individual portals	Streamlined grievance system via unified portal
Existing PAN Validity	Remains valid	Remains valid but upgrade available for free

Production Linked Incentive Scheme

Syllabus: Economics

Context:

India's Production Linked Incentive (PLI) Scheme, launched in 2020, aims to transform the country's manufacturing sector into a global hub by encouraging investments, innovation, and self-reliance.

What is the PLI Scheme?

The PLI Scheme incentivizes companies (domestic and foreign) to manufacture in India by offering financial rewards based on incremental production and revenue over five years. Initially targeting three industries, it was later expanded to 14 critical sectors to drive import substitution, employment generation, and high-tech industrial development.

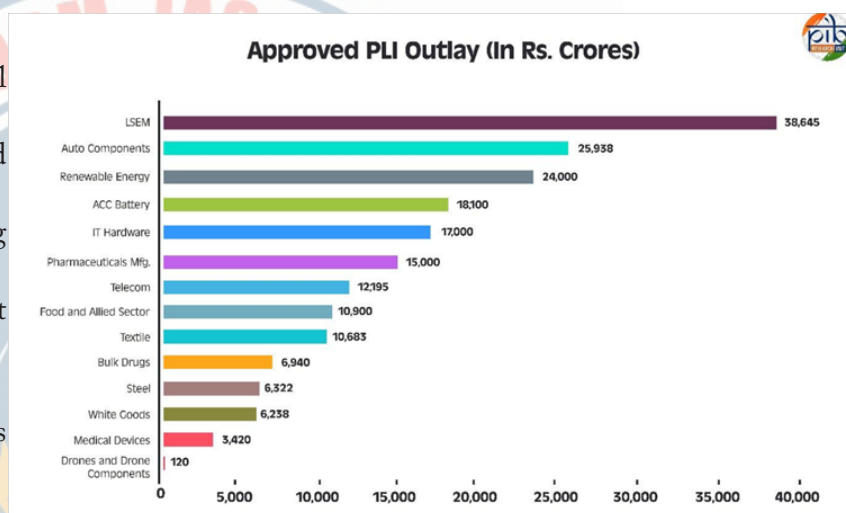
Features and Sectors Covered

1. Features:

- Performance-driven financial incentives.
- Promotes advanced technologies and economies of scale.
- Focus on self-reliance and boosting exports.
- Encourages job creation and import substitution.

2. Sectors Covered:

- Large-scale electronics manufacturing (LSEM).
- Pharmaceuticals and medical devices.
- Automobiles and auto components.
- Telecom and networking products.
- Renewable energy and solar PV modules.
- Advanced chemistry cell (ACC) batteries.
- White goods, drones, textiles, food products, and specialty steel.



Budget Outlay:



- **Total allocation:**

- o 1.97 lakh crore (~\$24 billion).
- o Strategic funding across 14 sectors to enhance domestic manufacturing, exports, and technological development.

Achievements and Impact:

1. Overall Impact:

- 1.46 lakh crore investments realized by August 2024.
- 12.50 lakh crore production generated.
- 4 lakh crore exports and 9.5 lakh jobs created.

2. Sector-Specific Achievements:

- Electronics: Transition from a net importer to a net exporter of mobile phones. Production grew to 33 crore units (2023-24), with exports reaching 5 crore units.
- Pharmaceuticals and Medical Devices: India became the 3rd largest producer by volume, exporting 50% of production and reducing import dependency on bulk drugs.
- Automotive: Attracted \$8 billion in investments and boosted production of high-tech automotive components.
- Renewable Energy: Solar PV module production expanded with 65 GW manufacturing capacity under the second tranche.
- Telecom: Achieved 60% import substitution and became a major exporter of 4G and 5G equipment.
- Drones: Sector witnessed seven-fold growth, driven by MSMEs and start-ups.

Challenges:

1. Limited Value Addition: Over-reliance on assembly rather than end-to-end manufacturing.
2. WTO Constraints: Rules limit tying incentives to domestic value addition.
3. Ambiguity in Disbursal: Lack of standardized parameters for fund allocation.
4. Data Gaps: Absence of centralized databases for tracking outcomes.
5. Complex Supply Chains: Difficulty in developing high-tech industries like semiconductor manufacturing.

Way Ahead:

1. Policy Evaluation: Assess cost per job, production outcomes, and export growth.
2. Transparent Incentives: Standardize criteria for fund disbursal and maintain accountability.
3. Strengthening Value Addition: Focus on entire supply chains to deepen domestic manufacturing.
4. Database Development: Create centralized systems for tracking investments, jobs, and exports.
5. Expand Sectors: Target emerging industries like green hydrogen, semiconductors, and AI.

Conclusion:

The PLI Scheme has significantly bolstered India's manufacturing capabilities, attracting investments, increasing production, and fostering innovation. Addressing challenges and building a robust ecosystem will ensure sustained growth and secure India's position as a global manufacturing powerhouse.

Urban Civic Bodies

Syllabus: Economics

Context:

A recent RBI report highlights challenges in municipal corporations' revenue generation, heavy dependence on government transfers, and insufficient capacity to meet urban development demands.

Data Facts on Urban Civics (Source: RBI Report on Municipal Finances)

- **Property Tax Revenue:**

- o Contributes 0.12% of GDP (2023-24).
- o Accounts for 16% of municipal revenue receipts and 60% of own tax revenue.

- **Revenue Receipts:**
 - Municipal receipts: 0.6% of GDP in 2023-24, compared to 9.2% (Central) and 14.6% (State governments).
 - Top 10 MCs generate 58% of municipal revenue receipts.
- **Grants and Transfers:**
 - Central government grants increased by 24.9% (2022-23).
 - State transfers grew by 20.4%.
- **Municipal Bonds:**
 - Total outstanding bonds: 4,204 crore (March 2024), only 0.09% of total corporate bonds.
- **Digitalisation:**
 - GIS-based property tax mapping can improve compliance and reduce revenue leakages.
- **Issues Plaguing Urban Bodies:**
 - Low Revenue Generation:
 - Property tax collection remains abysmally low.
 - Dependence on government transfers undermines financial autonomy.
- **Operational Inefficiencies:**
 - Poor enforcement of tax laws.
 - Leakages in revenue collection systems.
 - Underutilized Financing Options:
 - Limited use of municipal bonds and PPPs.
 - Infrastructure and Service Delivery Gaps:
 - Insufficient funds to maintain roads, drainage, and sanitation systems.
- **Dependence on Upper Tiers:**
 - Over-reliance on state and central transfers stifles long-term planning.

Way Ahead:

- **Strengthen Own Revenue Sources:**
 - Reform property tax structures to reflect real valuation.
 - Introduce GIS-based property tax mapping.
- **Enhance Non-Tax Revenues:**
 - Regularly revise user charges for services like water and waste management.
 - Adopt digital platforms for efficient fee collection.
- **Leverage Innovative Financing:**
 - Expand municipal bond market participation.
 - Promote PPPs in urban transport, waste management, and renewable energy.
- **Optimize Expenditures:**
 - Digitize operations to streamline costs.
 - Automate processes to free resources for capital investments.
- **Ensure Timely Transfers:**
 - Develop rule-based frameworks for predictable state and central transfers.
- **Capacity Building:**
 - Provide technical training for local bodies to improve planning and enforcement.

Conclusion:

Strengthening revenue sources, leveraging technology, and fostering collaborative frameworks can enhance their capacity to deliver essential services. This transformation is essential for sustainable urban growth and improved quality of life.

Bibek Debroy Committee on Railways

Context:

The Bibek Debroy Committee's 2015 report outlined transformative reforms for Indian Railways, focusing on viability and competitiveness, though several key recommendations remain unimplemented.

<p>Improving Finances Must focus on remunerative freight segment and e-commerce segment</p> <p>Leasing of parcel vans in trains through auction of carrying capacity/private parcel trains and concessioning of train services</p> <p>Must encourage on-board catering through food chains & local restaurants on payment of modest license fee</p> <p>Separate activities such as running of hospitals, schools, catering, security, real estate devpt, manufacturing of locomotives, coaches & wagons, from core function of running trains</p>	 <p>Reforms report by an eight-member panel, headed by economist Bibek Debroy</p> <p>Committee set up in Sept 2014 when Sadananda Gowda was rail mantri</p> <p>Gowda felt Railway Board had become unwieldy</p>	<p>Schools Educational needs of children of railway employees could be met by subsidizing their education in alternative schools, including KVs and private schools</p>
<p>Security State govts should be persuaded to bear entire cost of GRP and GMs/DRMs should have</p>	<p>Accounting Reforms Set up responsive, transparent accounting and costing system</p>	<p>Rationalizing Staff Amalgamate existing service into single unified railway service, OR second option is to create two sets of services to deal with technical and non-technical aspects</p> <p>Hospitals ➤ Give GMs/DRMs & employees choice to opt for services such as medical tests, pre-employment exam, safe water & food supply at stations either through Indian Railway Medical Services or private empanelled practitioners ➤ For preventive & curative healthcare, choice may be extended to CGHS framework; subsidized healthcare in</p>

Key Recommendations of Bibek Debroy Committee (2015)

1. Liberalization (Not Privatization):

- Allow entry of private operators to enhance growth and competition.
- Status: Not implemented due to opposition; PPP projects limited to goods services.

2. Empowering Field Officers:

- Delegation of decision-making powers to GMs and DRMs for greater autonomy.
- Status: Partially implemented with increased decentralization efforts.

3. Railway Board Restructuring:

- Redesignate Chairman as CEO with decision-making powers.
- Status: Implemented in 2020 with restructured Railway Board.

4. Independent Rail Regulator:

- Establish Rail Development Authority (RDA) for pricing and competition promotion.
- Status: RDA approved in 2017 but with limited functioning.

5. Accounting Reforms:

- Transition to accrual-based accounting to improve financial transparency.
- Status: Implemented across Indian Railways.

6. Offloading Non-Core Activities:

- Relieve Railways of responsibilities like RPF, medical, and educational facilities.
- Status: Under consideration.

7. Safety Upgrades:

- Create Rashtriya Rail Sanraksha Kosh (RRSK) for safety asset renewal with 1 lakh crore corpus.
- Status: Extended till 2027 with additional funding of 45,000 crore.

8. Technology Integration:

- Synergize technology, exemplified by Vande Bharat trains and KAVACH systems.
- Status: Being actively implemented.

One Rank One Pension

Context:

Prime Minister Narendra Modi commemorated a decade of the One Rank One Pension (OROP) scheme, highlighting it as a tribute to the dedication and sacrifices of India's veterans and ex-service personnel.

About One Rank One Pension (OROP) Scheme:

- **Definition:** OROP ensures that uniform pensions are paid to personnel retiring in the same rank with identical service lengths, regardless of when they retired.
- **Implementation year:** The government approved OROP in 2015, with benefits retroactively effective from July 1, 2014.
- **Pension Re-fixation:** Pensions are re-fixed based on the average of the minimum and maximum pensions of 2013 retirees of the same rank and service length.
- **Arrears:** Arrears are paid in four half-yearly instalments, except for family pensioners and Gallantry awardees, who receive it in one instalment.
- **Future revisions:** Pensions will be re-fixed every five years.
- **Nodal agency:** Department of Ex-Servicemen Welfare, Ministry of Defence.
- **Payment:** Integrated within the standard pension, not a separate component.
- **Exclusions:** Personnel discharged voluntarily under specific military rules post-OROP implementation are not eligible.



Urad and Tur Imports

Context:

The Indian government reported a significant increase in Urad imports from Brazil, reaching over 22,000 metric tonnes.

- The Ministry of Consumer Affairs highlighted Brazil's potential as a major supplier of Urad and Tur for India, benefiting from different cropping seasons that align with India's crop demands.

About Urad:

- **Scientific name:** Vigna mungo, commonly known as black gram.
- **Origins:** Native to South Asia; widely cultivated and highly valued in India.
- **Culinary use:** Essential in Indian cuisine, often used as a dal and paired with rice or curry.
- **Season:** Grown in both Kharif and Rabi seasons in India.
- **Global cultivation:** Also grown in tropical regions like the Caribbean, Fiji, Myanmar, and Africa, introduced by Indian immigrants.



About Tur:

- **Scientific name:** Cajanus cajan, known as toor dal or pigeon pea.
- **Origins:** Indigenous to the Eastern Hemisphere; cultivated widely in tropical and semi-tropical regions.
- **Culinary use:** Commonly consumed as a staple in South Asia, Southeast Asia, and Africa.
- **Global spread:** Cultivated in Latin America and the Caribbean, widely used in regional dishes.

Eklavya Digital Platform

Context:

Recently, the chief of the Indian Army launched an online learning platform for the Indian Army nicknamed as “Eklavya”.

Relevance:

GS II: Government Policies and Interventions

Eklavya Digital Platform

The Eklavya Digital Platform is a transformative educational tool specifically designed to enhance the training and professional development of Indian Army officers. This initiative marks a significant shift towards integrating advanced technological solutions within the military training regimen, reflecting the Indian Army’s commitment to embracing modernization in its operational and strategic frameworks.

Overview and Development

- **Development Agencies:** The platform was developed by the Bhaskaracharya National Institute of Space Applications and Geoinformatics (BISAG-N), Gandhinagar, with support from the Directorate General of Information Systems.
- **Hosting:** It is hosted on the Army Data Network, ensuring secure access and a robust framework for integrating various training modules.

Features and Functionalities

- **Scalable Architecture:** The platform’s scalable architecture allows for the addition of numerous training establishments, facilitating a comprehensive and diverse training curriculum.
- **Course Registration:** Officers can enroll in multiple courses simultaneously, enhancing their learning opportunities and flexibility.

Course Categories:

- **Pre-Course Preparatory Capsules:** These online modules cover foundational aspects to streamline and enhance the quality of subsequent physical training sessions.
- **Appointment-Specific Courses:** Tailored to support officers in acquiring specialized knowledge pertinent to their specific roles within the Army.
- **Professional Development Suite:** Offers advanced courses in strategic thinking, leadership, emerging technologies, and other critical military competencies.

Strategic Impact

- **Decade of Transformation:** This initiative aligns with the Indian Army’s vision for the “Decade of Transformation” and the “Year of Technology Absorption” for 2024, emphasizing the role of technology in modern military practices.
- **Knowledge Highway:** The platform also features a searchable database of journals, research papers, and articles, serving as a comprehensive resource for ongoing education and information dissemination.

Goals and Objectives

- **Continuous Education:** Promotes ongoing professional development, ensuring that officers remain well-informed and proficient in contemporary military strategies and technologies.
- **Course Optimization:** Aims to decongest physical training programs by transferring basic training components online, thereby enriching on-site training with more focused and application-oriented content.
- **Specialization and Preparedness:** Prepares officers for specialist roles and enhances their capabilities in domain-specific areas, crucial for operational effectiveness.

SAREX-24

Context:

The 11th edition of Indian Coast Guard's National Maritime Search and Rescue Exercise & Workshop (SAREX-24) will be in Kochi, Kerala on November 28-29, 2024.

Relevance:

Facts for Prelims

SAREX-24

SAREX-24 is a premier maritime search and rescue exercise conducted under the aegis of the National Maritime Search and Rescue Board (NMSARB). The exercise underscores India's commitment to enhancing maritime safety and fostering regional collaboration.

Key Highlights

Theme

- “Enhancing Search and Rescue capabilities through Regional Collaboration”: Focuses on strengthening operational capabilities through joint efforts and cooperation among regional and international partners.

Objectives

- **Demonstrating ICG's Commitment:**
 - Showcasing the Indian Coast Guard's (ICG) preparedness to handle large-scale contingencies.
 - Ensuring aid during emergencies irrespective of location, nationality, or circumstances within and beyond the Indian Search and Rescue Region (ISRR).
- **Capacity Building:**
 - Evaluating operational efficiency and coordination with national stakeholders.
 - Promoting cooperative engagements with neighboring littoral states and friendly nations.

Event Features

- Workshops and Seminars:
- Includes participation from:
 - Senior officials from government agencies, ministries, and armed forces.
 - Various national stakeholders and foreign delegates.
- **Table-Top Exercise:**
 - Aimed at strategic planning and response evaluation for simulated emergencies.
- **Sea Exercise:**
 - Conducted off the Kochi coast.
- **Involves:**
 - Ships and aircraft of ICG and Navy.
 - Assets from the Indian Air Force, Cochin Port Authority, Customs, and passenger vessels.
 - Demonstration of evacuation techniques using advanced technology.

Innovative Demonstrations

- **Technological Integration:**
 - Satellite-aided distress beacons.
 - Drones deploying life buoys.
 - Air-droppable life rafts.
 - Remote-controlled life buoys.
- **Evacuation Methods:**
 - Testing diverse techniques to rescue distressed passengers during large-scale emergencies.

Significance

- **Operational Efficiency:**
 - Enhances search and rescue capabilities by testing real-time coordination among stakeholders.

- **International Cooperation:**
 - o Strengthens partnerships with regional and international allies.
- **Advancing Maritime Safety:**
 - o Promotes the use of cutting-edge technology in maritime disaster response.

E-Daakhil portal

Context:

The Department of Consumer Affairs is proud to announce the successful nationwide implementation of the E-Daakhil portal, now operational in every state and union territory of India.

Relevance:

GS II-Polity and Governance

About E-Daakhil portal:

- It is launched by National Consumer Dispute Redressal Commission.
- The e-daakhil portal empowers the consumer and their advocates to file consumer complaints online.
- It also facilitates to make payment of requisite fees online from anywhere in order to redress their complaints.
- The site of the e-Daakhil Portal was developed and is maintained by the National Information Centre (NIC) under the Ministry of Electronics & Information Technology.
- This portal has been developed under the Consumer Protection Act, 2019.

National consumer dispute redressal commission:

Nodal: Ministry of consumer affairs and public distribution

- The Consumer Protection Act was passed in 1986 to protect the interests of the consumers.(quasi-judicial body)
- The objective of this law is to provide a simple, fast and inexpensive mechanism to the citizens to redress their grievances in specified cases.

The Act envisages a three-tier quasi-judicial machinery at the National, State and District levels:

- National Consumer Disputes Redressal Commission known as “National Commission”;
- State Consumer Disputes Redressal Commission known as “State Commission”;
- District Consumer Disputes Redressal Forum – known as “District Forum”.

India Boosts Innovation with Enhanced Atal Innovation Mission 2.0

Context:

The Union Cabinet has endorsed the continuation and expansion of the Atal Innovation Mission (AIM), operated under the auspices of NITI Aayog, with a significantly increased budget of Rs. 2,750 crore. This funding is set to support the newly launched AIM 2.0, which aims to invigorate India's innovation ecosystem through 2028.

Relevance:

GS II: Government policies and Interventions

Dimensions of the Article:

1. AIM 2.0 Overview
2. About Atal Innovation Mission

AIM 2.0 Overview

Expansion of Innovation Framework:

- AIM 2.0 is designed to broaden and enhance India's innovation ecosystem, building upon the successes of initiatives like Atal Tinkering Labs (ATLs) and Atal Incubation Centers (AICs).
- It introduces new programs and scales existing efforts to foster a deeper, more inclusive innovation landscape across India.

Global and National Innovation Standing:

- India holds the 39th position on the Global Innovation Index and boasts the third-largest startup ecosystem globally. AIM 2.0 seeks to elevate these standings through targeted developmental programs.

Key Initiatives under AIM 2.0:

- Language Inclusive Program of Innovation (LIPI):**
 - Establishes innovation centers across India that operate in 22 scheduled languages, aiming to bridge the language barrier for non-English speaking innovators.
- Frontier Program:**
 - Plans to set up 2500 new Atal Tinkering Labs, particularly in underserved regions such as Jammu and Kashmir, the North Eastern states, and Aspirational Districts, enhancing access to innovation resources.
- Ecosystem Enhancement Measures:**
 - Focuses on training professionals including managers, teachers, and trainers to support and sustain the innovation ecosystem.
 - Develops a research sandbox to aid the commercialization of deep-tech startups, which typically require longer periods of investment.
 - Strengthens state-level innovation through NITI Aayog's State Support Mission.
- Global Engagement:**
 - Expands India's innovation connections on a global scale through initiatives like the Global Tinkering Olympiad and strategic partnerships with international entities such as WIPO and G20 nations.
- Programs Aimed at Improving Output Quality:**
 - The Industrial Accelerator Program, which will create 10 accelerators in crucial sectors through Public-Private Partnerships (PPP), aims to scale advanced startups.
 - The Atal Sectoral Innovation Launchpads (ASIL) program establishes platforms similar to iDEX across central ministries to integrate and procure from startups in key industry sectors.

About Atal Innovation Mission

- The Mission has been set up under the NITI Aayog, in accordance with the Hon'ble Finance Minister's declaration in the 2015 Budget Speech.
- The objectives of the AIM are to create and promote an ecosystem of innovation and entrepreneurship across the country via interventions at school, university, research institutions, MSME and industry levels.
- The AIM has focused on both infrastructure creation and institution building.
- The AIM has worked on integrating innovation ecosystem both nationally and globally

Major Initiatives:

- Atal Tinkering Labs: Creating problem solving mindset across schools in India.
- Atal Incubation Centers: Fostering world class startups and adding a new dimension to the incubator model.
- Atal New India Challenges: Fostering product innovations and aligning them to the needs of various sectors/ministries.
- Mentor India Campaign: A national mentor network in collaboration with the public sector, corporates and institutions, to support all the initiatives of the mission.
- Atal Community Innovation Centre: To stimulate community centric innovation and ideas in the unserved /underserved regions of the country including Tier 2 and Tier 3 cities.
- Atal Research and Innovation for Small Enterprises (ARISE): To stimulate innovation and research in the MSME industry.

National Gopal Ratna Award

Context:

Recently, the Department of Animal Husbandry and Dairying (DAHD) declared the winners of the National Gopal Ratna Awards (NGRA) for the year 2024.

Relevance:**GS II: Government Policies and Interventions****National Gopal Ratna Award:**

- The National Gopal Ratna Award is one of the most prestigious awards in India's livestock and dairy sector.
- These awards are presented annually during the National Milk Day celebrations.

Objectives of the Award:

- Purpose: The primary aim of the National Gopal Ratna Awards is to honor and motivate individuals and organizations involved in various aspects of animal husbandry and dairying.
- Target Recipients: The awards target a wide range of contributors in the sector, including farmers who rear indigenous animals, artificial insemination technicians, and dairy cooperatives or producer organizations.

Award Categories:

- **Categories: The award is divided into three main categories:**
 - o Best Dairy Farmer Rearing Indigenous Cattle/ Buffalo Breeds: Recognizes farmers who excel in rearing local breeds.
 - o Best Artificial Insemination Technician (AIT): Honors excellence in the field of artificial insemination.
 - o Best Dairy Cooperative/Milk Producer Company/Dairy Farmer Producer Organization: Awarded to the top-performing dairy cooperative or producer organization.
 - o Special Award for the North Eastern Region: Starting this year, a special award category has been added for each of the three main categories specifically to acknowledge and promote dairy development activities in the North Eastern Region (NER) states.

Significance for the Dairy Sector:

- Enhancement of Dairy Practices: These awards play a crucial role in enhancing dairy practices by recognizing and encouraging the adoption of best practices and innovative techniques in the sector.
- Encouragement and Recognition: By acknowledging the hard work and achievements of various stakeholders in the dairy industry, these awards foster motivation and pride among professionals and organizations, contributing to the overall growth and development of the sector.

Atal Innovation Mission (AIM)**Context:**

The Union Cabinet recently approved the continuation of its flagship Atal Innovation Mission (AIM), under NITI Aayog, with an allocation of 2,750 crore until March 31, 2028.

Relevance:**GS II- Government policies and Interventions****About Atal Innovation Mission**

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- The objectives of the AIM are to create and promote an ecosystem of innovation and entrepreneurship across the country via interventions at school, university, research institutions, MSME and industry levels.
- The AIM has focused on both infrastructure creation and institution building.
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Major Initiatives:

- Atal Tinkering Labs: Creating problem solving mindset across schools in India.
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- Mentor India Campaign: A national mentor network in collaboration with the public sector, corporates and institutions, to support all the initiatives of the mission.

- Atal Community Innovation Centre: To stimulate community centric innovation and ideas in the unserved /underserved regions of the country including Tier 2 and Tier 3 cities.
- Atal Research and Innovation for Small Enterprises (ARISE): To stimulate innovation and research in the MSME industry.

Exercise Sanyukt Vimochan

Context:

Recently, the Indian Army successfully conducted the Exercise, 'Sanyukt Vimochan 2024' at Ahmedabad and Porbandar on 18-19 November 2024.

Relevance:

GS III: Security Challenges

Exercise Sanyukt Vimochan

- Nature and Scope: Exercise Sanyukt Vimochan is an annual multilateral joint Humanitarian Assistance and Disaster Relief (HADR) exercise.
- Organizers: Conducted by the Konark Corps of the Southern Command of the Indian Army, this exercise takes place in Gujarat, specifically Ahmedabad and Porbandar.
- Goals: The primary aim is to improve interagency integration and cooperation, ensuring effective and timely responses to natural disasters.

Activities and Participation

- Inaugural Event in Ahmedabad: Featured a Tabletop Exercise centered on managing a hypothetical cyclone in Gujarat's coastal regions. This session included representatives from the National Disaster Management Authority (NDMA), Gujarat State Disaster Management Authority (GSDMA), Meteorological Department, and the Federation of Indian Chambers of Commerce & Industry (FICCI).
- Multi-Agency Capability Demonstration: Held at Chowpatty Beach in Porbandar on 19 November 2024, this event showcased various agencies working together to manage logistics, response tactics, and overall disaster management in a simulated cyclone scenario.

Collaboration and Training

- Participating Agencies: The exercise saw participation from the Indian Army, Navy, Air Force, Coast Guard, National Disaster Response Force, State Disaster Response Force, and other central and state agencies.
- International Involvement: The event was attended by 15 senior officials and representatives from nine friendly foreign countries, including members from the Gulf Cooperation Council, the Indian Ocean Region, and Southeast Asia.

Significance and Impact

- Enhanced National Capabilities: Exercise Sanyukt Vimochan has significantly bolstered India's national disaster response capabilities.
- Global Contribution: The exercise contributes to the international discourse on Humanitarian Assistance and Disaster Relief, promoting global best practices and enhancing international cooperation.

Bhu-Neer Portal

Context:

Recently, the Hon'ble Minister of Jal Shakti, digitally launched the newly developed "Bhu-Neer" portal during the concluding ceremony of India Water Week 2024.

Relevance:

GS II: Government Policies and Interventions

Bhu-Neer Portal:

- Developed by the Central Ground Water Authority (CGWA) under the Ministry of Jal Shakti, in association with the National Informatics Centre (NIC), the Bhu-Neer Portal is an innovative tool designed to enhance groundwater regulation nationwide.

Purpose:

- The portal acts as a comprehensive platform for the management and regulation of groundwater resources, promoting transparency, efficiency, and sustainable practices.
- It is structured to provide detailed insights into the legal guidelines that govern groundwater extraction and the associated regulations at both state and national levels.
- A centralized database within the portal allows users easy access to essential information regarding groundwater compliance, relevant policies, and sustainability measures.
- User-friendly features are integrated to streamline the process for project proponents applying for groundwater withdrawal permits.
- Features such as a PAN-based single ID system and NOCs with QR codes enhance the portal's usability, representing a significant advancement from its predecessor, NOCAP.

Significance:

- The Bhu-Neer portal is designed to facilitate the Ease of Doing Business initiative by making groundwater regulation processes seamless and non-interactive.

Accessibility:

- The portal is now operational and available for public access. Project proponents are encouraged to use the portal for inquiries related to groundwater withdrawal, to track application statuses, and for the payment of statutory charges.

Indian Scientists Develop Model to Predict Equatorial Electrojet**Context:**

Scientists at the Indian Institute of Geomagnetism (IIG) in Navi Mumbai have developed a groundbreaking model called the Indian Equatorial Electrojet (IEEJ) Model. This innovative tool is designed to enhance the accuracy of predictions for the Equatorial Electrojet specifically over the Indian sector. Utilizing data from ground-based magnetometers located at the Tirunelveli station near the southern tip of India, the model facilitates regular measurements of the Equatorial Electrojet.

Relevance:**GS III: Science and Technology****Overview of Equatorial Ionospheric Processes****Equatorial Electrojet (EEJ)**

- **Definition:** The Equatorial Electrojet is a narrow band of intense electric current flowing eastward in the ionosphere at the geomagnetic equator, typically found at altitudes between 105 and 110 kilometers.
- **Geographical Relevance:** The phenomenon is especially relevant for India as the southern tip of the country is proximal to the Earth's geomagnetic equator, where this strong current is present.

IEEJ Model Capabilities

- **Simulation Tool:** The IEEJ model features a web interface that facilitates simulations of the Equatorial Electrojet under varying conditions, such as different dates and levels of solar activity.
- **User Interface:** This accessibility allows researchers and practitioners to model and predict EEJ behavior, which is crucial for planning and operational purposes in related fields.

Practical Applications

- The understanding and modeling of equatorial ionospheric processes are critical for several practical applications across various industries:
 1. Satellite Orbital Dynamics
 2. Global Navigation Satellite Systems (GNSS)
 3. Satellite Communication Links
 4. Electrical Power Grids

5. Transmission Lines
6. Oil and Gas Industry Pipelines

Bharat National Cyber Security Exercise 2024

Context:

Recently, the Bharat National Cyber Security Exercise (Bharat NCX 2024) was inaugurated to fortify India's cybersecurity resilience.

Relevance:

GS III: Security challenges

Bharat National Cyber Security Exercise Details:

- This is a comprehensive 12-day exercise designed to enhance the skills of Indian cybersecurity professionals against growing threats, by equipping them with advanced cyber defense capabilities.

Main Aspects of the Exercise:

- **Cyber Defense Training:** Provides training on how to counter cyberattacks and manage incidents effectively.
- **Live-Fire Simulations:** Facilitates practical experience through simulated cyberattacks on information technology systems.
- **Strategic Decision-Making:** Offers simulation exercises for senior management on handling national cyber crises.
- **CISO's Conclave:** A gathering where Chief Information Security Officers from various sectors discuss recent trends and governmental initiatives.
- **Cybersecurity Startup Exhibition:** An event that highlights cutting-edge cybersecurity solutions developed by Indian startups.

Narasapuram Lace Craft

Context:

The famous Narasapuram lace craft has bagged the prestigious Geographical Indication (GI) tag.

Relevance:

GS I: History

Dimensions of the Article:

1. Narsapur Lace Craft
2. Geographical Indications (GI) Tag

Narsapur Lace Craft

Location and Historical Significance:

- Narsapur is located along the banks of the Godavari River in Andhra Pradesh, India.
- The lace craft in Narsapur began approximately 150 years ago, initiated by women from the local farming community.
- This craft has withstood significant historical events including the Indian famine of 1899 and the Great Depression of 1929. By the early 1900s, it involved over 2,000 women in the Godavari region.

Craftsmanship and Techniques:

- The lace is crafted using fine threads and thin crochet needles of various sizes, showcasing intricate workmanship.
- Narsapur lace artisans produce a diverse range of items including doilies, pillow covers, cushion covers, bedspreads, table runners, and table cloths.

Economic and Cultural Impact:

- The lace products from Narsapur are highly valued both domestically and internationally, with significant exports to the United States, United Kingdom, and France.

- The continued practice of lace crafting in Narsapur not only supports the local economy but also preserves a unique cultural heritage in the region.

Geographical Indications (GI) Tag

Definition and Importance:

- Geographical Indications of Goods indicate the country or place of origin of a product.
- They assure consumers of the product's quality and distinctiveness derived from its specific geographical locality.
- GI tags are an essential component of intellectual property rights (IPRs) and are protected under international agreements like the Paris Convention and TRIPS.

Administration and Registration:

- Geographical Indications registration in India is governed by the Geographical Indications of Goods (Registration and Protection) Act, 1999.
- The registration and protection are administered by the Geographical Indication Registry under the Department of Industry Promotion and Internal Trade (DIPIT), Ministry of Commerce and Industry.
- The registration is valid for 10 years, and it can be renewed for further periods of 10 years each.

Significance and Examples:

- GI tags provide a unique identity and reputation to products based on their geographical origin.
- The first product in India to receive a GI tag was Darjeeling tea.
- Karnataka has the highest number of GI tags with 47 registered products, followed by Tamil Nadu with 39.

Ownership and Proprietorship:

- Any association, organization, or authority established by law can be a registered proprietor of a GI tag.
- The registered proprietor's name is entered in the Register of Geographical Indication for the applied product.

Protection and Enforcement:

- Geographical Indications protect the interests of producers and prevent unauthorized use of the product's name or origin.
- Enforcement of GI rights helps maintain the quality and reputation of the products associated with their specific geographical regions.

Location of the Geographical Indications Registry:

- The Geographical Indications Registry is located in Chennai, India.

Guru Tegh Bahadur

Context:

The President of India on the eve of Guru Tegh Bahadur Ji's Martyrdom Day (24th November), paid homage to the Sikh Guru, emphasizing his sacrifice for humanity and religious freedom.

Relevance:

GS I- History

Dimensions of the Article:

1. About Guru Tegh Bahadur
2. Run-in with the Mughals
3. The guru's martyrdom

About Guru Tegh Bahadur:

- Tegh Bahadur was born in Amritsar on April 21, 1621 to Mata Nanki and Guru Hargobind, the sixth Sikh guru, who raised an army against the Mughals and introduced the concept of warrior saints.
- As a boy, Tegh Bahadur was called Tyag Mal because of his ascetic nature.

- He spent his early childhood in Amritsar under the tutelage of Bhai Gurdas, who taught him Gurmukhi, Hindi, Sanskrit, and Indian religious philosophy, while Baba Budha trained him in swordsmanship, archery and horse-riding.
- He was only 13 when he distinguished himself in a battle against a Mughal chieftain.
- His bravery and swordsmanship in the battle earned him the name of Togh Bahadur.
- He was married to Mata Gujri at Kartarpur in 1632, and subsequently left for Bakala near Amritsar.
- Guru Togh Bahadur was the ninth of ten Gurus of the Sikh religion.

The Guru's times

- Aurangzeb was the ruling Mughal emperor at the time.
- Guru Togh Bahadur who started travelling extensively through Malwa and Majha, first came into conflict with the authorities when he started questioning the tradition of worshipping at the graves of pirs and faqirs.
- He preached against this practice, and urged his followers to be 'nirbhau' (fearless) and 'nirvair' (without envy).
- His sermons, delivered in a mix of Sadukhri and Braj languages, were widely understood from Sindh to Bengal. The metaphors he used resonated with people across North India.
- Guru Togh Bahadur often alluded to Panchali (Draupadi) and Ganika in his preachings and declared that Hindustan could regain its piety if it took refuge in one God.

Run-in with the Mughals

- As his message began to spread, a local chieftain at Dhamtan near Jind in present-day Haryana picked him up on fabricated charges of collecting revenue from villagers, and took him to Delhi.
- But Raja Ram Singh of Amer, whose family was a long-time follower of the gurus, intervened and kept him in his house for around two months until he convinced Aurangzeb that the guru was a holy man with no political ambitions.
- Earlier, Raja Jai Singh of Amer had donated land for a dharamshala where the gurus could rest while visiting Delhi.
- The present-day Bangla Sahib gurdwara is built on this site.

Travels beyond Punjab

- A little more than a year after setting up his headquarters in present-day Anandpur Sahib in 1665, the guru spent four-odd years travelling up to Dhaka in the east, and going up to Puri in Odisha.
- He also visited Mathura, Agra, Benares, Allahabad, and Patna, where he left his wife and her brother in the care of the local devotees. Guru Gobind Singh was born in Patna in 1666.
- While the guru was on the way back from Dhaka, Raja Ram Singh sought his help to broker a truce with the Ahom king.
- Gurdwara Dhubri Sahib on the banks of the Brahmaputra commemorates this peace accord. The guru was also honoured at Guwahati's Kamakhya temple.
- According to historians, the guru rushed back to Punjab on learning about the increasing atrocities by the Mughals.

The guru's martyrdom

- Aurangzeb ordered the public execution of the guru on November 11, 1675 after the guru declined to embrace Islam.
- He was tortured to death and beheaded at Chandni Chowk along with his three companions, Bhai Mati Das, who was torn asunder, Bhai Sati Das, who was burnt to death, and Bhai Dyala ji, who was put in boiling water. Till the very end they were asked to change their minds, but they remained resolute.
- In 1784, Gurdwara Sis Ganj was built on the site on which they were executed.
- Describing his father in Vichitra Natak, Guru Gobind Singh, the tenth guru who founded the Khalsa, wrote: "Dharam het saka jin kiya, sees diya par sir nahin diya (He sacrificed his life for dharma, he gave up his head but not his honour)."

Tsunami Ready Recognition Programme

Context:

Recently, twenty-four coastal villages in Odisha were recognised by the Intergovernmental Oceanographic Commission of UNESCO as 'Tsunami Ready'.

Relevance:

GS I: Geography

Dimensions of the Article:

1. Tsunami Ready Recognition Programme
2. Tsunami Preparedness in India

Tsunami Ready Recognition Programme

Introduction

The Tsunami Ready Recognition Programme is an international initiative spearheaded by the Intergovernmental Oceanographic Commission (IOC) of UNESCO. It focuses on enhancing tsunami preparedness at the community level, emphasizing the protection of lives, livelihoods, and property.

Objectives and Goals

- **Aim:** The primary aim is to build resilient communities that are well-prepared and informed about the necessary actions to take before, during, and after a tsunami, thereby reducing potential damages and casualties.
- **Main Goal:** The central goal of the programme is to improve coastal community preparedness for tsunamis through awareness, education, and actionable strategies. This includes the development of effective response plans that can be swiftly executed in the event of a tsunami.

Implementation and Requirements

- **Community Involvement:** The programme operates through active collaboration among various stakeholders including national and local warning and emergency management agencies, government authorities, scientists, community leaders, and the general public.
- **Indicators of Preparedness:** To achieve the 'Tsunami Ready' recognition, communities must meet 12 specific indicators that encompass three critical areas:
 - **Assessment:** Evaluating tsunami risks and vulnerabilities within the community.
 - **Preparedness:** Establishing and promoting preparedness measures including education and planning.
 - **Response:** Developing and implementing effective response strategies that can be rapidly deployed.
- **Recognition and Renewal:** Communities that successfully meet all the indicators are officially recognized as 'Tsunami Ready' by UNESCO/IOC. This recognition is subject to renewal every four years to ensure ongoing compliance and adaptation to any changes in risk or best practices.

Significance and Impact

- **Performance-Based:** The programme is voluntary and performance-based, encouraging communities to proactively improve their tsunami readiness.
- **Enhanced Safety and Resilience:** By meeting the established criteria, communities not only enhance their safety but also bolster overall resilience against tsunamis, potentially reducing the impact on both human lives and economic stability.
- **Global and Local Collaboration:** It promotes a comprehensive understanding of readiness that involves both global knowledge and local action, integrating scientific insights with community-based initiatives.

Tsunami Overview:

- Tsunami is a series of massive ocean waves caused by seismic activities like earthquakes or volcanic eruptions beneath the ocean.
- Characterized by long wavelengths and high energy, tsunamis can traverse entire ocean basins, leading to extensive destruction upon reaching coastlines.
- These waves can reach considerable heights, moving swiftly over deep waters and slowing down in shallower areas.

Factors Behind Tsunami Creation:

Underwater Earthquakes:

- Shifting tectonic plates generate seismic waves, propagating through water and creating tsunamis.

Volcanic Eruptions:

- Volcanic activity, especially under the ocean, displaces water, triggering tsunamis, particularly during volcanic island collapses or explosive eruptions.

Landslides:

- Underwater landslides, caused by various factors, displace water, generating significant tsunami waves.

Meteorite Impact:

- Rare but possible; the impact of a large meteorite or asteroid in the ocean can create tsunami-like waves.

Underwater Explosions:

- Human activities, such as underwater explosions, have the potential to generate tsunamis.

Devastation Caused:

- Tsunami waves, traveling at high speeds across the open ocean, unleash devastating force upon reaching coastal areas.
- Unique energy and wavelength characteristics differentiate them from regular ocean waves, causing widespread damage during inundation.

Tsunami Preparedness:

- Early warning systems and preparedness measures play a crucial role in minimizing the impact of tsunamis on coastal communities.
- Swift responses and effective communication are essential components of mitigating the destructive effects of tsunamis.

Tsunami Preparedness in India:

Indian Ocean Tsunami Warning System (IOTWS):

- India actively participates in the Indian Ocean Tsunami Warning System (IOTWS).
- The system includes seismic and sea-level sensors strategically placed to detect underwater earthquakes and monitor sea level changes.
- Information collected is utilized to issue timely warnings to coastal communities.

Tsunami Early Warning Centre (ITEWC):

- The Tsunami Early Warning Centre (ITEWC) is situated at the Indian National Centre for Ocean Information Services (INCOIS) in Hyderabad.
- ITEWC provides tsunami advisories to stakeholders.

Public Awareness and Education:

- INCOIS, in collaboration with the National Disaster Management Authority (NDMA), conducts mock drills and organizes workshops/trainings on tsunami awareness and preparedness.

Enhancing Community Preparedness:

- INCOIS coordinates the implementation of the UNESCO-IOC “Tsunami Ready” initiative to enhance community preparedness.
- Villages like Venkatraipur and Noliasahi in Odisha have been recognized as Tsunami-ready communities by UNESCO-IOC, making India the first country in the Indian Ocean region to achieve this distinction.

Software and Multimode Dissemination:

- INCOIS has the necessary software for monitoring earthquakes and multimode dissemination of early tsunami warnings.

- The Decision Support System software automatically generates and disseminates warnings, integrating with the NDMA Common Alert Protocol (CAP) system.
- INCOIS has developed the “SAMUDRA” mobile application for effective access to marine users for ocean data resources and advisories.

Technical Textiles

Context:

Recently, the Ministry of Textiles has approved 12 research projects under the National Technical Textiles Mission (NTTM) increasing the total number of approved research projects to 168.

Relevance:

GS III: Indian Economy

Dimensions of the Article:

1. About Technical Textiles
2. About National Technical Textiles Mission

About Technical Textiles

- The Technical Textiles are defined as Textile material and products manufactured primarily for their Technical performance and functional properties rather than aesthetic and decorative characteristics.
- The Technical textiles include textiles for automotive applications, medical textiles (e.g., implants), geotextiles (reinforcement of embankments), agrotexiles (textiles for crop protection), and protective clothing (e.g., heat and radiation protection for fire fighter clothing, molten metal protection for welders, stab protection and bulletproof vests, and spacesuits).

Significance and Potential Applications of Technical Textiles

- The Technical Textiles are being used globally for last several decades. These materials have provided innovative projects.
- Even while Technical Textiles have been extensively used in developed as well as many developing countries, India has yet to capitalize the technical, economical and environmental benefits on large scale.
- The Various parts of India are subjected to floods and environmental degradation. In some of the terrains, the flood management and control can rely on Technical Textiles tubes, containers and bags.
- The Technical Textiles have been found to perform better than concrete as water protection component because of permeability, flexibility and ease of underwater placement.

About National Technical Textiles Mission

- The Cabinet Committee on Economic Affairs (CCEA) approved the establishment of a National Technical Textiles Mission to help India position itself as a “global leader” in technical textiles.
- The Cabinet has approved a total outlay of Rs 1,480 crore for the project, which will be implemented over four years (2020-2024) and aims to promote research, export and skill development in this sector.
- An Export Promotion Council for Technical Textiles will be set up for export promotion of technical textiles and ensuring 10% average growth in exports per year upto 2023-24.

Objectives:

- The main aim is to get India the highest position in Technical Textiles at a global level
- This mission also aims at improving the penetration level of the technical textiles in the country. It must also be noted that the penetration level of technical textiles is low in India at 5-10%, against 30-70% in advanced countries.
- The authorities aim at increasing the global market for Indian technical textiles
- To simplify the objectives of the mission, it has been divided into four component as well
- The Mission will focus on the usage of technical textiles in various flagship missions, programmes of the country including strategic sectors.

Exercise Sea Vigil

Context:

The Indian Navy is set to conduct the fourth edition of the 'Pan-India' Coastal Defence Exercise 'Sea Vigil-24' on 20 & 21 Nov 24.

Relevance:

GS III: Security Challenges

About Exercise Sea Vigil:

- The National Level Coastal Defence Exercise was envisioned in 2018 as a tool of validation to a series of measures instituted towards enhancing maritime security since '26/11.
- The concept of 'Sea Vigil' will activate the Coastal Security apparatus throughout India and assess the all-encompassing Coastal Defence mechanism.
- This fourth edition of Ex Sea Vigil involves 06 Ministries and 21 Organisations/ agencies.
- This exercise will focus on the build-up of security for coastal assets like ports, oil rigs, Single Point Moorings, Cable Landing Points and critical coastal infrastructure including the coastal population.
- This year participation by other Services (Indian Army and Air Force) and planned deployment of a large number of ships and aircraft have enhanced the tempo of the exercise.
- The exercise will activate the entire infrastructure of coastal security and all maritime stakeholders, including fisherfolk and other people along the coast, as a whole.
- Sensitizing coastal communities on maritime security is one of the objectives of the exercise, and so the inclusion of the fisher community, coastal populace, and students from NCC and Bharat Scouts and Guides will contribute to the zeal of the effort.
- Exercise Sea Vigil, organized by the Indian Navy is a national-level endeavour and an integrated assessment of India's maritime defense and security capabilities.
- It is a precursor to the Theatre Level Readiness Operational Exercise (TROPEX), which the Indian Navy conducts biennially.

National Legal Services Day

Context:

The National Legal Services Day (NLSD) is celebrated on 9th November every year to spread awareness for ensuring reasonable fair and justice procedure for all citizens.

Relevance:

GS II- Polity

About National Legal Services Day:

- NLSD was first started by the Supreme Court of India in 1995 to provide help and support to poor and weaker sections of the society.
- Free legal services are provided in matters before Civil, Criminal and Revenue Courts, Tribunals or any other authority exercising judicial or quasi judicial functions.
- It is observed to make the citizens of the country aware of the various provisions under the Legal Services Authorities Act and the rights of the litigants. On this day, each jurisdiction organizes legal aid camps, Lok adalats, and legal aid programmes.

Objectives of Legal Services Authorities:

- Provide free legal aid and advice.
- Spread legal awareness.
- Organise lok adalats.
- Promote settlements of disputes through Alternative Dispute Resolution (ADR) Mechanisms. Various kinds of ADR mechanisms are Arbitration, Conciliation, Judicial settlement including settlement through Lok Adalat, or Mediation.
- Provide compensation to victims of crime.

Legal Services Institutions for providing Free Legal Services:

National Level:

- National Legal Services Authority (NALSA). It was constituted under the Legal Services Authorities Act, 1987. The Chief Justice of India is the Patron-in-Chief.

State Level:

- State Legal Services Authority. It is headed by the Chief Justice of the State High Court who is its Patron-in-Chief.

District Level

- District Legal Services Authority. The District Judge of the District is its ex-officio Chairman.

Persons Eligible for Getting Free Legal Services:

- Women and children
- Members of SC/ST
- Industrial workmen
- Victims of mass disaster, violence, flood, drought, earthquake, industrial disaster.
- Disabled persons
- Persons in custody
- Those persons who have annual income of less than the amount prescribed by the respective State Government, if the case is before any court other than the Supreme Court, and less than Rs. 5 Lakhs, if the case is before the Supreme Court.
- Victims of Trafficking in Human beings or begar.

Konark Sun Temple

Context:

Recently, four sandstone replicas of the iconic Konark wheels from the Konark Temple have been installed at the Rashtrapati Bhavan's Cultural Centre and Amrit Udyan. This initiative is among various efforts to incorporate traditional cultural and historical elements into Rashtrapati Bhavan.

Relevance:

GS I: History

Dimensions of the Article:

1. Key Facts About Konark Sun Temple

Key Facts About Konark Sun Temple:

Location and Attribution:

- The Konark Sun Temple is a 13th-century CE Sun temple located in Konark, along the coastline in the Puri district of Odisha, India.
- It is attributed to King Narasimhadeva I of the Eastern Ganga dynasty and was built around 1250 CE.
- The temple is dedicated to the Hindu Sun God Surya.

Architectural Marvel:

- The temple complex is renowned for its distinctive appearance, resembling a 100-foot-high chariot with massive stone wheels and horses.
- This architectural masterpiece is carved entirely from stone.
- It is considered the pinnacle of Kalinga temple architecture.

UNESCO World Heritage Site:

- The Konark Sun Temple is a UNESCO World Heritage Site, recognized for its cultural and historical significance.



- It is also a major pilgrimage site for Hindus and is featured on the reverse side of the Indian currency note of 10 rupees.

Colorful Nickname:

- European sailors referred to the temple as the “Black Pagoda” as early as 1676 due to its resemblance to a tiered tower that appeared black. In contrast, the Jagannath Temple in Puri was called the “White Pagoda.”

Key Features:

- The temple symbolizes the chariot of the Sun God, drawn by seven horses and with twelve pairs of wheels, representing the Sun’s movement across the heavens.
- Each wheel has 24 spokes, signifying the 24 hours in a day. These wheels also functioned as sundials, with shadows indicating the time of day.
- The temple complex consists of well-organized spatial units, including the vimana (principal sanctuary), jahamogana (audience hall), and natmandir (dance hall).
- The vimana once had a high tower with a shikhara (crowning cap), known as Rekha deul, which was destroyed in the 19th century.

Architectural Significance:

- The Konark Sun Temple stands as a testament to the architectural and artistic brilliance of the Kalinga dynasty. It combines religious symbolism with astronomical and timekeeping elements, making it a remarkable historical and cultural treasure.

Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana

Context:

The Department of Fisheries organised a meeting to discuss the recently implemented Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY), a sub-scheme of the Pradhan Mantri Matsya Sampada Yojana (PMMSY).

Relevance:

GS II- Government Policies and Interventions

Dimensions of the Article:

- About Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana
- About Pradhan Mantri Matsya Sampada Yojana

About Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana:

- The Union Cabinet has approved Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana, a Central Sector sub-scheme under the Pradhan Mantri Matsya Sampada for the fisheries sector.
- The scheme will be implemented for 4 years from FY 2023-24 to FY 2026-27 across all the States and UTs.

Aim:

- The scheme will help to formalize the fisheries sector and enhance access to institutional credit.

Fund Allocated:

- A total of 6000 crore rupees have been earmarked for the scheme over the next 4 years.

Finance:

- About 3,000 crore rupees will come from public finance including the World Bank and the AFD external financing, and the remaining 50 percent will be contributed by the beneficiaries from the private sector.

Significance:

- The initiative will support 6.4 lakh micro-enterprises and 5,500 fisheries cooperatives, providing access to institutional credit.
- This sub-scheme will help to create a National Fisheries Digital Platform to provide 40 lakh small and micro-enterprises work-based identities.

About Pradhan Mantri Matsya Sampada Yojana

- Pradhan Mantri Matsya Sampada Yojana (PMMSY) was launched in 2020 to bring about Blue Revolution through the sustainable development of the fisheries sector over a period of five years (2020-2025).
- It is an umbrella scheme to develop the fisheries sector with a total outlay of Rs. 20050 crores.

It has two components

- The Central Sector Scheme (CS) component with a non-beneficiary-oriented scheme and a Beneficiary oriented scheme (Central Assistance for General Category – 40%; SC/ST/Women – 60%).
- A Central Sponsored Scheme (CSS) component also with a non-beneficiary-oriented scheme and Beneficiary oriented scheme. The different break-ups of funding are: Central Assistance for Northeastern States – 90%, Other States – 60%; and UTs – 100%.

The areas expected to be covered by the PMMSY are:

- Fish production
- Fisheries productivity
- Quality of fisheries and aquaculture sectors
- Post-harvest infrastructure and management
- Modernization of value chain
- Welfare of the fishers and fish farmers
- Fisheries management framework

Insurance coverage:

- The insurance coverage provided under the PMMSY includes
- Rs.5,00,000/- against accidental death or permanent total disability,
- Rs.2,50,000/- for permanent partial disability
- Hospitalization expenses in the event of accident for a sum of Rs. 25,000/-.

The objectives of the PMMSY are:

- Develop fisheries and aquaculture sectors.
- Harness the potential of fisheries sector in a sustainable, responsible, inclusive and equitable manner
- Efficient use of land and water resources to enhance fish production and productivity.
- Modernize value chain considering post-harvest management and quality improvement.
- Double fishers and fish farmers' incomes
- Generate employment in the fisheries sector.
- Enhance fisheries sector's contribution to overall agricultural Gross Value Added (GVA) and exports.
- Provide social, economic and physical security to fish farmers and fishermen.
- Develop a robust fisheries management and regulatory framework.

Namo Drone Didi Scheme

Context:

Recently, the Department of Agriculture & Farmers Welfare (DoA&FW) launched the Nammo Drone Didi Scheme, aiming to empower 14,500 Women Self-Help Groups (SHGs) under the Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM) initiative through drone technology for agriculture services.

Relevance:

GS II: Government Policies and Interventions

Overview of the Nammo Drone Didi Scheme

The Nammo Drone Didi Scheme is an innovative government initiative aimed at empowering Women's Self-Help Groups (SHGs) through technology. The scheme facilitates the use of drones to apply fertilizers and pesticides, enhancing crop yields and reducing operational costs for agricultural practices.

Key Features of the Scheme

- Financial Assistance: The scheme offers substantial central financial assistance, covering 80% of the drone cost, up to Rs. 8 lakhs.

- **Additional Funding:** Further funding is available through the Agriculture Infrastructure Financing Facility (AIF), providing ample financial support for participants.
- **Equipment and Warranty:** Beneficiaries receive a comprehensive package that includes a drone equipped with essential accessories such as batteries, spray equipment, tools, and a one-year warranty.
- **Training Programs:** A mandatory 15-day training session is provided to one member of each participating women's SHG to become certified drone pilots. Additional training on the agricultural application of drones for nutrient and pesticide dissemination is also provided.

Governing Agencies

- **Central Level:** An Empowered Committee of Secretaries oversees the program, involving multiple departments:
 - o Department of Agriculture, Forestry, and Wildlife (DoA&FW)
 - o Department of Rural Development
 - o Department of Fertilizers
 - o Ministry of Civil Aviation
 - o Ministry of Women and Child Development
- **State-Level Implementation:** At the state level, Lead Fertilizer Companies (LFCs) play a pivotal role. They coordinate with state departments and SHGs to ensure effective drone distribution and utilization.

Impact and Implementation

This scheme not only promotes the adoption of advanced agricultural technologies among women-led groups but also aims to foster gender empowerment in rural areas. By equipping women with modern tools and skills, the Namo Drone Didi Scheme sets a precedent for integrating technology with traditional farming practices, potentially revolutionizing the agricultural landscape and empowering women economically and technologically across India.

Technical Textiles

Context:

Recently, the Ministry of Textiles has approved 12 research projects under the National Technical Textiles Mission (NTTM) increasing the total number of approved research projects to 168.

Relevance:

GS III: Indian Economy

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Relevance:

GS III: Security Challenges

About Exercise Sea Vigil:

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- The concept of ‘Sea Vigil’ will activate the Coastal Security apparatus throughout India and assess the all-encompassing Coastal Defence mechanism.
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- This year participation by other Services (Indian Army and Air Force) and planned deployment of a large number of ships and aircraft have enhanced the tempo of the exercise.
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- Sensitizing coastal communities on maritime security is one of the objectives of the exercise, and so the inclusion of the fisher community, coastal populace, and students from NCC and Bharat Scouts and Guides will contribute to the zeal of the effort.
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- It is a precursor to the Theatre Level Readiness Operational Exercise (TROPEX), which the Indian Navy conducts biennially.

Chapter- 8

INTERNATIONAL RELATION

India – Bangladesh

Syllabus: International Relations

Context:

A day after Bangladesh police arrested Hindu monk on sedition charges and a court on Tuesday denied him bail, India expressed “deep concern” and urged authorities “to ensure the safety and security of Hindus and all minorities” in the neighbouring country.



History Between India and Bangladesh:

- Pre-Partition Bond: Cultural and linguistic ties were disrupted by the Partition of 1947, leading to large-scale family separations and migration.
- 1971 Liberation War: India's military and moral support were instrumental in Bangladesh's independence from Pakistan, marking the foundation of strong bilateral relations.
- Post-Independence Cooperation: India was the first country to recognize Bangladesh and continues to share deep people-to-people connections.
- Shared Sacrifices: Historical and cultural links have been reinforced through mutual respect for shared histories, such as the commemoration of Vijay Diwas.

Areas of Cooperation:

- Economic Partnership: Bangladesh is India's largest trade partner in South Asia, with bilateral trade reaching \$18.2 billion in 2021-22.
- Connectivity: Restoration of rail links, inland waterways like the Protocol on Inland Water Transit and Trade (PIWTT), and Agartala-Akhaura rail link.
- Development Assistance: India extended \$8 billion in Lines of Credit (LoCs) to Bangladesh for infrastructure development.
- Cultural Exchange: Institutions like the Indira Gandhi Cultural Centre (IGCC) foster shared cultural heritage.
- Defence Collaboration: Joint exercises like CORPAT and the Bangosagar naval drills enhance security ties.

Challenges:

- **Water Sharing:** Disputes over rivers like Teesta and Brahmaputra remain unresolved, impacting livelihoods and trust.
- **Illegal Immigration:** Cross-border migration creates socio-economic and political strain in bordering Indian states.
- **China's Influence:** Bangladesh's growing ties with China, including investments in infrastructure under the Belt and Road Initiative, pose strategic challenges for India.
- **Terrorism and Insurgency:** Cross-border movements of insurgent groups and alleged support for extremist elements affect security.
- **Non-Tariff Barriers:** Trade growth is hindered by lengthy customs procedures and regulatory obstacles.

Way Ahead:

- **Resolve Water Disputes:** Prioritize agreements on Teesta and other rivers through mutual dialogue and time-bound solutions.
- **Enhance Connectivity:** Develop coastal, road, and rail networks to boost economic and cultural ties.
- **Energy Collaboration:** Strengthen cooperation in clean energy and finalize initiatives like the India-Bangladesh Friendship Pipeline.
- **Counter China's Influence:** Provide technological, financial, and strategic support to Bangladesh to balance regional geopolitics.
- **Address Refugee Issues:** Collaborate on a regional framework for managing refugee crises through SAARC initiatives.

Conclusion:

India and Bangladesh's relationship is marked by shared histories and future potential. By addressing challenges and fostering cooperation, both nations can strengthen their partnership, benefiting not just themselves but the region as a whole.

SAREX-24

Context:

The 11th edition of the Indian Coast Guard's National Maritime Search and Rescue Exercise (SAREX-24) is being held in Kochi, Kerala.

About SAREX-24:

- **Location:** Kochi, Kerala.
- **Theme:** "Enhancing Search and Rescue Capabilities through Regional Collaboration."



Activities:

- Sea exercise involving contingencies with participation from Coast Guard, Navy, Air Force, Cochin Port Authority, and Customs.

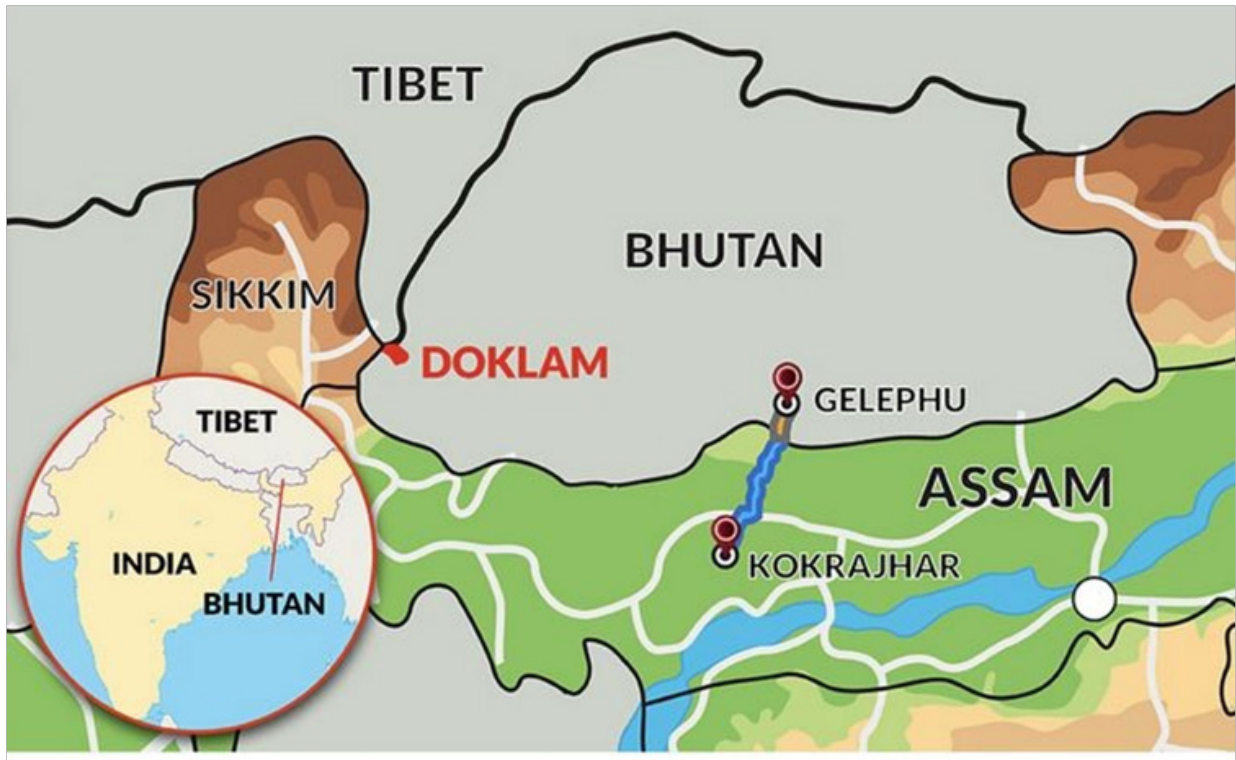
Objectives:

- Evaluate operational efficiency and coordination.
- Strengthen collaborative efforts among regional and international maritime agencies.
- Significance: Largest-ever simulations, enhancing cooperative engagement with littoral states and friendly nations.

Gelephu Mindfulness City

Context:

Bhutan's PM Tshering Tobgay highlighted the Gelephu Mindfulness City as a major "Zero Carbon" project, thanking India for supporting its development as a sustainable, cooperative initiative.



About Gelephu Mindfulness City:

- Vision: To create a sustainable, zero-carbon city promoting harmony, sustainability, and Bhutan's Gross National Happiness philosophy.
- Origin: Envisioned by King Jigme Khesar Namgyel Wangchuck to improve Bhutanese lives and build a global model for sustainable living.
- India's Role: Strategic collaboration with India for investment and infrastructure, strengthening India-Bhutan ties; viewed as a cooperative project benefiting both nations.

Key Features:

- Spread over 2,500 sq. km, comprising 2.5% of Bhutan's landmass.
- Includes protected national parks, wildlife sanctuaries, and renewable energy facilities generating 4,000-5,000 MW.
- Self-governed Special Administrative Region (SAR) with independent judiciary and law making powers.
- Mandala-style neighbourhoods connected by inhabitable bridges over 35 rivers and streams.
- Infrastructure for hydroelectric power, hydroponic farming, spiritual centers, markets, and healthcare (both traditional and modern).
- Designed as a low-rise, eco-friendly city prioritizing personal well-being and environmental sustainability.

Kurram district of Pakistan

Context:

Sectarian violence has escalated in the Kurram district of Pakistan, following a massacre of Shia travelers, resulting in days of clashes and significant casualties.

About Kurram District:

- **Location:**
 - o Situated in Khyber Pakhtunkhwa, northwestern Pakistan.
 - o Borders Afghanistan with multiple crossings along the 192-km Durand Line.
- **Key River:**
 - o The district is named after the Kurram River (Pashto: Kwarma), derived from the Sanskrit word Krumu.



- **Geographical Features:**
 - Lies in the Kurram Valley, a strategically significant and mountainous region.
 - Shares borders with Afghan provinces like Logar, Paktia, and Nangarhar.
- **Demographics:**
 - Predominantly Pashtun tribes: Turi, Bangash, Orakzai, Wazir, and others.
 - Shia-Sunni composition: Shia Turis dominate Upper Kurram, while Sunnis inhabit Lower and Central Kurram.
- **Why Conflict:**
 - Tribal rivalries over land and resources exacerbated by governance failures.
 - Sectarian tensions fueled by external influences (Saudi-Iran rivalry) and local grievances.
 - Historical factors: Zia-ul-Haq's Sunni Islamisation policies and Cold War geopolitics.

India's Neighbourhood Policy

Syllabus: International Relation

Context:

India's neighbourhood policy is under scrutiny as its relations with several neighbouring countries face challenges. With a history of deep cultural and historical ties, India's approach to its neighbours must balance its growing global aspirations with regional sensitivities.

India's Neighbourhood Policy:

- **Neighbourhood First Policy:**
 - Emphasizes prioritizing relations with immediate neighbours.
 - Seeks economic integration, development partnerships, and cultural ties.
- **Gujral Doctrine:**
 - Advocates non-reciprocity and goodwill gestures toward neighbours.
 - Focuses on non-interference, respect for sovereignty, and peaceful dispute resolution.

Act East Policy:

- Connects India with Southeast Asia for trade, security, and cultural integration.
- Strengthens ties with Myanmar, Bangladesh, and ASEAN countries.

Present Diplomatic Means to Handle Neighbours:

- **Economic Initiatives:**
 - Trade agreements and infrastructure projects like BBIN and SAARC.
 - Investments in energy, transport, and connectivity in Nepal, Bhutan, and Bangladesh.
- **Security Cooperation:**
 - Joint exercises and counter-terrorism efforts, e.g., BIMSTEC and Quad.
 - Border management agreements with Bhutan, Nepal, and Bangladesh.
- **Cultural Diplomacy:**
 - Leveraging historical and religious ties with Nepal and Sri Lanka.
 - Promoting Indian soft power through educational scholarships and cultural exchanges.
- **Aid and Assistance:**
 - Humanitarian assistance during crises (e.g., earthquake relief in Nepal).
 - Development aid to Bhutan, Maldives, and Afghanistan.

Positive Impacts:

- **Economic Growth:**
 - Enhanced trade and energy cooperation with Bangladesh and Bhutan.
 - Cross-border projects like Maitree Super Thermal Power Project with Bangladesh.
- **Regional Stability:**
 - Cooperation on counter-terrorism and maritime security in the Indian Ocean region.

- o Proactive measures in disaster management strengthen goodwill.

Soft Power:

- Popularity of Indian culture, films, and educational initiatives in neighboring countries.
- Religious tourism initiatives, such as Ramayana Circuit.

Negative Impacts:

- **Trust Deficit:**
 - o Perceptions of India as a “big brother” in Nepal and Sri Lanka.
 - o Accusations of interference in internal politics, e.g., Maldives and Nepal.
- **Chinese Influence:**
 - o China’s Belt and Road Initiative offers economic alternatives to India’s neighbours.
 - o Strategic encirclement through infrastructure projects like Hambantota Port in Sri Lanka.
- **Security Concerns:**
 - o Rise in anti-India sentiment used for political gains in Bangladesh and Maldives.
 - o Border disputes with Nepal strain bilateral ties.

Measures to Prioritize Neighbour Relations:

- **Respect Sovereignty:**
 - o Avoid overt interference in domestic politics of neighboring countries.
 - o Uphold the principle of non-reciprocity in bilateral agreements.
- **Strengthen Economic Ties:**
 - o Enhance cross-border infrastructure and connectivity projects.
 - o Promote regional trade blocs like BIMSTEC and BBIN.
- **Collaborate on Shared Challenges:**
 - o Partner in addressing climate change, disaster management, and health crises.
 - o Ensure equitable sharing of water resources in transboundary rivers.
- **Engage Strategically:**
 - o Counterbalance Chinese influence by offering competitive investments and aid.
 - o Focus on soft-power diplomacy through cultural and educational exchanges.
- **Transparent Communication:**
 - o Regular summits and dialogues to address grievances and foster trust.
 - o Encourage people-to-people contact to mitigate misunderstandings.

Conclusion

India’s neighbourhood policy must focus on fostering trust, mutual respect, and collaboration. Strengthening ties with its neighbours through economic, cultural, and diplomatic initiatives is crucial for regional stability and India’s global aspirations.

Chapter- 9

Yojana December 2024

1: Evolution of Indian Constitution: Constitutional Amendments

The Constitution of India is the supreme law that governs the functioning of the Indian state. Its evolution reflects the dynamic socio-political, cultural, and economic landscape of the nation.

- The process of constitutional amendments plays a crucial role in adapting the Constitution to the changing needs of society while ensuring that it remains relevant and responsive.

Evolution of the Constitution During British Rule

The roots of the Indian Constitution can be traced back to the British colonial period, marked by a series of constitutional developments that laid the groundwork for the eventual formation of an independent Indian state.

The key milestones include:

- The Government of India Act 1858: Established direct British control over India, marking the end of the East India Company's rule and the beginning of British imperial governance.
- The Indian Councils Act 1861 and 1892: Introduced the concept of limited representative governance, allowing Indians a voice in legislative processes through appointed councils.
- The Government of India Act 1909 (Morley-Minto Reforms): Expanded the legislative councils and introduced separate electorates for Muslims, setting the stage for the evolution of communal representation.
- The Government of India Act 1919 (Montagu-Chelmsford Reforms): Introduced a dyarchy system of governance, separating provincial and central functions. It also provided for limited self-governance through legislative councils.
- The Government of India Act 1935: Considered the most important precursor to the Indian Constitution, it introduced the federal structure, the establishment of a bicameral legislature, and reserved seats for minorities and other marginalized groups.

The roots of the Indian Constitution can be traced back to the British colonial period, marked by a series of constitutional developments that laid the groundwork for the eventual formation of an independent Indian state.

The key milestones include:

Constitutional Amendment of a Federal Constitution

- A federal constitution, by its nature, requires flexibility to accommodate changes in the political, economic, and social landscape.
- The Indian Constitution is designed as a federal structure, though it has a strong unitary bias. Constitutional amendments in a federal setup are essential for maintaining the balance of power between the central government and the states.
- This is evident in the Indian Constitution, where amendments have been used to redefine the distribution of powers and responsibilities between the Union and States, especially in the context of national integration and socio-economic justice.

Need for Constitutional Amendment

- Changing Social Norms: Over time, social practices evolve, and the Constitution must reflect these changes to address issues such as caste-based discrimination, gender equality, and minority rights.
- Political Realities: The political structure and dynamics change with time, requiring constitutional adjustments to accommodate new realities, such as the introduction of new states or changes in the electoral process.
- Judicial Interpretations: As the judiciary interprets the Constitution, new meanings and applications emerge that may necessitate formal amendments to clarify or expand constitutional provisions.
- Technological and Global Developments: Advancements in technology, economy, and global relations can create new challenges, requiring constitutional reforms, particularly in areas like digital governance, economic policies, and international cooperation.

Procedure for Amending the Constitution

The Constitution of India provides a detailed procedure for amendments under Article 368. The procedure is divided into three categories:

- Amendments by Parliament: Certain provisions can be amended by a simple majority in both Houses of Parliament (e.g., changes to the name of a state).
- Amendments requiring a special majority: Some provisions, such as the distribution of powers between the Union and States (Article 368), require a special majority of both Houses of Parliament.
- Amendments with State Consent: Some provisions, such as the representation of states in Parliament, require not only the approval of Parliament but also the consent of at least half of the states.

Power of Parliament to Amend the Constitution

- Article 368 grants Parliament the power to amend the Constitution. However, this power is not absolute.
- While Parliament can amend most provisions of the Constitution, certain basic features, such as the federal structure and fundamental rights, cannot be altered through ordinary amendments.
- The Kesavananda Bharati case of 1973 established the doctrine of the basic structure, which limits Parliament's power to amend essential aspects of the Constitution.

Kesavananda Bharati Case, 1973 and the Doctrine of Basic Structure

- The Kesavananda Bharati case (1973) is one of the most significant judgments in the history of the Indian Constitution. The Supreme Court ruled that while Parliament has the authority to amend the Constitution, it cannot alter its "basic structure."
- The basic structure doctrine ensures that key elements such as democracy, republicanism, separation of powers, the rule of law, and individual freedoms remain intact.
- This judgment has acted as a safeguard against arbitrary amendments and preserved the fundamental principles of the Constitution.

Landmark Constitutional Amendments Since 1950

- First Amendment (1951): The First Amendment imposed reasonable restrictions on the freedom of speech and expression, allowed laws against untouchability, and enabled the state to limit the right to property for social justice. It balanced individual freedoms with national security and social harmony, shaping India's democratic framework.
- Seventh Amendment (1956): This amendment reorganized Indian states based on linguistic and administrative factors, creating states like Andhra Pradesh and Tamil Nadu. It also updated the Union List to include new subjects for legislation, addressing the need for linguistic identity and administrative reforms.
- Forty-Second Amendment (1976): Known as the "Mini-Constitution," this amendment added "Socialist," "Secular," and "Democratic" to the Preamble, curtailed judicial review, expanded the Directive Principles of State Policy, and centralized power in the Union, significantly reshaping India's constitutional structure during the Emergency.
- Forty-Fourth Amendment (1978): The Forty-Fourth Amendment reversed undemocratic changes made during the Emergency, restored the right to property as a legal right (under Article 300A), and limited the power of the state to suspend fundamental rights, reinforcing democratic principles.
- Fifty-Second Amendment (1985): Introduced the anti-defection law to prevent elected representatives from switching parties, disqualifying those who defected or voted against party directives. It aimed at ensuring political stability and party discipline.
- Sixty-First Amendment (1988): This amendment lowered the voting age for general elections from 21 to 18, enhancing youth participation in the democratic process and aligning with global trends towards inclusive voting rights.
- Seventy-Third and Seventy-Fourth Amendments (1992): These amendments mandated the creation of elected local governments (Panchayats in rural areas and Municipalities in urban areas), devolved powers to local bodies, and provided reservations for women and marginalized communities, strengthening local governance and decentralization.
- Ninety-Ninth Amendment (2014): The amendment introduced the National Judicial Appointments Commission (NJAC) to replace the Collegium system for judicial appointments. Although aimed at increasing transparency, it was struck down by the Supreme Court in 2015 for violating judicial independence.

- Hundred and First Amendment (2016): This amendment implemented the Goods and Services Tax (GST), creating a unified tax structure across India to replace multiple indirect taxes, streamline the tax system, and promote economic integration and transparency.

Conclusion

The Indian Constitution is a living document that evolves with time, driven by the needs of society and the nation. Constitutional amendments play a vital role in ensuring that the Constitution remains relevant and effective in addressing contemporary challenges. While the power to amend the Constitution rests with Parliament, it is balanced by judicial oversight to safeguard the fundamental principles of the Constitution. Landmark amendments have not only addressed immediate political and social issues but have also contributed to India's democratic and federal structure. The evolution of the Indian Constitution through these amendments stands as a testament to India's commitment to democracy, justice, and social welfare.

2: Role of Indian Constitution in Promoting Social Justice

The Indian Constitution, adopted on 26th January 1950, is a foundational document that not only established a democratic and republican government but also laid down a framework for social justice.

- Social justice, in the context of the Indian Constitution, refers to the fair and equitable distribution of benefits and opportunities for all, particularly for those historically marginalized and disadvantaged groups.
- The Constitution of India has played a crucial role in promoting social justice through its provisions, directives, and judicial interpretations.

Preamble: A Commitment to Social Justice

- The Preamble of the Indian Constitution envisions an egalitarian society, stating the goals of Justice, Liberty, Equality, and Fraternity.
- It explicitly mentions social justice as one of the core objectives by promising to secure social, economic, and political justice for all citizens.
- This foundational vision lays the groundwork for ensuring that the government acts to reduce inequalities and protect the rights of all sections of society, particularly the marginalized and vulnerable.

Fundamental Rights:

The Fundamental Rights (Articles 12-35) in the Constitution provide a strong framework for promoting social justice by guaranteeing individual freedoms, equality before the law, and protection against discrimination.

- Article 14: Guarantees equality before the law and equal protection of the laws to all citizens, ensuring that the law treats everyone with fairness, irrespective of their social, economic, or political status.
- Article 15: Prohibits discrimination on the grounds of religion, race, caste, sex, or place of birth. This is one of the most important tools in promoting social justice, especially for historically disadvantaged communities like Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs).
- Article 16: Provides equality of opportunity in matters of public employment and ensures that no person is discriminated against on the basis of caste, religion, or sex.
- Article 17: Abolishes untouchability, a practice that was deeply ingrained in Indian society, ensuring that individuals cannot be treated as "untouchables" and denying them basic human dignity.
- Article 46: Directs the state to promote the educational and economic interests of Scheduled Castes, Scheduled Tribes, and other weaker sections.

These provisions are crucial in laying the foundation for a just and equal society, where individuals are treated with respect and dignity, regardless of their background.

Directive Principles of State Policy

The Directive Principles of State Policy (DPSPs), enshrined in Part IV of the Constitution (Articles 36-51), provide guidelines to the government for promoting social justice through welfare measures. While these principles are not justiciable (i.e., they are not enforceable by courts), they serve as a moral obligation for the state to enact policies that ensure social welfare and justice.

Key DPSPs that focus on social justice include:

- Article 38: Directs the state to promote the welfare of the people by securing a social order based on justice, including the reduction of inequalities in income and wealth.

- Article 39: Ensures that the state makes provisions for securing adequate means of livelihood for all citizens, equal pay for equal work for both men and women, and protection from economic exploitation.
- Article 41: Guarantees the right to work, education, and public assistance in case of unemployment, old age, sickness, and disablement.
- Article 42: Directs the state to make provisions for securing just and humane conditions of work and for maternity relief.

The DPSPs guide the government in formulating laws and policies that aim to uplift the underprivileged, reduce social and economic inequalities, and promote overall welfare.

Reservation and Affirmative Action

One of the most important tools for achieving social justice in India is the provision for reservations or affirmative action. The Constitution recognizes the need to uplift marginalized communities and provide them with access to opportunities in education, employment, and political representation.

- Article 15(4) and 16(4): Empower the state to make special provisions for the advancement of any socially and educationally backward classes, including Scheduled Castes (SCs), Scheduled Tribes (STs), and Other Backward Classes (OBCs). This has led to the establishment of reservation policies in educational institutions and government jobs to ensure that these communities are represented and can access opportunities they were historically denied.

Through such provisions, the Constitution aims to level the playing field and provide equal opportunities to groups that have been historically excluded or discriminated against.

Judicial Interpretation and Activism

The role of the judiciary in promoting social justice cannot be overstated. The Indian judiciary has been instrumental in interpreting constitutional provisions in ways that ensure social justice, often expanding the scope of rights and protecting vulnerable communities.

- Right to Life and Personal Liberty (Article 21): The Supreme Court has expanded the scope of Article 21 beyond mere protection from physical harm to include rights related to health, education, shelter, and environmental justice. This progressive interpretation has significantly contributed to enhancing the quality of life for marginalized sections of society.
- Public Interest Litigation (PIL): The judiciary has used PIL to allow social justice for marginalized groups, such as addressing the rights of prisoners, women, children, and persons with disabilities.
- Judgments on Fundamental Rights: Cases like *Vishaka v. State of Rajasthan* (1997), which laid down guidelines for the prevention of sexual harassment at the workplace, and *National Legal Services Authority v. Union of India* (2014), which recognized the rights of transgender persons, reflect the judiciary's role in upholding social justice.

Through judicial activism, the courts have been able to address issues that directly impact the socio-economic rights of the poor, marginalized, and vulnerable communities.

Social Justice Through Legislation

Beyond the Constitution, several laws have been enacted by Parliament to further the cause of social justice. These laws have sought to eradicate discrimination, provide welfare benefits, and protect the rights of vulnerable groups.

Some of the significant legislations include:

- The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act, 1989: This law protects SCs and STs from atrocities and discrimination.
- The Right to Education Act, 2009: Provides free and compulsory education to children aged 6-14 years, with a focus on socially disadvantaged children.
- The Maintenance and Welfare of Parents and Senior Citizens Act, 2007: Ensures that parents and senior citizens are provided for and not neglected by their families.
- The Protection of Women from Domestic Violence Act, 2005: Provides protection and legal recourse for women who face domestic violence.

Challenges and the Way Forward

While the Indian Constitution and subsequent laws have provided a robust framework for promoting social justice, challenges remain.

These include:

- **Caste-based Discrimination:** Despite the abolition of untouchability, caste-based discrimination persists in many parts of India.
- **Gender Inequality:** Women, particularly in rural areas, continue to face discrimination in various forms.
- **Economic Inequality:** Large disparities exist in wealth distribution, and many citizens still live below the poverty line.
- **Access to Justice:** Legal and procedural hurdles, as well as the cost of litigation, often prevent marginalized communities from accessing justice.

Conclusion

The Indian Constitution, through its vision of justice enshrined in the Preamble, its guarantee of fundamental rights, and its guiding directives, has laid a strong foundation for promoting social justice. It provides a comprehensive framework for addressing inequalities and safeguarding the rights of marginalized communities. However, achieving true social justice requires continuous efforts in lawmaking, judicial activism, and the active participation of all sectors of society. By addressing the challenges and expanding the scope of social justice, India can move closer to realizing the inclusive and equitable society envisioned by the Constitution.

3: The Future of AI in India: Profiling Concerns and Criminal Investigations

The integration of Artificial Intelligence (AI) in India is revolutionizing sectors like commerce, governance, and law enforcement. However, this rapid technological evolution poses significant challenges in balancing innovation with privacy and ethical concerns.

- Key legislations like the Digital Personal Data Protection Act (DPDP Act) 2023 and Bharatiya Nyaya Sanhita (BNS) 2023 are shaping the regulatory landscape to address these issues.

AI and Profiling

- Profiling, a core AI function, involves analyzing behavioral data to predict outcomes. While it enhances user experiences in personalized services, it raises privacy concerns.
- The DPDP Act 2023 recognizes behavioral data as personal data, empowering users with rights to access, correct, or erase their data.
- This disrupts traditional AI models dependent on continuous data aggregation for services like recommendation engines, financial risk assessments, and targeted advertising.

To comply with these stringent data protection laws, businesses must transition to privacy-first AI models that respect user consent while maintaining functionality.

Global Context

- India's approach aligns with global regulations like the EU's General Data Protection Regulation (GDPR), which mandates explicit consent for data collection and emphasizes privacy-centric AI systems.
- These global and domestic shifts illustrate a collective move toward safeguarding user rights without stifling technological innovation.

Balancing Innovation and Ethics

- As AI becomes integral to criminal investigations and predictive policing, the BNS 2023 and DPDP Act ensure ethical AI deployment in law enforcement while addressing concerns of bias, data misuse, and surveillance. This balance is critical to fostering trust in AI while leveraging its potential for societal benefit.

AI in Predictive Policing and Criminal Investigations

- Artificial Intelligence (AI) is emerging as a pivotal tool in law enforcement, particularly in predictive policing and criminal investigations.
- The Bharatiya Nyaya Sanhita (BNS) 2023 recognizes the potential of electronic evidence and AI in analyzing digital data, paving the way for advanced crime prevention and investigation techniques.

Applications in Law Enforcement

- **Predictive Policing:** AI algorithms analyze data to forecast potential criminal activity, aiding in crime prevention. For example, the UK's National Crime Agency uses AI to track online behavior and combat child exploitation by identifying at-risk individuals and potential perpetrators.

- Crime Investigations in India: AI systems can analyze large datasets, including social media activity and location history, to detect fraud, cybercrime, and terrorist activities.
- The BNS 2023 allows law enforcement agencies to seize digital devices and access personal data for investigations, enhancing digital forensics capabilities.

Challenges and Ethical Concerns

- Privacy Risks: Expansive powers to access personal data may lead to unlawful surveillance and privacy violations without robust oversight mechanisms.
- Bias in Algorithms: AI systems can perpetuate discrimination if trained on biased data, disproportionately impacting marginalized communities based on race, gender, or socio-economic status.
- Accountability: Ensuring algorithmic transparency and judicial oversight is crucial to prevent misuse and safeguard individual rights.

Power of AI in Predictive Policing

- AI's predictive capabilities, widely used in e-commerce for personalized recommendations, are now being harnessed in law enforcement through predictive policing.
- By analyzing human behavior and patterns, AI can forecast potential crimes and enable preemptive interventions, showcasing its transformative potential for public safety.
- However, predictive policing requires high accuracy, as false predictions could harm individuals' rights and freedoms.
- To ensure fairness, transparency, and accountability, law enforcement must adopt robust AI systems, invest in training, and establish safeguards to prevent misuse while leveraging AI's potential for societal benefit.

AI in Action: National Crime Agency (UK)

- The UK's National Crime Agency (NCA) exemplifies ethical AI use in law enforcement. Since 2019, it has employed AI to combat child exploitation by monitoring online behavior and proactively identifying risks. This approach highlights AI's potential for crime prevention, offering lessons for India to tackle cyberbullying, online harassment, and terrorist recruitment.
- The NCA's success underscores the need for ethical AI frameworks, emphasizing transparency, human oversight, and public trust to ensure AI systems are both effective and fair in their application.

Challenges and Road Ahead for AI in India

The integration of AI in India faces challenges in balancing innovation with privacy and fairness. The DPDP Act 2023 safeguards personal data but raises questions about enabling innovation, while the BNS 2023 supports AI-based policing, necessitating ethical use and training for law enforcement. Key priorities include auditing predictive tools to prevent biases, ensuring transparency, and implementing user safeguards like data correction and erasure. Lessons from global frameworks like the EU's GDPR and the UK's NCA offer guidance for building an AI ecosystem that respects individual rights and enhances societal benefits. India's future in AI requires evolving legal frameworks, collaboration among stakeholders, and a focus on accountability to harness AI's potential responsibly while safeguarding privacy and fairness.

4: Criminal Justice System Reforms: Evaluating the Impact of BNS

The Bharatiya Nyaya Sanhita (BNS) 2023, replacing the Indian Penal Code (IPC) 1860, represents a shift from punitive justice ("Dand") to restorative justice ("Nyaya").

- Along with the Bharatiya Nagarik Suraksha Sanhita (BNSS) 2024 and Bharatiya Sakshya Adhiniyam (BSA) 2023, these laws aim to decolonize India's legal system and address contemporary challenges from 1 July 2024 onwards.

Unmasking the Shadows BNS 2023 Takes On Organised Crime

- Dedicated section introduced in BNS 2023 to combat organised crime
- Section 111 of BNS 2023 targets offenses including kidnapping, robbery, cyber crimes, etc.
- Offenses that were either not clearly defined or non-existent have been introduced in Section 112 (petty organized crime)
- Activities committed using violence, threats, or coercion punishable



Key Features and Changes:

- Philosophical Shift: Unlike the colonial IPC focused on punishment, BNS emphasizes protection of vulnerable groups and justice delivery.
- Protection for Women and Children: BNS introduces stricter penalties and new provisions for crimes against women and children, prioritizing their protection in Sections 63–99.
- National Security Provisions: New offences target emerging threats, aligning with India's sovereignty and constitutional principles.

Key Additions in Bharatiya Nyaya Sanhita (BNS): Need of the Hour

The BNS 2023 introduces critical provisions to address emerging challenges and bridge legal gaps in India's justice system.

A. New Offences Against Women and Children

- Deceptive Relationships (Section 69): Criminalizes sexual intercourse through deceit or identity suppression, imposing up to 10 years' imprisonment. This resolves ambiguities in past legal interpretations and strengthens protections for victims.
- Exploitation of Children (Section 95): Penalizes hiring or engaging children to commit offences, particularly for sexual exploitation or pornography, with a minimum 3-year imprisonment. This addresses misuse of minors by hardened criminals.

B. New Offences Against Human Body

- Mob Lynching (Section 103(2)): Punishes murders by groups (5+ people) on discriminatory grounds with death or life imprisonment, implementing the Supreme Court's 2018 Tehseen Poonawalla guidelines.
- Organized Crime (Section 111): Defines and criminalizes syndicate-based crimes like land grabbing, cybercrimes, and trafficking.
- Petty Organized Crime (Section 112(1)): Introduces penalties for minor syndicate crimes such as snatching, gambling, and unauthorized betting.

Grievous Hurt and Hate Crimes (Section 117):

- Addresses grievous hurt causing permanent disability or vegetative states (e.g., Aruna Shanbaug case), with punishments up to life imprisonment.
- Penalizes grievous hurt by hate-motivated groups with up to 7 years' imprisonment.



BNS TRANSFORMING THE FIGHT AGAINST ORGANIZED CRIME

What Is Punishable As A Petty Crime?

- › Snatching
- › Shoplifting
- › Betting
- › Gambling
- › Selling examination papers

What Is Punishable As An Economic Offence?

- › Criminal breach of trust
- › Forgery
- › Hawala transactions
- › Mass-marketing fraud
- › Schemes to defraud

C. Offences Against the Nation

- Defining Terrorism (Section 113) Defines terrorism as acts intended to threaten India's unity, sovereignty, or security, or to incite terror domestically or internationally. This is India's first detailed legal definition of terrorism, enhancing the nation's ability to combat anti-national activities.

Acts Endangering Sovereignty and Integrity (Section 152)

- Rashtra Droh: Replaces the sedition law (Section 124A of IPC) with provisions targeting actions jeopardizing India's unity and integrity.
- Punishment: Life imprisonment or up to 7 years with a fine, focusing on secessionist or separatist activities.

Protection of Public Servants (Section 195(2))

- Penalizes threats or use of criminal force against public servants during riot control or dispersing unlawful assemblies, with up to 1 year of imprisonment or fines.

Tackling Misinformation (Section 197(1)(d))

- It provides legal tools to counter fake news and propaganda across media platforms while balancing free speech under Article 19(1)(a).

Extraterritorial Abetment (Section 48)

- It penalizes individuals outside India who abet offences committed within the country.
- It allows trials against absconding abettors under the Bharatiya Sakshya Adhiniyam, bypassing extradition hurdles.

D. Offences Against Property

- Snatching (Section 304(1)): Theft involving sudden, quick, or forcible seizure of movable property is classified as snatching.

- It addresses prevalent crimes like chain and mobile snatching, especially targeting vulnerable groups like women and the elderly, with a dedicated provision absent in the IPC.

E. Expanded Definitions

- Child (Section 2(3)): Defined as anyone below 18 years of age.
- Gender (Section 2(10)): Includes males, females, and transgenders.
- Impact: In line with the Supreme Court's (2014) judgment, ensures equal legal protection for transgender individuals.

F. New Punishment Provision

Community Service (Section 4(f)):

- Inspired by the Indian philosophy of , this penalty is introduced for first-time petty offenders.
- Purpose: Aims to reform and rehabilitate offenders through constructive societal contributions.

5: Impact of the BNS on Labour Dispute Resolution

The enactment of the Bharatiya Nyaya Sanhita (BNS) introduces significant changes to labour dispute resolution in India, shifting from the colonial-era Indian Penal Code (IPC) to a more contemporary framework.

- This shift aligns with global standards, supporting India's industrial development and addressing emerging labour challenges.

Background of Labour Dispute Resolution in India

Labour disputes in India have traditionally been governed by acts like the Industrial Disputes Act (IDA) of 1947, the Trade Unions Act of 1926, and the Industrial Employment (Standing Orders) Act of 1946, which were later consolidated into the Industrial Relations Code (IRC) of 2020. These statutes focused on conciliatory mechanisms like conciliation, arbitration, and adjudication to resolve industrial disputes.

Key Provisions in BNS Impacting Labour Disputes

Labour disputes in India have traditionally been governed by acts like the Industrial Disputes Act (IDA) of 1947, the Trade Unions Act of 1926, and the Industrial Employment (Standing Orders) Act of 1946, which were later consolidated into the Industrial Relations Code (IRC) of 2020. These statutes focused on conciliatory mechanisms like conciliation, arbitration, and adjudication to resolve industrial disputes.

- Shift from Conciliation to Penal Measures:** The BNS introduces strict penal provisions for labour conflicts, moving away from the earlier focus on amicable dispute resolution. This approach may affect how disputes between employers and employees, especially in the formal sector, are handled.
- Regulation of Worker Protests and Employer Liabilities:** The BNS outlines provisions related to protests, employer liabilities, and strikes, significantly altering the dispute resolution landscape. This could lead to more stringent penalties for unlawful strikes or protests.

Dispute Resolution: Labour Issues in India:

- Labour disputes in India have historically been governed by key acts such as the Industrial Disputes Act (IDA) of 1947, the Trade Unions Act of 1926, and the Industrial Employment (Standing Orders) Act of 1946.
- These laws were later subsumed into the Industrial Relations Code (IRC) of 2020, which sought to simplify and modernize India's labour law framework.
- The IRC retained a focus on amicable dispute resolution through mechanisms such as conciliation, arbitration, and adjudication. However, the Bharatiya Nyaya Sanhita (BNS) introduces a departure from this conciliatory approach, bringing stricter penalties and a more adversarial framework for resolving labour disputes.

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Labour Dispute Mechanisms under the IRC

Under the IRC, labour dispute resolution is primarily organized into three categories:

1. Bi-partite forums like Grievance Redressal Committees to mediate between workers and employers.
2. Conciliation, where a neutral third party mediates the conflict between workers and employers.
3. Court adjudication for disputes that remain unresolved through conciliation.

The IRC aims to maintain social harmony and economic stability by resolving industrial disputes quickly and efficiently. The International Labour Organization (ILO) also endorses voluntary conciliation and arbitration, aligning the IRC with international standards. However, challenges persist, especially concerning the exclusion of workers in the informal sector (including gig workers) from these dispute resolution mechanisms. Additionally, the conciliation process often gets manipulated in favour of employers, undermining its effectiveness.

The BNS: A Shift Towards Penal Provisions

The Bharatiya Nyaya Sanhita (BNS) represents a significant shift from the IRC's conciliatory approach, emphasizing penal measures to resolve labour conflicts.

- The BNS introduces stringent penalties for unlawful industrial actions, such as strikes and protests, which are traditionally seen as vital tools for workers in asserting their demands. This shift marks a departure from the Industrial Relations Code's provisions, which granted immunity to trade union members for actions taken in the course of industrial disputes.
- For example, Section 194 of the BNS criminalizes violent behaviour during strikes or protests (such as affray), imposing penalties that could potentially restrict legitimate forms of collective bargaining.
- While the IRC protected workers' rights to strike, the BNS reclassifies labour-related offences as criminal, imposing a deterrent effect on disruptive actions.
- This shift could lead to a chilling effect on worker protests, especially in cases where these actions are non-violent but disruptive to business operations.

Practical Challenges and Future Outlook

- The introduction of criminal penalties for labour-related offences under the BNS raises concerns regarding its implementation.
- The criminalisation of labour disputes may burden the already strained judicial system, leading to case backlogs. Employers, particularly smaller enterprises, may face challenges in navigating the more stringent legal requirements.
- Furthermore, the new legal framework could intensify adversarial relationships between workers and employers, potentially undermining the spirit of cooperation that earlier laws, such as the IDA and IRC, aimed to foster. While this may enhance accountability, it risks alienating workers and intensifying conflicts in the workplace.

BNS and the Informal Sector

- A significant issue that remains unresolved is the application of the BNS to the informal sector, which constitutes a large part of India's workforce.
- Recent judicial rulings, such as in *Ms X v. ICC, ANI Technologies Ltd*, where platform workers were recognized as employees, indicate that the BNS could eventually extend to gig workers and other informal workers, opening avenues for labour dispute resolution. However, the full scope of these provisions and their impact on informal sector workers is yet to be determined.

Conclusion

The Bharatiya Nyaya Sanhita (BNS) represents a fundamental shift in India's approach to labour dispute resolution, moving from a conciliatory framework under the Industrial Relations Code to a more adversarial, penal framework. This shift aims to strengthen compliance with labour laws but may also create new challenges, including potential suppression of legitimate worker protests and increased adversarial relations between employers and employees. The effectiveness of the BNS in transforming the labour landscape will depend on judicial interpretation and how both employers and workers adapt to the new legal framework. Whether the BNS succeeds in modernizing India's labour relations or requires further refinement will depend largely on its application, especially with regard to informal workers. The role of the judiciary will be crucial in striking a balance between protecting workers' rights and maintaining industrial harmony in an evolving economic environment.

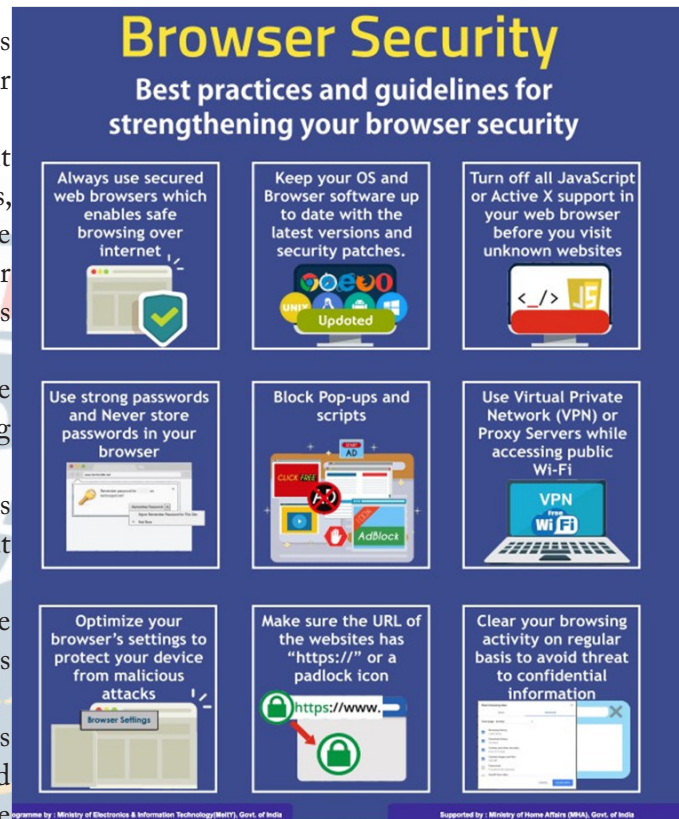
6: Redefining Law in a Cyber Age: India's Legislative Shift Against Modern Crime

The advent of the digital age has transformed not just how people interact, but also the nature of crime itself. India, as one of the fastest-growing digital economies, is facing a dramatic surge in cybercrime, including online fraud, data breaches, and cyber espionage.

- In response to this modern threat, India has introduced a series of legislative reforms: the Bharatiya Nyaya Sanhita (BNS), Bharatiya Nagrik Suraksha Sanhita (BNSS), and Bharatiya Sakshya Adhiniyam (BSA).
- These laws are designed to address the complexities of cybercrime, modernize the criminal justice system, and secure India's digital future.

The Evolution of Cybercrime and its Challenges

- Historically, India's criminal justice system was designed to handle physical crimes, which had clear jurisdictions and concrete evidence.
- In cases such as dacoity or theft, law enforcement could easily collect physical evidence—fingerprints, footprints, and testimonies—and prosecute offenders within the geographical confines of their locality. However, in the digital world, crime has evolved beyond these physical boundaries.
- Cybercriminals now operate from anywhere in the world, manipulating global networks and exploiting vulnerabilities in digital infrastructure.
- They are often able to breach security systems, access sensitive data, and commit financial fraud without leaving any tangible traces.
- The evidence, in the form of digital data, can be easily concealed or erased, making investigations and prosecutions more challenging.
- The BNS, BNSS, and BSA address these challenges by redefining the framework for investigating and prosecuting modern crimes. These laws acknowledge the borderless nature of cybercrime and empower law enforcement agencies to respond more effectively to digital threats.



BNS: A Modern Approach to Crime Jurisdiction

- The Bharatiya Nyaya Sanhita (BNS) is a critical part of India's efforts to tackle the complexities of cybercrime.
- It shifts the focus from physical jurisdiction to virtual jurisdiction, where crimes can occur across multiple locations, both within and outside India.
- For example, in the case of a cyberattack on a bank, the victim may be located in one state, the server in another, and the criminal in a third state or country. This geographical fragmentation necessitates a unified approach to law enforcement.
- The BNS streamlines the investigative process, ensuring that law enforcement agencies have the authority to pursue criminals across jurisdictions, both within India and globally.
- By adapting the legal framework to the digital age, the BNS empowers authorities to investigate and prosecute crimes without being limited by traditional territorial boundaries.

BNSS: Enhancing Security in the Digital Age

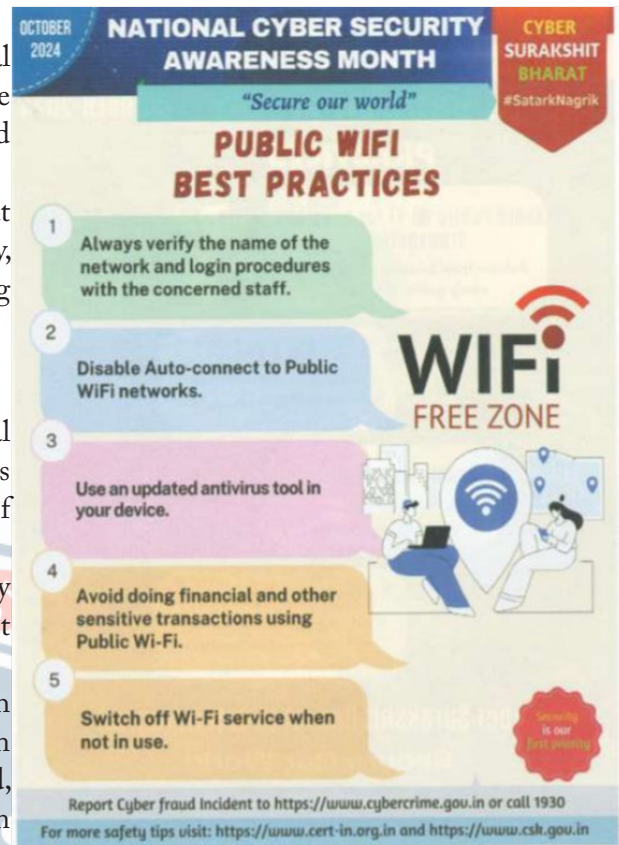
- The Bharatiya Nagrik Suraksha Sanhita (BNSS) complements the BNS by focusing on the protection of citizens in an increasingly digitized world.
- As cybercrime grows in scale and sophistication, the BNSS aims to equip law enforcement agencies with the tools and knowledge necessary to combat digital threats effectively.
- One of the key provisions of the BNSS is Section 176(3), which mandates forensic audits for cases involving cybercrime, particularly those that lead to financial fraud or data theft. The law recognizes that digital

evidence is often hidden behind encryption, spread across multiple servers, or intentionally destroyed by cybercriminals.

- To combat this, the BNSS strengthens the role of digital forensics, empowering investigators to analyze large volumes of data, trace encrypted communications, and track digital footprints across various platforms.
- By standardizing forensic investigations and ensuring that digital evidence is preserved and analyzed meticulously, the BNSS creates a robust framework for investigating modern crimes.

BSA: Revolutionizing Digital Evidence Handling

- The Bharatiya Sakshya Adhiniyam (BSA) plays a pivotal role in the legal process by establishing clear guidelines for the collection, preservation, and presentation of digital evidence.
- Unlike physical evidence, digital data can be easily modified or deleted, making it crucial to follow strict protocols to maintain its integrity.
- The BSA ensures that digital evidence is handled with the same rigor as physical evidence. For example, in cybercrimes such as identity theft or online fraud, evidence might include email records, transaction histories, or social media activity.
- The BSA provides a framework for collecting and presenting this evidence in a manner that makes it admissible in court, strengthening the prosecution's case.
- By standardizing the handling of digital evidence, the BSA ensures that justice is not delayed or denied due to procedural issues, while also protecting individuals from cybercriminals who seek to manipulate or destroy evidence.



The Need for Specialized Cybercrime Units and Digital Forensics

- While these legislative reforms are a significant step forward, they are only as effective as the infrastructure supporting them.
- Cybercrime investigations are highly complex and require specialized expertise in digital forensics. The BNS, BNSS, and BSA recognize this need and emphasize the importance of equipping law enforcement with the necessary tools, technology, and training to investigate cybercrime.
- India already has specialized cybercrime units in several states. However, as the scope and scale of cybercrime continue to grow, these units must be further strengthened.
- This requires investment in digital forensic laboratories, advanced training programs for police officers, and upgrading existing infrastructure to keep pace with the ever-evolving landscape of cybercrime.

Looking Ahead: Future-Proofing India's Legal System

- The introduction of the BNS, BNSS, and BSA marks a critical juncture in India's efforts to modernize its criminal justice system in response to the challenges posed by cybercrime.
- These laws provide a comprehensive framework for addressing the rising threats in the digital realm, but their success will depend on continuous investment in cybersecurity, digital forensics, and law enforcement training.
- As technologies such as artificial intelligence, blockchain, and quantum computing evolve, new forms of cybercrime will emerge. To remain effective, India's legal system must be agile and adaptable, continuously updating its frameworks to address these emerging threats.

Conclusion

The BNS, BNSS, and BSA represent a forward-thinking approach to digital security. By strengthening cybercrime units, enhancing digital forensic capabilities, and equipping law enforcement with the necessary tools and knowledge, India is laying the foundation for a safer digital future. However, these legislative reforms must be supported by robust infrastructure, continuous training, and a commitment to addressing the evolving nature of cybercrime in the years to come.

Chapter- 10

Kurukshetra December 2024

1- Social Security: Vital for Development and Prosperity

- Social security serves as a cornerstone in poverty reduction, promoting social inclusion and dignity for vulnerable populations while contributing to economic growth.
- By enhancing incomes, it stimulates consumption, savings, investment, and increases domestic demand, promoting human development.

India's Social Security Framework

- India has a broad social security system encompassing social insurance, social assistance, Right to Education, and Right to Food schemes, primarily led by the central government with additional state-level schemes.
- This comprehensive framework supports dignified living across the life cycle, addressing various needs such as family benefits, maternity, unemployment support, health protection, old-age pensions, and disability benefits.

Global Perspective and Sustainable Development

- Social protection is a recognized human right, essential for achieving the Sustainable Development Goals (SDGs).
- Goal 1 of the SDGs aims to end poverty by 2030 through national social protection systems, ensuring the coverage of vulnerable groups.
- Article 22 of the Universal Declaration of Human Rights emphasizes social security as a fundamental right, reaffirmed in the 2012 Social Protection Floors Recommendation by the International Labour Organization (ILO).

Need for Universal Social Protection

- The UN Commission for Social Development notes that 71% of the global population lacks adequate social protection, with significant portions of children and women underserved.
- According to ILO's World Social Protection Report (2024-26), coverage is expanding but remains inadequate, with 52.4% of the global population covered by at least one social benefit.
- Comprehensive social protection promotes stability, reduces inequalities, enhances social cohesion, and protects against economic shocks like pandemics and natural disasters.

Social security in India

- Social security in India has evolved significantly over the years, focusing on a range of key areas like free primary education, food security, health insurance, employment rights, and support for senior citizens and unorganized sector workers.
- The objective is to provide a comprehensive safety net for vulnerable populations to improve socioeconomic well-being.

Free Primary Education

- Education has been a high priority in India, with substantial funding directed toward it. Under Article 21A of the Indian Constitution, education is recognized as a fundamental right.
- The Right to Education (RTE) Act of 2009 mandates free and compulsory education for children aged 6-14.
- Programs like the Sarva Shiksha Abhiyan (SSA) and the Samagra Shiksha scheme ensure access to quality education. Some states extend free education to girls, even up to post-graduation in Karnataka, to promote gender equality.

Food Security

- The National Food Security Act (NFSA) of 2013 guarantees food and nutritional security by providing

subsidized food grains to up to 75% of the rural population and 50% of the urban population, covering around 81.35 crore beneficiaries.

- The Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY) and other initiatives, such as rice fortification and subsidized canteens in states like Tamil Nadu, ensure basic nutrition for all, especially during emergencies like COVID-19.

Health Insurance for the Poor

- Universal Health Coverage is a key goal under the United Nations Sustainable Development Goals (SDGs).
- India's Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) is the largest health insurance scheme globally, providing coverage of up to 5 lakh per family annually for secondary and tertiary care. The recent inclusion of senior citizens aged 70 and above, regardless of income, marks a significant expansion in 2024.

Right to Work

- The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) guarantees 100 days of wage employment to rural households, a major labor law aimed at improving rural livelihoods.
- Employment generation through MGNREGA has proven crucial during times of crisis, such as COVID-19 and drought conditions, providing economic security to millions.

Social Security for Senior Citizens

- With India's aging population projected to reach 193.4 million by 2031, pensions and other schemes for senior citizens have become vital.
- Programs like the Indira Gandhi National Old Age Pension Scheme (IGNOAPS) and the Atal Vayo Abhyuday Yojana (AVYAY) provide financial security, healthcare, and welfare support to the elderly. Various pension schemes also assist senior citizens who were not previously employed in government sectors.

Social Protection for Workers in the Unorganized Sector

- The Code on Social Security, 2020, provides comprehensive measures for unorganized, gig, and platform workers.
- Programs like the Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Pradhan Mantri Suraksha Bima Yojana (PMSBY) offer life and disability insurance. The Pradhan Mantri Shram Yogi Maan-Dhan (PM-SYM) pension scheme also ensures income security for workers in their old age.

Road Ahead

Building effective social security systems is an ongoing process, with countries adapting to demographic shifts and social needs. As per the ILO, 39 countries, mainly in Europe, have achieved near-universal social protection, with models like Uruguay investing over 25% of GDP in social programs, resulting in low inequality and minimal poverty. However, funding gaps remain high.

2- Social Security and Welfare of Farmers for Building Viksit Bharat

- Social security is vital for empowering farmers, enhancing income stability, promoting climate resilience, and fostering inclusive growth.
- It encourages adaptability to structural and technological changes and addresses globalization challenges, enabling farmers to achieve higher efficiency and productivity.
- The government plays a pivotal role in providing a robust social safety net, with recent initiatives shifting from a welfare-based to a participatory empowerment model under the principle of Antyodaya. Key government measures aim to strengthen rural economies, improve access to basic services, and ensure financial security for vulnerable groups.
- India's focus on farmer welfare and rural development aligns with its vision of becoming a developed nation by 2047.
- Social security for farmers is not only an economic necessity but also a moral imperative, fostering a resilient, inclusive, and productive agricultural sector essential for national progress.

Need for Farmers' Social Security

- Growth Vision for 2047: To achieve developed nation status by 2047, India needs sustained economic growth at 8% per year, with a focus on strengthening agriculture, which contributes around 18% to GDP.

- **Challenges in Agriculture:** Agriculture faces hurdles like climate change, resource degradation, changing land use, and socio-economic stressors, affecting productivity and growth.
- **Dependency on Agriculture:** Approximately 55% of the Indian population relies on agriculture for livelihoods, highlighting the sector's significance in the national economy.
- **Farmer Hardships:** Farmers face issues such as small land holdings, limited technology access, unpredictable weather patterns, market volatility, and rising input costs, often leading to debt and poverty.
- **Need for Social Security:** Robust social security frameworks are necessary to provide economic stability, alleviate poverty, and ensure access to basic needs for farmers.

Income Support Schemes for Farmers

- One of India's significant initiatives for farmer welfare, the Pradhan Mantri Kisan Samman Nidhi (PMKISAN), launched in 2019, provides direct income support of Rs 6,000 annually to land-holding farmers through Direct Benefit Transfer (DBT).
- The scheme uses digital tools like Aadhaar authentication and land record integration to ensure transparent and hassle-free disbursements, reaching over 11 crore farmers with Rs 2.81 lakh crore in benefits over five years.
- Innovations like the PM-KISAN mobile app and Kisan e-Mitra chatbot enhance accessibility, allowing farmers to complete e-KYC and access information in multiple languages.

Crop Insurance and Risk Mitigation

- Given agriculture's vulnerability to climate-related risks, Pradhan Mantri Fasal Bima Yojana (PMFBY), introduced in 2016, offers cost-effective crop insurance against pre- and post-harvest losses.
- The scheme supports farmers' incomes and incentivizes modern agricultural practices.
- With over 5,500 lakh farmers insured and Rs 1.5 lakh crore in claims paid, PMFBY is now the world's largest crop insurance scheme by enrolment.
- Additionally, credit flow to agriculture is boosted through concessional loans under the Interest Subvention Scheme (ISS), offering short-term crop loans at a 4% interest rate for timely repayment.

Minimum Support Price (MSP) and Price Assurance

- To assure income stability, the government established MSPs for 22 crops, ensuring at least a 50% profit above cost.
- Launched in 2018, the Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA) guarantees fair prices, enhancing farmers' economic security and incentivizing agricultural sustainability.

Financial Security for Farmers

Pradhan Mantri Kisan Maan-Dhan Yojana (PM-KMY)

- PM-KMY was launched on 12 September 2019.
- It is a contributory pension scheme designed for small and marginal farmers meeting specific eligibility criteria. Beneficiaries aged 18-40 years contribute 55 to 200 monthly to the Pension Fund, matched equally by the central government, until they reach 60 years.
- At this point, they become eligible for a 3,000 monthly pension, subject to exclusions. The scheme is administered by the Life Insurance Corporation (LIC) and beneficiaries are enrolled through Common Service Centres (CSCs) and state governments. So far, 23.38 lakh farmers have joined this initiative.

Atal Pension Yojana (APY)

- Launched on 9 May 2015, APY aims to provide pension coverage to unorganized sector workers. Subscribers aged 18-40 years contribute to the scheme, with pensions ranging from 1,000 to 5,000 per month upon reaching 60 years.
- To encourage participation, the government co-contributes 50% of the total contribution or 1,000 annually for five years for eligible subscribers. A minimum contribution period of 20 years is required for benefits.

Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)

- Introduced in 2015, this life insurance scheme addresses the low insurance penetration in India, which stood at 20% at the time. PMJJBY provides life insurance coverage to individuals aged 18-50 years with a bank account. For an annual premium of 436, the nominee receives 2 lakh in the event of the policyholder's death.

Sustainable Farming and Environmental Security

- Sustainability in agriculture is critical for ensuring long-term productivity and environmental health. The government has introduced several schemes to promote eco-friendly practices, improve resource use efficiency, and enhance farmers' incomes.

Paramparagat Krishi Vikas Yojana (PKVY)

- Launched in 2015, PKVY encourages cluster-based organic farming. Farmers receive 50,000 per hectare over three years, of which 31,000 is transferred directly to them via Direct Benefit Transfer (DBT).
- The scheme promotes integrated, climate-resilient farming systems, enhancing soil fertility, recycling nutrients, and reducing dependence on external inputs.

Per Drop More Crop (PDMC)

- It was launched in 2015 and this scheme focuses on improving water-use efficiency at the farm level through micro-irrigation techniques like drip and sprinkler systems.
- From 2015-16 to 2022-23, it has covered 78 lakh hectares under micro-irrigation.

Pradhan Mantri Krishi Sinchai Yojana (PMKSY)

- Initiated in 2015, PMKSY aims to enhance farm productivity through improved irrigation infrastructure. With an outlay of 50,000 crore for five years, its objectives include expanding irrigation coverage (Har Khet Ko Paani), promoting precision irrigation, and minimizing water wastage.

Rashtriya Krishi Vikas Yojana - Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR)

- It was revamped in 2017-18 and this scheme supports infrastructure development, value addition, and agri-entrepreneurship. It has merged multiple initiatives, such as Soil Health and Fertility and Per Drop More Crop, under a Cafeteria Approach.
- Since 2019-20, 1,524 agri-startups have been funded under its Agri-Startup Programme, with 106.25 crore disbursed as grants.



Empowering Farmers through Digital Platforms

Digital India, launched in 2015, has facilitated several initiatives to enhance farm mechanization and technology adoption:

- Direct Benefit Transfer for farm machinery subsidies ensures transparency in financial assistance.
- FARMS Mobile App enables farmers to rent or hire agricultural machinery conveniently.
- Centralized Farm Machinery Testing Portal streamlines the evaluation process for agricultural equipment.

Farmers' Collectives and Market Access

Formation and Promotion of Farmer Producer Organizations (FPOs)

- Launched in 2020 with an outlay of 6,865 crore, this scheme aims to form 10,000 FPOs to achieve economies of scale. FPOs receive 18 lakh over three years and can avail credit guarantees of up to 2 crore.
- FPOs are also integrated with the e-NAM platform, facilitating online trading and transparent price discovery.

National Agriculture Market (e-NAM)

- e-NAM connects 1,389 Agricultural Produce Market Committees (APMCs) across 23 states and 4 UTs, enabling over 1.76 crore farmers to sell produce online.

Marketing of Farm Produce

- Integrated Scheme for Agriculture Marketing (ISAM): It improves agricultural market structures and capacity, while facilitating access to critical market information.

Empowering Marginalized Entrepreneurs

- Stand-Up India Scheme: It was launched in 2016, this initiative supports SC/ST and women entrepreneurs by providing loans between 10 lakh and 1 crore for establishing greenfield enterprises.

Pradhan Mantri Jan Dhan Yojana (PMJDY)

- PMJDY aims to enhance financial inclusion by providing affordable access to financial services. Since its launch in 2014, it has opened over 50 crore accounts, with 67% in rural areas and 56% held by women.

Agriculture Infrastructure Fund (AIF)

- Part of the Atmanirbhar Bharat initiative, AIF provides loans and grants for agricultural infrastructure development. Eligible beneficiaries include FPOs, SHGs, PACS, and startups.

Farmers' Collectives and Market Access

Ensuring a prosperous India requires a focus on farmers' welfare, addressing challenges like income instability, climate change, and technological gaps. Government initiatives, including income support, crop insurance, pensions, and sustainable farming practices, aim to enhance farmers' economic stability, dignity, and resilience.

Emphasizing participatory and sustainable models reflects a commitment to social justice and development. These efforts contribute to a self-reliant and developed India, positioning agriculture at the core of national progress.

3- Government Schemes Making Path Easier for Divyangjans

In India, people with disabilities (Divyangjans) constitute a significant part of the population, facing various socio-economic challenges.

- The government, recognizing the need for inclusive growth, has launched several schemes to support Divyangjans, focusing on education, employment, healthcare, and social integration. This article explores key initiatives, their impact, and the challenges still faced in achieving an inclusive society.

Constitutional and Legislative Framework

India's commitment to supporting Divyangjans is rooted in the Constitution and reinforced by specific laws:

- Article 41 of the Indian Constitution mandates the state to make effective provisions for securing the right to work, education, and public assistance for people with disabilities.
- The Rights of Persons with Disabilities (RPWD) Act, 2016 expanded the disability categories from 7 to 21, ensuring more comprehensive coverage. This law guarantees fundamental rights and reservations in employment, education, and political participation.

Major Schemes for Divyangjans

Accessible India Campaign (Sugamya Bharat Abhiyan)

- Objective: Launched in 2015, this flagship initiative promotes accessibility for Divyangjans in public infrastructure, transport, and digital platforms.
- Components: Focuses on barrier-free access in buildings, public transport, and ICT (Information and Communication Technology).
- Achievements: Infrastructure in several government buildings and websites has been made accessible, but significant gaps remain in rural and semi-urban areas.

Deendayal Disabled Rehabilitation Scheme (DDRS)

- Objective: Provide financial assistance to NGOs for delivering rehabilitation services to Divyangjans.
- Components: Covers physical, occupational, and speech therapy, vocational training, special education, and rehabilitation services.
- Impact: A large number of NGOs are empowered to provide community-based rehabilitation, but dependency on NGOs limits government accountability.

Assistance to Disabled Persons for Purchase/Fitting of Aids and Appliances (ADIP) Scheme

- Objective: To provide aids and assistive devices to economically disadvantaged Divyangjans.
- Components: Includes aids such as hearing aids, wheelchairs, and prosthetic limbs, distributed through regional camps.
- Achievements: Enhanced mobility and confidence among Divyangjans, especially in rural areas. However, follow-up support and device maintenance are areas needing improvement.

National Fellowship and Scholarship for Higher Education of Divyangjan

- Objective: Encourage Divyangjans to pursue higher education and research.
- Components: Scholarships and fellowships for students with disabilities to continue education post 10th grade and pursue M.Phil. or Ph.D.
- Challenges: Awareness about the scheme is limited, leading to underutilization, particularly in rural areas.

National Action Plan for Skill Development of Persons with Disabilities (NAP-SDP)

- Objective: Empower Divyangjans with market-relevant skills for improved employment opportunities.
- Implementation: Partners with the National Skill Development Corporation (NSDC) and skill councils to provide specialized training.
- Impact: The program aims to train one million people with disabilities by 2030, though challenges in sector-specific placements and regional accessibility persist.

Unique Disability ID (UDID) Project

- Objective: Provide a national database and unique ID cards for Divyangjans to access schemes and benefits seamlessly.
- Implementation: Facilitates easy tracking and unified information access.
- Progress: The project has streamlined the disability certification process, although issues with timely issuance in remote regions continue.

Economically Empowering Schemes for Persons with Disabilities in India

The Government of India has introduced several schemes aimed at economically empowering persons with disabilities (PwDs). These initiatives not only provide financial assistance but also support employment and entrepreneurship for disabled individuals. Key provisions include:

- Reservation in Government Jobs: A 3% reservation in government employment for PwDs.
- Financial Assistance for Entrepreneurship: Disabled individuals can avail loans of up to Rs. 50 lakh at concessional interest rates to start businesses or small enterprises. This enables them to become self-reliant and even provide employment to others.
- State Government Support: In addition to central government schemes, state governments also offer liberal policies and grants to support disabled entrepreneurs.

The National Handicapped Finance and Development Corporation (NHFDC), established in 1997, plays a pivotal role in providing financial assistance. Moreover, state social welfare departments run various self-employment schemes for PwDs, which can be accessed through local district headquarters.

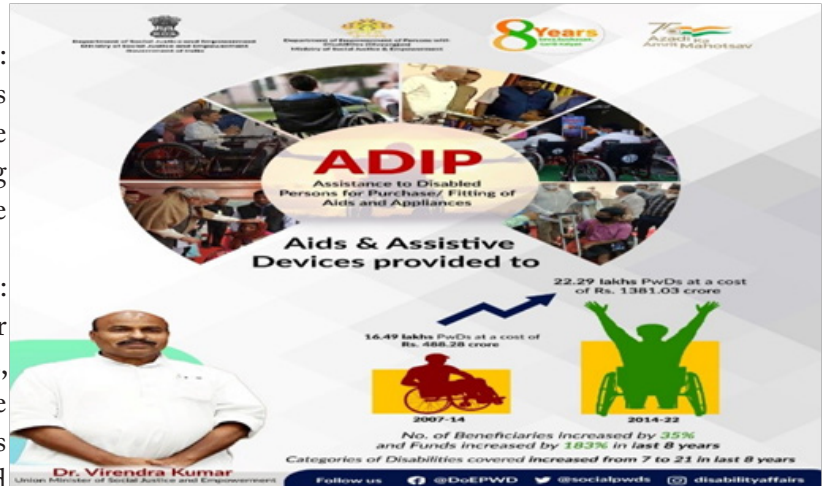
Schemes under the National Trust

The National Trust, an autonomous body under the Ministry of Social Justice and Empowerment, runs several schemes focused on the welfare and empowerment of persons with autism, cerebral palsy, intellectual disability, and multiple disabilities. The primary objective is to create a society that values humanity, dignity, and empowerment for PwDs.

Key schemes under the National Trust include:

- Disha: This early intervention scheme is aimed at children up to 10 years old. It provides treatment, training, and support to families of children with disabilities. Disha Centers offer day-care services, special teachers, and therapists to ensure comprehensive care.
- Day Care Centres: These centres provide opportunities for PwDs to enhance their interpersonal and vocational skills. They also offer respite to caregivers by taking care of PwDs during the day, allowing families to manage other responsibilities.
- SAMARTH (Respite Homes): This scheme focuses on providing group homes for PwDs from Below Poverty Line (BPL) and Low-Income Group (LIG) families, including orphans and children from distressed backgrounds. It aims to provide quality medical care and a supportive environment for PwDs.
- Gharaunda (Group Home for Adults): This scheme ensures lifelong care for adults with autism, cerebral palsy, mental retardation, and multiple disabilities. It includes provisions for vocational training and basic medical care.

- **Niramaya (Health Insurance Scheme):** The Niramaya scheme provides affordable health insurance coverage up to Rs. 5 lakh for PwDs, ensuring they have access to necessary healthcare services.
- **Sahyogi (Caregiver Training Scheme):** This initiative offers training for caregivers, including families of PwDs, to equip them with skills to provide adequate care at home. Training is provided at both primary and advanced levels.
- **Gyanprabha (Educational Support):** The Gyanprabha scheme provides financial support for PwDs pursuing higher education or vocational training. It covers expenses like tuition fees, transportation, and other related costs.
- **Prerna (Marketing Support):** This scheme offers marketing assistance for products and services made by PwDs. It supports participation in exhibitions and fairs to promote and sell these products. Registered organizations can also receive incentives based on their sales.
- **Sambhav (Aids and Assistive Devices):** The Sambhav scheme helps establish resource centers in cities across India to provide PwDs with easy access to assistive devices, software, and equipment that improve their quality of life.
- **Badhte Kadam (Awareness and Community Connectivity):** This initiative supports activities aimed at raising awareness and sensitizing the community about the disabilities covered under the National Trust Act. It encourages social integration and community involvement, promoting the mainstreaming of PwDs.



These schemes represent the government's commitment to promoting the welfare, inclusion, and economic empowerment of persons with disabilities, ensuring their active participation in society and the workforce.

Conclusion

The Government of India has introduced several commendable schemes aimed at empowering persons with disabilities, offering support ranging from educational scholarship to loans for self-employment and job reservations. While these initiatives have significantly benefited the differently-abled, challenges remain in ensuring accessibility. Despite the wide reach of information through social media, some individuals still face difficulties in accessing schemes, such as obtaining a UDID. Addressing these gaps can help make the path to empowerment smoother for PwDs.

4-Ensuring Dignity in Old Age

Social security is crucial for senior citizens, who face economic, health, and social challenges. In India, traditional family support has been weakened by urbanization and changing norms, prompting state intervention.

- The government has introduced schemes addressing pensions, healthcare, housing, and legal protections for the elderly. However, with a growing elderly population and limited resources, more efforts are needed to ensure their dignity and security.

The Growing Elderly Population in India

- India's elderly population is rapidly increasing. According to the 2019 Population Projections report, the number of people aged 60 and above is projected to rise from 103.8 million in 2011 to 240 million by 2041, nearly 1.75 times the 2021 figure.
- The share of the elderly in India's total population has been steadily increasing, from 5.5% in 1951 to an estimated 10.1% in 2021, with projections of 14.9% by 2036.
- This rise is driven by improved life expectancy due to better healthcare and living conditions.
- The demographic shift highlights the need for robust social security, healthcare, and economic policies, as the traditional caregiver system weakens due to the rise of nuclear families, urban migration, and globalization.

Table 1: Sex-wise Distribution of Elderly Population (Aged 60+) in India (Million)

Year	Male	Female	Person
1951	10.2	9.6	19.8
1961	12.4	12.4	24.8
1971	15.8	16.9	32.7
1981	21.1	22.0	43.1
1991	27.3	29.4	56.7
2001	38.9	37.8	76.7
2011	52.8	51.1	103.8
2021*	66.8	71.1	137.9
2031*	92.9	100.9	193.8

Note: * Projected Population.
Sources: (1) Census of India, Various Reports. (2) GOI, MoHFW, Population Projections for India and States 2011-2036

Table 2: Composition of Population in India (per cent)

Year	0-14 Age	15-59 Age	60+ Age
1951	38.4	56.1	5.5
1961	41.1	53.3	5.6
1971	42.0	52.0	6.0
1981	39.7	53.9	6.4
1991	37.6	55.7	6.7
2001	35.3	56.9	7.4
2011	30.8	60.3	8.6
2021*	25.5	64.4	10.1
2031*	21.7	65.2	13.1

Note: * Indicates Projected Population.
Sources: (1) Census of India, Various Reports. (2) Population Projections for India and States 2011-2036.

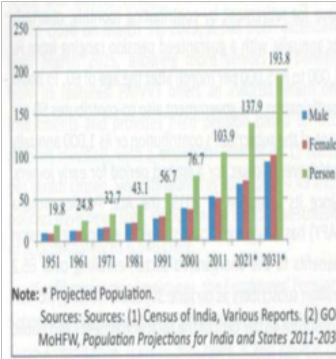


Figure 1: Sex Wise Elderly Population (Aged 60+) in India (Million)

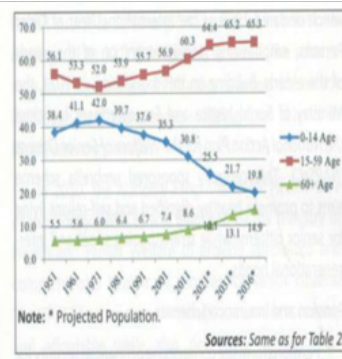


Figure 2: Age Group wise Composition of Population in India (per cent)

Social Security Programmes for Senior Citizens in India

- The Government of India has implemented various social security programmes for senior citizens in response to the changing socio-economic landscape.
- The National Policy on Older Persons (1999) was the first initiative, focusing on financial security, healthcare, shelter, and legal protection to improve the quality of life for the elderly.
- In 2021, the Ministry of Social Justice and Empowerment launched the National Action Plan for the Welfare of Senior Citizens (NAPSrC), a comprehensive scheme aimed at promoting dignified, self-reliant living for seniors and strengthening social bonds across generations.

Pension and Insurance Schemes for Senior Citizens

- National Social Assistance Programme (NSAP): Launched in 1995, this programme provides financial assistance to elderly, widows, and disabled individuals below the poverty line (BPL), covering nearly 30 million beneficiaries.
- Atal Pension Yojana (APY): Launched in 2015, it targets workers in the unorganized sector, encouraging savings for retirement. Subscribers receive a guaranteed pension of Rs 1,000 to Rs 5,000 per month post60, with government co-contributions.
- Pradhan Mantri Vaya Vandana Yojana (PMVVY): This pension scheme for senior citizens, launched in 2017, offers assured returns and fixed pensions based on investment, with a maximum limit of Rs 15 lakh. It has been extended until March 2025.
- Employees' Pension Scheme (EPS): Managed by EPFO, this scheme provides retirement security for formal sector employees, offering pensions upon retirement, in case of disability, and for the family after death.
- Pradhan Mantri Suraksha Bima Yojana (PMSBY): Launched in 2017, this affordable accidental insurance scheme provides coverage for accidental death, disability, and partial disability, with a minimal premium of Rs 20 per year.

Healthcare Initiatives:

- Rashtriya Swasthya Bima Yojana (RSBY): Launched in 2007, it offers health insurance for BPL workers, with additional coverage of Rs 30,000 for critical illnesses under the Senior Citizen Health Insurance Scheme (SCHIS).
- National Programme for Health Care of the Elderly (NPHCE): Started in 2010, it provides specialized healthcare, including geriatric units in district hospitals and trained healthcare providers.
- Rashtriya Vayoshri Yojana (RVY): Launched in 2017, it provides free aids and assistive devices (e.g., hearing aids, wheelchairs) to senior citizens with age-related disabilities.
- Pradhan Mantri Jan Arogya Yojana (PM-JAY): Launched in 2018, this health assurance scheme provides up to Rs 5 lakh per family annually, improving access to secondary and tertiary healthcare for vulnerable households.
- Senior Citizens' Welfare Fund (SCWF): Established in 2016, it funds various initiatives to improve the welfare of senior citizens, including healthcare services.

Livelihood and Skilling Initiatives:

- Senior Able Citizens for Re-employment in Dignity (SACRED): Launched in 2021, this portal connects senior citizens with job opportunities, fostering reemployment and dignity.

- Action Groups Aimed at Social Reconstruction (AGRASR): Encourages senior citizens to form Self-Help Groups (SHGs) for income-generating activities.
- Silver Economy Initiative: Supports start-ups focusing on products and services for the elderly, with government equity support through the SAGE portal.

Housing and Welfare Schemes:

- Old Age Homes and Day Care Centres: The government supports 566 Senior Citizen Homes through NGOs, providing care, recreational activities, and healthcare.
- Reverse Mortgage Scheme: Allow senior citizens to mortgage their homes and receive periodic payments to support living expenses while continuing to reside in their homes.

Legal Protection and Rights:

- Maintenance and Welfare of Parents and Senior Citizens Act, 2007: Mandates children to provide maintenance and support for elderly parents, with tribunals for timely justice.
- National Policy for Senior Citizens, 2011: Focuses on ensuring dignity, care, and financial security for seniors, calling for comprehensive programs in healthcare, housing, and pensions.
- Help-lines and Awareness: Helplines provide immediate assistance for senior citizens facing abuse or neglect, and awareness campaigns educate them about their legal rights.

Challenges

- Inadequate Infrastructure: Rural areas suffer from a lack of essential services, hindering access to benefits.
- Awareness Gaps: Many elderly individuals are unaware of available schemes, limiting their access to support.
- Insufficient Pensions: Pensions often do not cover basic living expenses, leading to financial insecurity.
- Healthcare Barriers: High medical costs prevent seniors from accessing necessary treatments, worsening health conditions.
- Digital Divide: Many elderly individuals lack the skills or resources to use online platforms for applying for schemes.
- Complex Processes: Difficult application procedures and documentation issues discourage potential beneficiaries.
- Gender Disparities: Elderly women, especially widows, face additional barriers in accessing benefits.
- Social Isolation: Many seniors experience isolation and mental health issues, which current systems do not adequately address.
- Fragmentation of Schemes: Inconsistent implementation across states leads to disparities in access and support.

Way Forward

- Universal Pension Coverage: Expand coverage to ensure all seniors have a basic income.
- Improved Healthcare Access: Focus on expanding healthcare facilities in rural and underserved areas.
- Simplified Processes: Streamline application procedures and documentation requirements.
- Awareness Campaigns: Increase awareness about rights and available support systems.
- Gender-Specific Initiatives: Provide targeted support for elderly women, particularly widows.
- Community Engagement: Combat social isolation by fostering community interactions and supporting mental health.

Conclusion

To improve the quality of life for senior citizens, India needs a multi-faceted approach that includes universal pension schemes, better healthcare, simplified application processes, and special support for vulnerable groups. A holistic framework will ensure dignity, security, and respect for senior citizens, contributing to a more inclusive society.

5- Social Security for Scheduled Tribes and Scheduled Castes in Northeastern India

Northeastern India holds a unique demographic and socio-economic profile, where Scheduled Tribes (STs) form a significant portion of the population.

- The region, comprising states like Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura, is characterized by a heavy tribal presence, with four of its eight states being tribal-majority.

- Despite their prominence, ST and Scheduled Caste (SC) communities in the region continue to face a myriad of challenges that hinder their access to social security and development, compounded by issues related to land alienation, literacy, healthcare, and housing.

Demographic and Socio-Economic Landscape

- States such as Mizoram (95%) and Nagaland (88%) have a predominantly tribal population, while Assam (12.4%), Manipur (25.7%), and Tripura (31.8%) feature a mixed demographic.
- The region also has a significant SC population, although it is concentrated in Assam (7.15%), Tripura (17.83%), and Manipur (3.81%), while other states like Arunachal Pradesh and Nagaland have no domiciled SC population.
- Historically, the indigenous communities' economic systems were heavily intertwined with land, forest, and water resources, which were crucial for their livelihoods.
- However, colonial policies, such as the establishment of tea estates and large-scale immigration from East Bengal and East Pakistan, led to substantial land alienation and socio-political fragmentation. These factors continue to affect tribal communities in Assam and Tripura, contributing to their vulnerability.

Existing Social Security Framework

- In the post-independence era, the Sixth Schedule of the Indian Constitution was introduced to safeguard the rights of tribal communities in Assam, Meghalaya, Tripura, and Mizoram. It provided administrative autonomy and aimed to protect tribal land rights.
- Despite these constitutional safeguards, issues like displacement due to development projects, insufficient access to social security benefits, and a lack of effective implementation of government schemes continue to persist.

Challenges in Social Security for ST and SC Communities

- Land Alienation and Economic Insecurity:** In states like Assam and Tripura, large-scale land alienation has displaced tribal populations, leading to severe economic insecurity. The protection of customary land rights remains a challenge, particularly in the face of rising urbanization and industrialization.
- Limited Access to Health and Education:** While literacy rates among ST communities in the Northeast are higher than the national average, challenges persist in ensuring quality education and healthcare access. The literacy rate for ST communities in states like Mizoram (91.5%) and Nagaland (80%) is commendable, but disparities remain, particularly in secondary and higher education levels. Health indicators such as Infant Mortality Rate (IMR) show that while most Northeastern states have better performance than the national average, Assam's IMR remains a concern.
- Crimes Against ST and SC Communities:** While crime rates against ST and SC communities in the Northeast are relatively low compared to other parts of India, there are still concerns regarding their vulnerability in certain regions. The NCRB report from 2020-2022 highlighted that very few crimes were committed against these communities in the region, reflecting a relatively safer environment.
- Housing and Infrastructure:** Housing remains a critical concern, with many ST and SC families living in substandard conditions. However, significant strides have been made under schemes like the Pradhan Mantri Awaas Yojana-Gramin (PMAY-G), which has provided over 16 lakh houses to beneficiaries in the region, particularly from ST and SC communities.



Government Initiatives for Social Security

- **Pradhan Mantri Janjatiya Unnat Gram Abhiyan:** Approved in 2024, this initiative aims to improve the socio-economic condition of tribal communities by focusing on infrastructure development, skill development, education, and healthcare. It targets over 63,000 villages and more than 5 crore tribal people.
- **Pradhan Mantri Awaas Yojana-Gramin (PMAY-G):** This scheme has been instrumental in providing housing to the weaker sections of society, with over 16 lakh houses constructed for ST and SC families across the Northeast.
- **Dharti Aaba Janjatiya Gram Utkarsh Abhiyan:** Launched in 2024, this ambitious initiative aims to bridge gaps in social infrastructure, healthcare, and livelihood in around 63,000 tribal villages. The scheme includes 25 interventions across 17 ministries, focusing on education, health, and self-employment.

Way Forward

While substantial progress has been made, challenges in ensuring social security for ST and SC communities in the Northeast persist. To build on the current initiatives and further enhance the well-being of these communities, the following measures are recommended:

- **Strengthening Land Rights:** The government must ensure that tribal communities' land rights are fully protected. This includes addressing land alienation, ensuring land reforms, and preventing encroachment by non-tribal populations.
- **Enhanced Access to Education and Healthcare:** To further bridge the literacy and healthcare gaps, targeted initiatives should be introduced, focusing on improving secondary and higher education for tribal children, along with enhancing healthcare access in remote areas.
- **Expanding Financial Inclusion:** Financial inclusion schemes, such as microfinance and digital banking, must be expanded to ensure that ST and SC communities have access to credit, savings, and insurance services, enabling them to achieve greater economic independence.
- **Promoting Cultural Sensitivity in Policy:** Policies must be more culturally sensitive, taking into account the unique socio-cultural dynamics of the region's tribal communities. This would help ensure that development interventions are contextually relevant and effective.

Conclusion

The Northeastern region of India, with its rich tribal heritage and diverse communities, presents a unique set of challenges and opportunities for social security policies. While significant strides have been made through constitutional safeguards and government initiatives, much more remains to be done to ensure that ST and SC communities in the region receive equitable access to social security benefits. By focusing on land rights, education, healthcare, and financial inclusion, India can pave the way for a more inclusive and secure future for its tribal populations in the Northeast.



