



SHAPING TALENT SINCE 2009

MONTHLY CURRENT AFFAIRS

FOR UPSC CIVIL SERVICE EXAMINATION

JULY 2026



$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

TABLE OF CONTENTS

- Prambanan Temple Complex
- Bronze Statue of Maharishi Sushruta
- 'Manas and Mahabharata' Civilizational Studies Centre
- Taj Mahal or 'Tejo Mahalaya'
- Abathsahayeswarar Temple
- Bhawaiya Folk Tradition
- Revival of Ancient 'Shastrarth' Tradition at Nalanda University
- India's Generation Z
- Protection of Women from Domestic Violence (DV) Act, 2005
- Unified District Information System for Education Plus (UDISE+) Report 2025-26
- Three-Pronged DNA Test in Paternity Disputes
- TribeX
- Indian Ocean Dipole (IOD)
- Antarctica's Blood Falls: Century-Old Mystery Solved
- Typhoon Bavi (2026)
- Right to Protest in India
- Prevention of Insults to National Honour (Amendment) Bill, 2026
- Protection of Life & Liberty
- Recognition of Intersex Persons
- SUMAN Roadmap 2030
- Internet Shutdowns in India
- Uttarakhand Becomes Fully Literate State
- Trial in Absentia
- Fast-Track Courts (FTCs)
- Externment
- India-New Zealand Bilateral Summit 2026
- India-Seychelles Relations
- India's 'Operationally Deployed' Nuclear Warheads
- India Joins WTO Agreement on Fisheries Subsidies
- BRICS Guwahati Declaration
- UNCITRAL: 60th Anniversary Conference

TABLE OF CONTENTS

- 21st East Asia Summit (EAS)
- Global Capability Centres (GCCs)
- Milk Production in the Gangetic Plains
- Roadmap for ‘Viksit Krishi, Samruddh Kisan’
- Specified Non-Financial Assets (SNFAs)
- Index of Core Industries (ICI)
- Cotton – The “White Gold”
- Futures & Options (F&O)
- Matcha Tea
- Pachpadra Greenfield Refinery-cum-Petrochemical Complex
- Jodhpuri Mojari Gets GI Tag
- Mission Golden Spice
- Polymer / Plastic Banknotes
- World Bank Retires Climate Finance Target
- India’s Ethanol-Blended Fuel Policy
- India’s First Geothermal Wells
- Compressed Biogas (CBG)
- Sulphur Dioxide (SO₂) Emissions
- Borjuli Wetland Declared a Biodiversity Heritage Site
- Banyan Tree (*Ficus benghalensis*)
- Himalayan Pangolin Recognised as a Distinct Species
- World Zoonoses Day 2026
- Jonathan: World’s Oldest Living Land Animal
- Global Helium Production and Supply Chain

Prambanan Temple Complex

Why in News?

India and Indonesia have launched a joint conservation and restoration project for the Prambanan Temple Complex, a UNESCO World Heritage Site in Indonesia.

About Prambanan Temple Complex

- Location: Yogyakarta, Central Java, Indonesia.
- It is the largest Hindu temple complex in Indonesia and a major example of classical Hindu architecture in Southeast Asia.
- Dedicated to: The Hindu Trimurti — Brahma, Vishnu and Shiva.
- Built: During the 9th century CE under the Sanjaya Dynasty of the Mataram Kingdom.
- It was built as a Shaivite royal temple complex, reflecting the revival of Hinduism in Java.
- Its walls feature bas-reliefs depicting the Ramayana and Bhagavata Purana, highlighting the influence of Indian culture on Java.
- The complex has suffered damage due to earthquakes, Mount Merapi eruptions and political changes, followed by systematic restoration.

UNESCO Status

- Declared a UNESCO World Heritage Site in 1991.
- Recognised for its outstanding Hindu architecture and exceptional cultural significance.

Bronze Statue of Maharishi Sushruta

Why in News?

The Royal College of Surgeons of Edinburgh, Scotland, considered the world's oldest surgical college, has unveiled a 90-kg bronze statue of Maharishi Sushruta, recognising his contribution to the field of surgery.

More on the News

- The statue was crafted at Swamimalai near Kumbakonam, Tamil Nadu, known for its traditional bronze-casting heritage.
- The Royal Australasian College of Surgeons, Melbourne, has also installed a statue of Sushruta.



About Sushruta

- Period: Around the 6th century BCE, nearly 2,600 years ago.
- Known as the “Father of Plastic Surgery.”
- A pioneer of Shalya Tantra (ancient Indian surgical science).
- Established surgery as a systematic and documented branch of medicine.
- Emphasised practical surgical training, scientific learning and medical ethics.
- His work describes advanced surgical procedures that predate major Greek and Roman medical scholars such as Hippocrates, Celsus and Galen.

Literary Contribution

- Sushruta compiled his medical knowledge in the Sushruta Samhita, a foundational text of ancient Indian medicine and surgery.

‘Manas and Mahabharata’ Civilizational Studies Centre

Exposition of the Holy Relics of the Tathagata

Why in News?

India and Kyrgyzstan jointly inaugurated the International Centre for Civilizational Studies “Manas and Mahabharata” in Bishkek, Kyrgyzstan. The occasion also saw the release of the first Hindi translation of the Kyrgyz epic Manas, covering all three parts — Manas, Semetey and Seitek.

About the Centre

- Established by: Manas National Academy, Kyrgyzstan, in collaboration with the Centre for Studies of International Relations (CSIR), New Delhi.
- The Centre aims to promote the study of the shared cultural and civilizational connections between India and Central Asia.
- It will provide a platform for research and academic exchange on the Manas and Mahabharata traditions.

About the Epic Manas

- Manas is a major Kyrgyz epic and an important part of the country's cultural heritage.
- It consists of three major parts:
 - Manas
 - Semetey
 - Seitek
- The epic reflects the history, traditions, values and cultural identity of the Kyrgyz people.

Taj Mahal or 'Tejo Mahalaya'

Why in News?

The Allahabad High Court sought responses from the Union Government and Archaeological Survey of India (ASI) on a plea seeking a survey of the Taj Mahal to establish whether it was originally a “Tejo Mahalaya” temple.

About Taj Mahal

- **Built by:** Mughal Emperor Shah Jahan between 1632–1653 as the mausoleum of his wife Mumtaz Mahal.
- **Architect:** Traditionally attributed to Ustad Ahmad Lahori.
- **Location:** Right bank of the Yamuna River in Agra, Uttar Pradesh.
- **UNESCO Status:** Declared a World Heritage Site in 1983.
- **Protection:** A Monument of National Importance under the AMASR Act, 1958; maintained by the ASI.

Key Features

- **Architecture:** Combines Persian, Timurid, Islamic and Indian architectural influences.
- **Material:** White Makrana marble.
- **Layout:** Persian-style Charbagh garden.
- **Structure:** Central double dome, four minarets, mosque, jawab, gateway, gardens and reflecting pools.
- **Decoration:** Pietra dura stone inlay and Quranic calligraphy by Amanat Khan Shirazi.
- **Pietra Dura:** Decorative technique in which semi-precious stones are cut and embedded into marble to create floral and geometric patterns.
- **Speciality:** Known for its exceptional geometric symmetry.



Abathsahayeswarar Temple

Why in News?

The 12th-century Abathsahayeswarar Temple at Thukkachi, Tamil Nadu, received the UNESCO Asia-Pacific Award of Distinction (2024) for exemplary heritage conservation.



About Abathsahayeswarar Temple

- Location: Thukkachi, Thanjavur, Tamil Nadu.
- A living Hindu temple showcasing the architectural traditions of the Later Chola period.
- Associated with: Kulottunga I and Vikrama Chola.
- It is regarded as the only major temple built entirely during the reign of Vikrama Chola.
- Kulottunga I endowed the temple for the recitation of Thevaram hymns.

Key Features

- Kara Kovil: A rare form of Chola temple architecture in which the sanctum resembles a processional chariot.
- Shaivite Significance: Inscriptions refer to the temple as Thenthirukalathi and Vikramacholeeswaram.
- It houses one of the oldest stone icons of Lord Sarabeshwarar.

Bhawaiya Folk Tradition

Why in News?

Vice President C. P. Radhakrishnan released a book on the Bhawaiya folk tradition, highlighting its cultural significance in eastern India.



About Bhawaiya Folk Tradition

- Type: Traditional folk music of Eastern India, closely associated with the Koch-Rajbongshi community.
- Origin: Terai and Dooars regions of North Bengal, particularly Cooch Behar and Jalpaiguri.
- It is also prevalent in Goalpara (Assam) and the Rangpur division of Bangladesh.
- Associated Communities: Koch-Rajbongshi and Kamtapuri communities.

Key Themes

- Biraha: A central theme expressing separation, longing and emotional pain, especially among spouses separated due to livelihood.
- Depicts the lives of mahouts (elephant handlers), mahishals (buffalo herders) and gariyals (cart drivers).
- Reflects agricultural practices, seasonal festivals, nature and everyday rural life.

Musical Features

- Dirgha: Slow and emotional style expressing sorrow and longing.
- Chatka: Fast-paced and lively style, often depicting domestic and social life.
- Principal Instrument: Dotara, accompanied by instruments such as bansuri, dhol and kartal.

Revival of Ancient 'Shastrarth' Tradition at Nalanda University

Why in News?

The Prime Minister praised Nalanda University for reviving the ancient Indian tradition of Shastrarth, or structured scholarly debate.



What is Shastrarth?

- Shastrarth is an ancient Indian tradition of structured intellectual debate aimed at examining and discussing ideas.
- It emphasises:
 - Tarka: Logic and reasoning
 - Pramāṇa: Evidence or valid means of knowledge
 - Respectful dialogue
 - Critical thinking
- Its primary objective was to discover truth (Satya) rather than defeat an opponent.
- It contributed to the development of Indian philosophy, Buddhism, Nyaya and Vedanta through open intellectual discourse.

About Nalanda University

- Established: 5th century CE during the Gupta period, traditionally associated with Kumaragupta I.
- It was among the world's earliest residential centres of higher learning.
- Global Knowledge Hub: Attracted scholars from China, Korea, Tibet, Japan and Southeast Asia.
- Subjects included Buddhism, philosophy, medicine, astronomy, mathematics, grammar and logic.
- Decline: The ancient university was destroyed around 1193 CE, traditionally associated with the invasion of Bakhtiyar Khilji.

Modern Nalanda University

- Re-established under the Nalanda University Act, 2010 as an international university near the ancient site in Rajgir, Bihar.
- UNESCO Status: The Archaeological Site of Nalanda Mahavihara was inscribed as a UNESCO World Heritage Site in 2016.

India's Generation Z

Why in News?

Repeated examination paper leaks across India have triggered protests led largely by Gen Z aspirants, demanding transparent recruitment, stricter anti-cheating measures and greater accountability. India has a large youth population, making the empowerment of Gen Z crucial for realising the country's demographic dividend.

Who is Generation Z?

- Born: 1997–2012; follows Millennials and precedes Generation Alpha.
- Demographic Profile: PLFS 2023-24 estimates around 29.94 crore working-age Gen Z (15–26 years) in India.
- Digital Natives: The first generation to grow up extensively with smartphones, social media, AI, digital payments and high-speed internet.



Key Characteristics of India's Gen Z

- **Individualism:** Greater emphasis on self-expression, personal autonomy, career flexibility and work-life balance.
- **Changing Families:** Delayed marriages, nuclear families, women's financial independence and shared household responsibilities are reshaping family structures.
- **Skill Orientation:** Increasing focus on digital literacy, multidisciplinary education, upskilling and industry-relevant skills, in line with NEP 2020.
- **Global Outlook:** Global digital exposure has created a generation that is internationally connected while retaining local identities.
- **Social Consciousness:** Growing interest in climate action, gender equality, mental health, constitutional rights, diversity and inclusion.

Emerging Challenges

1. Employment & School-to-Work Transition

- Gen Z unemployment is estimated at 11.9%, compared with around 2% among Millennials.
- Regular salaried employment remains low, particularly among women, reflecting limited availability of quality jobs.

2. Education-Employment Mismatch

- Graduate unemployment is around 29% among young men and 36.9% among young women, highlighting the gap between education and industry requirements.

3. Informalisation & Regional Imbalances

- Growth of gig and platform work has expanded employment opportunities but often provides limited social security.
- Only around 20.1% of workers are covered by social security.
- Northern States have a younger population, while Southern States are experiencing population ageing, contributing to migration and regional labour-market disparities.

4. Gender & Mental Health

- Around 27.1% of Gen Z women are engaged in unpaid domestic work compared with 0.32% of men.
- Academic pressure, unemployment and digital comparison can contribute to stress, anxiety and depression.

5. Digital & Technological Risks

- Digital addiction, misinformation, deepfakes and algorithm-driven echo chambers pose social risks.
- Generative AI offers productivity gains but also raises concerns over job displacement, ethical AI and continuous reskilling.



Government Initiatives

- Skill India Mission (2015): Industry-oriented skills and vocational training.
- Startup India (2016): Promotes entrepreneurship and innovation.
- Atal Innovation Mission (2016): Supports innovation through Atal Tinkering Labs and Atal Incubation Centres.
- NAPS (2016): Promotes industry-linked apprenticeships.
- NEP 2020: Focuses on multidisciplinary and experiential learning, critical thinking and skill development.
- FutureSkills PRIME (2020): Develops skills in AI, cybersecurity, cloud computing and other emerging technologies.
- Tele-MANAS: Provides mental-health support through tele-counselling.

Way Forward

- Future-ready education: Strengthen vocational education, internships, apprenticeships and industry-academia linkages.
- Quality employment: Expand labour-intensive, green and digital sectors while increasing formal employment and social security.
- Women's workforce participation: Improve safe mobility, childcare, equal pay and flexible work opportunities.
- Digital inclusion: Expand internet access and digital literacy while strengthening AI governance, data protection and cybersecurity.
- Recruitment reforms: Ensure timely recruitment, examination integrity and faster filling of vacancies.
- Mental well-being: Expand counselling, psychological support and Tele-MANAS services.
- Youth participation: Encourage young people to participate in policymaking, innovation and local governance.
- Innovation-led growth: Promote startups, research and emerging technologies to make Gen Z a key driver of Viksit Bharat 2047.

Conclusion: India's Gen Z can become a major driver of Viksit Bharat 2047. Realising this potential requires quality education, productive employment, innovation, digital inclusion and strong social support systems.

Protection of Women from Domestic Violence (DV) Act, 2005

Why in News?

The Karnataka High Court held that an adult unmarried daughter can seek monetary relief from her father under Section 20(1)(d) of the Protection of Women from Domestic Violence Act, 2005, including financial support for higher education.

Key Highlights of the Judgement

- **Educational Support:** An adult unmarried daughter can invoke Section 20(1)(d) to seek financial assistance from her father for higher education.
- **Parental Responsibility:** The Court observed that parents' responsibility to provide basic amenities, healthcare and education does not automatically end when a child becomes a major.
- **Legislative Intent:** Denying relief merely because the daughter has attained adulthood could defeat the purpose of Section 20(1)(d).
- The provision allows monetary relief "in addition to" other forms of relief, which may include educational expenses where justified.

About the DV Act, 2005

- A civil law enacted to protect women from violence within domestic and family relationships.
- **Enacted:** 2005; came into force on 26 October 2006.
- **Coverage:** Protects an aggrieved woman in a domestic relationship, including relationships in the nature of marriage (live-in relationships).

What is Domestic Violence?

The Act covers:

- Physical abuse
- Sexual abuse
- Verbal and emotional abuse
- Economic abuse
- Dowry-related harassment

Key Provisions

Section	Provision
Section 18	Protection Orders
Section 19	Residence Orders
Section 20	Monetary Relief
Section 21	Custody Orders
Section 22	Compensation Orders
Section 23	Interim/Ex parte Orders

Section 20 - Monetary Relief may cover:

- Loss of earnings
- Medical expenses
- Loss or damage to property
- Maintenance for the aggrieved woman and her children
- Educational expenses, where justified, as recognised in the present case

Unified District Information System for Education Plus (UDISE+) Report 2025-26

Why in News?

The Supreme Court (Number of Judges) Amendment Ordinance, 2026 was promulgated to increase the sanctioned strength of the Supreme Court, reviving the debate over the frequent use of Ordinances instead of parliamentary legislation.

Key Findings

1. More Teachers

- Total teachers increased to 1.03 crore in 2025-26, an 8.3% rise compared with 2022-23.
- Female teachers accounted for 54.9% of the teaching workforce.

2. Improved Pupil-Teacher Ratio (PTR)

PTR improved across all school stages:

- Foundational: 10:1
- Preparatory: 12:1
- Middle: 17:1
- Secondary: 21:1

These are better than the NEP 2020 recommended ratio of 30:1.

3. Decline in Dropout Rates

- Preparatory stage: 2.3% → 1.8%
- Secondary stage: 8.2% → 7.0%

4. Higher Secondary Enrolment

- Gross Enrolment Ratio (GER) at the secondary stage increased from 68.5% to 71.7%, indicating improved access to secondary education.

5. Fewer Single-Teacher & Zero-Enrolment Schools

- Single-teacher schools declined by around 3%, from 1,04,125 to 1,00,843.
- Zero-enrolment schools declined by nearly 29%, from 7,993 to 5,663.

6. Improved Digital Infrastructure

- Schools with computer facilities: 64.7% → 69.9%
- Schools with internet connectivity: 63.5% → 67.4%

7. Basic Infrastructure

- Electricity: 95.0%
- Safe drinking water: 99.5%
- Girls' toilets: 98.5%
- Boys' toilets: 97.2%
- Handwashing facilities: 96.9%

8. Progress in Gender Representation

- Girls' enrolment increased from 48.3% to 48.4%.
- The rising share of female teachers and girls' enrolment indicates gradual progress towards gender parity in school education.

Three-Pronged DNA Test in Paternity Disputes

Why in News?

The Supreme Court upheld a mandatory DNA test in a paternity dispute, balancing a child's right to identity and inheritance with an individual's right to privacy under Article 21.

Way Forward

- Strengthen the Parliamentary Committee System for better scrutiny of Bills.
- Ensure Ordinances are used only in exceptional situations with clear justification.
- Promote greater parliamentary debate on major legislation.
- Strengthen Question Hour to improve executive accountability.
- Enhance research support for MPs to improve legislative quality.
- Review the Anti-Defection Law to encourage informed legislative discussions.

TribeX

Why in News?

The Ministry of Tribal Affairs has launched TribeX, India's first digital learning platform dedicated to tribal arts, culture, languages and traditional knowledge.

About TribeX

- A digital learning and knowledge platform aimed at preserving, promoting and showcasing India's tribal heritage globally.
- Offers free online certificate courses on tribal arts, crafts, languages and traditional knowledge.
- Provides online learning, assessments and progress tracking.
- Functions as a digital archive of tribal languages, oral traditions, performing arts, festivals and indigenous knowledge.
- Hosts 5,000+ multimedia resources, with a target of 10,000 resources.
- Helps digitally preserve endangered tribal knowledge and supports its intergenerational transmission.

Indian Ocean Dipole (IOD)

Why in News?

India's 2026 Southwest Monsoon recorded around a 40% rainfall deficit in June 2026, partly linked to a strengthening El Niño. This has raised interest in whether a positive Indian Ocean Dipole (IOD) could support rainfall during the remaining monsoon season.

What is the Indian Ocean Dipole?

- The IOD is an ocean-atmosphere coupled climate phenomenon in the tropical Indian Ocean.
- It is based on differences in Sea Surface Temperatures (SSTs) between:
 - Western Indian Ocean: Near East Africa
 - Eastern Indian Ocean: Near Indonesia
- It is measured using the Dipole Mode Index (DMI)

Phases of IOD

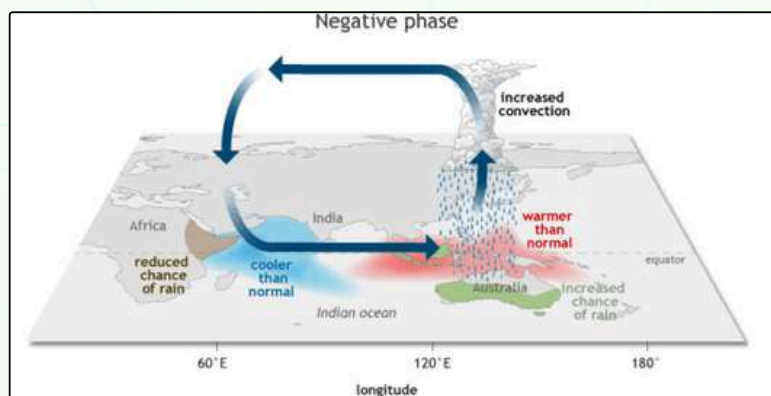
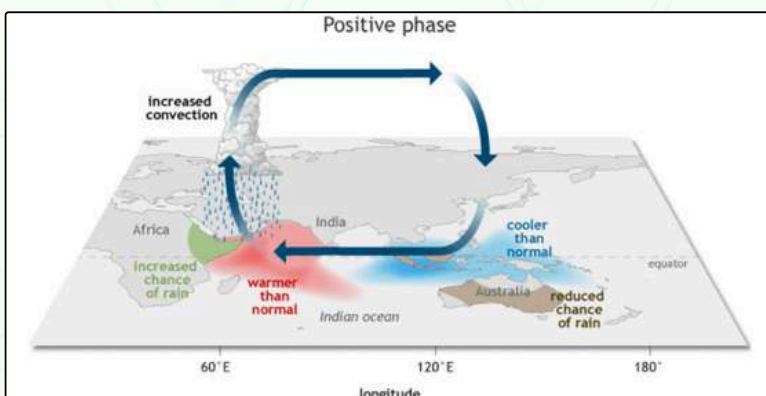
Phase	Key Feature	Impact on India
Positive IOD	Western Indian Ocean warmer; eastern region cooler	Generally strengthens monsoon and supports higher rainfall
Negative IOD	Eastern Indian Ocean warmer; western region cooler	Generally weakens monsoon and reduces rainfall
Neutral IOD	No major SST difference	Limited influence on monsoon

Positive IOD and Indian Monsoon

- **Increases moisture supply:** Warmer waters in the western Indian Ocean increase evaporation and help transport moisture-laden winds towards India.
- **Supports monsoon rainfall:** Enhanced moisture availability can strengthen southwest monsoon rainfall.
- **Offsets El Niño:** A positive IOD can partly counter El Niño's tendency to suppress the Indian monsoon by improving moisture transport.
- **However,** a strong positive IOD cannot necessarily completely overcome a strong El Niño.

Negative IOD and Indian Monsoon

- **Moisture shifts eastward:** Warmer waters near Indonesia increase evaporation and convection in the eastern Indian Ocean.
- This can divert moisture and rainfall towards Indonesia, reducing moisture reaching India.
- **Weakens monsoon:** Lower moisture availability can weaken southwest monsoon rainfall.
- **With El Niño:** A negative IOD can further aggravate monsoon deficits and increase the risk of drought.



Antarctica's Blood Falls: Century-Old Mystery Solved

Why in News?

Scientists have solved the century-old mystery of Blood Falls, a rust-red waterfall flowing from Taylor Glacier into Lake Bonney in Antarctica's McMurdo Dry Valleys.

Key Findings

- **Source:** Blood Falls originates from an ancient underground reservoir of iron-rich, hypersaline brine trapped beneath Taylor Glacier.
- **Flow Mechanism:** Pressure created by the movement of the glacier forces the brine through subglacial channels to the surface.
- **Red Colour:** When the iron-rich brine comes in contact with air, dissolved iron reacts with oxygen to form iron oxides (rust), producing the reddish-brown colour.

Why Does Blood Falls Not Freeze?

- The brine has an extremely high salt concentration, which lowers its freezing point.
- Latent heat released during freezing also helps maintain the brine in liquid form.
- Taylor Glacier is considered the coldest known glacier with continuously flowing liquid water.

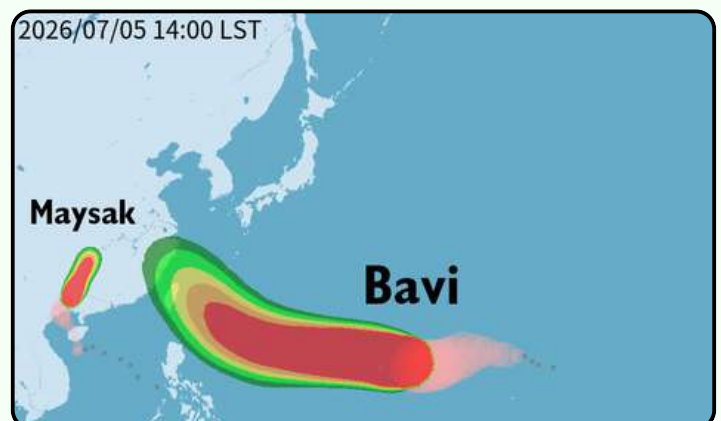
Significance

- The discovery improves understanding of subglacial environments and extreme life-supporting conditions on Earth.
- Similar salty liquid environments may potentially exist beneath the icy surfaces of Mars and Jupiter's moon Europa, making Blood Falls relevant to the search for extraterrestrial life.

Typhoon Bavi (2026)

Why in News?

Typhoon Bavi weakened into a tropical storm after making landfall in Zhejiang, China, causing widespread disruption across parts of East Asia.



About Typhoon Bavi

- It was an exceptionally large and intense Category 5 tropical cyclone that developed over the western North Pacific Ocean in 2026.
- Origin: Western Pacific Ocean; it moved northwestward across the Philippine Sea towards East Asia.
- Philippines: Known as Super Typhoon Inday.
- Landfall: First struck Rota in the Northern Mariana Islands at Category 5 intensity on 6 July 2026.
- It later crossed Japan's Sakishima Islands before making landfall in Zhejiang, China.
- Name: "Bavi" was contributed to the international tropical cyclone naming roster by Vietnam.

Right to Protest in India

Why in News?

A protest march by the Cockroach Janta Party (CJP) towards Parliament and the subsequent police action have renewed debate over the constitutional right to protest, reasonable restrictions and the balance between civil liberties and public order.

Constitutional Basis

The Right to Protest is not explicitly mentioned in the Constitution but is derived from:

- Article 19(1)(a): Freedom of speech and expression.
- Article 19(1)(b): Right to assemble peacefully and without arms.
- Article 19(1)(c): Right to form associations.

However, this right is not absolute. Under Article 19(2) and 19(3), reasonable restrictions may be imposed in the interests of:

- Sovereignty and integrity of India
- Security of the State
- Public order
- Friendly relations with foreign States
- Decency or morality
- Contempt of court
- Defamation
- Incitement to an offence



Why is the Right to Protest Important?

- **Public Participation:** Allows citizens to participate in governance beyond elections.
- **Example:** India Against Corruption Movement (2011).
- **Government Accountability:** Encourages governments to respond to public concerns.
- **Example:** Farmers' Protest (2020-21) contributed to the repeal of the three farm laws.
- **Protection of Rights:** Enables citizens to peacefully assert constitutional and social rights.
- **Example:** Chipko Movement.
- **Policy Reforms:** Public movements can lead to legislative changes.
- **Example:** Nirbhaya protests (2012) contributed to the Justice Verma Committee and Criminal Law (Amendment) Act, 2013.
- **Voice for Marginalised Groups:** Brings concerns of vulnerable communities into policymaking.
- **Example:** Narmada Bachao Andolan.
- **Strengthens Democracy:** Promotes liberty, participation, dissent and accountable governance.

India's Global Legacy

- India's tradition of Gandhian Satyagraha and non-violent protest has influenced movements worldwide, including those led by Martin Luther King Jr., Nelson Mandela, Aung San Suu Kyi and César Chávez.

Challenges in Regulating Protests

- **Use of Section 163 BNSS:** Frequent prohibitory orders may restrict peaceful assembly.
- **Excessive Police Action:** Lathi charges, detention, tear gas and other coercive measures raise concerns about proportionality.
- **Permission Delays:** Lack of transparent and timely procedures can restrict the effective exercise of the right.
- **Public Order vs Civil Liberties:** Authorities must balance public safety with freedom of speech and assembly.
- **No Uniform Framework:** Different States follow varying standards for regulating protests.
- **Digital Surveillance:** CCTV, facial recognition and digital monitoring raise concerns about privacy and free expression.
- **Security-Freedom Balance:** National security measures should not unnecessarily suppress peaceful dissent.

Conclusion

The right to peaceful protest is an essential feature of constitutional democracy, enabling citizens to express dissent and hold governments accountable. Restrictions may be necessary for public order and security, but they must remain reasonable, proportionate and non-arbitrary.

Prevention of Insults to National Honour (Amendment) Bill, 2026

Why in News?

The Prevention of Insults to National Honour (Amendment) Bill, 2026 was passed by Parliament to extend legal protection against intentional insults, obstruction or disturbance during the singing of the National Song, “Vande Mataram.”

Key Provisions

- The Bill amends the Prevention of Insults to National Honour Act, 1971.
- It proposes to extend Section 3 of the Act to cover the National Song along with the National Anthem.
- It makes it an offence to:
 - Intentionally prevent the singing of Vande Mataram.
 - Cause disturbance to an assembly engaged in singing it.
- Punishment: Imprisonment up to 3 years, fine, or both.
- For second and subsequent convictions, the parent Act provides for a minimum imprisonment of 1 year.
- The amendment seeks to address the earlier absence of specific penal protection for the National Song.

About the 1971 Act

The Prevention of Insults to National Honour Act, 1971 aims to preserve the dignity and sanctity of India's national symbols.

It provides protection against:

- Intentional insult to the National Flag and Constitution, including burning, mutilation, defacement, destruction or showing contempt.
- Intentional prevention or disturbance of the singing of the National Anthem.

The Act provides for imprisonment of up to 3 years, fine, or both.

Constitutional Basis

- Article 51A(a): Makes it a Fundamental Duty of every citizen to respect the Constitution, National Flag and National Anthem.
- Flag Code of India, 2002: Regulates the display, hoisting and use of the National Flag.

Arguments in Favour

- Protects National Symbols: Provides statutory protection to a symbol associated with India's freedom movement.
- Closes Legal Gap: Extends specific legal protection to the National Song.
- Promotes National Unity: The government argues that respect for national symbols strengthens patriotism and constitutional values.
- Legal Consistency: Brings the National Song under a framework similar to that applicable to the National Anthem.

Concerns

- **Constitutional Status:** Critics argue that an ordinary law should not equate the legal status of the National Song with the National Anthem, given their distinct constitutional positions.
- **Freedom of Speech:** The law may raise concerns under Article 19(1)(a), subject to reasonable restrictions under Article 19(2).
- **Legislative Competence:** Questions may arise over whether such a change alters the constitutional understanding without a constitutional amendment.
- **Potential Misuse:** There are concerns that the provision could be used against individuals for symbolic or political expression.

Conclusion

The amendment seeks to strengthen legal protection for Vande Mataram and reinforce respect for national symbols. However, its implementation must balance national unity and dignity with constitutional freedoms, particularly freedom of expression, ensuring that patriotism remains consistent with democratic values.

Protection of Life & Liberty

Why in News?

The Supreme Court is considering a petition seeking a 24x7 judicial accessibility mechanism to protect life and personal liberty, particularly in cases involving late-night arrests, demolition drives, deportations and other urgent executive actions.

The Court has agreed to consider framing a Standard Operating Procedure (SOP) to enable citizens to approach courts beyond regular working hours.

Background

- A three-judge Bench headed by Chief Justice of India Surya Kant heard the petition.
- The petition argues that courts should remain accessible during nights, weekends and holidays when urgent executive actions may threaten fundamental rights.
- Lack of timely judicial intervention could result in irreversible violations of Article 21, particularly in cases of illegal detention, demolition or deportation.

Right to Life and Personal Liberty — Article 21

Article 21 states:

“No person shall be deprived of his life or personal liberty except according to procedure established by law.”

- The right is available to both citizens and non-citizens.
- Initially interpreted narrowly, Article 21 has been expanded by the Supreme Court to include several rights necessary for a life with dignity.

Why is 24x7 Judicial Access Important?

- **Protects Personal Liberty:** Enables immediate intervention against illegal arrests and arbitrary detention.
- **Prevents Irreparable Harm:** Courts can intervene before demolitions, deportations or evictions cause irreversible damage.
- **Checks Executive Power:** Provides continuous judicial oversight over urgent State actions.
- **Strengthens Rule of Law:** Ensures that executive action remains subject to judicial review at all times.
- **Builds Public Trust:** Reinforces public confidence that constitutional remedies remain available whenever fundamental rights are threatened.

Challenges

- **Institutional Constraints:** Shortage of judges, staff and infrastructure, along with heavy pendency.
- **Lack of Uniformity:** High Courts follow different procedures for urgent matters.
- **Risk of Misuse:** Non-urgent cases may be presented as emergency matters, burdening emergency benches.
- **Administrative Burden:** 24x7 functioning requires round-the-clock registries, technical support and security.
- **Judicial Independence:** Emergency hearings must balance quick intervention with judicial efficiency and reasoned decision-making.

Way Forward

- **Nationwide SOP:** Establish a common framework for emergency judicial access while allowing necessary regional flexibility.
- **24x7 Emergency Benches:** Introduce rotational duty judges or emergency benches for urgent cases.
- **Digital Emergency Filing:** Create a dedicated e-filing system with real-time alerts and automated case assignment.
- **Define Urgent Cases:** Prioritise matters such as illegal detention, habeas corpus, imminent demolition, deportation and custodial violence.
- **Time-Bound Response:** Set clear timelines for acknowledging and hearing emergency petitions.
- **Virtual Hearings:** Strengthen secure video-conferencing and digital court infrastructure.
- **Respect High Court Autonomy:** Maintain a common national framework while allowing High Courts to develop region-specific procedures.

Conclusion

Article 21 is a cornerstone of India's constitutional democracy and cannot depend solely on court working hours. A uniform, technology-enabled 24x7 emergency judicial mechanism can strengthen the Rule of Law, constitutional supremacy and access to justice, particularly when life and liberty are at immediate risk.

Recognition of Intersex Persons

Why in News?

A three-judge Bench of the Supreme Court, headed by the Chief Justice of India, issued notice to the Union Government and States on a petition seeking distinct legal recognition and constitutional protection for intersex persons.

Key Demands

- The petition seeks recognition of persons born with congenital variations in sex characteristics or Differences of Sex Development (DSD) as a distinct and identifiable class.
- It seeks to distinguish intersex persons from transgender persons, as the two concepts relate to different aspects of sex and gender.
- It also seeks a dedicated legal framework providing:
 - Legal recognition
 - Protection from discrimination
 - Affirmative support
 - Welfare measures
- The petition has sought directions to the Union Government to frame statutory guidelines within six months.

Constitutional Basis

The petition invokes:

- Article 14: Equality before law and equal protection of laws.
- Article 15: Protection against discrimination.
- Article 21: Right to life, dignity, identity and bodily autonomy.

Who are Intersex Persons?

- Intersex persons are born with variations in biological sex characteristics, including chromosomes, gonads, hormones or genitalia, that do not fit typical male or female classifications.
- Differences of Sex Development (DSD): A group of congenital conditions involving atypical development of chromosomal, gonadal or anatomical sex characteristics.

Intersex vs Transgender

Intersex

Biological variation in sex characteristics, generally present from birth

Concerns biological sex characteristics

Transgender

Relates to a person's gender identity

Concerns gender identity differing from the sex assigned at birth

Medical Ethics

- International medical standards generally discourage non-essential and irreversible medical interventions on intersex children before they can provide informed consent.
- Exceptions may apply where intervention is medically necessary or required in an emergency.

Key Challenges

Intersex persons may face:

- Social stigma and discrimination
- Non-consensual or forced medical procedures
- Legal and identity-documentation difficulties
- Limited access to appropriate healthcare
- Lack of specific legal recognition and protection

SUMAN Roadmap 2030

Why in News?

The Ministry of Health and Family Welfare (MoHFW) has launched the SUMAN Roadmap 2030 to strengthen maternal and newborn healthcare and accelerate India's progress towards SDG 3 by 2030.

Key Features

- **Targeted District Strategy:** Focused interventions in 130 districts across 13 high-focus States, along with universal strategies for all States and UTs.
- **High-Risk Pregnancy Management:** Systematic identification and monitoring of high-risk pregnancies during antenatal, delivery and postnatal stages.
- **SUMAN Package:** Promotes early pregnancy registration, quality antenatal care, institutional delivery, postpartum care and complete clinical assessment.
- **Community-Based Care:** ASHAs will conduct bi-weekly visits during the 8th and 9th months of pregnancy for counselling, nutrition support, birth preparedness and identification of danger signs.
- **Digital & AI Integration:** Uses AI-enabled labour rooms, JANANI Portal for digital monitoring and a centralised SUMAN Call Centre for grievance redressal.
- **Community Participation:** Initiatives such as SUMAN Panchayats and Mothers' Picnics aim to increase community awareness and local ownership.
- **Child Health Integration:** Incorporates Samagra Shishu Swasthya Karyakram (SSBSK) for integrated home-based healthcare of children from birth to 36 months.

Significance

The roadmap adopts a continuum-of-care approach, linking maternal, newborn and early childhood healthcare with community participation and digital technology to improve health outcomes and achieve SDG 3 targets by 2030.



Internet Shutdowns in India

Why in News?

The Union Ministry of Home Affairs temporarily suspended mobile Internet services in parts of Central Delhi during the 'Chalo Sansad' protest organised by the Cockroach Janta Party (CJP), citing public order and safety concerns. The move has renewed debate over the legality, necessity and proportionality of Internet shutdowns.

What is an Internet Shutdown?

An Internet shutdown is the intentional disruption or suspension of Internet or electronic communication services by the government for a specific area or population for a limited period.

Common Forms

- Complete shutdown: Suspension of Internet connectivity.
- Throttling: Deliberate slowing of Internet speeds.
- Platform-specific blocking: Blocking access to particular websites or online platforms.

Legal Framework

Telecommunications Act, 2023

- Section 20(2)(b) provides the current legal framework for suspension of telecommunication services.
- Services may be suspended only in cases of:
 - Public emergency, or
 - Public safety.
- A protest alone does not automatically justify an Internet shutdown.

Every suspension order must:

- Record the reasons in writing.
- Be issued by the competent authority.
- Cover only the minimum geographical area and duration necessary.
- Be published to ensure transparency and accountability.

Telecommunications (Temporary Suspension of Services) Rules, 2024

- Rule 3(2) requires publication of suspension orders.
- Orders must specify the date, time, duration and geographical area of the shutdown.
- Publication ensures transparency, accountability and proportionality in the exercise of government power.

Key Concern

Internet access has become essential for communication, education, business, digital payments and access to public services. Therefore, shutdowns must be used only as a last resort and must satisfy the principles of necessity, proportionality and legality.

Uttarakhand Becomes Fully Literate State

Why in News?

Uttarakhand has become India's sixth fully literate State, achieving the required adult literacy benchmark under the ULLAS (New India Literacy Programme). Its literacy rate has crossed 98%.

What is "Full Literacy"?

A State/UT can be declared fully literate after meeting the literacy benchmarks prescribed under NEP 2020 and ULLAS.

- Nodal Ministry: Department of School Education & Literacy, Ministry of Education.
- Adult Literacy: At least 95% literacy among people aged 15 years and above; 100% literacy is not mandatory.
- Functional Literacy: Ability to read, write and perform basic arithmetic, along with essential digital, financial and life skills.
- Certification: Learners must qualify the Foundational Literacy and Numeracy Assessment Test (FLNAT).

Fully Literate States/UTs

States:

- Mizoram
- Goa
- Tripura
- Himachal Pradesh
- Sikkim
- Uttarakhand

Union Territories:

- Ladakh
- Chandigarh



ULLAS Programme

ULLAS stands for Understanding Lifelong Learning for All in Society and is also known as the Nav Bharat Saaksharta Karyakram.

- Launched: Under NEP 2020 as a Centrally Sponsored Scheme for 2022-27.
- Focus Areas:
 - Foundational literacy and numeracy
 - Critical life skills
 - Vocational skills
 - Basic and continuing education
- Implementation: Based on community participation, volunteerism and technology-enabled learning.

Significance

ULLAS moves beyond basic literacy by promoting functional, digital and financial literacy, helping adults participate more effectively in social, economic and civic life.



Trial in Absentia

Why in News?

The National Investigation Agency (NIA) is expected to seek a trial in absentia against Hafiz Saeed under the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023 in connection with the Pahalgam terror attack case.

What is Trial in Absentia?

- A trial in absentia is a criminal trial conducted without the physical presence of the accused.
- It is provided under Section 356 of the BNSS, 2023.
- The provision is intended for cases where an accused deliberately remains unavailable despite legal proceedings.

When is it Applicable?

- It applies to an accused who has been declared a “proclaimed offender” under Section 84 of the BNSS.
- Under Section 84(4), the provision applies where the accused is charged with an offence punishable with:
 - Imprisonment of 10 years or more
 - Life imprisonment
 - Death penalty

Significance

Trial in absentia enables criminal proceedings to continue against serious offenders who evade the judicial process or remain beyond the jurisdiction of Indian courts, while following the procedural safeguards prescribed under the BNSS.

Fast-Track Courts (FTCs)

Why in News?

Prime Minister Narendra Modi proposed establishing Fast-Track Courts (FTCs) for examination paper leak cases amid protests demanding faster and stricter action against those involved in exam irregularities.



- What are Fast-Track Courts?
- FTCs are special courts established to speed up trials in specific categories of cases and reduce judicial delays.
- Legal Status: There is no single central law governing FTCs.
- Establishment: They may be created through government schemes, judicial directions or State initiatives.

Evolution of Fast-Track Courts

- 14th Finance Commission (2015–20): Recommended 1,800 FTCs for:
 - Heinous crimes
 - Long-pending property disputes
 - Cases involving vulnerable groups
- 2019: The Union Government launched the Fast-Track Special Courts (FTSCs) Scheme, partly funded through the Nirbhaya Fund, for speedy disposal of rape and POCSO cases.

Time Limit for Disposal

- FTCs have no specific statutory deadline for completing trials.
- The BNSS recommends:
 - Criminal trials: Within 2 years
 - Sexual offence trials: Within 2 months
- FTSC Target: Around 41–42 cases per quarter, or approximately 165 cases per year per court.

Performance of FTCs

As of January 2026:

- 862 regular FTCs functioning across 21 States/UTs.
- 774 FTSCs, including 398 exclusive POCSO courts, functioning across 29 States/UTs.
- In 2024, FTSCs received 88,902 cases and disposed of 85,595 cases.
- Average disposal rate: 9.5 cases/month, compared with 3.3 cases/month in regular trial courts.
- Despite faster disposal, over 2.4 lakh cases remained pending by the end of 2023.

Significance: FTCs can help ensure speedy justice, reduce case pendency and improve judicial efficiency, particularly in sensitive and time-bound cases such as sexual offences and examination-related fraud.

Externment

Why in News?

The Bombay High Court held that a person cannot be subjected to externment merely for participating in agitations or protests against the government.

What is Externment?

- Externment is a preventive administrative measure under which a person is directed to leave a specified geographical area for a fixed period.
- It aims to prevent activities that may threaten public order, public peace or public safety.
- Legal Basis: Governed by State-specific police laws, such as the Maharashtra Police Act, 1951.
- It is intended to be preventive, not punitive.

Objective

Externment powers are generally used against habitual offenders or persons considered to pose an imminent threat, with the aim of:

- Preventing intimidation of witnesses.
- Preventing disturbance of public order.
- Preventing further offences.

Key Observation of the Bombay High Court

- Participation in protests alone cannot justify externment, particularly when the protest is directed against government policies or actions.
- Since externment restricts a person's freedom of movement, residence and livelihood, its use must satisfy the principles of:
 - Necessity
 - Proportionality
 - Procedural fairness

Constitutional Protection

Arbitrary use of externment powers can affect:

- Article 19: Freedom of speech and expression and freedom of movement.
- Article 21: Right to life, personal liberty and dignity.

Significance

The judgment reinforces that preventive powers cannot be used to suppress legitimate democratic dissent. Restrictions on individual liberty must have a lawful basis and should be necessary, proportionate and procedurally fair.

India-New Zealand Bilateral Summit 2026

Why in News?

The Indian Prime Minister visited New Zealand on 10-11 July 2026 for the India-New Zealand Bilateral Summit, marking the first visit by an Indian Prime Minister to New Zealand in four decades.

Key Outcomes

- **Strategic Partnership:** India and New Zealand elevated their relationship to a Strategic Partnership and adopted the Roadmap to 2030 for long-term bilateral and multilateral cooperation.
- **Trade & Economy:** Both countries aim to double bilateral trade in goods and services to NZ\$7 billion by 2030.
 - **Defence & Maritime Cooperation:** Signed a Reciprocal Logistics Support Arrangement between the Indian Navy and New Zealand Defence Force.
 - New Zealand joined the Maritime Security Pillar of India's Indo-Pacific Oceans Initiative (IPOI), including cooperation against Illegal, Unreported and Unregulated (IUU) Fishing.
 - **Agriculture & Horticulture:** Agreed to strengthen cooperation in horticulture, forestry, animal husbandry and dairying.
 - Launched the Kiwifruit Action Plan.
 - Two Centres of Excellence for Kiwifruit will be established in Nagaland and Uttarakhand.
 - Focus areas include research, technology transfer and capacity building.
- **Clean Energy:** New Zealand joined the Global Biofuels Alliance, promoting cooperation in biofuels, clean energy and energy security.
- **Sports & People-to-People Relations:** The two countries are celebrating 100 years of sporting ties in 2026, recalling the 1926 tour of the Indian Army Hockey Team to New Zealand.

Māori Powhiri

During the visit, the Indian Prime Minister received a traditional Māori Powhiri ceremonial welcome.

Powhiri is a traditional Māori welcome ceremony that:

- Honours distinguished guests.
- Represents respect, hospitality (manaakitanga) and peace.
- Symbolises the establishment of a relationship between tangata whenua (hosts) and manuhiri (visitors).

Significance

The summit marks a major step in India-New Zealand relations, expanding cooperation across trade, defence, maritime security, agriculture, clean energy, sports and people-to-people ties, while strengthening India's engagement in the Indo-Pacific region.



India-Seychelles Relations

Why in News?

The Prime Minister of India visited Seychelles as the Guest of Honour for its 50th National Day (Golden Jubilee of Independence) celebrations.

The visit highlighted India's vision of the Indian Ocean as an "Ocean of Opportunity", based on security, sustainability and shared prosperity.

Key Outcomes

- **CDRI:** Seychelles joined the Coalition for Disaster Resilient Infrastructure (CDRI).
- **Award:** Seychelles conferred the "Guardian of the Blue Horizon" distinction on Prime Minister Modi for contributions to environmental conservation, sustainable development and global climate action.
- **Development Assistance:** India provided:
 - 1 Fast Patrol Vessel
 - 10 utility vehicles
 - 5 Laser Radial-class boats
 - 6 ambulances
 - 500 MT rice
 - 8,500 MT cement
- **50 Years of Diplomatic Ties:** A commemorative logo was launched to mark 50 years of India-Seychelles diplomatic relations.

Why is Seychelles Important for India?

- **Strategic Location:** Located in the western Indian Ocean, near important Sea Lanes of Communication (SLOCs) linking Asia, Africa and Europe.
- **Maritime Security:** A key partner in combating piracy, illegal fishing, drug trafficking and other maritime crimes.
- **EEZ Surveillance:** Seychelles has a large Exclusive Economic Zone (EEZ). India supports its maritime surveillance and coastal security through equipment, technology and capacity building.
- **SAGAR Vision:** Seychelles is an important partner in India's SAGAR (Security and Growth for All in the Region) initiative for a secure and prosperous Indian Ocean.
- **Climate Partnership:** As a Small Island Developing State (SIDS), Seychelles is highly vulnerable to sea-level rise and climate change. India supports its climate resilience and sustainable development efforts.
- **Neighbourhood First & Indo-Pacific:** India's engagement reflects its Neighbourhood First and broader Indo-Pacific approach through development assistance, defence cooperation and capacity building.

Significance

India-Seychelles relations strengthen India's maritime security, island diplomacy and SAGAR vision, while promoting cooperation in defence, climate resilience, infrastructure and sustainable development across the Indian Ocean region.

India's 'Operationally Deployed' Nuclear Warheads

Why in News?

According to the SIPRI Yearbook 2026, India is estimated to possess around 190 nuclear warheads, of which about 12 are operationally deployed. This reflects the gradual development of India's second-strike capability under its No First Use (NFU) doctrine.

What are Operationally Deployed Nuclear Warheads?

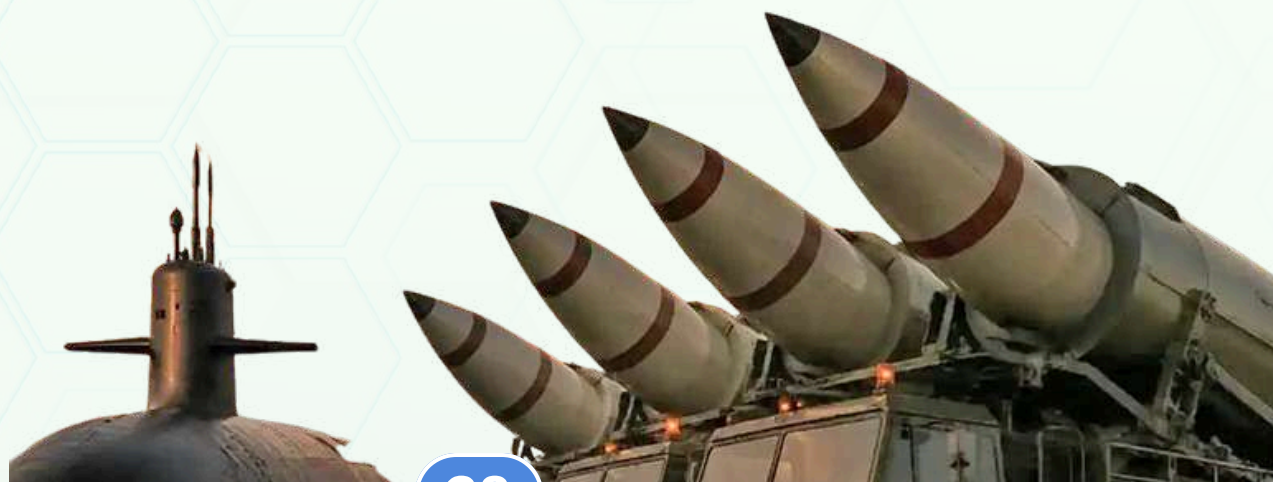
- These are nuclear warheads mated with delivery systems such as missiles, aircraft or submarines and kept in operational readiness.
- Operational deployment $\neq$ immediate use: It does not necessarily mean that nuclear weapons are ready for instant launch or that the nuclear threshold has been lowered.
- Stockpile vs Deployment: A country may possess a large nuclear stockpile, while only a small portion is operationally deployed at a given time.

India's Nuclear Doctrine

- No First Use (NFU): India maintains that it will not initiate a nuclear attack, but reserves the right to undertake massive retaliation following a nuclear attack.
- Credible Minimum Deterrence: India seeks to maintain the minimum nuclear capability required to deter adversaries.
- Assured Retaliation: Emphasis is placed on maintaining a survivable second-strike capability rather than a large deployed arsenal.
- Civilian Political Control: India's nuclear weapons are under civilian oversight through the Nuclear Command Authority (NCA).

Significance

The limited number of operationally deployed warheads, alongside India's development of land-, air- and sea-based nuclear capabilities, highlights the focus on a credible and survivable second-strike capability while maintaining the principles of NFU and minimum deterrence.



India Joins WTO Agreement on Fisheries Subsidies

Why in News?

India has formally joined the WTO Agreement on Fisheries Subsidies by depositing its Instrument of Acceptance with the World Trade Organization (WTO). India became the 123rd WTO Member to accept the agreement.

About the WTO Agreement on Fisheries Subsidies

- **Adopted:** By consensus at the 12th WTO Ministerial Conference (MC12) in Geneva in June 2022.
- **Entry into Force:** 15 September 2025, after acceptance by two-thirds of WTO members.
- **Main Objective:** To promote sustainable fisheries by regulating harmful government subsidies.

What Does the Agreement Target?

It seeks to curb subsidies that contribute to:

- Illegal, Unreported and Unregulated (IUU) fishing
- Fishing of overexploited fish stocks
- Unsustainable exploitation of marine resources

Key Features

- **Scope:** Covers subsidies related to marine wild-capture fishing and fishing-related activities at sea.
 - Excluded: Aquaculture
 - Inland fisheries
- Therefore, India's aquaculture sector, including shrimp exports, remains outside the agreement's scope.

Importance for Small-Scale Fishers

- Recognises the importance of traditional and small-scale fishers.
- Aims to protect their livelihoods while promoting sustainable fishing practices.
- Places greater discipline on harmful subsidies provided to large industrial and distant-water fishing fleets.

Significance for India

India's accession supports sustainable marine resource management while protecting the interests of its small-scale and traditional fishing communities. It also contributes to a more equitable and sustainable global fisheries regime.



BRICS Guwahati Declaration

Why in News?

BRICS countries adopted the Guwahati Declaration to strengthen cooperation against illicit drug trafficking and transnational organised crime.

About the Guwahati Declaration

- Adopted at: BRICS Heads of Anti-Drug Agencies Meeting 2026, held in Guwahati, Assam, under India's BRICS Chairship.
- Adopted by: 11 BRICS member countries.
- Objective: Strengthen collective action against drug trafficking, synthetic drugs, precursor chemicals and transnational organised crime.

Key Components

- Intelligence Sharing: Promotes timely exchange of intelligence, information and best practices among BRICS anti-drug agencies.
- Operational Cooperation: Encourages greater coordination between law-enforcement agencies.
- Technology & AI: Promotes the use of AI, digital tools and data-driven approaches for drug-control and law-enforcement efforts.
- Emerging Threats: Focuses on challenges such as:
 - Synthetic drugs and New Psychoactive Substances (NPS)
 - Diversion of precursor chemicals
 - Misuse of virtual assets and digital platforms
 - Criminal exploitation of maritime routes

Significance

The Declaration strengthens the BRICS framework for coordinated action against evolving drug-related threats and organised crime, particularly through intelligence sharing, technology-enabled enforcement and cross-border cooperation.

UNCITRAL: 60th Anniversary Conference

Why in News?

India hosted the 60th anniversary conference of UNCITRAL, where External Affairs Minister S. Jaishankar called for inclusive, predictable and development-oriented global trade laws that reflect the priorities of the Global South.



About UNCITRAL

UNCITRAL stands for the United Nations Commission on International Trade Law.

- **Established:** By the UN General Assembly in 1966.
- **Role:** It is the UN's core legal body for international trade law.
- **Objective:** To promote the progressive harmonisation and unification of international trade law.
- **Key Work:** Develops:
 - Model laws
 - International conventions
 - Legislative guides
 - Legal standards for international trade

Membership

- **Comprises 60 Member States**, elected by the UN General Assembly for six-year terms.
- Half of the membership is renewed every three years.
- **Regional representation:**
 - Africa: 14
 - Asia: 14
 - Eastern Europe: 8
 - Latin America & Caribbean: 10
 - Western Europe & Others: 14

Significance

UNCITRAL helps create predictable and harmonised legal frameworks for:

- International trade and investment
- Cross-border commercial transactions
- Dispute resolution
- Modernisation of commercial laws

India & UNCITRAL

- **Founding Member:** India joined UNCITRAL in 1968.
- **Legal Reforms:** India has undertaken reforms in arbitration, commercial dispute resolution and insolvency to create a transparent and internationally compatible legal system.
- **Global South:** India advocates greater participation of developing countries in framing international legal and trade norms.
- **Viksit Bharat 2047:** Predictable global legal frameworks can support India's manufacturing, technological innovation, global integration and economic resilience.

Key Takeaway

India's engagement with UNCITRAL reflects its effort to promote a fairer and more inclusive global trade architecture, particularly by ensuring that international legal norms address the developmental needs of the Global South.



21st East Asia Summit (EAS)

Why in News?

The 21st East Asia Summit (EAS) is being held in Manila, Philippines, bringing together leaders to discuss key political, security and economic issues in the Indo-Pacific.

About East Asia Summit (EAS)

- **Nature:** A leaders-led strategic forum for dialogue on political, security and economic issues in the Indo-Pacific.
- **Established:** 2005; the first EAS was held in Kuala Lumpur, Malaysia, in December 2005.
- **Secretariat:** Supported administratively and operationally by the ASEAN Secretariat in Jakarta, Indonesia.
- **Leadership:** Led by ASEAN, with the Chair rotating annually among ASEAN Member States.

Membership

The EAS has 19 participating countries:

11 ASEAN Members:

Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Vietnam.

8 Other Members:

Australia, China, India, Japan, New Zealand, Republic of Korea, Russia and the United States.

Priority Areas

Key areas of cooperation include:

- Environment & Energy
- Education
- Finance
- Global Health & Pandemic Diseases
- Natural Disaster Management
- ASEAN Connectivity

Meeting Structure

- Annual Leaders' Summit forms the core of the EAS.
- Foreign, Economic and Senior Officials' meetings are held periodically to advance the Summit's agenda.

India & EAS

- India is a founding member of the EAS.
- It actively contributes to discussions on:
 - Regional security
 - Maritime cooperation
 - Connectivity
 - Indo-Pacific stability

Significance

The EAS provides an important platform for ASEAN-led regional cooperation, allowing major Indo-Pacific powers to engage in dialogue on security, economic and strategic challenges.

Global Capability Centres (GCCs)

Context:

India has emerged as the world's leading destination for Global Capability Centres (GCCs), with over 2,100 centres serving more than 500 Forbes Global 2000 companies.

What are GCCs?

- GCCs are offshore units set up by Multinational Corporations (MNCs) to provide specialised services, innovation and strategic support to their global operations.
- They have moved beyond routine back-office work to high-value functions such as:
 - AI, Data Analytics and Cybersecurity
 - Engineering R&D and Product Design
 - Cloud Computing
 - Clinical Research and Drug Discovery

Evolution of GCCs

1. 1990s–2000s – Cost Centres: Focused mainly on low-cost BPO, IT and finance services.
2. 2010s – Capability Centres: Took responsibility for IT portfolios, application development and product maintenance.
3. Present – Innovation Hubs: Drive AI/ML research, digital transformation and global business strategy.

Why is India a GCC Hub?

- **Skilled Workforce:** Large pool of engineers, management professionals and digital specialists.
- **Cost Competitiveness:** Lower operational costs compared to many developed economies.
- **Strong Digital Ecosystem:** Growing digital infrastructure and adoption of emerging technologies.
- **Favourable Policies:** Initiatives such as Digital India, Ease of Doing Business, NEP 2020 and the National AI Mission support knowledge-based industries.
- **English Proficiency:** Facilitates integration with global business and technology networks.

Milk Production in the Gangetic Plains

Context:

A study published in Scientific Reports found that climate change is reducing milk production in India's Trans-Gangetic Plains, with buffaloes particularly vulnerable to heat stress.



How Climate Change Affects Dairy Production

- **Heat Stress:** High temperatures cause panting, reduced feed intake and lower activity, diverting energy away from milk production.
- **Lower Milk Yield:** Heat stress affects milk secretion and ejection, reducing overall productivity and increasing mortality during extreme heat.
- **Fodder Shortage:** Rising temperatures and water scarcity reduce the quantity and quality of animal fodder.
- **Higher Disease Risk:** Climate stress weakens animal immunity, increasing the risk of parasites and infectious diseases.
- **Economic Losses:** India currently loses around 3.2 million tonnes of milk annually, valued at about ₹2,661 crore. This could rise to 15 million tonnes by the 2050s.

Implications for India

- **Dairy Economy:** Lower productivity can affect food security, nutrition and the rural dairy economy.
- **Farmer Livelihoods:** Around 80 million smallholder dairy farmers may face reduced incomes.
- **Nutritional Security:** Declining milk availability can reduce access to protein, calcium and essential micronutrients.
- **Climate Vulnerability:** The trend highlights the growing vulnerability of both livestock and crop agriculture to climate change.

Roadmap for ‘Viksit Krishi, Samruddh Kisan’

Context:

On the 98th Foundation Day of ICAR, the Union Agriculture Minister launched the ‘Viksit Krishi, Samruddh Kisan’ roadmap to transform Indian agriculture into a climate-resilient, technology-driven, sustainable and globally competitive sector in line with the vision of Viksit Bharat 2047.

Key Features

- **100 Climate-Smart Villages:** ICAR will develop 100 villages to demonstrate climate-resilient farming, integrated agriculture, water conservation and climate-risk management.
- **One Institute-One Grand Innovation:** Each ICAR institute will develop at least one major innovation—such as a crop variety, vaccine, digital tool or climate-smart solution—within two years.
- **Technology Outreach:** Agricultural technologies and scientific innovations will be taken to 100 million farmers by ICAR’s 100th Foundation Day.
- **Mission ICAR-100:** Krishi Vigyan Kendras (KVKs) will be developed as innovation and climate-advisory hubs, startup incubation centres and technology demonstration centres, with each KVK covering at least 100 villages.
- **ICAR Open Digital Knowledge Platform:** Farmers will get free mobile-based access to scientific advisories, soil testing, weather forecasts, crop practices and market information.

- **Technology Commercialisation:** ICAR aims to generate ₹10,000 crore by 2029 through commercialisation and licensing of agricultural technologies, crop varieties and vaccines.
- **Research & Innovation:** ICAR released 43 new crop varieties, 17 technologies/products and 14 publications, covering areas such as disease-resistant crops, nutrition, livestock, fisheries and digital agriculture.

Specified Non-Financial Assets (SNFAs)

Context:

The Reserve Bank of India (RBI) has introduced Specified Non-Financial Assets (SNFAs) as a new regulatory category while updating rules for the management of stressed bank assets.

What are SNFAs?

- SNFAs are immovable properties acquired by banks when borrowers fail to repay loans.
- They may include residential or commercial buildings, industrial land and other real estate accepted by banks to settle outstanding debt.
- These assets are not used for regular banking operations and are mainly held for recovery purposes.
- The RBI Third Amendment Directions, 2026 provide rules for their acquisition, valuation, management and disposal.

Key Provisions

- **Acquisition after NPA:** Banks can acquire an SNFA only after the loan is classified as a Non-Performing Asset (NPA).
- **Debt Settlement:** The property must be acquired against full or partial settlement of outstanding bank dues.
- **Internal Policy:** Banks must frame policies covering eligibility, approval procedures and recovery efforts before acquiring such assets.
- **Restriction on Sale:** Repossessed properties cannot be sold back to the original borrower or related parties, even after they cease to be classified as SNFAs.
- **Separate Accounting:** SNFAs will not be included in Gross NPA, Net NPA or stressed assets. They will be shown separately as “non-banking assets acquired in satisfaction of claims.”



Index of Core Industries (ICI)

Context:

The Union Government has released a new series of the Index of Core Industries (ICI) by changing its base year from 2011-12 to 2022-23. This brings the ICI in line with other major indicators such as GDP, WPI and IIP, which also use 2022-23 as the base year.

Key Changes in the New ICI

- New Base Year: Revised from 2011-12 to 2022-23.
- Nine Core Industries: Iron ore has been added, increasing the number of sectors from 8 to 9.
- Updated Weights: Sectoral weights have been recalculated to reflect changes in the industrial structure and their contribution to the Index of Industrial Production (IIP).
- Steel Measurement: Steel is now measured using gross production instead of net production.
- Coal Coverage: Only raw coal is included. Washed coal and coal middlings are excluded to avoid double counting.

Changes in Sectoral Weights

Higher Weight:

- Electricity: Increased significantly from 19.85% to 30.932%.
- Fertilisers: Recorded a marginal increase.
- Iron Ore: Newly added with a 4.905% weight.

The higher weight of electricity reflects greater electrification, manufacturing growth, digitalisation, the EV ecosystem and rising power demand.

Lower Weight:

- Coal: 10.33% → 5.596%
- Natural Gas: 6.88% → 3.841%
- Refinery Products: 28.04% → 22.572%

These changes reflect the evolving structure of India's industrial economy.

Cotton – The “White Gold”

Context:

India is the world's largest cotton cultivator and the second-largest producer and consumer. The government has launched the Mission for Cotton Productivity (2026-31) to improve cotton productivity, quality and global competitiveness.



About Cotton

- Cotton is a Kharif cash crop and a major natural fibre crop.
- It is called “White Gold” because of its importance to agriculture, industry, employment and exports.
- It is a semi-xerophytic crop, suited to tropical and subtropical climates.

Agro-Climatic Requirements

- Temperature: 21-27°C
- Rainfall: 50-100 cm
- Frost-free period: At least 210 days
- Soil: Well-drained black (regur) or alluvial soils

Cotton Species in India

India is the only country cultivating all four recognised cotton species:

- *Gossypium arboreum* - Asian cotton
- *Gossypium herbaceum* - Asian cotton
- *Gossypium hirsutum* - American/Upland cotton; accounts for nearly 90% of hybrid cotton production and all Bt cotton hybrids in India.
- *Gossypium barbadense* - Egyptian/Sea Island/Peruvian cotton; produces Extra Long Staple (ELS) fibre.

Status of Cotton Sector in India

- Global Position: 1st in area under cultivation and 2nd in production and consumption.
- India accounts for around 38% of global cotton cultivation area and nearly 19% of global fibre production.
- Exports: India exported cotton worth about US\$11.49 billion in FY 2024-25.
- Major Uses: Textile and apparel industries, technical textiles, edible oil and livestock feed.

Major Cotton-Producing Regions

1. Northern Zone: Punjab, Haryana and Rajasthan
2. Central Zone: Gujarat, Maharashtra and Madhya Pradesh
3. Southern Zone: Telangana, Andhra Pradesh and Karnataka

Cotton is also cultivated in Odisha and Tamil Nadu.

Historical Significance

- Cotton cultivation in India dates back to the Indus Valley Civilisation.
- During the freedom struggle, cotton became a symbol of Swadeshi and self-reliance.
- Ahmedabad came to be known as the “Manchester of India” due to its major textile industry.

Futures & Options (F&O)

Context:

India's rapidly growing Futures & Options (F&O) market has raised concerns over increasing retail investor losses. A SEBI study released in July 2025 found that over 90% of individual traders suffered losses over the four-year period from FY22, highlighting the need for stronger investor safeguards.



What are Futures & Options?

F&O are derivative contracts whose value depends on an underlying asset such as stocks, indices, commodities or currencies. They are mainly used for hedging, speculation and price discovery.

Types of F&O

- **Futures:** A legally binding contract to buy or sell an underlying asset at a predetermined price on a future date.
- **Options:** Gives the buyer the right, but not the obligation, to buy or sell an asset at a predetermined price.
 - **Call Option:** Right to buy.
 - **Put Option:** Right to sell.

Key Features

- **Risk Management:** Helps investors hedge against adverse price movements.
- **Leverage:** Allows traders to take larger positions with relatively less capital.
- **Price Discovery:** Helps determine market prices efficiently.
- **Liquidity:** Increases trading activity and market liquidity.
- **Contracts are standardised and traded through recognised stock exchanges.**

Regulation in India

- The Securities and Exchange Board of India (SEBI) regulates the derivatives market.
- F&O trading is conducted through recognised exchanges such as the NSE and BSE under SEBI's regulatory framework.

Matcha Tea

Context: Assam's Chota Tingrai Tea Estate has become the first tea estate in India to commercially produce Matcha tea, marking a new area of diversification for India's tea industry.

About Matcha Tea

- Matcha is a premium powdered green tea made from specially cultivated leaves of *Camellia sinensis*.
- It is traditionally associated with Japan and is also produced in China and Vietnam.
- China is the world's largest producer, accounting for around 70% of global matcha production.
- Global demand for matcha currently exceeds supply.

Key Features

- **Shade-Grown:** Tea plants are covered for around 3-4 weeks before harvesting, reducing sunlight exposure by nearly 90%. This increases chlorophyll, amino acids and flavour.
- **Whole-Leaf Consumption:** The leaves are finely powdered, whisked into water and consumed completely, unlike conventional tea where leaves are discarded.
- **Nutrient-Rich:** Matcha contains catechins (antioxidants), L-theanine, chlorophyll and natural caffeine.



Pachpadra Greenfield Refinery-cum-Petrochemical Complex

Context:

The Prime Minister inaugurated India's first Greenfield Integrated Refinery-cum-Petrochemical Complex at Pachpadra in Balotra district, Rajasthan.

Key Features

- **Developer:** A joint venture between Hindustan Petroleum Corporation Limited (HPCL) and the Government of Rajasthan.
- **Investment:** Over ₹79,450 crore.
- **Refining Capacity:** 9 Million Metric Tonnes Per Annum (MMTPA).
- **Significance:** It is India's first Greenfield integrated refinery-cum-petrochemical complex.

What is a Greenfield Project?

A Greenfield project is developed on previously unused land with entirely new infrastructure, rather than upgrading an existing facility.

Advanced Feature

- **High Nelson Complexity Index (NCI):** The refinery has an NCI of 17.0, indicating a highly sophisticated facility.
- **A higher NCI enables a refinery to process heavier and more complex crude oil and produce a greater share of high-value petroleum products.**

Jodhpuri Mojari Gets GI Tag

Context:

The Jodhpuri Mojari, a traditional handcrafted leather footwear from Rajasthan, has been granted a Geographical Indication (GI) tag by the Centre.

About Jodhpuri Mojari

- **Origin:** Traditionally made in Jodhpur, Rajasthan.
- **Royal Connection:** Historically patronised by Rajput royalty and later adopted by nomadic and farming communities.
- **Crafting Community:** Mainly made by the Jinagar (Jingar) community, traditionally associated with saddle and leather-sheath making.
- **Distinctive Features:** Known for handcrafted leather, intricate embroidery and customised designs.

Economic Significance

- **Domestic Market:** Jodhpuri Mojari sales are estimated at around ₹100 crore annually.
- **Exports:** Annual exports are valued at around ₹10 crore.

What is a GI Tag?

A Geographical Indication (GI) tag identifies products whose quality, reputation or characteristics are linked to a specific geographical region. It helps protect traditional products from misuse and supports local artisans.

Mission Golden Spice

Context:

The Union Minister for Communications and Development of North Eastern Region launched Mission Golden Spice to strengthen the Lakadong turmeric value chain in Meghalaya and promote its cultivation, processing and marketing.

About Mission Golden Spice

- It is an integrated project focused on Lakadong turmeric cultivation and value-chain development.
- Nodal Bodies: Ministry of Development of North Eastern Region (MDoNER) and North Eastern Council (NEC).
- Duration: Five-year roadmap from 2025 to 2030.

About Lakadong Turmeric

- Origin: Mainly cultivated in the Jaintia Hills of Meghalaya.
- Special Feature: Known for its exceptionally high curcumin content.
- GI Tag: Received a Geographical Indication (GI) tag in 2024.
- Curcumin Content: Contains around 7-12% curcumin, much higher than ordinary turmeric.
- Curcumin: The main active compound in turmeric, known for its anti-inflammatory and antioxidant properties.
- Cultivation: Traditionally grown by indigenous farmers and associated with organic farming practices.

Polymer / Plastic Banknotes

Context:

The Reserve Bank of India (RBI) is planning a fresh trial of polymer banknotes, nearly 15 years after an earlier field trial was discontinued due to technical issues.

What are Polymer Banknotes?

- Polymer banknotes are made from a durable polymer (plastic) substrate instead of traditional cotton-based paper.
- Australia introduced the first polymer banknotes in 1988.
- They are now used in more than 50 countries, including the UK, Canada, New Zealand, Singapore and Malaysia.

Key Features

- High Durability: Polymer notes can last around 2-6 times longer than conventional paper notes, depending on usage and denomination.
- Enhanced Security: They can incorporate advanced security features and are generally more difficult to counterfeit.
- Recyclable: Used polymer notes and manufacturing waste can be recycled into other plastic products.
- Environmental Benefit: Their longer lifespan reduces the need for frequent production, transportation and destruction of replacement notes.

World Bank Retires Climate Finance Target

Context:

The World Bank Group (WBG) has decided to retire its 45% Climate Co-benefits Target, along with the earlier 35% climate finance benchmark, under its Climate Change Action Plan (CCAP). The Bank will shift from fixed spending targets to measurable climate and development outcomes.

Why Did the World Bank Remove the Target?

- The decision followed concerns from the United States, which argued that rigid climate-finance targets could divert the Bank from its core goals of poverty reduction, economic growth and development.
- The World Bank will now focus on outcomes such as greenhouse gas emission reductions, climate resilience and development impact.
- Climate interventions will remain client-driven, rather than being determined by a fixed financing percentage.

About Climate Change Action Plan (CCAP)

- Launched in 2016 following the Paris Agreement to integrate climate action into development financing.
- The second CCAP covered 2021–2025 and was later extended until June 30, 2026.
- The climate-finance target was initially 35%, later increased to 45% in 2023.
- Objective: Integrate climate action with economic development by supporting mitigation, adaptation and climate resilience.

Strategic Pillars of CCAP

1. **Aligning Climate and Development:** Integrating climate concerns into development planning and policies.
2. **Accelerating System Transitions:** Supporting low-carbon and climate-resilient transitions in energy, agriculture, transport, manufacturing, cities and water.
3. **Mobilising Climate Finance:** Leveraging public and private finance and expanding concessional funding.

Implications

- **Reduced Climate-Finance Momentum:** Removing fixed targets may reduce institutional incentives for climate investment.
- **Global Climate Goals:** It could make mobilisation of the USD 1.3 trillion annual climate finance goal by 2035 for developing countries more challenging.
- **Large Adaptation Gap:** Developing countries already require far more adaptation finance than they currently receive.
- **India:** NITI Aayog estimates India may need around USD 22.7 trillion by 2070 to meet its net-zero and long-term climate goals.
- **Energy Security:** Geopolitical disruptions highlight the need to accelerate investment in renewable and clean energy.

Way Forward

- **Strengthen Multilateral Climate Finance:** MDBs should expand affordable climate funding while supporting development priorities.
- **Mobilise Private Capital:** Promote green bonds, blended finance and carbon markets.
- **Prioritise Adaptation:** Increase financial support for climate-vulnerable developing countries.
- **Strengthen Domestic Finance:** Improve domestic resource mobilisation and institutional capacity.
- **Focus on Outcomes:** Measure climate action through emission reductions, resilience and development outcomes, while ensuring adequate funding.

India's Ethanol-Blended Fuel Policy

Context:: The Union Government will continue pricing E20 petrol (20% ethanol blend) above pure petrol despite lower crude oil prices. This has renewed the debate over energy security, farmer welfare, consumer affordability and sustainable resource use.

Ethanol-Blended Petrol (EBP) Programme

- Launched in 2003 and expanded under the National Policy on Biofuels.
- Aims to reduce crude oil imports, greenhouse gas emissions and dependence on fossil fuels, while creating additional demand for agricultural produce.
- India has achieved the 20% ethanol-blending target ahead of schedule in selected regions and plans wider nationwide adoption.
- Major feedstocks: Sugarcane molasses, sugarcane juice, maize, damaged food grains and agricultural residues.

Benefits of Ethanol Blending

- **Energy Security:** Reduces dependence on imported crude oil.
- **Farmer Income:** Creates additional demand for sugarcane, maize and crop residues.
- **Lower Emissions:** Renewable ethanol can reduce transport-related emissions and support India's Net Zero 2070 goal.
- **Rural Economy:** Supports distilleries, biofuel industries and rural employment.
- **Circular Economy:** 2G ethanol converts agricultural waste into useful fuel.

Key Concerns

- **Consumer Burden:** Higher E20 prices can increase fuel costs despite lower global crude prices.
- **Water-Intensive Crops:** Heavy dependence on sugarcane may encourage cultivation of a water- and fertiliser-intensive crop, particularly in water-stressed regions.
- **Food vs Fuel:** Using maize and rice for ethanol can create concerns about food availability and prices during supply shortages.
- **Lower Mileage:** Ethanol has lower energy density than petrol, which can reduce vehicle mileage and raise the effective fuel cost.
- **Limited Farmer Gains:** Higher feedstock prices alone cannot solve problems such as small landholdings, post-harvest losses, weak market access and low value addition.

Alternative Feedstocks

- **Maize:** Less water-intensive than sugarcane but requires considerable fertiliser.
- **Millets:** More climate-resilient and water-efficient, though their lower starch content limits ethanol output.
- **Sweet Sorghum:** Requires less water, has a short crop cycle and suits semi-arid areas.
- **Agricultural Residues:** Rice and wheat straw, maize stover and groundnut shells can be used for 2G ethanol, reducing pressure on farmland.

Way Forward

- **Diversify Feedstocks:** Provide higher incentives for water- and resource-efficient crops.
- **Expand 2G Ethanol:** Support residue collection, assured offtake and commercial-scale plants.
- **Integrate Policies:** Link biofuel policy with water conservation, food security, crop diversification and climate resilience.
- **Strengthen Farmer Infrastructure:** Improve irrigation, storage, logistics, processing and market linkages.
- **Protect Consumers:** Ensure transparent and affordable biofuel pricing while pursuing energy-security goals.

Conclusion:

India's ethanol programme can strengthen energy security and climate action, but its long-term success requires a balance between farmer welfare, consumer affordability and resource sustainability through diversified feedstocks and greater adoption of 2G ethanol.

India's First Geothermal Wells

Context: India's first and deepest geothermal wells have been commissioned at Puga Valley in Ladakh, highlighting the potential of geothermal energy as a clean and reliable source of power and heating.

What is Geothermal Energy?

- Geothermal energy is renewable energy derived from heat stored beneath the Earth's surface.
- The heat mainly comes from radioactive decay inside the Earth and residual heat from the planet's formation.
- Wells are drilled into geothermal reservoirs to extract hot water or steam, which can generate electricity or provide direct heating.

Types of Geothermal Resources

- **Hydrothermal Systems:** Naturally occurring hot water and steam reservoirs.
- **Enhanced Geothermal Systems (EGS):** Artificial reservoirs created in hot, dry rocks.
- **Geopressured Resources:** Hot, highly pressurised underground brine.
- **Hot Dry Rock:** Deep, high-temperature rocks with little natural water.

Puga Geothermal Field

- **Location:** Puga Valley, Changthang region, Leh district, Ladakh.
- **Geological Setting:** Part of the Himalayan Geothermal Belt, associated with the collision of the Indian and Eurasian plates.
- **Features:** Hot springs, fumaroles, mud pools, sulphur deposits and steam vents indicate active geothermal activity.
- **Potential:** Considered one of India's most promising geothermal sites for electricity and direct-heat applications.

Significance of Geothermal Energy

- **Clean & Renewable:** Provides low-carbon energy with very low greenhouse gas emissions.
- **24x7 Power:** Can provide continuous base-load electricity, unlike intermittent solar and wind power.
- **Energy Security:** Reduces dependence on fossil fuels and diversifies India's renewable-energy mix.
- **Remote-Area Development:** Can provide reliable energy to remote Himalayan regions and reduce dependence on diesel.
- **Multiple Uses:** Suitable for heating, greenhouses, aquaculture, industrial applications and tourism, apart from power generation.

Geothermal Potential in India

- The Geological Survey of India (GSI) estimates India's geothermal power potential at around 10,600 MW across 381 thermally anomalous areas.
- India's first operational 20 kW geothermal power plant was commissioned by Singareni Collieries Company Limited (SCCL) at Manuguru, Telangana, using Organic Rankine Cycle (ORC) technology.

Way Forward

- **National Policy:** Develop a dedicated geothermal energy policy with financial incentives.
- **Technology & Investment:** Encourage Public-Private Partnerships (PPP) and international technology cooperation.
- **Scale-Up:** Expand pilot projects before large-scale commercial deployment.
- **Renewable Integration:** Include geothermal energy in India's renewable-energy and Net Zero strategy.
- **Capacity Building:** Strengthen geological exploration, resource mapping and domestic technology development.

Compressed Biogas (CBG)

Context:

Renewed tensions in West Asia have disrupted crude oil and LPG supply routes, highlighting the need for alternative domestic fuels. Compressed Biogas (CBG) can help reduce India's import dependence while supporting waste management and clean energy goals.



What is Biogas?

- Biogas is produced through the anaerobic decomposition of organic waste such as cattle dung, crop residues, municipal waste and sewage.
- Composition: Mainly methane (50–70%) and carbon dioxide (30–50%), along with small amounts of other gases.
- It is a renewable, clean-burning fuel that converts organic waste into energy.
- Uses: Cooking, electricity generation, heating and small-scale industrial applications.

What is Compressed Biogas (CBG)?

- CBG is purified and compressed biogas from which CO₂, hydrogen sulphide, moisture and other impurities are removed.
- It contains over 90–95% methane, making it similar to Compressed Natural Gas (CNG).
- Uses: Transport fuel, industrial applications and supply through City Gas Distribution (CGD) networks.
- By-products: Produces Fermented Organic Manure (FOM) and Liquid Fermented Organic Manure (LFOM), which can be used as organic fertilisers.

Government Initiatives

- SATAT (2018): Aims to establish 5,000 CBG plants and create a market for CBG. However, only 132 plants were operational as of June 2026.
- GOBARdhan (2018): Promotes conversion of biodegradable waste into biogas and organic manure under the Waste-to-Wealth approach.
- CBG Blending Obligation: 1% CBG blending in CNG and PNG from FY 2025–26, increasing to 5% by FY 2028–29.

Challenges

- Slow Infrastructure Development: CBG plants remain far below the planned targets.
- High Capital Costs: Large upfront investments affect project viability.
- Limited Private Investment: Financing difficulties and policy uncertainty discourage investors.
- Limited Institutional Credit: Developers often struggle to obtain affordable financing.
- Food vs Fuel Concerns: Excessive use of crops such as maize as feedstock could reduce food-crop diversity.

Lesson from Germany: Rapid expansion of biogas led to excessive maize cultivation, popularly termed “corn mania”, prompting restrictions on maize as a feedstock.

Global Scenario

- Europe, China and the US together account for around 90% of global biogas production.
- Germany: A major European producer; incentives under the Renewable Energy Sources Act, 2000 supported biogas expansion.
- Denmark: Targets 100% biomethane in its gas system by 2030 and relies largely on livestock manure and agricultural waste rather than food crops.

Way Forward

- **Prioritise Waste-Based Feedstock:** Focus on crop residues, cattle dung, municipal waste and other biodegradable materials.
- **Improve Financial Support:** Provide capital subsidies, viability-gap funding, tax incentives and easier institutional credit.
- **Build Infrastructure:** Strengthen biomass collection, storage, transportation and gas-pipeline connectivity.
- **Encourage Private Investment:** Ensure stable policies, assured offtake and predictable pricing.
- **Balance Food and Energy Needs:** Prevent excessive diversion of food crops towards energy production and protect crop diversity and food security.

Conclusion:

CBG can strengthen India's energy security, waste management and clean-energy transition. Its sustainable expansion, however, requires better infrastructure, financial support, private investment and a waste-based feedstock strategy that does not compromise food security.

Sulphur Dioxide (SO₂) Emissions

Context:

A report by the Centre for Research on Energy and Clean Air (CREA) found that 81% of SO₂ emissions from coal-fired power plants within 300 km of Delhi-NCR come from plants exempted from mandatory Flue Gas Desulphurisation (FGD) installation under the July 2025 notification.

What is Sulphur Dioxide (SO₂)?

- SO₂ is a colourless, reactive gas with a pungent smell, mainly released by burning sulphur-containing fossil fuels, particularly coal.
- It is a major air pollutant and contributes to:
 - Secondary PM_{2.5} formation
 - Acid rain
 - Respiratory and cardiovascular diseases
 - Ecosystem degradation
- India is among the world's largest SO₂ emitters, largely due to its dependence on coal-based thermal power.



Key Findings

- **Relaxed FGD Norms:** Around 78% of India's coal-fired power plants are no longer required to install FGD systems following the July 2025 revision of emission norms.
- **Regional Pollution:** SO₂ can travel hundreds of kilometres before transforming into secondary PM2.5, allowing emissions from distant power plants to affect Delhi-NCR.
- **FGD Effectiveness:** Plants equipped with FGD systems emit significantly less SO₂ than similar plants without pollution-control technology.
- **Health Risks:** SO₂ and the PM2.5 formed from it can increase the risk of respiratory and cardiovascular diseases, stroke and premature deaths.

About CREA

- **Founded:** 2019
- CREA is an independent research organisation focusing on air pollution, energy transition and climate policy.
- It provides scientific analysis and evidence-based recommendations to support clean-air policies and the transition to clean energy.

Borjuli Wetland Declared a Biodiversity Heritage Site

Context:

The Borjuli Wetland in Assam has been notified as a Biodiversity Heritage Site (BHS) to conserve *Oryza rufipogon*, the wild ancestor of cultivated rice.

About Biodiversity Heritage Sites (BHS)

- A BHS is an area with unique ecological, biodiversity, cultural or aesthetic importance.
- **Legal Provision:** Under Section 37 of the Biological Diversity Act, 2002, State Governments can notify such areas in consultation with local bodies.
- **India's First BHS:** Nallur Tamarind Grove, Bengaluru, Karnataka, designated in 2007.

About *Oryza rufipogon*

- It is the wild progenitor (ancestor) of cultivated rice (*Oryza sativa*).
- A perennial wild rice species that reproduces through both seeds and rhizomes.
- **Habitat:** Naturally found in marshes, wetlands, swamps and shallow water bodies across South and Southeast Asia.

Key Features

- Shows resistance to several pests and diseases.
- Tolerates flooding and saline conditions.
- Serves as an important genetic resource for developing climate-resilient, high-yielding and nutritionally improved rice varieties.



Banyan Tree (*Ficus benghalensis*)

Context:

Scientists from the Birbal Sahni Institute of Palaeosciences used radiocarbon dating to confirm that the Munger Banyan Tree in Bihar is around 700 years old, making it the world's oldest scientifically dated banyan tree.

About Banyan Tree

- Scientific Name: *Ficus benghalensis*
- Family: Moraceae
- Native Range: Indian subcontinent, including India, Bangladesh, Nepal, Pakistan and Sri Lanka.
- National Status: National Tree of India.
- It is also the state tree of Gujarat and Madhya Pradesh.

Key Features

- Aerial Prop Roots: Branches produce aerial roots that grow downward and reach the ground, forming additional trunks and allowing the tree to spread over large areas.
- Leaves & Fruits: Has large, leathery leaves and produces small fig fruits called syconia.
- Unique Pollination: Its flowers are pollinated through a mutualistic relationship with species-specific fig wasps.
- Ecological Importance: Provides food and shelter to birds, bats, insects and mammals and supports biodiversity and ecosystem stability.



Himalayan Pangolin Recognised as a Distinct Species

Context:

Researchers have recognised the Himalayan pangolin (*Manis aurita*) as a distinct living species, separate from the Chinese pangolin (*Manis pentadactyla*).



About RudraM-II

- RudraM-II is an indigenous Air-to-Surface Anti-Radiation Missile (ARM) developed by DRDO for the Indian Air Force (IAF).
- It is designed for Suppression of Enemy Air Defence (SEAD) operations by targeting enemy radar and air-defence systems.

Key Features

- **Targets Enemy Air Defences:** Destroys radars, communication systems, and radio-frequency emitters, weakening hostile air-defence networks.
- **Successful Flight Test:** Successfully launched from a Su-30MKI under challenging flight conditions, achieving accurate target engagement.
- **Performance Verified:** Flight monitored by the Integrated Test Range (ITR), Chandipur, confirming all mission objectives.
- **Part of RudraM Series:** Includes RudraM-I, RudraM-II, and RudraM-III, providing layered indigenous precision-strike capability.
- **Long-Range & Hypersonic:** Has an estimated range of 300 km and can reach speeds of Mach 5.5, enabling stand-off attacks.

Mach Speed: A measure of speed relative to the speed of sound.

- Mach 1: Speed of sound
- Mach 5: Five times the speed of sound

Significance

- Enhances India's capability to neutralise enemy air-defence systems before air strikes.
- Strengthens precision-strike and stand-off attack capabilities.
- Developed by Research Centre Imarat (RCI), Hyderabad, along with other DRDO laboratories, supporting Aatmanirbhar Bharat in defence.

World Zoonoses Day 2026

Context:

World Zoonoses Day is observed annually on July 6 to raise awareness about diseases that can spread between animals and humans.

Why July 6?

- The day commemorates Louis Pasteur's first successful administration of the rabies vaccine on July 6, 1885.
- It marks an important milestone in the prevention of infectious diseases.

Significance

- Promotes vaccination and responsible animal care.
- Highlights the importance of food safety and environmental hygiene.
- Encourages the One Health approach, which recognises the close link between human, animal and environmental health.
- Supports coordinated action to prevent and control future disease outbreaks.

What are Zoonotic Diseases?

Zoonoses are diseases that can be transmitted between animals and humans, involving livestock, wildlife or domestic animals.

Examples:

- Zika virus
- Ebola
- Avian influenza
- SARS and MERS
- West Nile virus
- Lyme disease
- Yellow fever

Jonathan: World's Oldest Living Land Animal

Context:

During his visit to Seychelles, Prime Minister Narendra Modi met Jonathan, the world's oldest known living land animal, at the Seychelles National Botanical Gardens.

About Jonathan

- **Species:** Seychelles giant tortoise, belonging to the Aldabra giant tortoise species.
- **Age:** Estimated to have been born around 1832, making him approximately 194 years old.
- **Native Range:** Aldabra giant tortoises are endemic to the Aldabra Atoll, a UNESCO World Heritage Site.
- **Habitat:** Jonathan lives at Plantation House, the official residence of the Governor of Saint Helena, where he has stayed since 1882.
- **Historical Significance:** Having lived for nearly two centuries, Jonathan has witnessed major changes from the Industrial Revolution to the digital age.
- **Scientific Significance:** He is a symbol of longevity, biodiversity conservation and successful species protection.
- **Conservation Status:** The Aldabra giant tortoise is classified as Vulnerable on the IUCN Red List.



Global Helium Production and Supply Chain

Context:

China temporarily banned helium exports amid global supply disruptions, raising concerns over the availability of this critical industrial gas.

About Helium

- Symbol: He
- Helium is the second-lightest and second-most abundant element in the universe, after hydrogen.
- It is a noble gas, meaning it is chemically inert and rarely reacts with other elements.
- It is colourless, odourless and non-flammable.
- It has the lowest boiling point of any element (-269°C) and remains liquid only at extremely low temperatures.
- Its low density makes it useful in balloons and airships, while its ability to pass through microscopic leaks makes it valuable for leak detection.

Production of Helium

- Helium is naturally produced through the radioactive decay of uranium and thorium in the Earth's crust.
- Alpha particles released during this process capture electrons and form helium atoms, which accumulate in natural gas deposits.
- Helium is generally recovered during natural gas processing when its concentration is sufficiently high.
- It is purified using cryogenic processes, taking advantage of its extremely low boiling point.
- For commercial applications, helium is generally 99.997% or more pure.

Storage & Transportation

- Helium is stored either as compressed gas or liquid helium.
- Liquid helium requires specialised vacuum-insulated containers because it evaporates rapidly at extremely low temperatures.

Global Production & Trade

- United States: Largest producer, contributing around 43% of global supply (~81 million cubic metres annually).
- Qatar: Second-largest producer, contributing around 33% (~63 million cubic metres).
- Major Consumers: The US and China.
- China: Produces only around 1.6% of global helium, but imports over 80% of its requirements, mainly for semiconductors and healthcare.



India's Position

- India is 100% dependent on imports for helium.
- Annual demand is around 3.4 million cubic metres.
- More than half of India's helium imports come from Qatar, making supplies vulnerable to geopolitical disruptions.
- Small traces of helium are found in natural gas fields in West Bengal and Jharkhand, but commercial extraction is currently not viable.

Applications of Helium

- Healthcare: Used to cool superconducting magnets in MRI scanners.
- Electronics: Important for semiconductor manufacturing, silicon wafers and optical fibre production.
- Emerging Technologies: Used in quantum computing.
- Space & Defence: Used by organisations such as ISRO, NASA and SpaceX to pressurise rocket fuel tanks and support launch operations.

