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Test Yourself

75 YEARS OF SUPREME COURT

The Supreme Court of India, established on January 28, 1950, has completed over 75 years of serving as the highest judicial authority in the country. It has played a critical role in shaping India's legal and constitutional framework.

About:

- Over 75 years, the Supreme Court of India has been an integral part of India's democracy, protecting fundamental rights, maintaining the balance of power between the government and citizens, and upholding the rule of law.
- In accordance with it, a national conference of the District Judiciary, inaugurated by Prime Minister Narendra Modi on August 31,2024.
  - During this event, a commemorative stamp and coin were unveiled.
- President Droupadi Murmu unveiled the Supreme Court's new flag and insignia, which were designed to symbolize justice and democracy.
  - The flag features important elements such as the Ashoka Chakra, the Supreme Court building, and the Constitution of India, reflecting the Court's commitment to the rule of law.

STRUCTURE

The Supreme Court of India is the highest judicial body in the country and functions as the final court of appeal. It is composed of the Chief Justice of India (CJI) and a maximum of 33 other judges.

- **Chief Justice of India (CJI):**
  - The CJI is the head of the judiciary and is appointed by the President of India.
  - The most senior judge of the Supreme Court is usually appointed as the CJI.
  - The CJI holds a crucial administrative role, including assigning cases to different benches of the Supreme Court.
- **Other Judges**
  - The total sanctioned strength of the Supreme Court is 34 judges, including the CJI.
  - Judges of the Supreme Court are appointed by the President based on the recommendation of the Collegium system, which includes the CJI and the four most senior judges of the Supreme Court.
  - Judges of SC serve until the age of 65.
- **Collegium System**
  - A five-member body led by the CJI and four senior-most judges.
  - The Collegium recommends appointments and transfers of judges to the High Courts and the Supreme Court.
  - It is an important institution within the court structure.

Powers of Supreme Court:

- Judicial Review (Article 13 and Article 32)
- Original Jurisdiction (Article 131)
- Appellate Jurisdiction (Article 132-136)
- Advisory Jurisdiction (Article 143)
- Power to Issue Writs (Article 32 and 226)
- Contempt of Court (Article 129)
- Power of Judicial Transfer (Article 139A)
- Supervisory Powers (Article 144)
- Power to Review its Own Judgment (Article 137)
- Special Leave Petition (Article 136)

Journey of Supreme Court:

- **Establishment and Early Days (1950s):**
  - The Supreme Court of India was established on January 28, 1950, following the adoption of the Constitution of India.
  - It replaced the Federal Court of India, which had been functioning since 1937 under the Government of India Act, 1935.
  - In its early years, the Court focused on interpreting the newly framed Constitution and addressing cases involving fundamental rights and federal structure.
- **The 1980s and Judicial Activism:**
  - The 1980s marked the beginning of **Public Interest Litigation (PIL)** in India, which allowed any individual or group to file a case on behalf of those who could not approach the Court directly. This expanded access to justice for marginalized communities.
  - **S. P. Gupta vs. Union of India (1981):** Known as the"Judges' Transfer Case," this case played a pivotal role in enhancing the judiciary's independence from executive interference.
- **The 1990s: Expanding Fundamental Rights:**
  - The Supreme Court played a crucial role in expanding the scope of **Article 21 (Right to Life and Personal Liberty)**, interpreting it to include the right to a clean environment, education, and health.
- **Judicial Independence and Collegium System:**
  - The Collegium system, developed through a series of judgments (the Three Judges Cases), became the standard for appointing judges to the Supreme Court and High Courts.
  - This system ensured that the judiciary had significant control over judicial appointments, reducing the executive's influence.

SOME OF LANDMARK JUDGMENTS OF SUPREME COURT

- **Kesavananda Bharati v. State of Kerala (1973):** This landmark ruling established the "basic structure doctrine," asserting that certain fundamental features of the Constitution cannot be altered or destroyed by amendments. It emphasized the supremacy of the Constitution.
- **Maneka Gandhi v. Union of India (1978):** This judgment expanded the interpretation of Article 21 (Right to Life and Personal Liberty) by ruling that the right to life includes the right to live with dignity, thus strengthening personal freedoms and civil liberties.
- **Vishaka v. State of Rajasthan (1997):** The Supreme Court laid down guidelines for preventing sexual harassment at the workplace, establishing a framework for protecting women's rights and ensuring a safe working environment.
- **Indian Young Lawyers Association v. State of Kerala (2018):** This ruling allowed women of all ages to enter the Sabarimala Temple, declaring that gender discrimination in religious practices violates the right to equality and religious freedom under Articles 14 and 25 of the Constitution.
- **Navtej Singh Johar v. Union of India (2018):** The Supreme Court decriminalized Section 377 of the Indian Penal Code, which criminalized consensual same-sex relationships, affirming the rights of the LGBTQ+ community and recognizing their dignity and freedom.
- **Shayara Bano v. Union of India (2017):** In this case, the SC declared the practice of instant triple talaq unconstitutional, stating that it violated the fundamental rights of Muslim women and calling for reform in personal laws.
- **Justice K.S. Puttaswamy v. Union of India (2017):** This ruling recognized the right to privacy as a fundamental right under Article 21, impacting issues related to data protection, surveillance, and individual autonomy in the digital age.
- **Ayodhya Verdict (2019):** In a historic judgment, the Court resolved the decades-long Ayodhya land dispute by allocating the disputed land for the construction of a Ram temple and directing the government to provide an alternative site for a mosque.

Significance of the Supreme Court:

- **Guardian of the Constitution:** The Supreme Court is the highest constitutional authority, ensuring the supremacy of the Constitution, protecting fundamental rights, and upholding the rule of law.
- **Judicial Review:** It has the power to review laws and executive actions, declaring them unconstitutional if they violate constitutional provisions, thereby maintaining checks and balances in governance.
- **Protector of Fundamental Rights:** The Supreme Court plays a vital role in safeguarding citizens' fundamental rights through public interest litigations, ensuring justice for marginalized and disadvantaged groups.
- **Dispute Resolution:** It serves as the final appellate court, resolving disputes between states, the central government, and various other entities, thus maintaining peace and harmony in the nation.
- **Legislative Interpretation:** The Supreme Court interprets laws and provides clarity on legal ambiguities, guiding lower courts and influencing legislative actions by clarifying legal principles.
- **Social Justice:** Through various landmark judgments, the Supreme Court has addressed social issues, promoted equity, and brought about significant changes in areas like women's rights, environmental protection, and affirmative action.

Major Reforms needed in Supreme Court:

- **Case Management System:** Implementing a robust case management system can streamline the process of filing, tracking, and resolving cases, reducing delays and improving efficiency. This system should include digital tools to manage dockets and prioritize urgent matters.
- **Judicial Appointments and Transparency:** Reforming the process of appointing judges to ensure transparency and merit-based selection is crucial. Establishing an independent body to oversee appointments can help maintain the integrity of the judiciary and prevent politicization.
- **Alternate Dispute Resolution (ADR) Mechanisms:** Promoting alternative dispute resolution methods, such as mediation and arbitration, can help alleviate the burden of cases in the Supreme Court, providing faster and more accessible resolutions for litigants.
- **Infrastructure Development:** Upgrading court infrastructure, including physical facilities and technological resources, is essential for improving the efficiency of the Supreme Court.
  - Enhanced facilities can help accommodate the growing number of cases and improve access to justice.
- **Increased Judicial Capacity:** Increasing the number of judges in the Supreme Court can help address the backlog of cases and ensure timely justice.
  - This includes hiring additional judges and establishing more benches to handle different types of cases.
- **Public Awareness and Legal Aid Programs:** Enhancing public awareness of legal rights and providing accessible legal aid can empower citizens to seek justice more effectively. Strengthening legal aid programs can ensure that marginalized groups have access to the judicial system.

BLACK COAT SYNDROME

- **Meaning:** "Black coat syndrome" refers to a metaphorical or symbolic concept, often used to describe certain behaviors or issues associated with the legal or judicial system, as the legal profession is criticized for corruption, inefficiency, or excessive formality.
- President Droupadi Murmu compared it to the **'white coat syndrome'** patients feel in hospitals.
- President Droupadi Murmu stressed the need for the judiciary to be more approachable, empathetic, and connected to the public, especially for citizens from marginalized and vulnerable sections of society.
- The "syndrome" part of the phrase highlights the psychological or emotional barrier that people may experience when interacting with the legal system. This barrier can manifest as fear, hesitation, or a sense of alienation when ordinary citizens approach courts, lawyers, or judges.
- They may perceive the legal process as complex, inaccessible, or biased, which creates a gap between the judiciary and the public.
- Even the issue of **pendency in Indian courts**—which refers to the large number of unresolved cases—can be exacerbated by factors associated with "black coat syndrome. " Here's how the "black coat syndrome" contributes to case pendency in Indian courts:

Reasons for Case Pendency:

- **Shortage of Judges:** One of the primary reasons for pendency is the lack of sufficient judges. The judge-to-population ratio in India is far lower than international standards, with approximately **21 judges per million people**, compared to the recommended **50 judges per million.**
- **Vacancies in the Judiciary:** Many judicial positions remain unfilled, especially in the High Courts and District Courts. As of recent data, **around 25% of judicial positions** are vacant in High Courts, and **around 20%** in subordinate courts.
- **Frequent Adjournments:** The culture of granting frequent adjournments significantly slows down case resolution. This practice is prevalent at all levels of the judiciary.
- **Complex and Lengthy Procedures:** The procedural complexities in Indian courts, especially regarding evidence collection, filing, and legal technicalities, lead to prolonged trials.
- **Limited Use of Technology:** While digitization and e-courts have been introduced, their implementation remains inconsistent. Many courts still rely on manual processes, which delay case processing.
- **Increasing Litigation:** With growing awareness and access to legal services, more people are approaching courts for a variety of disputes. This rise in the number of cases has not been matched by a proportional increase in judicial resources.

CURRENT STATE OF CASE PENDENCY

Total Cases Pending: There are more than **40 million** cases pending across various levels of the judiciary in India. This includes both civil and criminal cases.

- **Supreme Court:** Over **70,000 cases** pending.
- **High Courts:** Nearly **6 million cases** pending.
- **District and Subordinate Courts:** More than **34 million cases** pending.

Impact of Case Pendency:

- **Justice Delayed, Justice Denied:** Case backlogs cause significant delays, eroding public trust in the judicial system and making timely justice ineffective.
- **Violation of Undertrial Prisoners' Rights:** Many undertrial prisoners endure long detentions without resolution, infringing on their right to a speedy trial and worsening prison overcrowding.
- **Public Distrust and Perceived Inequality:** Slow justice fosters public frustration and a belief that the system favors the wealthy, creating perceptions of inequality.
- **Economic and Social Impact:** Delayed justice in commercial and civil disputes hampers business growth, strains relationships, and disrupts societal harmony.
- **Burden on Judiciary:** The case backlog overburdens judges, leading to reduced productivity, burnout, and compromised attention to individual cases, affecting the quality of justice.

Efforts to Address Pendency:

- **Fast Track Courts:** The Indian government has set up **fast-track courts** to deal with specific types of cases, such as rape and sexual assault cases. These courts aim to deliver swift justice, although their success has been mixed.
- **Alternative Dispute Resolution (ADR):** Mediation, arbitration, and Lok Adalats (people's courts) are being promoted as ways to reduce the burden on traditional courts. ADR mechanisms are particularly useful in settling civil disputes.
- **National Judicial Data Grid (NJDG):** This online platform provides real-time data on case pendency across courts, helping in better case management and tracking.
- **Increasing the Number of Judges:** The Supreme Court and various law commissions have recommended increasing the number of judges and filling vacant positions to reduce the burden on the judiciary.
- **Use of Technology:** Initiatives like e-courts, video conferencing for hearings, and online filing of cases have been introduced to streamline procedures and improve efficiency. However, the implementation of these reforms is still a work in progress.
- **The Malimath Committee, 2003** in its report recommended that the period of vacation should be reduced by 21 days, keeping in mind the long pendency of cases.

CENTENNIAL COMMEMORATION OF THE IVC DISCOVERY

September 20, 2024, marks the centenary of the announcement of the discovery of the Indus Valley civilization, which now encompasses 2,000 sites across 1.5 million square kilometers in India, Pakistan, and Afghanistan.

About:

- **Phases of the Harappan Civilization:** The Harappan civilization can be segmented into three distinct phases, reflecting its evolution from nascent urban communities to a complex, widespread culture:
- **Early Phase (3200 BCE to 2600 BCE):**
  - This period marks the formative years of civilization.
  - Settlements began to emerge along the fertile plains of the Indus River, characterized by small agricultural communities that relied on farming and trade.
  - The beginnings of urbanization can be traced during this phase, with early forms of crafts and pottery becoming evident.
- **Mature Period (2600 BCE to 1900 BCE):**
  - This era signifies the zenith of Harappan civilization, showcasing advanced urban planning, architecture, and social organization.
  - Cities such as Mohenjo-daro and Harappa featured well-structured layouts with grid patterns, sophisticated drainage systems, and public baths, reflecting a high level of civic planning.
  - Trade flourished, both locally and with distant regions, evidenced by the discovery of goods like lapis lazuli and carnelian, which were likely imported.
  - The civilization also saw a flourishing of art, craft, and possibly early forms of governance and social stratification.
- **Late Phase (1900 BCE to 1500 BCE):**
  - This period is marked by a gradual decline in urban centers, possibly due to a combination of environmental factors such as drought or flooding, socio-economic changes, and possibly the movement of people.
  - The decline led to the abandonment of cities and a return to smaller, more rural communities.
- **Major Harappan Sites:** The Harappan civilization encompasses around **2,000 sites**, with five major archaeological sites recognized for their size and significance:
  - **Mohenjo-daro:** Known as one of the largest urban settlements of civilization, it features advanced city planning with a well-defined layout, including residential areas, public baths, and drainage systems.
  - **Harappa:** Another critical site that provides insight into the civilization's urban architecture, trade practices, and social organization.
  - **Ganweriwala:** This site, while less explored, is crucial for understanding the geographic distribution of Harappan culture in the region.
  - **Rakhigarhi:** Located in India, it is one of the largest Harappan sites and provides substantial evidence of the civilization's urban layout and lifestyle.
  - **Dholavira:** This site showcases an impressive water conservation system and provides insights into the social and economic life of the Harappan people.
- **Distribution of Sites:**
  - The civilization's influence spread over a vast area of **1.5 million square kilometers**, primarily across **India**, **Pakistan**, and **Afghanistan**.
  - Approximately **1,500 sites** are found in **northwestern India**, particularly in states like **Gujarat**, **Haryana**, **Jammu and Kashmir**, **Maharashtra**, **Rajasthan**, and **Uttar Pradesh**.
  - The diversity of sites indicates the widespread nature of Harappan culture across various geographic terrains.
  - The village of **Daimabad**, situated on the banks of the **Godavari River** in Maharashtra, serves as the southernmost outpost of the Harappan civilization, indicating its reach beyond the Indus River Valley.
  - About **500 sites** are located in **Pakistan**, with a few additional sites in **Afghanistan**, further showcasing the civilization's extensive trade and cultural interactions.
- **Geographic Significance:**
  - The Harappan civilization thrived along the banks of the **Indus River** and the now-dried **Saraswati River**.
  - The **Saraswati River**, believed to have dried up around **1900 BCE**, was crucial for agricultural activities and trade.
  - Its decline likely impacted the sustainability of urban centers, contributing to the civilization's eventual collapse.
- **Characteristic Features:** The Harappan civilization is renowned for several hallmark features that reflect its sophistication:
  - **Indus Script:** The writing system, which remains undeciphered, is thought to have been used for administrative and trade purposes, showcasing an early form of written communication.
  - **Finely Carved Stamp Seals:** These seals often depicted animals and symbolic motifs, suggesting their use for trade and as identifiers of ownership or authority.
  - **Standardized Weights and Measures:** The use of standardized weights, such as cubic weights made of chert, indicates advanced trade practices and an understanding of mathematics and commerce.
  - **Burnt Bricks:** The extensive use of burnt bricks, standardized in size (with a 1:2:4 ratio), reflects the architectural advancements and the importance of durable construction.

- **Lapidary Art:** The civilization was known for its exquisite craftsmanship, particularly in the production of beads made from materials like carnelian, often featuring intricate designs and chemical staining techniques.
- **Religion and Iconography:** Harappan artifacts depict various symbols and motifs believed to be related to religious beliefs.
  - These include figures such as the **"Priest King"** and images of animals like **bulls,** suggesting possible reverence for certain animals.

- **Key Archaeological Discoveries:** The groundbreaking discoveries of the Harappan civilization were largely credited to two pioneering archaeologists:
  - **Daya Ram Sahni:**
    - His excavation of **Harappa** in **1921-22** revealed numerous artifacts, including seals, pottery, and beads.
    - His methodical approach to archaeology earned him a reputation as a dedicated researcher, leading to his eventual position as the first Indian Director-General of the Archaeological Survey of India (ASI).
  - **Rakhal Das Banerji:**
    - He excavated **Mohenjo-daro** in **1922**, discovering significant artifacts that contributed to the understanding of Harappan urban life, including seals, pottery, and various metal objects.
- **Role of Sir John Marshall:**
  - In **June 1924**, Sir John Marshall, a prominent archaeologist, convened Sahni and Banerji in Shimla to discuss their discoveries.
  - Marshall noted the striking similarities in artifacts from both Harappa and Mohenjo-daro, despite their 640 km distance.
  - He interpreted these findings as indicative of a single, cohesive civilization, leading to his announcement of the discovery of the **"civilization of the Indus Valley"** in a London newspaper.

Key Features of Urban Design in the Indus Valley Civilization (IVC):

- **Rectangular Grid Pattern:**
  - The cities of the IVC were meticulously designed on a grid pattern, characterized by streets that ran predominantly in north-south and east-west directions.
  - This layout formed rectangular blocks, with streets intersecting almost at right angles, promoting an organized urban environment.
  - The main streets connected to narrow lanes, which facilitated access to homes; house doors typically opened into these lanes rather than directly onto the main streets.
- **Planned Streets:**
  - Streets were constructed with precision and were wide enough to accommodate both carts and pedestrians.
  - Some streets featured covered drains alongside them, indicating a sophisticated understanding of urban infrastructure.
- **Sophisticated Drainage Systems:**
  - The drainage system in the IVC was highly elaborate, with every house connected to street drains.
  - Drains were constructed using mortar, lime, and gypsum, and were covered with removable manhole bricks or stone slabs for cleaning.
  - This comprehensive drainage system demonstrates the advanced knowledge of sanitation and urban hygiene among Harappan people.
- **Division of Cities:** Each city was typically divided into two main areas: an elevated citadel and a lower town.
  - **Citadel:**
    - The citadel was situated in the western part of the city, serving as the foundation for significant structures such as granaries, administrative buildings, pillared halls, and courtyards.
    - Essential residential structures were also located within the citadel, often used by prominent individuals or administrative leaders.
  - **Lower Town:**
    - The lower town was located beneath the citadel and was primarily inhabited by common people.
    - This area contained brick houses constructed using standardized methods.
- **The Great Bath:**
  - One of the most famous structures of the Harappan civilization, the Great Bath is situated within a courtyard, featuring corridors on all four sides.
  - It has entrances with flights of steps leading down to the bath, which was well-paved and included adjacent rooms for changing clothes.
- **Residential Areas:**
  - The cities featured distinct residential zones with houses made of baked bricks, often constructed with multiple stories, reflecting a well-developed urban society.
  - Homes were typically arranged around courtyards, with some equipped with private wells and ventilated bathrooms.
  - Notably, houses did not have windows facing the streets, and bathrooms were tiled, indicating a concern for privacy and hygiene.
- **Commercial Areas:**
  - The cities featured designated commercial areas where artisans, craftsmen, and merchants conducted trade.
  - Specialized workshops and shops were common, indicating a well-organized economic system; evidence of breadmaker shops has been found at sites like Chanhu-Daro and Lothal.

PRINCIPAL SITES OF THE INDUS CIVILIZATION

INDIA'S OUTREACH IN SOUTH-EAST ASIA

India's Act East Policy is key to strengthening ties with Southeast Asia. PM Modi's recent visit to Brunei, Singapore, and Malaysia emphasizes India's commitment to enhancing economic, strategic, and cultural collaborations in the region.

1. INDIA-BRUNEI DARUSSALAM RELATIONS

Key Highlights of the Visit:

- **MoU on Space Collaboration:** The signing of a Memorandum of Understanding (MoU) on Telemetry, Tracking, and Telecommand Station operations for satellite and launch vehicles. This partnership strengthens India's space ambitions, with Brunei hosting crucial infrastructure for ISRO.
- **Economic Cooperation:** Both leaders emphasized expanding trade in sectors like technology, agriculture, and finance. Discussions also focused on food security and the exchange of best practices in agriculture.
- **Direct Flight Connection:** A new direct flight between Bandar Seri Begawan and Chennai was announced, enhancing people-to-people exchanges, trade, and tourism.
- **Defense and Security Cooperation:** The leaders discussed deepening defense ties, including joint naval exercises and port visits. Both countries stressed the importance of maritime cooperation and the adherence to international law in the Indo-Pacific region.
- **Regional Cooperation:** They reaffirmed their commitment to the ASEAN-India Comprehensive Strategic Partnership and condemned terrorism, calling for regional stability.

India-Brunei Relations:

- **Political Relations:** India and Brunei established diplomatic relations in 1984, underpinned by shared membership in organizations like the UN and ASEAN. High-level visits have reinforced ties, with both countries supporting each other in multilateral forums, notably in ASEAN-India cooperation.
- **Cultural Relations:** Cultural connections are strengthened by a significant Indian diaspora in Brunei, contributing to various sectors. India and Brunei engage in cultural exchanges through festivals, arts, and MoUs on cultural cooperation, promoting mutual understanding.
- **Commercial Relations:** Trade is primarily centered around energy, with Brunei exporting crude oil and LNG to India. Bilateral trade stands around USD 1 billion, and both nations are exploring opportunities in IT, agriculture, and pharmaceuticals to expand economic ties.
- **Defence Relations:** India and Brunei have developed strong defence cooperation, with naval exercises, officer training programs, and defence agreements fostering collaboration. Goodwill visits by Indian naval ships and joint training initiatives are key aspects of this partnership.
- **Educational & People-to-People Ties:** Bruneian students pursue higher education in India, strengthening educational ties. Scholarships under Indian programs like ITEC and ICCR further promote academic exchanges, enhancing people-to-people connections between the two nations.
- **Energy Cooperation:** Brunei is a significant supplier of hydrocarbons to India, meeting India's energy needs. Both countries are exploring collaboration in renewable energy technologies to contribute to sustainable energy solutions and climate change efforts.
- **Tourism and Connectivity:** India's rich heritage attracts Bruneian tourists, while Brunei's natural beauty holds potential for Indian travelers. Expanding air connectivity between the two nations could boost tourism and facilitate greater exchanges.
- **Multilateral Cooperation:** India and Brunei work closely in multilateral forums like ASEAN and the UN. Brunei supports India's aspirations for a permanent UN Security Council seat and collaborates on regional security, maritime issues, and climate change through ASEAN frameworks.
- **Healthcare Cooperation:** Indian medical professionals play a vital role in Brunei's healthcare system. Both nations are looking to enhance medical tourism, Ayurvedic medicine exchanges, and collaboration in healthcare technologies to boost sectoral cooperation.
- **Sustainability and Environment:** India and Brunei are working together on sustainability, focusing on green technologies and clean energy initiatives. India has invited Brunei to join efforts in renewable energy through platforms like the International Solar Alliance (ISA).

Challenges:

- **Trade Imbalance:** Despite efforts to enhance trade, a significant imbalance exists, with India exporting more than it imports from Brunei. Addressing this disparity is essential for balanced economic ties.
- **Limited Awareness:** There is a lack of awareness in both countries about each other's markets, cultures, and opportunities. This can hinder investment and trade initiatives.
- **Geopolitical Competition:** The increasing influence of other regional powers like China in Southeast Asia can complicate India's efforts to strengthen its presence in Brunei, requiring careful navigation of geopolitical dynamics.
- **Infrastructure Development:** Limited infrastructure connectivity between India and Brunei can pose challenges for trade and investment, necessitating improvements in logistics and transport links to facilitate better economic interaction.
- **Cultural and Language Barriers:** Differences in culture and language can create misunderstandings and hinder effective communication, impacting business negotiations and collaborations between Indian and Bruneian entities.

Way Forward:

- **Enhance Trade Partnerships:** Establish trade agreements that address imbalances, focusing on sectors like agriculture, technology, and energy to promote mutual benefits.
- **Increase Cultural Exchange:** Promote cultural programs and educational exchanges to build awareness and understanding of each other's societies, fostering stronger ties.
- **Boost Connectivity:** Invest in infrastructure projects that enhance transportation and logistics between India and Brunei, facilitating smoother trade and investment flows.
- **Strengthen Strategic Cooperation:** Collaborate on regional security initiatives, maritime security, and counter-terrorism efforts to address common challenges and enhance stability.
- **Foster Business Collaboration:** Organize business forums and trade missions to connect Indian and Bruneian businesses, encouraging joint ventures and investment opportunities.

2. INDIA AND SINGAPORE RELATIONS

Key Agreements:

- **Digital Technologies:** It covers digital technologies, including cybersecurity, 5G, super-computing, quantum computing, and AI, and focuses on upskilling and reskilling workers.
- **Semiconductor Ecosystem:** It involves cooperation in semiconductor cluster development and talent cultivation.
  - It aims to facilitate investment by Singaporean companies in India's semiconductor sector.
- **Health Cooperation:** It focuses on joint research, innovation, and human resource development in healthcare and pharmaceuticals.
  - It also aims to promote Indian healthcare professionals in Singapore.
- **Skill Development:** It targets educational cooperation and technical/vocational training, enhancing ongoing skill development initiatives.

Significance of India - Singapore Relations:

- **Historical:** Strong commercial, cultural, and people-to-people links dating back over a millennium. Modern ties linked to Sir Stamford Raffles establishing a trading station in 1819. India recognized Singapore soon after its independence in 1965.
- **Strategic:** India-Singapore relations were elevated to Strategic Partnership during the visit of Prime Minister Narendra Modi to Singapore in 2015.
- **India-Singapore Ministerial Roundtable (ISMR):** Inaugural ISMR in 2022 focused on digital connectivity, Fintech, green economy, and other areas.
  - 2nd ISMR in 2024 added new pillars like Advanced Manufacturing and Connectivity.
- **Geo-economic:** Singapore is India's largest trade partner in ASEAN. It is the leading source of FDI, among the largest sources of External Commercial Borrowings and Foreign Portfolio Investment.
  - Bilateral trade between the two countries grew significantly from USD 6.7 billion in FY 2004-05 to USD 35.6 billion in FY 2023-24.
  - **Singapore ranks as India's 6th largest trade partner**, accounting for 3.2% of India's total trade. In FY 2023-24, India's imports from Singapore were USD 21.2 billion (a 10.2% decrease from the previous year), while exports to Singapore reached USD 14.4 billion (a 20.2% increase from the previous year).
- **Multilateral Cooperation:** Singapore has joined international initiatives like the International Solar Alliance and Global Biofuel Alliance. Both countries are part of multilateral groups such as IORA, NAM, and the Commonwealth.
- **Science & Technology Cooperation:** ISRO has launched several Singaporean satellites. Collaborative efforts in digital health and medical technologies.
  - **Fintech:** Initiatives include the UPI-PayNow linkage, RuPay card acceptance, and other cross-border Fintech developments.
- **Cultural Cooperation:** Regular exchanges in performing arts, theatre, and other cultural spheres. Active promotion of Indian art forms in Singapore.
- **Indian Community:** Indians make up about 9.1% of Singapore's resident population and 21% of foreign residents. Significant Indian diaspora with high concentrations of IIT and IIM alumni.

Challenges:

- **Trade Imbalance:** Despite strong trade ties, India faces a trade deficit with Singapore, necessitating efforts to increase Indian exports and diversify the trade basket.
- **Regulatory Complexities:** Different regulatory frameworks can pose challenges for businesses operating across borders, impacting investment and trade flows.
- **Geopolitical Rivalries:** Regional tensions, especially regarding China, can complicate diplomatic relations and require careful balancing by both nations.
- **Skill Mismatch:** Differences in workforce skills and training can hinder collaboration in sectors like technology and innovation, limiting potential partnerships.

Way Forward:

- **Enhance Trade Diversification:** Focus on diversifying trade relationships by exploring new sectors such as green technology, pharmaceuticals, and digital services to balance trade.
- **Streamline Regulatory Processes:** Work on simplifying regulatory frameworks and fostering cooperation between government agencies to facilitate smoother business operations.

- **Joint Strategic Initiatives:** Collaborate on strategic initiatives, such as defense and cybersecurity, to strengthen ties and address shared regional concerns.
- **Invest in Skill Development:** Promote skill development programs and internships to align workforce capabilities, enhancing collaboration in high-tech and innovative industries.

3. INDIA AND MALAYSIA RELATION

About:

- Both leaders announced the **decision to upgrade the 2010 Strategic Partnership,** which had been made an 'Enhanced Strategic Partnership' in 2015, along with a number of agreements and MoUs signed in their presence.
  - These include MoUs on workers' mobility, digital technology, culture, tourism, sports, and education.
- The two Prime Ministers also discussed geopolitical challenges, including the current conflicts and tensions in the Indo-Pacific region.

Significance:

- **Diplomatic Relations:** India and Malaysia established diplomatic relations shortly after Malaysia gained independence from British rule in **1957.**
  - Both countries are members of various international organizations, such as the United Nations, ASEAN (Association of Southeast Asian Nations), and the Non-Aligned Movement.
- **Trade and Economic Relations:** Malaysia is the 13th largest trading partner for India while India stands amongst the 10 largest trading partners globally.
  - Furthermore, Malaysia has emerged as the third largest trading partner for India from the ASEAN region and India is the largest trading partner for Malaysia among the countries of the Southeast Asian region.
  - Malaysia stands as an important trade partner, as both countries have engaged in various economic agreements such as the **India-Malaysia Comprehensive Economic Cooperation Agreement (CECA).**
  - Both countries have agreed to conduct **trade settlements in Indian rupees,** reflecting an intention to bolster trade relations.
- **Defense and Security:** The defense ties have steadily expanded, marked by the signing of a **defense cooperation memorandum in 1993,** regular defense cooperation meetings, joint military exercises, and Malaysia's interest in acquiring 18 new Indian light fighter jets, indicating potential growth in arms trade between the two nations.
- **Strategic Partnership:** India and Malaysia have aimed to strengthen their strategic partnership through various initiatives, including high-level visits, joint commissions, and dialogues.
  - Both countries have expressed interests in enhancing cooperation in areas such as defense, counter-terrorism, maritime security, and cultural exchanges.
- **ASEAN Centrality:** Malaysia holds a crucial position in **expanding India's trade with ASEAN**, aligning with I**ndia's Act East Policy**, **advancing maritime connectivity** in the Strait of Malacca and South China Sea, and supporting ASEAN's Indo-Pacific Perspective (AOIP) and the Indo-Pacific Initiative (IPOI).
- **Tourism and diaspora:** Over the last two decades, tourism has been a cornerstone in fostering relations between India and Malaysia.
  - Various agreements, including the India-Malaysia visa waiver for diplomatic and official passport holders, a tourism-focused memorandum of understanding in 2010, a bilateral agreement on employment and workers' welfare in 2009, and a revised air services agreement in 2017, have significantly contributed to the growth of tourism between the nations.
- **Cultural Ties:** Indian influence in Malaysia can be seen in various aspects of Malaysian culture, including language, religion (Hinduism and Buddhism), architecture, cuisine, and festivals.

Challenges:

- **Trade Imbalance:** India experiences a trade deficit with Malaysia, highlighting the need for increased Indian exports to balance the relationship and diversify trade.
- **Political Dynamics:** Domestic political changes in Malaysia can affect bilateral relations, leading to fluctuations in policy and engagement levels.
- **Cultural and Ethnic Tensions:** Differences in cultural and ethnic identities may lead to misunderstandings, impacting people-to-people connections and cooperation.
- **Geopolitical Rivalries:** The influence of larger regional players, particularly China, can complicate India's strategic interests in Malaysia, requiring careful diplomatic navigation.

Way Forward:

- **Strengthen Economic Cooperation:** Focus on enhancing trade agreements that promote Indian exports, especially in sectors like technology, pharmaceuticals, and agriculture.
- **Enhance Diplomatic Engagement:** Foster consistent high-level diplomatic dialogues to navigate political changes and reinforce commitments to mutual interests.
- **Cultural Exchange Programs:** Implement initiatives to promote cultural exchanges, tourism, and educational collaborations to build stronger people-to-people ties.
- **Collaborate on Regional Security:** Work together on regional security initiatives and counter-terrorism efforts to address common threats and ensure stability in the region.

ELECTRONIC WARFARE

Recent explosions involving pagers in Lebanon, linked to Hezbollah, have left a significant number of people dead and injured. The explosions are believed to be part of a security operation targeting Hezbollah.

About:

- **Electronic warfare (EW)** involves the use of the electromagnetic spectrum to disrupt, intercept, or manipulate enemy communications and systems while protecting friendly operations.
- **It typically consists of three components:**
  - **Electronic Attack (EA):** This involves jamming or disrupting enemy radars, communications, or guidance systems. Techniques include electromagnetic jamming (interfering with radio signals), electronic deception (feeding false data), and physical attacks on electronic infrastructure (*e.g.,* EMPs).
  - **Electronic Protection (EP):** Countermeasures aimed at defending against EA, ensuring that communication and control systems remain functional despite enemy attempts to disrupt them. Techniques include frequency hopping, signal encryption, and spread-spectrum technologies.
  - **Electronic Support (ES):** The use of sensors to detect, intercept, identify, and locate sources of electromagnetic emissions. This can be used for threat detection, electronic intelligence (ELINT), and signals intelligence (SIGINT).

MODERN CONFLICTS INVOLVING ELECTRONIC WARFARE

- **Russia and Ukraine:** Russia has employed extensive EW capabilities in Ukraine, disrupting GPS, radio, and drone communications to impede Ukrainian forces' operations.
- **US Military:** The US has heavily invested in EW, integrating it into air, sea, and ground forces to disable adversaries' communications, targeting systems, and other electronic infrastructure.
- **Israel and Hezbollah:**
  - On September 17,2024, a wave of pager explosions resulted in at least 12 deaths and nearly 3,000 injuries across Lebanon and parts of Syria. This was followed by more blasts the next day, adding 14 more deaths and 450 injuries.
  - The explosions are believed to be part of a security operation targeting Hezbollah, potentially involving the sabotage of a shipment of communication devices. These devices, likely pagers, may have been compromised in the supply chain, possibly with the inclusion of explosive materials.
  - This incident has raised tensions between Hezbollah and Israel, with fears of further escalation in the ongoing conflict.

India's Vulnerability to Electronic Warfare:

- **Space and Satellite Vulnerabilities:** India heavily relies on satellite systems for communication, surveillance, and navigation. These assets are vulnerable to EW attacks such as signal jamming or cyber-attacks, especially from advanced actors like China, which has demonstrated Anti-Satellite (ASAT) capabilities.
- **Cybersecurity Risks:** India's military and critical infrastructure face significant cybersecurity challenges. EW systems are increasingly interconnected with cyber networks, making them vulnerable to cyber-attacks. Any disruption in digital communications or data integrity could lead to compromised operations, especially during conflicts.
- **Vulnerability of Civilian Infrastructure:** India's growing dependence on civilian telecommunications networks and GPS for both civilian and military purposes create a vulnerability to EW attacks. Civilian infrastructure, which may not have the same level of protection as military networks, could be targeted in an electronic warfare campaign.
- **Rapid Advancements in Adversary Capabilities:** Both China and Pakistan are rapidly advancing their EW and cyber capabilities. China's investment in artificial intelligence (AI) and quantum technologies could enable more sophisticated electronic attacks, potentially outpacing India's current EW defense systems.

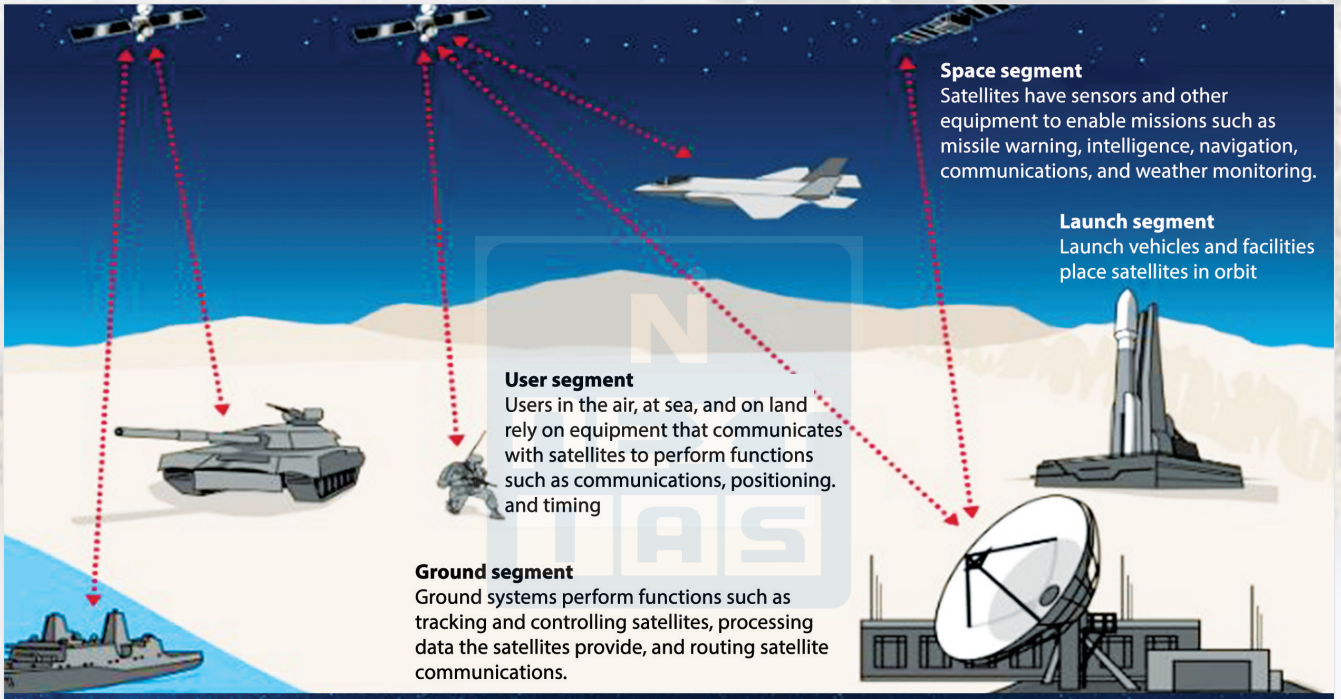
India's Preparedness:

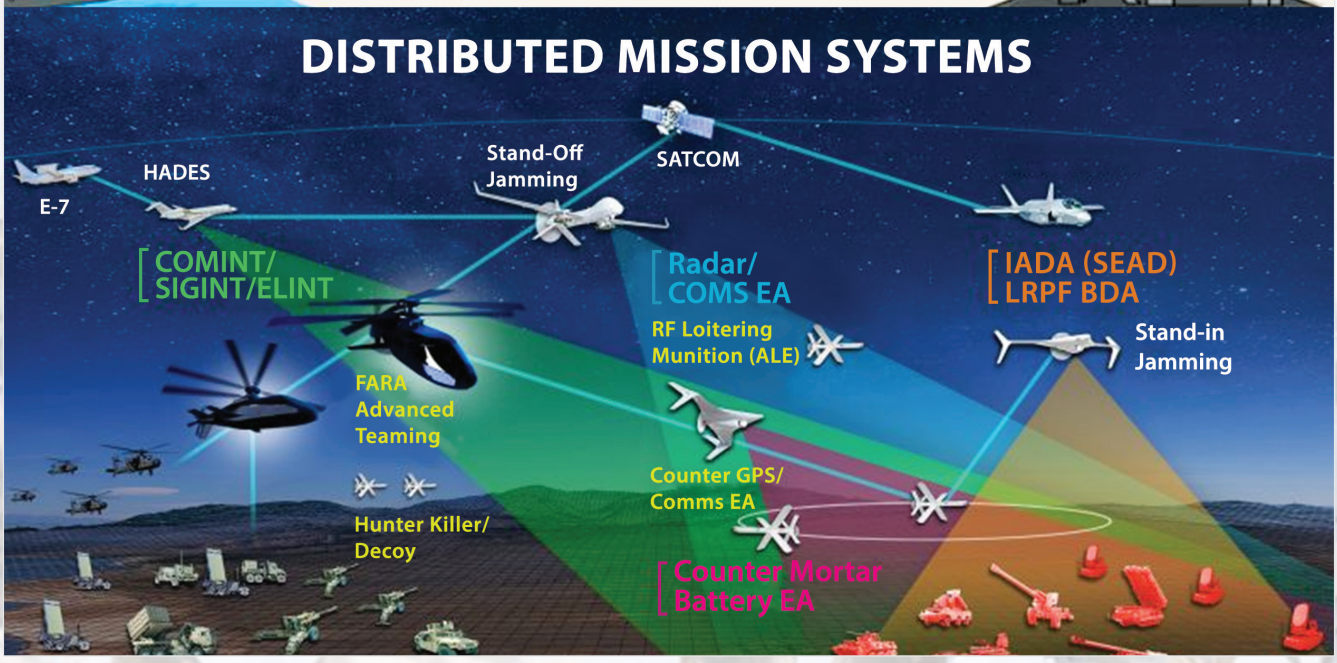
- **Development of Indigenous EW Systems:** India has been focusing on building indigenous EW capabilities like the **Samyukta** (a mobile electronic warfare system) and **D-29** (EW suite for fighter jets like the MiG-29). India has also been equipping its naval and air forces with systems like the **Kavach** and **Ajanta**, which are electronic warfare decoys to protect warships from anti-ship missiles.
- **Collaboration with Allies:** India is strengthening partnerships with countries like the U.S. , France, and Israel to acquire advanced EW technologies and improve its defense infrastructure.
- **Cybersecurity Initiatives:** The Indian government has launched multiple initiatives to enhance the cyber defense capabilities of the military, including creating specialized units to counter cyber-attacks on defense infrastructure.
- **Space-Based EW Capabilities:** India's heavy reliance on satellite communications and navigation systems for both civilian and military use has made space an important frontier for EW. The **Defence Space Agency (DSA)**, formed in 2019,

is tasked with coordinating and enhancing India's space warfare capabilities, including countering space-based EW threats such as signal jamming and satellite interference.

Way Forward:

- **Indigenous R&D:** Continued investment in research and development to produce indigenous EW systems that can compete with global technology.
- **Cyber-EW Integration:** Strengthening the integration between cyber and electronic warfare capabilities to address the growing overlap between these domains.
- **Space Warfare:** Further development of space-based EW capabilities to protect India's satellite infrastructure from potential jamming or hacking attacks.
- **Resilience to EW Attacks:** Alongside offensive capabilities, India must focus on **hardened communication systems** and **counter-jamming technologies** to protect its own assets from being disrupted during an electronic attack.
- **Development of EMP Defense:** Considering the growing use of electromagnetic pulse (EMP) weapons, India should invest in EMP-resistant infrastructure and defense systems that can mitigate the effects of these high-intensity weapons.





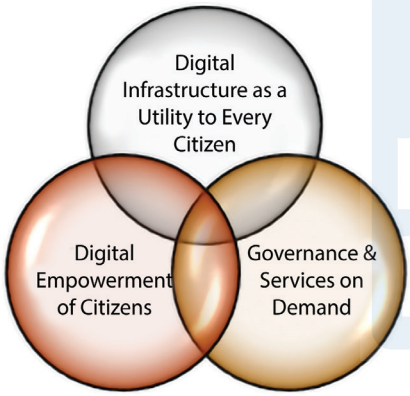
9 YEARS OF DIGITAL INDIA INITIATIVE

Launched on 1st July 2015 by the Ministry of Electronics and Information technology, Digital India initiative completed its 9 years recently.

About:

- It is a Programme to prepare India for a knowledge future. The focus is on being transformative to realize IT + IT = IT *(Information Technology + Indian Talent = India Tomorrow)*. The focus is on making technology central to enabling change.
- It is an Umbrella Programme covering many departments. It weaves together a large number of ideas and thoughts into a single, comprehensive vision so that Each of them is seen as part of a larger goal. Each individual element stands on its own.
- But it is also part of the larger picture. It is coordinated by DeitY, implemented by the entire government. The weaving together makes the Mission transformative in totality

Vision of Digital India is centered on 3 Key Areas:



Key Achievements:

- **Internet Connectivity:** Expansion of broadband connectivity to rural areas through the Bharat Net project, connecting over 1.5 lakh gram panchayats. **Bharat Net has laid 6.83 lakh kilometers** of optical fiber network, enough to circle the Earth over 17 times . Increased mobile network coverage across remote and rural regions.
- **Digital Infrastructure:** Established over 400,000 CSCs, providing digital services and e-governance solutions in rural areas. It also enables citizens to store and share important documents electronically, with over **674 c**rore documents issued. **Over Nine crore FASTag**s issued it's almost equal to the number of vehicles manufactured worldwide in 2023.
- **E-Governance:**
  - **Digital Service Delivery:** Implementation of various government services online, improving transparency and reducing processing times. Key services include online tax filing, passport applications, and land records management.
  - **E-Sign Framework:** Facilitated secure and authenticated electronic signatures for digital documents.
  - The **Government has come up with e-Marketplace (GeM**), a dedicated platform for different goods & services procured by government organizations/departments/PSUs, offering 11,829 product categories and 327 service categories.
  - **Swamitva Scheme:** Using drones and technology, the Swamitva Scheme aims to provide land titles to rural landowners.
  - **Digital India Land Records Modernization Programme (DILRMP):** Modernized land records management with digitized records, ensuring transparency and reducing disputes.
  - **Over 137 Crore Aadhaar numbers** have been generated, a unique ID for every Indian which is empowering millions with digital identity.
- **Financial Inclusion:**
  - **Pradhan Mantri Jan Dhan Yojana (PMJDY):** Opened over 450 million bank accounts, promoting financial inclusion and access to banking services.
  - **Digital Payments:** Widespread adoption of digital payment systems through initiatives like the Unified Payments Interface (UPI), Bharat Interface for Money (BHIM) app, and RuPay card.
  - Due to the Digital India campaign, over **11 Crore farmers now receive money** directly in their bank accounts. The Government of India, in collaboration with the EKstep Foundation, launched an AI chatbot with PM-Kisan to extend financial help to farmers.
  - **BHIM** is a UPI-based payment app that simplifies digital transactions. It has empowered millions of users to send and receive money seamlessly. There has been more than **535 lakh crore rupees of UPI transactions.**
- **Digital Literacy:**
  - **National Digital Literacy Mission (NDLM):** Trained over 40 million individuals in digital literacy, ensuring at least one digitally literate person per household.
  - **Pradhan Mantri Grameen Digital Saksharta Abhiyan (PMGDisha),** the world's largest digital literacy program, equips rural communities with essential digital skills like marketing, e-commerce, finance, and cybersecurity, enabling them to participate fully in the digital economy.
- **Startup Ecosystem:**
  - **Startup India:** Created a supportive environment for startups with various incentives, tax benefits, and funding opportunities.

- **Atal Innovation Mission:** Established Atal Tinkering Labs and incubation centers, fostering innovation and entrepreneurship among young minds.

- **E-Health and E-Education:**
  - Expansion of the National Digital Health Mission (NDHM) for digitizing healthcare records.
  - **E-Sanjeevani Platform:** Launched telemedicine services, enabling remote consultations and healthcare access, with over 10 million teleconsultations conducted.
  - **SWAYAM Platform:** Offers free online courses from top institutions, benefiting over 15 million learners.
  - **Ayushman Bharat:** leverages digital platforms to provide health insurance coverage to vulnerable sections of society. **Over 34.6 crore Ayushman Cards** were created
- **Smart Cities Mission:** Promoted the development of smart cities with integrated digital infrastructure for better urban management and improved quality of life.
- **Digital Services for Farmers:**
  - **E-NAM (National Agriculture Market):** Provided an online trading platform for farmers, connecting them to a wider market and ensuring better price discovery.
  - **Soil Health Card Scheme:** Enabled farmers to receive digital soil health reports, guiding them on optimal fertilizer use.
- **Cybersecurity and Data Protection:**
  - Strengthened cybersecurity frameworks and initiatives to protect digital infrastructure and data.
  - Implementation of the Personal Data Protection Bill to safeguard citizens' data privacy.

Challenges:

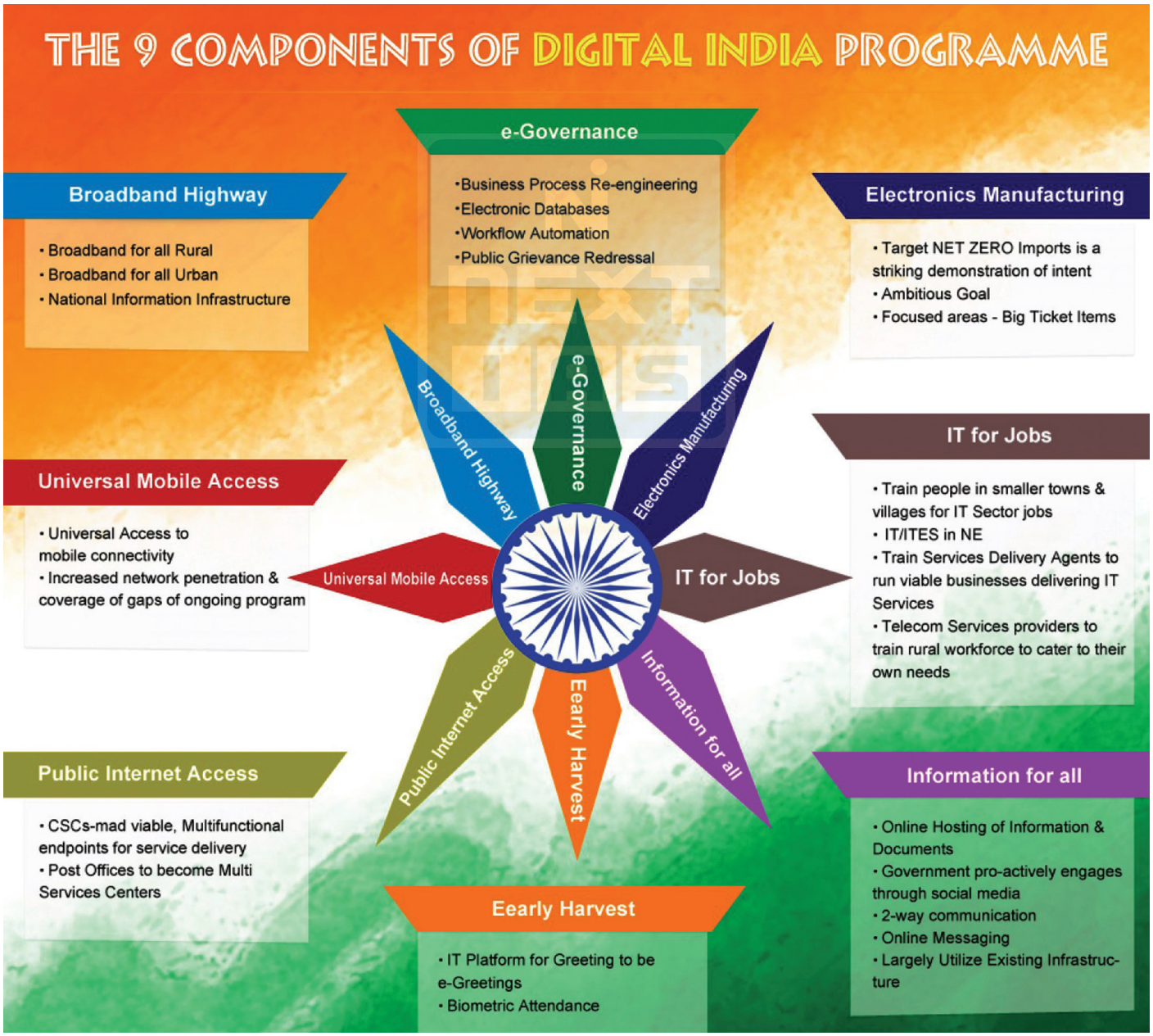
- **Digital Divide:** A significant gap exists between urban and rural areas in digital access, with only 24% of rural households having the internet compared to 66% in cities (NSSO data). This disparity limits access to education, jobs, and economic opportunities in rural regions.
- **Infrastructure Limitations:** Consistent high-speed broadband access is still lacking, particularly in remote and hilly regions. Frequent power outages in many areas disrupt digital infrastructure, hindering continuous access to digital services.
- **Digital Literacy:** Many, especially in rural areas, lack digital literacy, with only 38% of Indian households digitally literate. Urban literacy is 61%, compared to just 25% in rural areas. Expanding digital literacy programs nationwide is a significant challenge, requiring widespread outreach and resources.
- **ybersecurity and Data Privacy:** As per NCRB, cybercrime cases surged by 24.4% in 2022, with 65,893 cases reported, mostly cyber fraud (64.8%). The crime rate rose from 3.9 in 2021 to 4.8 in 2022. Ensuring strong data privacy and protection, particularly as more personal data is collected, is essential to secure user trust.
- **Regulatory and Policy Challenges:** Coordinating digital policies across states and sectors is complex, leading to inconsistencies in implementation. Developing robust frameworks for emerging technologies like AI, blockchain, and IoT is critical for safe and effective adoption.
- **Financial Constraints:** Securing sufficient funding for large-scale digital infrastructure and literacy initiatives remains challenging, especially in underdeveloped areas. Ensuring the financial viability of digital programs, particularly in low-income regions, is vital for long-term success.
- **Interoperability and Integration:** Breaking down data silos between government departments and platforms is crucial for seamless, integrated digital services. Upgrading outdated legacy systems is necessary to support new digital infrastructure and ensure system compatibility.

Way Forward:

- **Bridging the Digital Divide:**
  - **Rural Connectivity:** Accelerate the expansion of high-speed broadband and mobile connectivity in rural and remote areas through projects like BharatNet and other innovative technologies such as satellite internet.
  - **Affordable Access:** Implement policies to make digital devices and internet services more affordable for lower-income populations through subsidies or financing options.
- **Enhancing Digital Infrastructure:**
  - **Infrastructure Investment:** Increase investment in digital infrastructure, including data centers, cloud services, and 5G networks, to support growing demand.
  - **Reliable Power Supply:** Improve the reliability of electricity in rural and underserved areas to ensure continuous operation of digital services.
- **Promoting Digital Literacy:**
  - **Scaled Training Programs:** Expand digital literacy programs to reach all demographics, including women, elderly, and differently-abled individuals, through community centers, schools, and online platforms.
  - **Curriculum Integration:** Integrate digital literacy and skills training into the education system from early stages to prepare future generations for a digital economy.
- **Strengthening Cybersecurity and Data Privacy:**
  - **Robust Cybersecurity Measures:** Enhance cybersecurity frameworks and infrastructure to protect against cyber threats, with regular updates and training for both government and private sector entities.
  - **Data Protection Laws:** Enforce comprehensive data protection laws to safeguard personal information and ensure transparency in data usage.
- **Regulatory and Policy Support:**
  - **Policy Harmonization:** Ensure coordination between central and state governments to harmonize digital policies and regulations.

- **Emerging Technologies Regulation:** Develop clear regulatory frameworks for emerging technologies such as AI, blockchain, and IoT, balancing innovation with security and privacy concerns.

- **Ensuring Financial Sustainability:**
  - **Public-Private Partnerships:** Foster public-private partnerships to leverage private sector expertise and investment in digital infrastructure and services.
  - **Innovative Financing:** Explore innovative financing models, including crowdfunding, impact investing, and international funding, to support digital projects.
- **Improving Service Quality and User Experience:**
  - **User-Centric Design:** Design digital services with a user-centric approach, ensuring they are intuitive, accessible, and meet the needs of diverse user groups.
  - **Feedback Mechanisms:** Establish robust feedback mechanisms to continuously improve digital services based on user input.
- **Promoting Interoperability and Integration:**
  - **Unified Platforms:** Develop unified digital platforms that integrate various government services, enabling seamless access and reducing data silos.
  - **Legacy System Upgrades:** Prioritize the upgrade or replacement of outdated legacy systems to ensure compatibility with modern digital infrastructure.



DELAY IN APPOINTMENT OF NHRC CHAIRPERSON

The National Human Rights Commission (NHRC) has been without a full-time chairperson since June 1,2024, following the retirement of former Supreme Court Justice Arun Mishra.

About:

- Vijayabharathi Sayani is the only full-time member and acting chairperson, handling all responsibilities.
- The NHRC should have a chairperson and five other full-time members. It is currently operating with only one full-time member out of six required positions and seven ex-officio members.

National Human Rights Commission (NHRC):

- It was established on October 12, 1993, under the Protection of Human Rights Act (PHRA), 1993, amended by the **Protection of Human Rights (Amendment) Act, 2006.** It aligns with the **Paris Principles**, which were endorsed by the UN General Assembly in 1993.
- The **Protection of Human Rights Act, 1993** was amended in 2019 to allow **any Supreme Court judge** to head the **NHRC**, not just retired Chief Justices of India.
- **Composition NHRC:**
  - The commission is a multi-member body consisting of the following full-time members: A Chairperson, and 5 other members.
  - In addition to these full-time members, the commission also has the following **7 ex-officio members:**
    - Chairperson of the National Commission for Minorities,
    - Chairperson of the National Commission for SCs,
    - Chairperson of the National Commission for STs,
    - Chairperson of the National Commission for Women,
    - Chairperson of the National Commission for BCs,
    - Chairperson of the National Commission for the Protection of Child Rights, and
    - The Chief Commissioner for Persons with Disabilities.

Position	Qualifications
Chairperson	A retired Chief Justice of India or a Judge of the Supreme Court
1st Member	A serving or retired Judge of the Supreme Court
2nd Member	A serving or retired Chief Justice of a High Court
3rd, 4th, and 5th Members	Persons having knowledge or practical experience with respect to human rights. *Note:* Out of these three members, one should be a woman.

- **Appointment of Members of NHRC:** The Chairperson and the members of the National Human Rights Commission are appointed by the President on the recommendations of a six-member committee consisting of:
  - The Prime Minister as its head,
  - The Speaker of the Lok Sabha,
  - The Deputy Chairman of the Rajya Sabha,
  - The Leader of the Opposition in the Lok Sabha,
  - The Leader of the Opposition in the Rajya Sabha, and
  - The Union Home Minister.

Functions of the NHRC:

- To inquire into any violation of human rights or negligence in the prevention of such violation by a public servant, either **suo motu** or on a petition presented to it or on an order of a court.
- To intervene in any proceeding involving an allegation of violation of human rights pending before a court.
- To visit jails and detention places to study the living conditions of inmates and make recommendations thereon.
- To review the constitutional and other legal safeguards for the protection of human rights and recommend measures for their effective implementation.
- To review the factors including acts of terrorism that inhibit the enjoyment of human rights and recommend remedial measures.
- To study treaties and other international instruments on human rights and make recommendations for their effective implementation.
- To undertake and promote research in the field of human rights.
- To spread human rights literacy among the people and promote awareness of the safeguards available for the protection of these rights.
- To encourage the efforts of non-governmental organizations (NGOs) working in the field of human rights.
- To undertake such other functions as it may consider necessary for the promotion of human rights.

Powers of NHRC:

- The NHRC is vested with the power to regulate its own procedure.
- It has all the powers of a Civil Court and its proceedings have a judicial character.
- It may call for information or reports from the Central and State Governments or any other subordinate authority thereof.
- The Commission is not empowered to inquire into any matter after the expiry of one year from the date on which the Act constituting a violation of human rights is alleged to have been committed. In other words, it can look into a matter within one year of its occurrence.

- The Commission may take any of the following steps during or upon the completion of an inquiry:
  - To recommend to the concerned government or authority to make payment of compensation or damages to the victim.
  - To recommend to the concerned government or authority the initiation of proceedings for prosecution or any other action against the guilty public servant.
  - To recommend to the concerned government or authority for the grant of immediate interim relief to the victim.
  - To approach the Supreme Court or the High Court concerned for the necessary directions, orders, or writs.

SIGNIFICANT ROLE PLAYED BY NHRC

- The National Human Rights Commission (NHRC) plays a significant role in addressing a wide range of issues related to human rights violations in India.
- Below are some examples of the issues taken up by NHRC across the country:
  - Arbitrary arrest and detention, Custodial torture and deaths, Fake Encounters, Communal Violence, Atrocities committed on women and children and other vulnerable sections,
  - Non-payment of retiral benefits, Child labour, Extra-judicial killings, Sexual violence and abuse, LGBTQ community rights and SCs/STs, disabled people, and other religious minority issues etc.

Issues Faced By NHRC:

- **Limited Powers:** The NHRC's authority is primarily recommendatory, meaning it can suggest actions but lacks the power to enforce its decisions. This undermines its ability to hold violators accountable, often rendering its recommendations ineffective, leading to it being labeled a "toothless tiger. "
- **Funding Dependence:** The NHRC relies on annual grants from the Ministry of Home Affairs, restricting its financial independence. This dependence affects its ability to allocate resources freely, limiting its capacity to address pressing human rights violations and develop its infrastructure.
- **Manpower Constraints:** The NHRC operates with fewer staff than its sanctioned strength, leaving it ill-equipped to handle the growing volume of human rights complaints. Manpower shortages, especially in the Law Division, slow down case handling, causing delays in delivering justice.
- **Expertise Deficit:** The commission faces a shortage of specialized personnel, especially in legal analysis, human rights law, and investigative techniques. This deficit hampers the NHRC's ability to carry out in-depth inquiries and effectively advocate for human rights reform.
- **Operational Challenges:** The commission often struggles to meet the high expectations of human rights victims, who look to it for swift justice. Limited resources and an overburdened system lead to delays, lowering the confidence of the public in the institution's ability to deliver.
- **Limited Reach:** The NHRC's capacity to address human rights violations is constrained, particularly in remote and rural areas where state apparatuses are weak or absent. This geographic limitation undermines its mandate to protect vulnerable populations.
- **Public Awareness:** Many citizens are unaware of the NHRC's existence or the scope of its work, which diminishes its ability to be an accessible institution for human rights redress. This lack of awareness contributes to underreporting of violations and limited engagement with the commission.
- **Deferred NHRC's accreditation:** The Global Alliance of National Human Rights Institutions (GANHRI) has **deferred NHRC's accreditation** for the second consecutive year, **citing lack of transparency and poor representation.** It fails to cooperate with civil society, involves police personnel in investigations creating "conflict(s) of interest, " and is unable to respond to escalating human rights violations.

Way Forward:

- **Training and Capacity Building:** Regular training programs for NHRC members and staff can help enhance their knowledge of human rights laws, investigation techniques, and case management. This would ensure more effective handling of complaints and better overall performance.
- **Diverse Composition:** Including members from SCs, STs, civil society, and human rights activists would bring a broader range of perspectives and expertise to the NHRC, making it more representative and sensitive to the needs of marginalized groups.
- **Structural Improvements:** Ensuring adequate infrastructure, such as modern office spaces, technology, and sufficient personnel, along with regular funding, would help the NHRC function more efficiently and handle cases promptly.
- **Time-bound Investigations:** Setting deadlines for completing investigations would help the NHRC deliver quicker justice to victims, improving its credibility and effectiveness in addressing human rights violations.
- **Enforceable Decisions:** Strengthening the legal framework to make NHRC decisions enforceable would give the commission more authority, ensuring that its recommendations are acted upon by the government and relevant agencies.
- **Process Simplification:** Simplifying the process of filing complaints and improving case management systems would make the NHRC more accessible to the public, reducing delays and administrative hurdles for those seeking justice.
- **Enhanced Outreach:** Increasing NHRC's presence on social media and other platforms would raise public awareness about its functions and services. Collaborating with civil society organizations can also help reach communities that are often overlooked.

PERFORMANCE REVIEW OF REGULATORY BODIES

The Public Accounts Committee (PAC) will hold a performance review of "regulatory bodies established by Act of Parliament", such as the Securities and Exchange Board of India (SEBI).

About:

- The decision came amid a political storm over the allegations of **conflict of interest against Securities and Exchange Board of India (SEBI)** Chairperson Madhabi Puri Buch.
- The panel has picked five subjects for suo motu investigations, including "performance review of regulatory bodies established by Act of Parliament" and "levy and regulation of fees, tariffs, user charges etc. on public infrastructure and other public utilities".

PUBLIC ACCOUNTS COMMITTEE

- The committee was set up first in **1921** under the provisions of the **Government of India Act of 1919.**
- It consists of **22 members,** 15 from the Lok Sabha and 7 from the Rajya Sabha.
- The members are elected by the Parliament every year from amongst its members according to the **principle of proportional representation** by means of the single transferable vote.
- A **minister cannot be elected as a member** of the committee. The term of office of the members is **one year.**
- **The function** of the committee is to examine the annual audit reports of the Comptroller and CAG, which are laid before the Parliament by the President. The reports are;
  - Audit report on appropriation accounts,
  - Audit report on finance accounts and
  - Audit report on public undertakings.
- In addition, the Committee can also select one or more suo motu subjects for in-depth examination during the year.

Significance of Parliamentary Committees:

- **Expertise and Specialization:** Parliamentary Committees are composed of members of Parliament with expertise in specific areas, allowing for informed discussions on complex issues.
  - ***For example,*** the Committee on Health and Family Welfare studied the Surrogacy (Regulation) Bill, 2016, and recommended changes that improved the law's structure, such as the distinction between commercial and altruistic surrogacy.
  - This specialization enables committees to provide detailed, informed recommendations that contribute to the refinement of legislation.
- **Checks and Balances:** Parliamentary Committees serve as a mechanism for holding the executive accountable. They scrutinize govt. policies, question ministers, and demand explanations, thereby ensuring transparency and accountability.
  - ***For instance,*** the Public Accounts Committee (PAC) audits the government's finances and brings to light irregularities in public expenditure, providing an essential check on the executive's fiscal management.
- **Strengthening Legislation:** Committees significantly contribute to strengthening the quality of laws. They review bills in detail, suggest amendments, and consult various stakeholders to ensure that the final legislation is well-rounded and effective.
  - *For example*, the Committee on Food and Consumer Affairs recommended several crucial amendments to the Consumer Protection Act, 2019, such as increasing penalties for misleading advertisements and refining definitions, thus improving the law's clarity and enforceability.
- **Budgetary Oversight:** Committees, especially the Departmentally Related Standing Committees (DRSCs), examine the detailed budget estimates of ministries and provide recommendations. This in-depth review helps ensure fiscal prudence and allocates resources more effectively.
  - *For example*, the Finance Committee reviews the Union Budget and suggests improvements in the allocation and utilization of resources across sectors.
- **Building Consensus:** Committees provide a non-partisan platform for MPs to engage in constructive dialogue. Since committee meetings are held behind closed doors, members from different political parties can freely discuss and negotiate on key issues, which often leads to consensus-building.
  - This collaborative approach is particularly useful in passing contentious bills, where political differences need to be bridged for the sake of legislative progress.
- **Public Engagement and Transparency:** Parliamentary Committees enable the public and civil society organizations to directly engage with the legislative process. Committees often invite expert testimony, stakeholder input, and public suggestions, fostering greater transparency and inclusivity in law-making.
  - *For example*, during the drafting of the Data Protection Bill, the Joint Parliamentary Committee invited inputs from various tech companies, civil society groups, and privacy advocates, ensuring that the bill reflected a broader spectrum of views.
- **Efficiency in Parliamentary Work:** Given the vast volume of work and time constraints in Parliament, committees play a vital role in ensuring that legislative proposals and policies are thoroughly examined. This division of labor enables Parliament to function more efficiently.
  - *For instance*, the Standing Committees regularly review

Departmental Standing Committees

- There are 24 Department - Related Standing Committees (DRSCs).
- The main function of these standing committees is to secure more accountability of the executive to the parliament.
- The term of office of these committees does NOT exceed one year.

There are 2 types of Parliamentary Committees

- **Standing Committees:** Permanent and constituted periodically
- **Ad Hoc Committees:** Temporary, cease to exist on completion of their task

Financial Committees

- Public Accounts Committee
- Estimates Committee
- Committee on Public Undertakings

Committees to Scrutinise and Control

- Committee on Government Assurances
- Committee on Subordinate Legislation
- Committee on Papers Laid on the Table
- Committee on Welfare of SCs and STs
- Committee on Empowerment of Women
- Joint Committee on Offices of Profit

Committees relating to the Day-to-Day Business of the House

- Business Advisory Committee
- Committee on Private Members' Bills and Resolutions
- Rules Committee
- Committee on Absence of Members from Sittings of the House

Committees to Inquire

- Committee on Petitions
- Committee of Privileges
- Ethics Committee

House-Keeping Committees

- General Purposes Committee
- House Committee
- Library Committee
- Joint Committee on Salaries and Allowances of Members

the implementation of various policies and schemes, ensuring that Parliament focuses on broader debates while committees handle the granular details.

- **Enhancing Accountability of Public Institutions:** Committees often scrutinize the functioning of public institutions like regulatory bodies, government departments, and autonomous agencies.
  - The Committee on Public Undertakings (COPU), for example, regularly examines the performance of public sector enterprises and makes recommendations to improve efficiency, accountability, and governance.

Issues:

- **Resource Constraints:** Parliamentary committees have limited access to expert resources, often relying only on a secretariat for administrative tasks. The lack of research support and specialist advisors, as noted by the National Commission to Review the Working of the Constitution (2002), restricts their ability to conduct in-depth analyses and offer informed recommendations.
- **Lack of Independence:** Committees are vulnerable to pressure from the government or influential groups, compromising their autonomy.
  - This interference weakens the committees' ability to perform impartial oversight and make objective decisions.
- **Limited Powers:** Parliamentary committees lack the authority to enforce their recommendations or take disciplinary action against non-compliant officials or agencies. This reduces the impact of their findings, as the executive may disregard or fail to implement them.

- **Low Participation by Members:** Committees often face poor attendance by MPs, undermining their effectiveness. For example, only 49% of MPs attended committee meetings between 2009 and 2014, reducing the quality of discussions and decision-making.
- **Political Influence:** Committees are susceptible to political pressure from party leadership or influential factions, which can skew their work and reduce their ability to function independently and objectively.
- **Poor Number of Parliamentary Sittings:** The limited number of days Parliament convenes restricts the time available for committee work. Over the past decade, Parliament has averaged just 67 sitting days per year, limiting opportunities for committees to meet and deliberate effectively.
- **Lack of Detailed Scrutiny:** Committees often struggle with the thorough scrutiny of government policies, particularly in budget discussions. In the 16th Lok Sabha, only 17% of the budget was debated, leaving much of the government's spending inadequately examined.

Way Forward:

- **Increase Resources and Time:** Allocate more time and resources for committees to conduct thorough reviews of government policies. This includes funds for inquiries, public hearings, and hiring expert advisors, as recommended by the National Commission to Review the Working of the Constitution (2002).
- **Strengthen Research Support:** Provide committees with access to specialized research teams, technical advisors, and independent experts to ensure they have the necessary information and expertise to conduct detailed scrutiny of legislation and government actions.
- **Enhance Independence:** Safeguard committees from external pressures, such as government or political party influence, ensuring they operate independently to carry out their oversight role impartially and effectively.
- **Increase Public Visibility and Transparency:** Promote public engagement by making committee work more accessible, such as live streaming meetings, holding public hearings, and regularly publishing reports. This would increase accountability and public trust.
- **Improve Member Participation:** Address low participation rates by providing MPs with incentives, more flexible scheduling, and proper support to encourage their active involvement in committee work, ensuring more effective deliberation.
- **Grant Greater Powers of Enforcement:** Equip committees with stronger enforcement powers, such as the ability to summon officials and demand compliance with their recommendations, ensuring that their findings are respected and acted upon.
- **Ensure Comprehensive Budget Scrutiny:** Empower committees to scrutinize a larger portion of the national budget, allowing them to provide more rigorous oversight of government expenditures and financial management.

SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI)

- **Origin:** The Securities and Exchange Board of India was constituted as a non-statutory body in 1988 through a resolution of the Government of India.
  - In 1992 it was established as a statutory body under the provisions of the Securities and Exchange Board of India Act, 1992.
- **Governance:** SEBI is managed by its board of members, which consist of the following people;
  - **The chairman,** who is nominated by the Union Government of India.
  - Two members from the Union Finance Ministry.
  - One member from the Reserve Bank of India.
  - The remaining **five members are nominated by the Union Government of India,** and out of them at least three should be whole-time members.

Functions of SEBI:

- **Promotion of Investor Education:** SEBI undertakes initiatives to educate investors about the functioning of securities markets, investment products, and associated risks, promoting informed decision-making.
- **Regulation of Market Intermediaries:** SEBI regulates various market intermediaries such as stock brokers, merchant bankers, and mutual funds, ensuring they adhere to ethical practices and maintain financial integrity.
- **Corporate Governance:** SEBI promotes good corporate governance practices among listed companies to enhance transparency, accountability, and ethical management, thereby fostering investor confidence.
- **Development of Financial Markets:** SEBI plays a crucial role in developing the infrastructure of the capital markets, including promoting new instruments like Exchange Traded Funds (ETFs) and Real Estate Investment Trusts (REITs).
- **Surveillance of Market Activities:** SEBI continuously monitors market activities to identify and prevent fraudulent and unfair trade practices, ensuring fair trading conditions for all participants.
- **Risk Management Framework:** SEBI establishes risk management measures for market participants, including guidelines for managing market risk and ensuring the stability of financial systems.
- **Coordination with Other Regulatory Bodies:** SEBI collaborates with other financial regulators, such as the Reserve Bank of India (RBI) and the Insurance Regulatory and Development Authority (IRDA), to maintain systemic stability and enforce coherent financial regulations.
- **Promotion of Sustainable Finance:** SEBI encourages the adoption of sustainable and responsible investment practices, supporting initiatives focused on Environmental, Social, and Governance (ESG) criteria to promote long-term economic growth.

BULLDOZER JUSTICE

The Supreme Court has expressed disapproval over "bulldozer justice" where houses of accused individuals are demolished.

About:

- 'Bulldozer justice' refers to the practice of **using the heavy-duty piece of machinery to demolish houses of alleged criminals,** communal violence rioters and accused criminals.
- As part of 'bulldozer justice', houses, shops and small establishments have been bulldozed across India, especially in the states of **Uttar Pradesh, Delhi, Madhya Pradesh, Gujarat, Assam and Maharashtra.**

Supreme Court Ruling:

- The Supreme Court has emphasized that any demolition of property must strictly follow **legal procedures,** even in cases involving unauthorized construction in public spaces or individual's involvement in criminal activities.
- In raising questions about the legality of demolition of homes belonging to alleged offenders, the SC has raised and articulated a valid worry about the use of the bulldozer as a form of **retribution.**
- The ruling underscores the importance of ensuring **natural justice** and due process in property-related cases, especially demolitions. The court expressed the need for nationwide guidelines to ensure that demolitions are carried out lawfully, ensuring fairness and protecting citizens' rights.

Issues with Bulldozer Justice:

- **Targeting of Marginalized Communities:** Bulldozer justice disproportionately affects marginalized and minority communities, intensifying existing inequalities. These actions often target vulnerable groups, exacerbating social divisions and creating a perception of selective enforcement of law, leading to societal alienation.
- **Erosion of Rule of Law:** By bypassing established legal procedures, bulldozer justice undermines the core principles of the rule of law. This extrajudicial practice disregards due process, damaging public trust in legal and political institutions, and fosters a sense of lawlessness within the state apparatus.
- **Infringement of Fundamental Rights:** Rushed decisions can result in the violation of individuals' or communities' fundamental rights.
  - In India, the right to shelter is a fundamental right, recognized as an integral part of the right to life under Article 21 of the Constitution. This right encompasses the provision of adequate housing, which is essential for living with dignity.
- **Unjust Punishments and Ethical Dilemmas:** Bulldozer justice conflates the roles of judge, jury, and executioner, resulting in unjust outcomes. It punishes entire families or communities for the actions of individuals, failing to distinguish between the guilty and innocent, and often inflicting disproportionate harm.
- **Psychological Trauma to Communities:** The sudden and violent nature of demolitions causes severe psychological trauma to affected individuals and entire communities. The shock and instability from losing one's home often result in long-term emotional distress and mental health issues.

Way Ahead:

- **Adherence to Rule of Law and Due Process:** The legal process must be strictly followed in all cases of property demolition. No action should be taken without proper legal notice, hearings, and the opportunity for the accused to appeal. Strengthening institutional checks and balances will help prevent arbitrary and unjust demolitions.
- **Development of Nationwide Guidelines:** There is a need for clear, nationwide guidelines to regulate the demolition of properties, ensuring transparency, consistency, and accountability. These guidelines should ensure that demolitions are used as a last resort and are proportionate to the offense.
- **Protection of Marginalized Communities:** Safeguards should be established to protect marginalized and minority communities from disproportionate targeting. Governments must ensure that no individual or community is unfairly subjected to demolitions based on their socioeconomic status, religion, or ethnicity.
- **Provision for Resettlement and Compensation:** In cases where demolitions are necessary, provisions for resettlement and fair compensation must be made to minimize the impact on affected individuals and families. Governments should take responsibility for rehabilitating those whose livelihoods and homes are destroyed.
- **Promoting Restorative Justice Approaches:** Instead of punitive actions like bulldozing, a shift towards restorative justice approaches should be encouraged. These approaches prioritize community healing, rehabilitation of offenders, and long-term solutions to prevent recurring issues.
- **Independent Oversight and Accountability:** To prevent misuse of power, independent oversight bodies should be established to review cases of demolition and ensure accountability for wrongful actions. This will help build public trust and reduce the risk of politically or communally motivated actions.
- **Public Awareness and Legal Aid:** Raising public awareness about legal rights and providing access to legal aid for vulnerable communities can help prevent arbitrary demolitions. Citizens should be informed about their right to due process, legal recourse, and protection from state overreach.

INDIA-UAE CIVIL NUCLEAR COOPERATION

India and the United Arab Emirates (UAE) signed a Memorandum of Understanding (MoU) for civil nuclear cooperation.

About:

- During the 2015 visit of Prime Minister Narendra Modi to the UAE, both countries had agreed to cooperate in **"peaceful use of nuclear energy"**, including in areas of **"safety, health, agriculture, and science and technology."**
- The recent agreement is a part of the UAE's policy of expanding investments into the nuclear energy sector especially in India.

INDIA'S CIVIL NUCLEAR COOPERATION

- Civil nuclear cooperation involves collaboration between countries or organizations to **develop and use nuclear technology for peaceful purposes.**
- **It can encompass a variety of activities, including:** Energy Production, Regulatory and Safety Standards, Nuclear Fuel Supply, and Non-Proliferation Efforts.
- India's civil nuclear program is aimed at harnessing nuclear energy for peaceful purposes, primarily **electricity generation, and other applications.**
- India has Nuclear cooperation with **France, Russia, U.S. A and Japan.**

Implications of Civil Nuclear Cooperation between India and UAE:

- **Strengthened Bilateral Ties:** The Memorandum of Understanding (MoU) on civil nuclear cooperation represents a significant deepening of India-UAE relations. This cooperation not only enhances strategic and economic ties but also reflects mutual trust and commitment to collaborative growth in the nuclear energy sector.
- **Advancements in Peaceful Nuclear Applications:** The agreement focuses on the peaceful use of nuclear energy, which includes applications in safety, health, agriculture, and science and technology. This collaboration could lead to advancements in these fields, such as improved agricultural practices, better healthcare solutions, and enhanced scientific research capabilities.
- **Expansion of UAE's Nuclear Energy Investments:** The UAE's policy of expanding investments into nuclear energy is reinforced by this MoU. This partnership may accelerate the UAE's efforts to develop its nuclear energy infrastructure, diversify its energy sources, and achieve energy security, thus supporting its long-term economic and energy goals.
- **Enhanced Energy Security and Collaboration:** The MoU, alongside the agreement for long-term LNG supply, underscores a comprehensive approach to energy security. This collaboration allows both countries to secure stable energy supplies and support their respective energy needs, potentially reducing their dependence on other energy sources.
- **Strengthened Global Nuclear Cooperation:** By partnering with the UAE, India demonstrates its commitment to global nuclear cooperation and non-proliferation principles. This collaboration sets a precedent for other nations and strengthens the international community's efforts to utilize nuclear energy responsibly and safely for peaceful purposes.

Broader Significance of India-UAE Relationship:

- **Geostrategic Partnership:**
  - **Diplomatic Relations:** Established in 1972, with a significant boost in 2015 following the Indian Prime Minister's visit, marking a new strategic partnership. In January 2017, the Crown Prince of Abu Dhabi's visit to India as the chief guest for Republic Day celebrations led to the establishment of a comprehensive strategic partnership.
  - **Strategic Engagement:** Both countries are involved in regional groupings and initiatives such as I2U2 and the India-Middle East-Europe Economic Corridor (IMEC), reflecting shared strategic interests.
- **Geo-Economic Cooperation:**
  - **Bilateral Trade:** The economic partnership has flourished, with bilateral trade reaching USD 85 billion in 2022-23. The UAE is India's third-largest trading partner and second-largest export destination.
  - **Trade Targets:** The aim is to boost bilateral merchandise trade to over USD 100 billion and services trade to USD 15 billion within five years.
  - **Manufacturing Units:** Many Indian companies have established manufacturing units in the UAE, either as joint ventures or in Special Economic Zones (SEZs) for various products including cement, textiles, and consumer electronics.
  - **Free Trade Agreements (FTAs):** Under India's revamped FTA strategy, the UAE is a top priority for an early harvest deal. The UAE also intends to pursue bilateral economic agreements with India and other countries like the UK, Turkey, and Israel.
  - **Energy Security:** The UAE is crucial to India's energy security, with strategic oil reserves stored in Mangalore, India.
  - **Fintech Collaboration:** Local Currency Settlement System (LCSS): The framework for using local currencies in

transactions aims to establish an LCSS, facilitating invoicing and payments in domestic currencies. This will help develop an INR-AED foreign exchange market.

- **Cultural Relations:**
  - **Indian Community:** The UAE is home to more than 3.3 million Indians. Indian culture is well-accepted, with participation in events like the Abu Dhabi International Book Fair 2019.
  - **Media Presence:** Indian cinema and TV channels are popular, with Hindi, Malayalam, and Tamil films regularly screened in UAE theaters.
  - **Yoga and Meditation:** The Emirati community actively participates in International Day of Yoga events, with various yoga and meditation centers thriving in the UAE.
- **Tourism and Connectivity:**
  - **Tourism Growth:** Enhanced connectivity and cultural exchange have boosted tourism between India and the UAE.
  - **Digital Payment Systems:** Initiatives like the acceptance of RuPay cards in the UAE since August 2019 and the operationalization of a Rupee-Dirham settlement system highlight mutual convergence in digital payment systems.
- **Diaspora and Remittances:**
  - **Indian Diaspora:** The large Indian community in the UAE acts as a bridge between the two countries, contributing significantly to the UAE's development and strengthening bilateral ties.
  - **Skill Development:** Agreements and collaborations in skill development enhance the capabilities and welfare of the Indian workforce in the UAE.

Challenges:

- **Non-Tariff Barriers (NTBs):** Measures like SPS and TBT, including mandatory Halal certification, have hindered Indian exports, especially in sectors such as poultry, meat, and processed foods. Indian processed food exports to the UAE have declined by approximately 30% in recent years due to these barriers.
- **Cheque Book Diplomacy:** China's strategy of offering low-interest loans has overshadowed Indian economic efforts in the UAE and the wider Middle East region.
- **Labor System Issues:** The Kafala system in the UAE grants significant control to employers over migrant workers, leading to human rights violations such as passport confiscation, delayed wages, and poor living conditions.
- **Geopolitical Apprehensions:** UAE's substantial financial aid to Pakistan raises concerns over potential misuse, given Pakistan's history of cross-border terrorism against India.
- **Regional Diplomacy Challenges:** India faces diplomatic complexities amidst ongoing conflicts between Iran and Arab nations, exacerbated by recent tensions between Israel and Hamas, which impact initiatives like the IMEC.

Way Forward:

- **Addressing Non-Tariff Barriers:** India and the UAE should engage in regulatory dialogues to streamline trade regulations, particularly in sectors like processed foods, to enhance trade efficiency and remove barriers hindering Indian exports.
- **Strengthening Economic Footprint:** Both nations can boost India's economic presence in the UAE by increasing investments in key sectors and fostering joint ventures and partnerships. Creating a conducive business environment and supporting entrepreneurship will attract more Indian businesses to the UAE.
- **Countering Chinese Economic Influence:** Collaborative efforts should focus on promoting transparency, sustainability, and fair business practices to counter Chinese economic influence in the region.
- **Improving Rights of Migrant Workers:** India and the UAE should prioritize reforming the Kafala system to ensure fair wages, decent living conditions, and protection of fundamental rights for all migrant workers in the UAE.

Conclusion:

- India-UAE relations are robust, marked by extensive economic ties, significant Indian diaspora presence, and strategic cooperation in areas like security and energy.
- These relations exemplify a strong partnership bolstered by mutual interests and shared regional stability goals.

INDIA'S SPECIAL CHINA PROBLEM

The External Affairs Minister has said that India has a special China problem above the world's general China problem.

About:

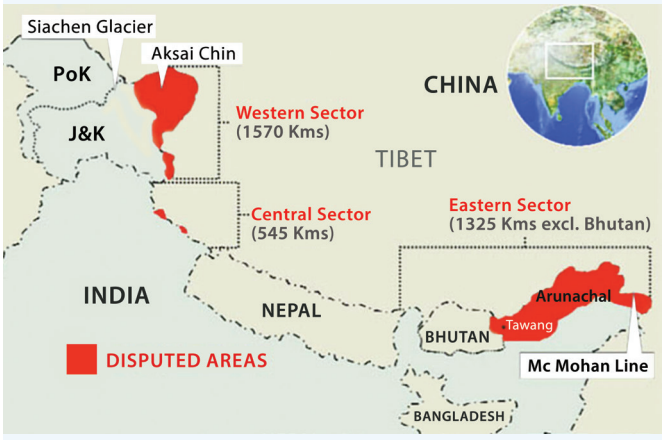
- The comments come days after diplomatic-level talks — the **31st meeting of the Working Mechanism for Consultation & Coordination on India-China Border Affairs (WMCC)** was held in Beijing on the border situation.
- The two sides agreed on **"intensified contact through diplomatic and military channels".**

LINE OF ACTUAL CONTROL

- The LAC is the demarcation that separates Indian-controlled territory from Chinese-controlled territory.
- India considers the **LAC to be 3,488 km** long, while the Chinese consider it to be only around 2,000 km.
- **It is divided into three sectors:**
  - the eastern sector which spans Arunachal Pradesh and Sikkim,
  - the middle sector in Uttarakhand and Himachal Pradesh,
  - and the western sector in Ladakh.
- LAC in the eastern sector consisting of Arunachal Pradesh and Sikkim is called the **McMahon Line which is 1,140 km long.**

How is the LAC different from the Line of Control with Pakistan?

- The LoC emerged from the **1948 ceasefire** line negotiated by the UN after the Kashmir War.
- It was **designated as the LoC in 1972,** following the **Shimla Agreement** between the two countries. It is delineated on a map signed by DGMOs of both armies and has the international sanctity of a legal agreement.
- The LAC, is only a concept and it is not agreed upon by the two countries, neither delineated on a map or demarcated on the ground.



- The expression **"narrow down the differences"** had been used for the first time in the bilateral talks on the border standoff and, in diplomatic parlance, indicates progress in the negotiations.
- It is to be noted that the WMCC on India-China Border Affairs was activated after the face-off on the **Line of Actual Control** began in May 2020.
- The **border standoff** has been ongoing for more than five years now and two sides have each deployed around 50,000-60,000 troops along the LAC in eastern Ladakh.

Challenges of India-China Peace Process:

- **Border Disputes:** The longstanding and unresolved border issues, particularly along the Line of Actual Control (LAC), lead to frequent standoffs and skirmishes, undermining trust and making it difficult to achieve lasting peace.
- **Strategic Rivalry:** Both nations view each other as strategic competitors in the region, with conflicting interests in areas like the Indian Ocean, South Asia, and Southeast Asia. This rivalry complicates efforts to find common ground in peace negotiations.
- **Military Build-up and Infrastructure Development:** The rapid military build-up and infrastructure development along the border by both sides increase tensions and the risk of escalation, making peaceful resolutions more challenging.
- **Nationalistic Sentiments:** Strong nationalistic sentiments in both countries, often fueled by media and political narratives, put pressure on their governments to take hardline stances, reducing the flexibility needed for compromise in peace talks.
- **Differing Worldviews:** India and China have different approaches to regional and global governance, with China advocating for a more assertive role in global affairs, which often clashes with India's vision of a multipolar world. These differing worldviews contribute to a lack of trust and make cooperation difficult.

Significance of Sino-India Relations:

- **Historical and cultural ties:**
  - **Ancient Trade and the Silk Road:** The Silk Road, an extensive network of trade routes connecting Asia, Europe, and Africa, played a crucial role in facilitating cultural exchanges between India and China.
  - **Buddhism:** Indian monks such as Bodhidharma and Xuanzang played a pivotal role in transmitting Buddhist teachings, scriptures, and practices to China.
  - **Artistic Exchanges:** Artistic exchanges between India and China flourished during the Tang Dynasty (618-907 CE). *For example:* Dunhuang Caves in China.

- **Philosophical Exchanges:** The teachings of Confucianism and Taoism in China have parallels with Hinduism and Jainism in India.

- **Geo strategic importance:**
  - **Regional Power Dynamics:** Both nations have significant influence in South Asia, Southeast Asia, that affects regional stability and security. India and China are seen as strategic rivals in the Asia-Pacific region, with both countries vying for influence and power.
  - **Maritime Security:** The Indian Ocean and the South China Sea are vital maritime routes for trade and energy transportation.
  - **Influence in Multilateral Organizations:** India and China are key players in various multilateral forums such as BRICS, SCO, etc. are shaping the world order in the backdrop of declining US hegemony.
  - **Nuclear Proliferation:** Both India and China are nuclear-armed states, and their relationship impacts strategic stability in the region.
  - **Belt and Road Initiative:** China's ambitious infrastructure and connectivity project, the BRI, has implications for India's strategic interests, particularly in South Asia.
- **Geo-political relations:**
  - **Strategic Rivalry:** India and China are seen as strategic rivals in the Asia-Pacific region, with both countries vying for influence and power.
  - **Regional Dynamics:** India's "Act East" policy and China's Belt and Road Initiative (BRI) have overlapping interests in the Indo-Pacific region.
  - **Multilateral Diplomacy:** India and China engage in multilateral diplomacy through platforms like the United Nations, where they cooperate on issues such as climate change and sustainable development.
  - **Soft Power Competition:** India and China also compete for influence through soft power tools such as cultural diplomacy, educational exchanges, and public diplomacy.
- **Geo-Economic interdependence:**
  - **Trade Relations:** Both the nations have a substantial trade relationship, with China being India's largest trading partner.
    - In 2023, bilateral trade had reached a record $136.2 Billion, while the trade deficit in favor of China had crossed a mammoth $100 billion driven by a 21% rise in Imports from China into India, despite continuing bilateral tensions over the military standoff at the LAC.
  - **Complementary Economies:** India and China have complementary economies, with China being a major exporter of manufactured goods and India being a significant market for these goods.
  - **Supply Chain Integration:** Both countries are part of global supply chains, with China being a major manufacturing hub and India emerging as a global manufacturing destination.
- **Security cooperation:**
  - **Confidence-Building Measures:** Both countries have engaged in confidence-building measures such as border personnel meetings, hotline communication between military commanders, and agreements to maintain peace and tranquility along the LAC.
  - **Regional Security Cooperation:** India and China are key players in regional security architectures such as SCO and BRICS. Both the nations have cooperated on counterterrorism initiatives and maritime security issues within these frameworks.
  - **Maritime Security:** Competition over sea lanes of communication, port infrastructure development, and naval presence in the region adds a maritime dimension to their security relationship.
- **Tourism and People-to-People Exchanges:** The tourism industry plays a role in enhancing people-to-people contacts and economic ties between India and China.

Broader Issues in India-China Relations:

- **Border Disputes:** The 3,488-kilometer-long border between India and China is a significant source of tension, leading to occasional skirmishes and standoffs.
  - Notable events include the 1962 Sino-Indian War, the Doklam standoff, and the Galwan Valley clashes. Despite agreements like the 1993 Agreement on Maintaining Peace along the LAC, disputes persist, with China accused of employing a **"salami-slicing"** strategy in the region.
- **Tibet Issue:** India's hosting of the Dalai Lama and the Tibetan government-in-exile remains a long-standing point of contention.
- **Trade Imbalance:** India faces a significant trade deficit with China, which remains its largest trading partner. This imbalance heavily favors China, causing economic concerns for India.
- **Regional Influence:** Both countries compete for influence in South Asia and the Indian Ocean, with China making significant inroads through initiatives like the Belt and Road Initiative (BRI).
- **Nuclear Proliferation:** China's close relationship with Pakistan, including nuclear cooperation, is a major concern for India.
- **Cybersecurity:** Accusations of cyber espionage and hacking between India and China have led to mistrust and strained relations.
- **Hydro Hegemony:** China's plans to build a **"super dam"** on the TsangPo river exemplify what some scholars describe as the **"weaponization of river waters. "**
- **Regional Security:** India and China hold divergent views on issues such as the South China Sea dispute and the Afghanistan peace process, complicating regional cooperation.

- **Human Rights:** India's concerns over China's human rights record in regions like Tibet, Xinjiang, and Hong Kong often strain bilateral relations.
- **South Asian Hegemony and String of Pearls Strategy:** China's investments in South Asia, including the China-Pakistan Economic Corridor (CPEC) and strategic maritime bases, challenge India's regional dominance and security.

NECKLACE OF DIAMOND STRATEGY

- The "Necklace of Diamonds" strategy refers to China's diplomatic and military efforts to establish a network of alliances and bases encircling India, particularly in the Indian Ocean region.
- This strategy aims to contain India's influence, enhance China's strategic foothold, and secure maritime trade routes, raising concerns over India's national security.

Way Forward:

- **Multi-Prong Strategy:**
  - **Regional Engagement:** Strengthen ties with South Asian countries to counter Chinese influence.
  - **Internal Balancing:** Modernize and enhance India's defense capabilities.
  - **External Balancing:** Build strategic alliances with countries like South Korea, Australia, and the USA.
- **3Cs (Competition, Cooperation, and Confrontation):**
  - **Competition:** Increase India's trade share with regions like the EU, Africa, and Latin America.
  - **Cooperation:** Engage actively in multilateral forums for broader cooperation.
  - **Confrontation:** Respond firmly to any attempts by China to alter the status quo in the Himalayas and the Indian Ocean.
- **Border Disputes Resolution:** Establish extra buffer zones in contested areas, building on existing border protocols.
- **Economic Cooperation:** Address the trade imbalance with China while managing geopolitical tensions.
- **Conflict Prevention and Crisis Management Mechanism:** Develop a credible military deterrence in the mountains and the Indian Ocean.
- **Cultural Diplomacy:** Promote people-to-people exchanges and harness cultural soft power to strengthen bilateral relations.
- **Proper Implementation of the Vibrant Villages Program:** Ensure seamless connectivity with border districts.

NITI AAYOG REPORT ON EDIBLE OILS

The report titled "Pathways and Strategies for Accelerating Growth in Edible Oils Towards the Goal of Atmanirbharta" was released by NITI Aayog.

Key Highlights:

- **Global Edible Vegetable Oil Economy:**
  - The **global edible vegetable oil sector** has been experiencing consistent growth over the years, and for **2024-25**, it is projected to see a **2% increase in production**, reaching a total of **228 million tonnes (MT)**.
  - This growth is primarily driven by increased output in **soybean, palm, and rapeseed oil**, which are major contributors to the vegetable oil market.
  - The modest growth in **sunflower oil** reflects its smaller share of the global market but contributes to the overall positive trend.
- **Oilseed Production:**
  - Since 1961, global **oilseed production** has surged almost **tenfold**, from **57.02 MT** to significantly higher levels today.
  - This dramatic rise is not only due to an increase in the **cultivated area** for oilseeds but also because of technological and farming improvements, which have made production more efficient.
  - The **global oilseed yields** doubled during this period, from **5.7 tonnes per hectare (t/ha)** in 1961 to **13.16 t/ha** in 2022-23.
  - This reflects enhanced farming practices, better seed varieties, and more efficient use of resources.
- **Global Oil Consumption:**
  - **Palm oil** is the most consumed vegetable oil worldwide, followed by **soybean oil**, **rapeseed oil**, and **sunflower oil**.
  - According to the United States Department of Agriculture's 2024 market analysis, global consumption of vegetable oils is expected to increase by nearly **3%**, with **palm and soybean oil** seeing the most significant growth.
  - On the other hand, the consumption of **sunflower oil** is predicted to decline slightly, reflecting shifts in consumer preferences and supply dynamics.
- **India's Role in the Global Market:**
  - As the **5th largest economy** globally, India is a significant player in the edible vegetable oil sector.
  - It ranks **fourth** in terms of contribution, behind the USA, China, and Brazil.
  - India accounts for **15-20% of the global oilseed area**, **6-7% of global vegetable oil production**, and **9-10% of total global consumption**.
  - Despite these impressive statistics, India faces a **domestic shortfall**, leading to high levels of **oil imports** to meet local demand.
- **India's Strengths**: India is a global leader in several edible oil sectors:
  - **Rice bran oil** production: India contributes **46.8%** of the global market.
  - **Castor seed oil** production: India dominates with **88.48%** of global production.
  - **Cottonseed oil**: India ranks second globally, contributing **28.41%** to the market.
  - For **groundnut seeds and oil**, India is second only to China, with a **18.69%** share in groundnuts and **16.34%** in groundnut oil.

Overview of India's Edible Oil Sector:

- **Importance of Oilseeds in Indian Agriculture:**
  - In India's agricultural sector, **oilseeds** rank second in both **area** and **production**, only behind food grains.
  - The country's diverse agro-ecological conditions allow for the cultivation of nine different annual oilseed crops, including **groundnut, rapeseed-mustard, soybean, sunflower, sesame, safflower, nigerseed, castor**, and **linseed**.
  - However, **rainfed agriculture**, which constitutes **76% of the oilseed cultivation area**, contributes **80%** of total oilseed production.
  - Rainfed agriculture is highly vulnerable to **biotic** (pests and diseases) and **abiotic stresses** (climate-related risks like drought), making it crucial to adopt strategies to improve **crop resilience** and stabilize production.
- **Contribution of Oilseeds:**
  - The **nine major oilseeds** cover **14.3% of the gross cropped area** in India, provide around **12-13% of dietary energy**, and account for approximately **8% of agricultural exports**.
  - **Soybean** occupies the largest cultivation area (11.74 million hectares, Mha), followed by **rapeseed-mustard** (7.08 Mha), and **groundnut** (5.12 Mha).
  - **Sesame** (1.58 Mha) and **castor seed** (0.89 Mha) are also significant contributors.
- **Dominance of Soybean, Rapeseed-Mustard, and Groundnut:**
  - **Soybean** contributes **34%** of the total oilseed production, followed by **rapeseed-mustard** with **31%**, and **groundnut** with **27%**.
  - Together, these three crops make up more than **92% of the total oilseeds production** in India, indicating their dominance in the sector.
- **Domestic Edible Oil Production:**
  - The largest share of domestic edible oil production comes from **rapeseed-mustard oil** (**45%**), followed by **groundnut oil** and **soybean oil** (each contributing **25%**).
  - Minor edible oilseeds like **sesame, sunflower, safflower**, and **nigerseed** together contribute around **5%** to the total domestic oil production.

- **State-wise Production of Oilseeds:**
  - The states of **Rajasthan** and **Madhya Pradesh** are the leading oilseed producers, each contributing about **21.42%** of India's total production.
  - **Gujarat** follows with **17.24%**, and **Maharashtra** contributes **15.83%**.
  - Together, these four states account for **75.63%** of the country's total oilseed production.
- **Regional Crop Dominance:**
  - **Rajasthan** leads in **mustard** cultivation.
  - **Madhya Pradesh** is the top producer of **soybean**.
  - For **sunflowers**, **Karnataka** takes the lead.
  - **Kerala** dominates **coconut** production.
  - **Uttar Pradesh** and **West Bengal** have significant areas for **rice** cultivation.
  - **Maharashtra** and **Gujarat** lead in **cotton** production.
- **Concentrated Production in States:**
  - For **soybean**, **Madhya Pradesh, Maharashtra**, and **Rajasthan** account for **92% of India's production**.
  - Regarding **groundnut**, **Gujarat, Rajasthan, Tamil Nadu, Andhra Pradesh**, and **Karnataka** contribute **83.4%** of the country's production.
  - Similarly, **Rajasthan, Haryana, Madhya Pradesh, Uttar Pradesh**, and **West Bengal** contribute **87.9%** of India's total **rapeseed-mustard** production.
- **Secondary Oil Crops:**
  - **Palm oil** production is heavily concentrated in **Andhra Pradesh** (**87.3%**), followed by **Telangana** (**9.8%**), **Kerala**, and **Karnataka**.
  - **Gujarat** leads in **cotton** production with a **24.4% share**, while **Maharashtra, Telangana, Rajasthan**, and **Karnataka** collectively contribute **77.3%**.
  - For **coconut** production, **Kerala** leads, followed by **Tamil Nadu** and **Karnataka**, which together contribute **84%** of the country's production.
- **Tree-Borne Oilseeds (TBOs):**
  - **Tree-borne oilseeds (TBOs)** such as **wild apricot, cheura, kokum, olive, simarouba, mahua, sal seed, mango kernel, dhupa**, and **tamarind seed** are important sources of oils for various uses.
  - For example, **wild apricot** in **Himachal Pradesh** provides oil for cooking and industrial purposes.
  - **Cheura** from **Sikkim** and **West Bengal** is valued for its use in cooking, medicine, and cosmetics.
  - **Kokum**, grown mainly in **Goa** and **Maharashtra**, is used in the production of **chocolates** and **biodiesel**.
  - **Olive** cultivation, introduced through **Indo-Israel collaboration**, has potential for expansion in **Rajasthan** and other states.
  - These tree-borne oils offer an opportunity to reduce **India's reliance on imports** by providing alternative sources of edible oils.

Initiatives taken by Government:

- **National Mission for Edible Oils - Oil Palm (NMEO-OP):**
  - Launched in 2021, this mission aims to promote oil palm cultivation in the country.
  - It focuses on increasing domestic production of palm oil and reducing import dependence.
  - The government provides financial assistance to farmers for oil palm plantation and offers subsidies on inputs like fertilizers and planting materials.
  - The mission is committed to escalating oil palm cultivation and elevating Crude Palm Oil production to 11.20 lakh tonnes by 2025-26.
- **National Food Security Mission- Oilseeds (NFSM-OS)**
  - Under the NFSM, a separate component for oilseeds has been implemented to increase the area, production, and productivity of oilseed crops.
  - This scheme promotes research, seed production, and improved agronomic practices for oilseed crops like groundnut, mustard, soybean, and sunflower.
- **Cluster Demonstrations:**
  - The government promotes cluster demonstrations of oilseed crops across different regions to showcase best practices and new technologies to farmers.
  - This helps farmers adopt better techniques, increasing productivity.
- **Use of High Yielding Varieties (HYV) and Genetically Modified Seeds:** The government encourages the use of high-yielding varieties and research on genetically modified (GM) seeds for crops like mustard and soybean.
- **Promotion of Oilseed-Based Cropping Systems:**
  - Integrated farming systems, which include oilseed crops, are being promoted to improve soil health, diversify income, and enhance overall productivity.
  - Crop diversification initiatives focus on oilseed cultivation as an alternative to water-intensive crops like rice and sugarcane.

Recommendations:

- **Crop Clusters and Technology Customization:**
  - States are grouped into **four clusters** (High Area-High Yield, High Area-Low Yield, Low Area-High Yield, Low Area-Low Yield) based on the area and yield of oilseeds.
    - This allows for targeted strategies to boost both horizontal and vertical expansion.
  - **Customized technology** needs to be developed for each cluster, especially in creating **Agro-Ecological Sub Region (AESR)-based crop-specific model farms**.
    - This would spread advanced farming technologies specific to the ecological conditions of the region.
- **Horizontal Expansion in Rice Fallow:**
  - **Rice fallow land** refers to areas left uncultivated after the rice-growing season.

- Utilizing one-third of the **Rabi rice fallow** across ten states for oilseeds could produce an additional **1.03 million tonnes** (MT) of oilseeds, reducing India's edible oil imports by **7.1%.**
- Large-scale cultivation in these areas requires evaluating the **economic feasibility** and determining the optimal oilseed crops for different regions.

- **Oilseed Development in Bundelkhand and Indo-Gangetic Plain (IGP):**
  - **Bundelkhand** (in Madhya Pradesh and Uttar Pradesh) holds significant potential for oilseed cultivation, with a focus on **sesame**. Technological interventions and crop diversification in the region can increase farm incomes.
  - Diversifying the **rice-wheat cropping system** in the IGP by introducing oilseeds such as **soybean, rapeseed-mustard, and sunflower** can help address environmental concerns like **groundwater depletion** and improve soil health, while also providing farmers with more profitable options.
- **Wasteland Utilization for Oil Palm Expansion:**
  - **Oil palm cultivation** can be expanded by utilizing **highly suitable wastelands** identified by ICAR-IIOPR (Indian Council of Agricultural Research-Indian Institute of Oil Palm Research).
  - Two-thirds of the 6.18 million hectares (Mha) of such wasteland could be converted for oil palm cultivation, adding **24.7 MT** to domestic production and reducing dependency on imports.
- **Cluster-Based Seed Village:**
  - Establishing **cluster-based seed hubs** at the block level (like "**One Block-One Seed Village**") can ensure farmers have access to **high-quality seeds**.
  - These hubs, managed by FPOs, SHGs, and FPCs, aim to increase the **Seed Replacement Rate (SRR)** and **Varietal Replacement Rate (VRR)** for oilseeds, ensuring a more consistent and improved yield.

SEED REPLACEMENT RATE (SRR) VS VARIETAL REPLACEMENT RATE (VRR)

Seed Replacement Rate (SRR):

- It refers to the percentage of total crop area sown using certified or quality seeds, as opposed to farm-saved or traditional seeds from previous harvests.
- **Objective:** The goal is to replace old, lower-quality seeds with certified, high-quality seeds to improve yield and crop performance.
- **Importance:** Certified seeds typically result in better germination rates, higher yields, and greater resistance to pests and diseases.
  - *Example:* If a farmer plants 100 acres of a crop and uses certified seeds on 70 acres, the SRR is 70%.

Varietal Replacement Rate (VRR):

- It measures the percentage of the crop area planted with newer, improved varieties of seeds as opposed to older, outdated varieties.
- **Objective:** The goal is to ensure farmers adopt newer, more productive, and resilient seed varieties to keep up with technological advancements in agriculture.
- **Importance:** Newer varieties often provide better yields, improved resistance to diseases and pests, and adaptability to changing climate conditions.
- **Example:** If 50% of the crop area is planted with newer seed varieties developed in the last few years, the VRR is 50%.

- **Promotion of Bio-fortified Oilseed Varieties:**
  - **Biofortification** involves enriching crops with essential nutrients. This strategy aims to address **micronutrient malnutrition** by enhancing the content of beneficial fatty acids and reducing anti-nutritional factors in oilseeds.
  - Biofortified varieties such as **oleic acid-rich groundnut and soybean** and **linoleic acid-rich linseed** should be promoted. The goal is to increase adoption of these bio-fortified seeds by **10-12% annually.**
- **Adoption of Improved and Advanced Production Technologies:**
  - There's a significant **yield gap** in oilseeds, ranging from **12% in castor** to **96% in sunflower**.
  - Closing this gap through advanced production technologies could raise national oilseed production by **46%**, leading to a **26% reduction in import reliance**.
  - Focus should be on **heterosis breeding** (exploiting hybrid vigor) for crops like **sunflower, castor, rapeseed-mustard, safflower**, and **sesame**.
- **Enhancing Efficiency in the Solvent Extraction Industry:**
  - The **solvent extraction industry** currently suffers from **low-capacity utilization (30%)** due to geographical imbalances and outdated equipment.
  - Increasing efficiency to **60% utilization** through modernization and improved management practices would enhance domestic edible oil production.
- **Optimizing Storage Strategies and Price Incentives:**
  - Balancing **off-season storage** of oilseeds and maintaining **affordable prices** for consumers is vital.
  - Fair pricing structures that account for **storage costs, interest, and returns** for stakeholders should be implemented to ensure market stability and incentivize year-round sales.
- **Enhancing Marketing Infrastructure:**
  - To improve the income of oilseed farmers, ensuring **procurement at Minimum Support Price (MSP)** through **NAFED** (National Agricultural Cooperative Marketing Federation of India) and state oilseed federations is critical.
  - Facilitating **direct marketing** between farmers and state agencies can boost oilseed cultivation in **non-traditional areas**, broadening the market reach.

DIGITAL AGRICULTURE MISSION

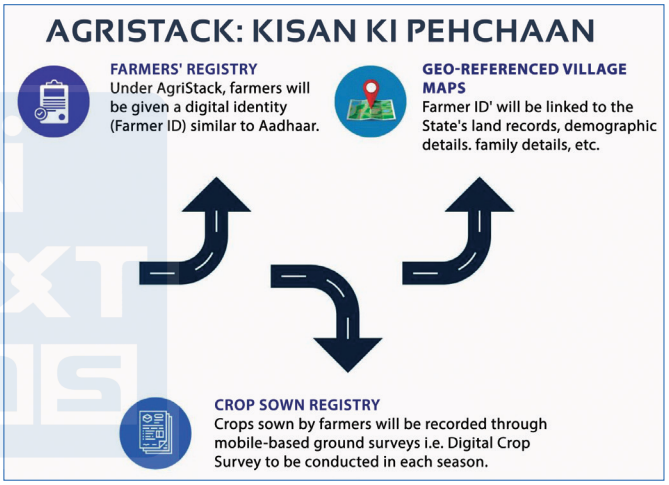
Recently, the Union Cabinet Committee approved the Digital Agriculture Mission with an outlay of Rs. 2817 Crore, including the central share of Rs. 1940 Crore.

About:

- **Agri-Tech Start-Up Support:**
  - The initiative aims to **nurture agri-tech start-ups** by leveraging advancements in **cloud computing, earth observation, remote sensing, data analytics**, and **artificial intelligence/machine learning (AI/ML).**
  - These cutting-edge technologies can help improve the precision, efficiency, and sustainability of agriculture.
- **Umbrella Scheme for Digital Agriculture:**
  - This includes developing **Digital Public Infrastructure** and implementing the **Digital General Crop Estimation Survey (DGCES)**, among other IT-focused programs driven by the **Central Government**, **State Governments**, and **Academic and Research Institutions**.
  - The goal is to harmonize efforts across multiple levels to digitally empower the agricultural sector.
- **Transforming Agriculture with Digital Nutrients:**
  - The core aim of the **Digital Agriculture Mission (DAM)** is to **digitally transform India's agricultural landscape**.
  - By incorporating digital tools and technologies, it seeks to make agriculture smarter, more efficient, and data-driven, thereby providing a foundation for long-term growth.
- **Digital Public Infrastructure (DPI) for Agriculture:**
  - A major component of the initiative is building **Digital Public Infrastructure (DPI)** for agriculture.
  - This involves creating a system that contains **authenticated demographic data**, **land holdings**, and **crop information** for both cultivators and tenant farmers.
  - DPI will act as a secure repository, making it easier to access verified data about farmers and their agricultural activities.
- **Digital Farmer Identity: 'Kisan ki Pehchaan':**
  - One of the key features is to provide every farmer with a **digital identity** akin to Aadhaar.
  - This digital **'Kisan ki Pehchaan'** (Farmer ID) will serve as a trusted source of information about the farmer, linking them to relevant **state and central government databases**.
  - This **data-driven approach** will open doors to innovative services that are customized for farmers, enabling them to access government schemes and benefits more efficiently.
- **Innovative, Farmer-Centric Services:**
  - The use of advanced digital technologies, combined with **farmer-centric services**, promises to improve the quality of support and resources available to farmers.
  - This could range from crop estimation to financial support systems, enhancing the overall agricultural ecosystem.

Three Pillars of Digital Agriculture Mission:

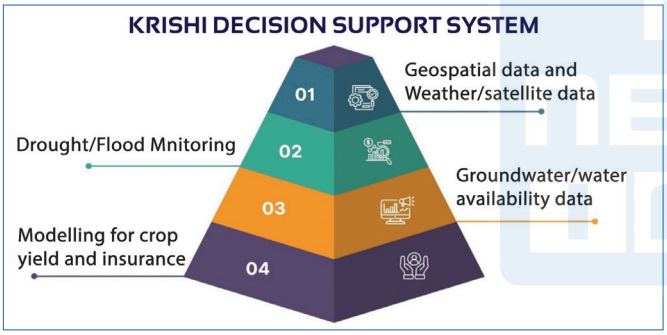
- **AgriStack Overview:**
  - **AgriStack** is a **farmer-centric Digital Public Infrastructure (DPI)** that comprises three main registries: **Farmers' Registry**, **Geo-referenced Village Maps**, and the **Crop Sown Registry**.
  - These registries will be maintained by **state/UT governments**, ensuring localized data management for better decision-making and resource allocation.



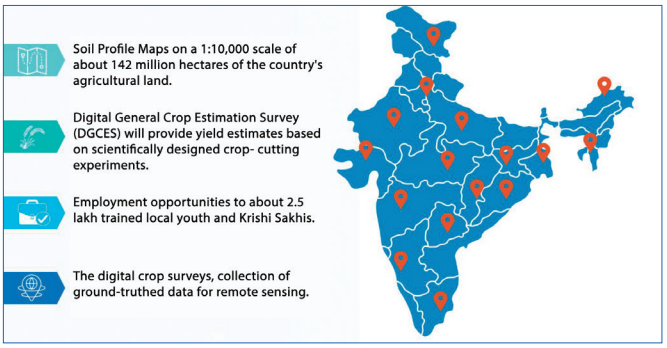
- **Farmers' Registry:**
  - This registry will assign each farmer a **digital identity** or **'Farmer ID'**, akin to Aadhaar.
  - The **Farmer ID** will be dynamically linked to multiple data points, including:
    - Land records
    - Livestock ownership
    - Crops sown
    - Demographic details
    - Family information
    - Government schemes and benefits availed
  - Pilot projects for creating **Farmer IDs** have already been conducted in six districts across India: **Farrukhabad (Uttar Pradesh)**, **Gandhinagar (Gujarat)**, **Beed (Maharashtra)**, **Yamuna Nagar (Haryana)**, **Fatehgarh Sahib (Punjab)**, and **Virudhunagar (Tamil Nadu)**.
- **Crop Sown Registry:**
  - This registry will track the crops planted by farmers during each season. Data will be collected through **Digital Crop Surveys**, which are **mobile-based ground surveys** conducted in every crop season.

- This registry will provide vital information about crop patterns and help in resource planning and monitoring.

- **Geo-referenced Village Maps:**
  - These maps will link geographic information (land records) with their **physical locations**.
  - This will enable more accurate land management and help in identifying the exact boundaries and areas of different agricultural fields.
- **Krishi DSS (Decision Support System):**
  - **Krishi DSS** is envisioned as a comprehensive **geospatial system** that will integrate remote sensing information on various agricultural factors, including: **Crops, Soil, Weather & Water resources.**
  - This system will support:
    - **Crop map generation** to identify crop sowing patterns
    - **Drought/flood monitoring**
    - **Model-based yield assessments**, particularly for **crop insurance claims settlement**, benefiting farmers by ensuring timely and accurate compensation in case of crop loss.



- **Soil Profile Maps:**



  - The **Mission** aims to prepare detailed **Soil Profile Maps** (on a 1:10,000 scale) covering around **142 million hectares** of agricultural land.
  - These maps will offer an in-depth understanding of soil types and conditions across India.
  - As of now, a soil profile inventory of about **29 million hectares** has already been completed.

Significances of Digital Agriculture Mission:

- **Data-Driven Decision Making**
  - The mission aims to collect and analyze data from various agricultural activities and environments, enabling farmers to make informed decisions on crop selection, pest control, irrigation, and fertilization.
  - This data-driven approach helps optimize farming practices and improve productivity.
- **Precision Agriculture**
  - With the help of AI, ML, and satellite imagery, precision agriculture becomes possible, allowing farmers to monitor crops in real-time and apply inputs like water, fertilizer, and pesticides precisely where needed.
  - This reduces resource wastage and increases crop yield.
- **Farmers' Empowerment**
  - The mission encourages the digital empowerment of farmers by providing access to real-time weather data, market prices, and farming advisories through mobile applications and digital platforms.
  - This ensures that farmers are well-informed, reducing their dependency on middlemen.
- **Reduction in Input Costs**
  - By leveraging technology to optimize the use of inputs like water, seeds, fertilizers, and pesticides, farmers can reduce their input costs.
  - Drones and sensors help detect the precise needs of crops, avoiding overuse of resources and promoting sustainability.
- **Climate-Resilient Farming**
  - The use of AI and big data allows farmers to adapt to climate change by providing accurate weather predictions and advisories.
  - This helps in reducing the impact of adverse climate events and promotes sustainable farming practices.
- **Employment Generation and Skill Development**
  - The mission encourages the development of digital skills in rural areas, offering new employment opportunities in agri-tech, data analytics, and drone operation.
  - This helps bridge the digital divide and enhances the livelihood of rural populations.

Conclusion:

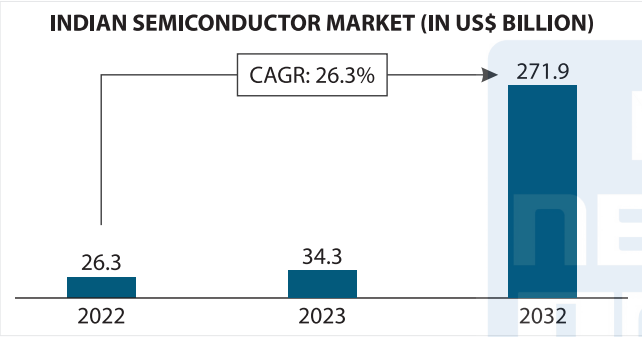
- The **Digital Agriculture Mission** is a significant step toward modernizing India's agricultural sector.
- By integrating technology into farming practices, it seeks to enhance productivity, ensure sustainability, and empower farmers with the tools and knowledge they need to thrive in a rapidly changing environment.
- Ultimately, it is expected to contribute to the overall goal of making Indian agriculture more competitive, sustainable, and resilient.

SEMICONDUCTOR PRODUCTION IN INDIA

Recently, the US announced a "new partnership" with India to explore semiconductor supply chain opportunities.

India's Semiconductor Industry:

- **Market Overview and Growth Projections:**
  - In 2022, the Indian semiconductor market was valued at approximately **USD 26.3 billion**.
  - With the increasing domestic demand driven by factors such as the surge in mobile device and computer usage, as well as government initiatives to promote digital adoption in rural areas, the market is poised for significant expansion.
  - It is projected to grow at a compound annual growth rate (CAGR) of 26.3%, reaching an estimated **USD 271.9 billion by 2032.**



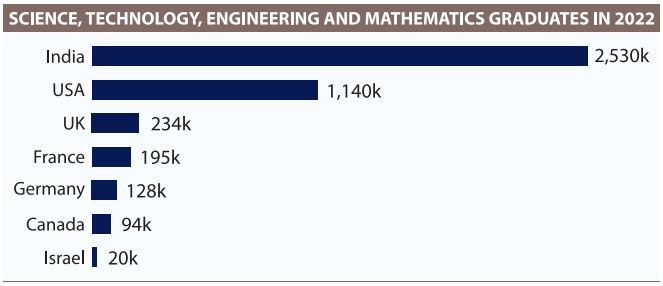
  - The rise of Indian start-ups and their reliance on electronic devices to bring innovative ideas to life also contributes to this growth.
- **India's Competitive Advantage:**
  - India holds a strong position in the global semiconductor landscape, with **20% of the world's semiconductor design workforce**, a rapidly evolving technology sector, and a thriving domestic market.
  - These factors are conducive to building a robust indigenous semiconductor ecosystem.
  - Government initiatives such as the National Electronics Policy and the **USD 10 billion Production-Linked Incentive (PLI) scheme** for semiconductor manufacturing are also boosting India's aspirations in chipmaking.
  - The **2024 budget** further underscored this commitment with increased allocations for the semiconductor ecosystem and the establishment of a **USD 12 billion innovation corpus** to incentivize research and development.
  - A recent development is the partnership between an Indian conglomerate and a Taiwanese firm to establish India's first fabrication plant in Dholera, Gujarat, which will produce indigenous chips for both domestic and export markets.
- **Building a Supportive Ecosystem:**
  - A critical factor in the success of leading semiconductor nations, such as Taiwan, has been the **development of industry clusters** that provide a supportive ecosystem.
  - This includes a robust supply network of essential raw materials, components, machinery, and a seamless integration of fabless design houses.
  - For India to establish a similar **end-to-end chip industry**, it will need to focus on self-sufficiency in technological manufacturing, enhance logistical infrastructure, expand research centers, and integrate small- to medium-sized enterprises into the value chain.
  - Estimates suggest that India will require **1.2 million skilled professionals** in the **semiconductor sector** by **2032.**
  - To meet the growing demand for skilled professionals, India must significantly invest in education and training.
    - While the National Education Policy's focus on STEM education and initiatives like the **Skills Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP)** are steps in the right direction, more needs to be done to accelerate the development of niche skills.

SEMICONDUCTOR

- A semiconductor is a material that exhibits properties between those of a conductor and an insulator, making it a crucial component in modern electronics.
  - A conductor allows electricity to flow through it, while an insulator does not
- Semiconductors are typically made from silicon, a material that allows some electrical conductivity but not as much as a conductor like copper or aluminum.
  - Silicon is favored in semiconductor production because it provides a balance between insulation and conduction, making it ideal for use in a wide range of electronic devices.
- The conductivity and other characteristics of semiconductors can be modified through a process known as **"doping."**
  - Doping involves introducing impurities into the semiconductor material to alter its electrical properties.
  - By adding specific impurities, manufacturers can enhance the semiconductor's performance to meet the particular requirements of the electronic component it will be used in.
  - This process allows semiconductors to be tailored for various applications, from simple diodes to complex integrated circuits.

Factors Favouring India:

- **Traditional Semiconductor Hubs and Shifting Dynamics:**
  - Historically, the global semiconductor value chain, encompassing design, manufacturing, and final product sales, has been concentrated in the United States and its key allies, including South Korea, the Netherlands, Japan, and Taiwan. China also emerged as a significant player in this sector.
  - However, the COVID-19 pandemic, coupled with rising labor costs in China, has disrupted the global semiconductor industry.
  - These challenges have prompted major producers to rethink their strategies and diversify their operations away from China.
  - Amidst this industry-wide relocation, India has emerged as a preferred destination for back-end assembly and testing operations.
  - The country's entry into the semiconductor ecosystem is a critical development for global supply chain diversification.
  - India's stable political environment, coupled with its vast and rapidly growing domestic market, makes it an attractive option for technology companies seeking greenfield expansion opportunities.
- **Potential for Future Front-End Manufacturing:**
  - While India is currently gaining traction in back-end assembly and testing, there is significant potential for the country to move up the value chain into front-end manufacturing.
  - This transition would not only strengthen India's position in the global semiconductor industry but also enhance the resilience of global supply chains by reducing dependency on a few traditional hubs.
- **Skilled Workforce:** India leads the world with a record number of Science, Technology, Engineering and Mathematics (STEM) graduates, offering the much-needed skilled workforce required in semiconductor manufacturing, design, research, and development.
  - India has a large portion of the world's STEM talent pool, with **31% of STEM graduates worldwide** coming from **India.**



- **Cost Advantage:** India offers a substantial cost advantage for semiconductor manufacturing due to the lower labour cost, supply chain efficiency and emerging ecosystem.
- **Policy support:** The Indian government has promptly seized the opportunity following the global semiconductor supply chain glut after the pandemic and showed great intent through policy support to present India as an alternative to China in the global semi supply chain.

Challenges:

- **High Capital Investment:**
  - Setting up a semiconductor manufacturing unit, or "fab, " requires a massive capital investment, with the cost of building a new facility estimated to exceed one billion U.S. dollars.
  - Beyond financial investment, these facilities demand highly trained teams and the capacity to support large-scale production from the outset.
  - Currently, India lags behind in both capital availability and the necessary infrastructure to support such large-scale operations.
- **Global Competition:**
  - India faces intense competition from established semiconductor manufacturing hubs like China, Taiwan, and South Korea.
  - Building a complete domestic value chain for semiconductors is a formidable challenge, especially given that a significant portion of this value chain currently resides outside of India.
  - Competing with these established players requires not only substantial investment but also a strategic approach to developing local capabilities and infrastructure.

LABOR COSTS

Compared to developed countries, labour costs in India are lower. This translates to decreased production expense for semiconductor manufacturers, particularly in labour-intensive processes such as assembly and testing.

SUPPLY CHAIN EFFICIENCY

India's proximity to key semiconductor markets in Asia, Europe and the Middle East facilitates efficient supply chain management. Reduced transportation expenses and shortened lead times play a crucial role in generating cost savings for semiconductor manufacturers operating in India.

EMERGING ECOSYSTEM

As India strengthens its semiconductor ecosystem with investment in research and development, infrastructure development and skill enhancement programmes, the overall cost-effectiveness of semiconductor manufacturing is expected to improve further.

- **Slow Pace of Government Initiative:**
  - The Indian government's efforts to attract semiconductor manufacturing through incentives like the "Modified Scheme for Semiconductors and Display Fab Ecosystem" have met with limited success.
  - The lukewarm response from industry players suggests that these incentives may not be as competitive as those offered by other countries.
  - Moreover, there is skepticism among global semiconductor giants about the viability of setting up manufacturing operations in India, highlighting the need for more robust and attractive policy frameworks.
- **Logistical Challenges:**
  - Semiconductor manufacturing facilities require significant space, a reliable and uninterrupted power supply, and a substantial amount of water.
  - India's infrastructure in these areas is still developing, creating challenges for potential fab sites.
  - Additionally, proximity to airports and customs facilities is crucial for the timely import and export of key components.
  - However, in India, customs clearance can be time-consuming, and the lack of developed infrastructure around potential manufacturing sites adds another layer of complexity to establishing a domestic semiconductor industry.
- **Dependence on China for Critical Raw Materials:**
  - Despite possessing 6% of the world's rare earth reserves, India's contribution to global output is a mere 1%.
  - The majority of its demand for these critical minerals is met through imports from China.
  - To reduce reliance on China and combat its dominance in critical minerals crucial for semiconductor manufacturing, India must adopt a multi-faceted approach.
  - This includes increasing domestic production of these minerals and securing alternative sources from other countries.

Government Initiatives:

- **The government offers incentives for manufacturing setup in India:**
  - Under the Semiconductor Fab Scheme, fiscal support of 50% of the project cost on an equal footing for all technology nodes.
  - Under the Display Fab Scheme, fiscal support of 50% of the project cost on an equal footing basis.
  - Under the Compound Semiconductor Scheme, fiscal support of 50% of the capital expenditure on an equal footing basis, including support for discrete semiconductor fabs.
- In February 2024, the government approved the **establishment of three semiconductor plants, two in Gujarat and one in Assam.**
- **India Semiconductor Mission:** It functions as a dedicated division within the Digital India Corporation.
  - Its main goal is to nurture a strong semiconductor and display ecosystem to position India as a prominent global player in electronics manufacturing and design.
  - Under ISM, there are several schemes in place:

SEMICONDUCTOR FAB

01

- Offers fiscal support of up to 50% of the project cost to approved applicants.
- Attract substantial investments for the establishment of semiconductor wafer fabrication facilities in India.

DISPLAY FAB

01

- Offers fiscal support of up to 50% of the project cost to approved applicants.
- Focus on increasing display fabrication facilities in India.

COMPOUND SEMICONDUCTORS

01

- Fiscal support of 50% of the capex to facilities involved in compound semiconductor, silicon photonics, sensor and discrete semiconductor fabrication and semiconductor packaging.
- Focus on establishing semiconductor wafer fabrication facilities in India.

DESIGN LINKED INCENTIVE (DLI)

01

- Offers product design-linked incentives of up to 50% of eligible expenditure and product deployment-linked incentives ranging from 6% to 4% on net sales over a five-year period.

Way Ahead:

- To establish an end-to-end semiconductor ecosystem, India can adopt a phased approach, strategically advancing across the industry value chain.
- The design phase alone constitutes 50% of the global semiconductor value chain, followed by front-end wafer fabrication (24%) and pre-competitive research (20%).
- The remaining value is added through back-end operations such as Assembly, Testing, Marking, and Packaging (ATMP), electronic design automation, and core intellectual property.
  - India already has an edge in domains such as Outsourced Semiconductor Assembly and Test (OSAT), ATMP, design, and R&D, which can be leveraged alongside efforts to establish a fabrication plant.
- China has followed a similar model, establishing itself as a leader in the relatively less skill- and capital-intensive activity of ATMP before expanding across the value chain.
  - India can emulate this approach to build a competitive advantage and lay a solid foundation for an indigenous semiconductor ecosystem, thereby attracting substantial long-term investments from global players.

PRADHAN MANTRI MATSYA SAMPADA YOJANA

Recently, the Pradhan Mantri Matsya Sampada Yojana marked the completion of four years since its implementation.

About:

- **Overview of the Scheme:**
  - **The Pradhan Mantri Matsya Sampada Yojana (PMMSY)** is a flagship initiative under the **Ministry of Fisheries, Animal Husbandry and Dairying, Government of India**.
  - Launched in **2020**, this transformative scheme focuses on the overall development of the fisheries sector in India, improving the livelihood of fishers and fish farmers, and enhancing fish production.
  - The scheme aims to address **critical gaps** in fish production, technology, infrastructure, and value chain management.
  - It also focuses on the **welfare of fishermen**, recognizing the role of fisheries in ensuring food security and contributing to the economy.

BLUE REVOLUTION TO PMMSY

2015-16	Blue Revolution Scheme Launched
2017-18	National Marine Fisheries Policy Launched
2018-19	Fisheries & Aquaculture Infrastructure Development Fund (FIDF) Launched
2018-19	KCC facility extended to fish farmer
2018-19	Exclusive Department for Fisheries Created
2019-20	Separate Ministry of Fisheries, Animal Husbandry and Dairying created
2020-21	**Pradhan Mantri Matsya Sampada Yojana Launched**

- **Key Objective and Blue Revolution Linkage:**
  - PMMSY follows the earlier initiative of the **Blue Revolution Integrated Development and Management Fisheries Scheme**, launched in **2015-16**.
  - While the Blue Revolution had an outlay of 3,000 crores and focused on boosting fish production and productivity, PMMSY seeks to address broader challenges across the fisheries value chain.
  - PMMSY has an ambitious budget of **₹20,050 crore**, making it one of the largest investments in the fisheries sector to date, running for five years (2020-21 to 2024-25).
- **Focus Areas:**
  - **Inland Fisheries and Aquaculture:** Recognizing the significance of **inland fisheries**, PMMSY emphasizes its development to enhance food security and rural employment.
  - **Technological Interventions and Value Chain Enhancement:** The scheme aims to modernize and strengthen the post-harvest infrastructure, supply chain, and fisheries management framework.
  - **Fishers' Welfare:** In addition to increasing fish productivity, PMMSY aims to improve the **livelihood** and **welfare** of fishers and fish farmers through various sub-schemes and initiatives.

New Initiatives Launched under PMMSY:

- **NFDP Portal:** The launch of the **National Fisheries Development Program (NFDP)** portal enables easy access to institutional credit and aquaculture insurance for fish farmers.
- **Fisheries Cluster Development Program:**
  - Standard Operating Procedures (SOPs) were announced for the development of **Production and Processing Clusters** for specialized fisheries such as **pearl cultivation**, **ornamental fisheries**, and **seaweed cultivation**.
  - This initiative includes establishing three specialized clusters.
- **Climate Resilient Coastal Fishermen Villages:** Guidelines for transforming 100 coastal villages into **climate-resilient communities** were released, with an allocation of **₹200 crores** to help them withstand climate impacts.
- **Drone Technology for Fish Transportation:** A **pilot project** was launched to use drone technology for **fish transportation**, conducted by the **Central Inland Fisheries Research Institute (CIFRI)** located in Kolkata.
- **Research and Breeding Centers:**
  - **Mandapam Regional Centre** was designated as a **Centre of Excellence** for seaweed farming.
  - Nucleus Breeding Centres for both **marine** and **inland species** were established in collaboration with **ICAR-CIFA** (Bhubaneswar) and **ICAR-CMFRI** (Mandapam).
- **Fisheries Start-Ups:**
  - PMMSY aims to promote **fisheries start-ups** by establishing **three incubation centers**.

- The scheme supports **100 fisheries start-ups**, along with **cooperatives, FPOs (Farmer Producer Organizations), and SHGs (Self-Help Groups)**.

- **Priority Projects:** ₹721.63 crore has been allocated for priority projects, including:
  - **Development of Five Integrated Aqua Parks:** These parks will be established in states such as **Assam, Chhattisgarh, Madhya Pradesh, Tripura, and Nagaland**.
  - **World-Class Fish Markets:** These markets will be developed in **Arunachal Pradesh** and **Assam**.
  - **Smart and Integrated Fishing Harbors:** These harbors will be established in **Gujarat, Puducherry, and Daman & Diu**.
  - **Saline Area Aquaculture and Integrated Fish Farming:** Over 800 hectares have been designated for **aquaculture** in saline areas across multiple states.
- **Safety and Communication for Fishermen:** A Vessel Communication & Support System, aims to ensure the safety and real-time communication of fishermen through 1 lakh transponders.

Contribution of Fisheries Sector to the Indian Economy:

- **Socio-Economic Significance:**
  - The fisheries sector plays a **vital role** in supporting livelihoods, especially for marginalized communities, providing employment to around **30 million people**.
  - It is a key source of income for those in coastal and rural areas, including small-scale fishers and fish farmers.
- **India's Global Standing in Fisheries:**
  - India is the **third-largest fish-producing country** in the world, demonstrating its importance in global fisheries.
  - With **175.45 lakh tons of fish production** in FY 2022-23, the sector has established a strong presence both domestically and internationally.
- **Contribution to the National Economy:**
  - The fisheries sector contributes approximately **1.09%** to India's **Gross Value Added (GVA)** and more than **6.72%** to the **agricultural GVA**.
  - This showcases its role not only in the agriculture sector but also in boosting overall economic growth and ensuring food security.

Challenges Facing India's Fisheries Sector:

- **Climate Change and Environmental Degradation:**
  - **Rising sea temperatures**, **ocean acidification**, and **changing currents** are significantly impacting marine ecosystems and fish populations.
  - As sea conditions change, fish species are forced to shift their distribution patterns, often moving to cooler waters.
  - Climate change leads to **reduced productivity** in fisheries, increased **vulnerability to diseases**, and changes in breeding cycles.
  - This undermines the stability of marine ecosystems and negatively affects fishers who rely on predictable fish populations.
  - Additional environmental pressures, such as **pollution**, **habitat destruction**, and **coastal development**, further degrade marine environments, reducing available habitats for fish and other aquatic species.
- **Socio-Economic Issues:**
  - The fisheries sector in India consists predominantly of **small-scale and artisanal fishers**, who face a multitude of **socio-economic challenges**.
  - Many fishers have **low incomes** and limited access to essential financial services such as **credit** and **insurance**.
  - The **lack of social security** provisions leaves fishing communities vulnerable, especially in times of crisis, such as natural disasters or economic downturns.
  - There are also significant **gender disparities** in the sector. Women, who play a critical role in post-harvest activities and small-scale aquaculture, often face **marginalization** and **limited opportunities** for leadership roles or access to resources.
- **Market Access and Value Chain Inefficiencies:**
  - Despite India's substantial fish production, there are several barriers to **accessing domestic and international markets**.
  - The sector suffers from **poor post-harvest handling**, leading to spoilage and reduced quality of fish products.
  - There is also limited **value addition**, which reduces the profitability of fish products for fishers.
  - Inadequate **market linkages** further hinder fishers from reaching lucrative markets, causing losses in potential earnings.
- **Illegal, Unreported, and Unregulated (IUU) Fishing:**
  - **IUU fishing** is a major problem that exacerbates **overfishing** and threatens the sustainability of the sector.
  - This includes activities such as fishing without the necessary licenses, using banned gear, and exceeding allowable catch limits.
  - Weak **monitoring and surveillance systems** make it challenging for authorities to effectively combat IUU fishing, allowing illegal practices to continue unchecked.

Government Initiatives:

- **Fisheries and Aquaculture Infrastructure Development Fund (FIDF):**
  - Launched in **2018-19**, the **FIDF** aims to support infrastructure development in the fisheries sector with a total fund size of **₹7,522.48 crores**.
  - The initiative provides crucial financial support to modernize and expand fisheries infrastructure.

- The scheme includes an **interest subvention** of up to **3% per annum** for a **12-year repayment period**, which includes a two-year **moratorium** for repaying the principal amount.
- This financial support helps fisheries entrepreneurs and institutions to improve production capabilities and infrastructure.

- **National Fisheries Development Board (NFDB):**
  - The NFDB serves as the primary body for planning and promoting fisheries development in India.
  - It plays a pivotal role in ensuring the sustainable growth of the sector by implementing various programs aimed at boosting fish production and improving infrastructure.
  - **Primary Functions:**
    - Enhances fish production through modern practices and the promotion of aquaculture.
    - Improves post-harvest infrastructure like cold storage, processing units, and market linkages.
    - Provides financial and technical assistance to fishers and fish farmers, improving their socio-economic conditions.
- **Sagarmala Programme:**
  - This is a flagship initiative by the Government of India designed to promote port-led development across the maritime sector, including fisheries.
  - **Key Initiatives:**
    - Development of fishing harbors and modern fish landing centers.
    - Establishment of cold chain infrastructure, ensuring that fish and seafood can be transported efficiently while maintaining quality.
    - Support for the creation of fish processing units and clusters, which will enable better value addition and create more employment opportunities.
- **National Fisheries Policy (2020):**
  - **Objective:** To provide a comprehensive framework for the sustainable development of India's fisheries sector.
  - **Key Focus Areas:**
    - **Responsible Fisheries Management**: Implements measures to manage fish stocks sustainably, ensuring long-term productivity while avoiding overfishing.
    - **Conservation of Aquatic Biodiversity**: The policy emphasizes protecting endangered species and critical marine ecosystems.
    - **Enhancement of Fish Production**: Focuses on improving fish production through technological interventions, promoting inland aquaculture, and optimizing marine fisheries.
    - **Improvement in Fishers' Livelihood**: The policy aims to elevate the socio-economic status of fishers and fish farmers by ensuring better access to financial aid, markets, and social welfare programs.
- **Coastal Aquaculture Authority (CAA):**
  - **Objective**: To regulate and promote sustainable coastal aquaculture activities while protecting coastal ecosystems from degradation.
  - **Key Functions:**
    - Formulates guidelines for responsible **shrimp farming**, one of the largest aquaculture industries in India.
    - Regulates the use of **coastal land** for aquaculture purposes, ensuring minimal adverse impacts on coastal ecosystems and biodiversity.
    - Monitors compliance with environmental standards to prevent pollution, over-extraction of resources, and habitat destruction caused by unregulated aquaculture practices.
- **Sagar Parikrama Initiative:**
  - **Objective**: Focused on addressing the socio-economic challenges faced by India's fishing communities, particularly small-scale and artisanal fishers.
  - **Key Components:**
    - The initiative aims to **resolve challenges** such as lack of market access, inadequate infrastructure, and financial insecurities faced by fishers.
    - Aligns with fisheries policies like the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)** and **Kisan Credit Card (KCC)**, ensuring that fishers receive necessary financial support, credit, and insurance.
    - **Outreach and engagement programs** under the initiative involve visiting fishing villages, understanding ground-level issues, and working with local governments to provide solutions, including improving access to markets and enhancing livelihood opportunities.

Way Ahead:

- **Promote Responsible Fishing:** Implement and enforce sustainable fishing practices to prevent overfishing and protect marine ecosystems.
- **Enhance Aquaculture Techniques:** Invest in research and development of innovative aquaculture practices, including Integrated Multi-Trophic Aquaculture (IMTA) and biofloc technology.
- **Support Small-Scale Farmers:** Provide financial assistance, training, and resources to small-scale fish farmers to improve productivity and sustainability.
- **Improve Cold Chain Facilities:** Develop cold storage and transportation infrastructure to minimize post-harvest losses and maintain the quality of fish products.
- **Modernize Fishing Harbors:** Upgrade fishing harbors and landing centers to support efficient processing, storage, and distribution of fish.
- **Facilitate Direct Market Access:** Create platforms for fishers to directly access markets, reducing reliance on middlemen and increasing their earnings.

RELATIVE ECONOMIC PERFORMANCE OF INDIAN STATES

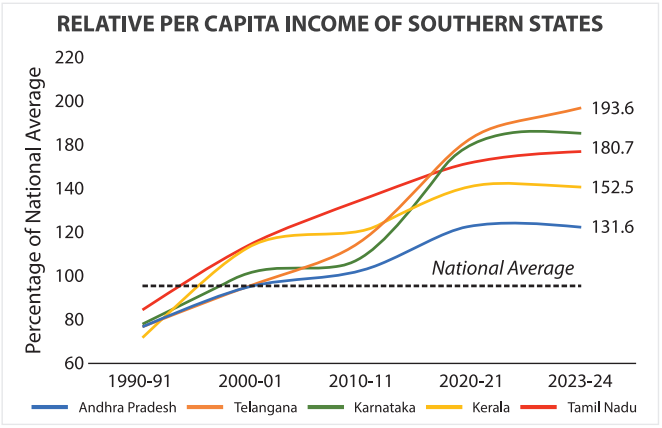
Recently, the Economic Advisory Council to the Prime Minister (EAC-PM) published a paper titled 'Relative Economic Performance of Indian States: 1960-61 to 2023-24. '

Indicators for Measuring Relative Economic Performance of States:

- **Share in India's GDP:**
  - This indicator measures the economic importance of each state in relation to the national economy.
  - It is calculated by dividing a state's Gross State Domestic Product (GSDP) by the total GSDP of all states in India.
  - The resulting percentage reflects the state's contribution to India's overall GDP.
- **Relative Per Capita Income:**
  - This indicator compares a state's per capita income to the national average.
  - It is calculated as the ratio of a state's per capita Net State Domestic Product (NSDP) to the all-India per capita Net National Product (or Net National Income for some years).
  - This metric does not account for remittances, which could be significant for states like Kerala, Bihar, and Uttar Pradesh, potentially affecting their actual per capita income.

Key Findings:

- **Southern States:**
  - **Pre-1991:** Historically, southern states—Karnataka, Andhra Pradesh, Telangana, Kerala, and Tamil Nadu—did not stand out in terms of economic performance before the economic liberalization in 1991. They were not seen as exceptional contributors to India's GDP.
  - **Post-1991 Economic Liberalization:** The 1991 reforms catalyzed a major transformation in the southern states, making them the leading performers in India's economy.
  - By 2023-24, these five southern states collectively contributed nearly 30% of India's total GDP, marking a significant leap in their economic prominence.
  - **Per Capita Income:** These states also saw their per capita income rise above the national average after 1991, a major shift in their economic standing:
    - **Telangana:** With a relative per capita income of 193.6% of the national average, Telangana became one of the highest-earning states in India.
    - **Karnataka:** Known for its thriving tech industry, Karnataka's per capita income reached 181% of the national average.
    - **Tamil Nadu and Kerala:** Both states also outperformed, with Tamil Nadu at 171% and Kerala at 152.5% of the national average, showcasing the impact of industrialization and development in these regions.



- **Western States:**
  - **Maharashtra:**
    - Maharashtra has consistently been a major contributor to India's GDP, maintaining the highest share of the national economy throughout the study period.
    - Its economic strength is driven by its industrial, financial, and service sectors, particularly Mumbai, which serves as the country's financial hub.
  - **Gujarat:**
    - Initially, Gujarat's economic performance was relatively steady, but post-2000, it witnessed rapid growth.
    - Its share of India's GDP rose from 6.4% in 2000-01 to 8.1% in 2022-23, reflecting the state's industrial and infrastructural progress.
  - **Per Capita Income:** Both Maharashtra and Gujarat have maintained per capita incomes above the national average since the 1960s. However, Gujarat has seen a particularly sharp rise:
    - By 2023-24, Gujarat's per capita income was 160.7% of the national average, surpassing Maharashtra's 150%.
  - **Goa:** Goa's economic journey is marked by a remarkable rise in per capita income, which doubled since 1970-71.
    - In 2022-23, Goa's per capita income was nearly three times the national average, making it the second highest in India, after Sikkim.
- **Northern States**
  - **Delhi:** Despite its small size, Delhi's share of India's GDP rose from 1.4% in the early years to 3.6% by 2023-24, driven by its service-based economy and infrastructure development.
  - **Haryana:** Once lagging behind Punjab, Haryana outpaced its neighbor in both GDP share and per capita income.
    - By 2023-24, Haryana's relative per capita income

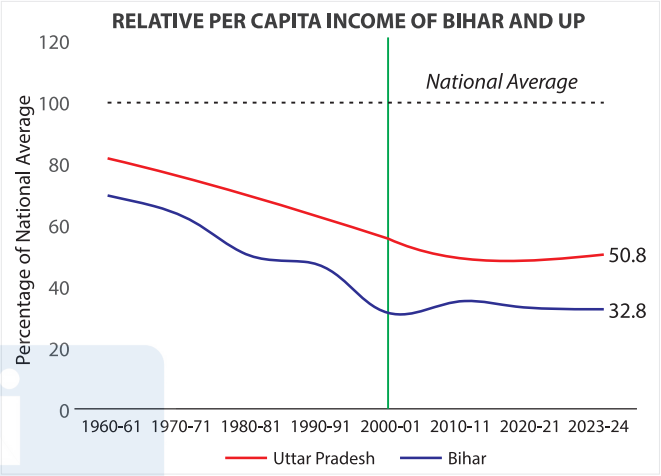
reached 176.8% of the national average, significantly higher than Punjab's.

- **Punjab:** In contrast, Punjab, once one of India's most prosperous states, has faced economic stagnation since the 1990s.
  - **GDP Share and Per Capita Income:** Punjab's GDP share, which peaked during the Green Revolution, stagnated at around 4.3% until the 1990s, before declining to 2.4% in 2023-24.
  - Its relative per capita income also fell from 169% of the national average in 1970-71 to just 106.7% in 2023-24.
  - This decline raises concerns about the state's heavy reliance on agriculture, possibly leading to a form of **'Dutch disease'** that hindered its industrial growth.

DUTCH DISEASE

An economic phenomenon wherein both the rapid development of one sector of the economy and the decline of other sectors lead to the substantial appreciation of the domestic currency.

- **Eastern States:**
  - **West Bengal:** West Bengal, once a significant economic player with a 10.5% share of India's GDP in 1960-61, has seen a consistent decline. By 2023-24, its share had reduced to 5.6%.
    - **Per Capita Income:** West Bengal's per capita income also fell behind, dropping from 127.5% of the national average in 1960-61 to 83.7% in 2023-24. This reflects a failure to keep pace with national economic trends.
  - **Bihar:** Bihar's economic performance has been among the weakest, particularly after its bifurcation in 2000. The state's per capita income fell sharply from 70.3% of the national average in 1960-61 to just 31% in 2000-01, before stabilizing at 33%.
    - **Remittances:** It's important to note that remittances from migrant workers are not captured in these figures, which might suggest higher actual household incomes, especially for states like Bihar and UP.
  - **Odisha:**
    - Odisha, which experienced a steady decline in per capita income from the 1960s to the 1990s, turned around in the post-liberalization period.
    - Its relative per capita income grew from 54.3% in 1990-91 to 88.5% in 2023-24, demonstrating the impact of economic reforms.
- **Central States:**
  - **Uttar Pradesh (UP):** Once the largest economic contributor to India's GDP (14.4% in 1960-61), UP's share has declined steadily over time. In 2023-24, its share stood at 8.4%.
    - **Per Capita Income:** UP's per capita income has also dropped significantly post-bifurcation, reflecting the state's struggle to match national economic growth.
  - **Madhya Pradesh (MP):**
    - Madhya Pradesh, which experienced decades of economic decline, has shown a turnaround since 2010.
    - Its relative per capita income increased from 60.1% in 2010-11 to 77.4% in 2023-24, signaling improvements in industrial growth and infrastructure development.



- **North-Eastern States**
  - **Sikkim:**
    - Sikkim's economic rise has been exceptional. Its per capita income surged from being below the national average in 1980-81 to 320% of the national average by 2023-24, making it the highest in India.
    - This growth is driven by hydroelectric power projects, tourism, and organic farming.
  - **Assam:**
    - Assam's per capita income, once slightly above the national average (103% in 1960-61), declined to 61.2% in 2010-11.
    - However, the state has shown signs of recovery, with its relative per capita income increasing to 73.7% in 2023-24, partly due to improvements in industrial and agricultural sectors.

Reasons for Regional Disparities among the States:

- **Natural Resources:** States with rich natural resources (like minerals, fertile land, water bodies) tend to develop faster. For example, states like Jharkhand and Chhattisgarh are rich in minerals, while Punjab and Haryana have fertile land for agriculture.
- **Topography:** Hilly terrains (like those in the northeastern states and parts of Uttarakhand) make infrastructure development and connectivity challenging, leading to slower economic growth compared to plains.
- **Uneven Industrialization:** Industrial development has been

concentrated in a few states like Maharashtra, Gujarat, Tamil Nadu, and Karnataka, leading to higher growth in these areas.
  - In contrast, states that were more agriculture-dependent, like Bihar and Uttar Pradesh, lagged behind in industrial development.
- **Green Revolution:** The Green Revolution in the 1960s and 70s primarily benefited states like Punjab, Haryana, and western Uttar Pradesh, leading to a regional disparity in agricultural productivity and rural prosperity.
- **Connectivity:** States with better road, rail, and air connectivity, such as Maharashtra, Tamil Nadu, and Gujarat, have attracted more investment and experienced faster economic growth. Remote and hilly regions like the northeast suffer from poor connectivity.
- **Education Levels:** States with higher literacy rates and better educational infrastructure, like Kerala, Tamil Nadu, and Maharashtra, have seen faster socio-economic development compared to states with low literacy levels, such as Bihar and Jharkhand.
- **State Governance:** States with more effective governance, transparent policies, and better management of resources tend to develop faster.
  - *Examples* include states like Tamil Nadu and Gujarat, which have attracted more investments due to better governance.
- **Agriculture Dependence:** States that remain primarily dependent on agriculture, like Bihar and Odisha, face slower economic diversification and growth compared to states that have developed strong industrial and service sectors.
- **Investment Patterns:** States like Maharashtra, Karnataka, and Tamil Nadu attract more foreign and domestic investments due to better infrastructure, favorable policies, and skilled labor, leading to faster economic growth.
  - Conversely, less developed states fail to attract significant investments.

ECONOMIC ADVISORY COUNCIL TO THE PRIME MINISTER (EAC-PM)

- **Nature:**
  - It is an **independent advisory body** that is **non-constitutional** and **non-statutory**.
  - It is formed specifically to provide expert advice on economic and related matters to the Government of India, particularly to the Prime Minister.
- **Primary Role and Purpose:**
  - The council's main function is to offer **neutral and unbiased economic insights** to the government.
  - By doing so, it helps the government focus on critical economic issues from a **non-partisan** perspective, enabling sound decision-making.
  - The EAC-PM advises the Prime Minister on **various economic topics**, including but not limited to **inflation management**, **microfinance policies**, and strategies for improving **industrial output**.
- **Periodic Reports:** Annual Economic Outlook and Review of the Economy.

Way Forward:

- **Decentralized Planning and Governance:**
  - **Empower local governments**: Strengthen Panchayati Raj Institutions (PRIs) and urban local bodies by devolving more financial and administrative power to them. This will enable tailored development initiatives at the grassroots level.
  - **Balanced resource allocation**: Ensure that central and state funds are allocated equitably, focusing on lagging regions like the northeastern states, backward districts, and tribal areas.
- **Investment in Infrastructure:**
  - **Improve transportation networks:** Prioritize the development of roads, railways, and air connectivity in underdeveloped regions, especially in the northeast and central India.
  - **Enhance digital infrastructure:** Expand access to high-speed internet in rural and remote areas to facilitate better education, healthcare, and economic opportunities.
- **Educational and Skill Development Initiatives:**
  - **Focus on vocational training:** Create skill development programs tailored to the needs of different regions, enabling people to engage in local employment opportunities like agriculture, tourism, or industry.
  - **Invest in quality education:** Strengthen the educational infrastructure in backward regions through better schools, teacher training, and scholarships for underprivileged children.
- **Regional Economic Corridors:**
  - Develop **regional economic corridors** that connect less developed regions to urban centers and ports. This can stimulate economic growth by improving trade, mobility, and employment.
  - ***Example:*** The **Eastern Economic Corridor** could help boost economic activity in states like Bihar, Odisha, and West Bengal.
- **Private Sector Participation:**
  - Encourage **private sector investment** in backward areas through **public-private partnerships (PPPs)** in sectors like education, healthcare, and infrastructure.
  - Provide incentives for businesses to engage in Corporate Social Responsibility (CSR) activities aimed at developing underprivileged regions.

INDIA TOPS PLASTIC POLLUTION RANKINGS

Recently, a study published in the journal Nature revealed that India accounts for one-fifth of global plastic pollution.

Key Highlights:

- **Plastic Waste Generation:**
  - India generates approximately **9.3 million tonnes** of plastic waste annually.
  - Out of this total, **5.8 million tonnes** are incinerated *(it is a waste treatment process that involves burning waste materials in a furnace to destroy contaminants and reduce waste volume)*, while **3.5 million tonnes** are released into the environment as debris.
  - This figure places India among the top contributors to global plastic pollution, significantly higher than other countries such as ***Nigeria (3.5 million tonnes), Indonesia (3.4 million tonnes), and China (2.8 million tonnes).***
  - The waste generation rate in India is approximately **0.12 kilograms per capita per day**, reflecting a considerable environmental challenge that needs urgent attention.
  - The growing population, which is increasingly becoming affluent, leads to a significant increase in waste generation.
  - The country has a severe disparity in waste management infrastructure. **Dumping sites** outnumber **sanitary landfills** by a ratio of 10 to 1, leading to uncontrolled land disposal practices.
  - Although India claims to have a **95%** national waste collection coverage, evidence suggests that this figure does not adequately account for rural areas, open burning of uncollected waste, or waste managed by the informal sector.
    - The actual waste collection average is closer to **81%**.
- **Global North-South Divide:**
  - The issue of plastic waste is exacerbated by a pronounced **global divide** in emissions sources.
  - Countries in **Southern Asia, Sub-Saharan Africa,** and **Southeastern Asia** experience the highest levels of plastic waste emissions.
  - In the Global South, including India, there is a reliance on **open burning** for waste management due to inadequate infrastructure, leading to greater environmental harm.
  - Conversely, countries in the Global North utilize **controlled waste disposal systems**, resulting in less unmanaged waste.
- **Disparity Between High and Low-Income Countries:**
  - Globally, **69%**, or **35.7 million tonnes**, of plastic waste emissions originate from just **20 countries**.
  - In the Global South, the predominant source of plastic pollution is from open burning practices, while in the Global North, a significant portion stems from **uncontrolled debris**.
  - High-income countries, despite generating more plastic waste, do not rank among the top polluters due to their comprehensive waste collection and controlled disposal systems.
- **Per-Capita Emissions and Global Comparisons:**
  - The inadequacies in local and national waste management systems become more pronounced when assessed on a per-capita basis.
  - For instance, while China ranks as the fourth-largest absolute emitter of plastic waste, it falls to **153rd** when considering per-capita emissions.
  - India, on the other hand, ranks first in absolute emissions but **127th** on a per-capita basis.
  - This disparity reflects the impact of population size rather than the effectiveness of waste management systems.
  - Despite having some of the most substantial populations, both China and India face significant challenges in waste management, with over **100 countries** exhibiting even poorer waste management provisions.
- **Sources of Plastic Emissions:**
  - In high-income countries, **littering** represents the largest source of plastic emissions, contributing to **53%** of debris emissions and **49%** of all plastic emissions in the Global North.
  - Additionally, mismanagement of rejects from plastic sorting and recycling systems globally contributes an estimated **1 million tonnes per year** of plastic waste emissions, indicating that this source, while previously emphasized in research, is comparatively minor in the broader context of plastic pollution.

Criticism of Current Research:

- **Narrow Focus:** Critics argue that the studies often overemphasize waste management solutions while neglecting the critical need to **reduce plastic production** at the source.
- **Misplaced Priorities:** This focus on downstream solutions might divert attention from essential upstream strategies, such as **phasing out single-use plastics.**
- **Industry Support:** The endorsement of such studies by plastics industry groups raises concerns about prioritizing industry interests over broader **environmental goals.**
- **Undermining Comprehensive Solutions:** The predominant focus on waste management could weaken comprehensive efforts aimed at addressing issues related to **production and recycling** of plastic materials.

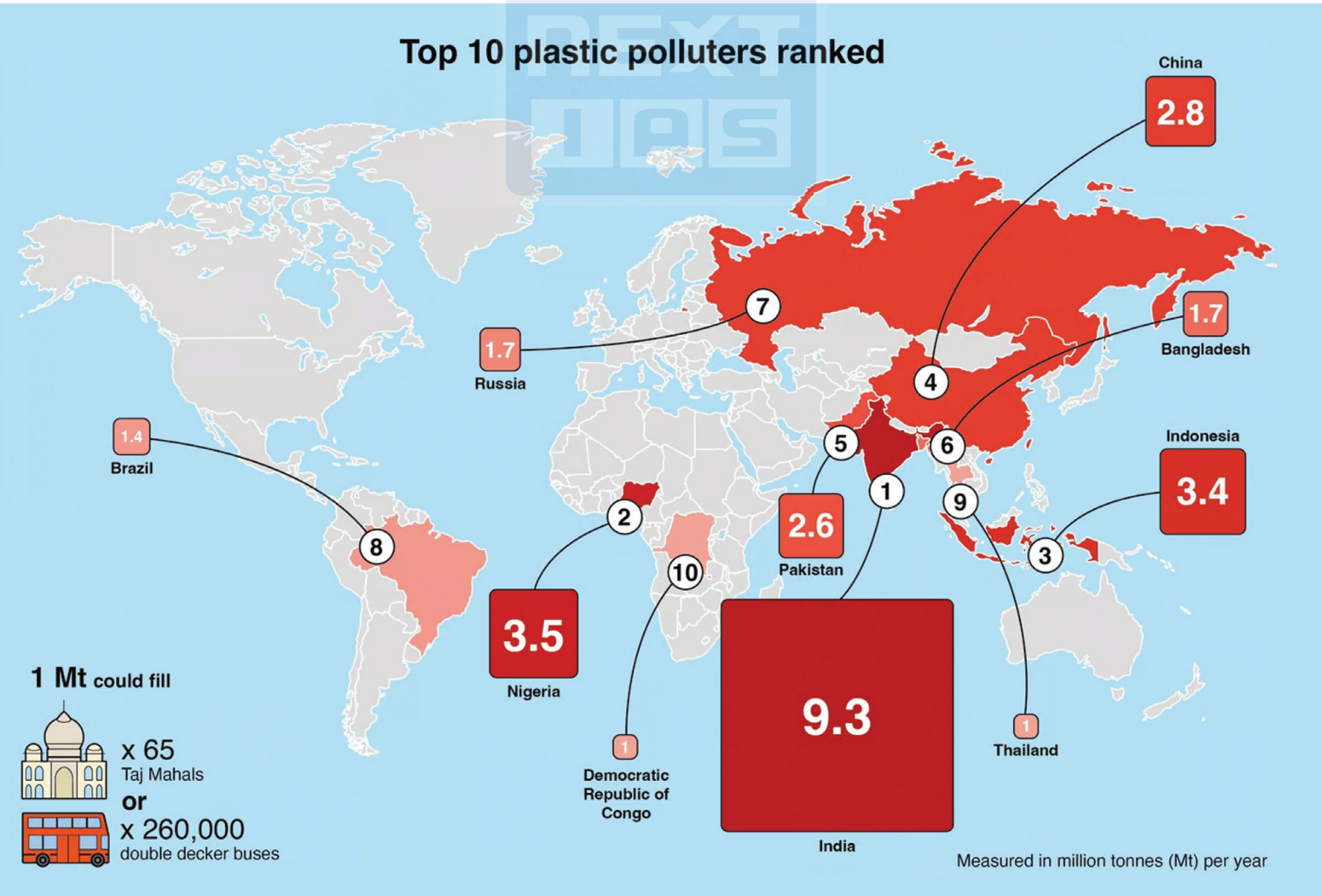
Concerns of Plastic Pollution:

- Plastics are hard to eradicate due to their **slow decomposition rate** in natural ecosystems.

- Plastics break down into their smaller units called **microplastics,** which find their way across the planet, from the depths of the Pacific Ocean to the heights of the Himalayas.
- **BPA or Bisphenol A**, the chemical which is used to harden the plastic contaminates food and drinks, causing alterations in liver function, fetal development in pregnant women, the reproductive system and brain function.
- Plastic, which is a petroleum product, also **contributes to global warming**. If plastic waste is incinerated, it releases toxic fumes and carbon dioxide into the atmosphere.
- Plastic waste **damages the aesthetic value of tourist destinations,** leading to decreased tourism-related incomes and major economic costs related to the cleaning and maintenance of the sites.

Concerns for Plastic Waste in India:

- **Environmental Degradation:**
  - Plastic debris clogs waterways, leading to flooding and increasing marine pollution.
  - The ingestion of plastic by marine life poses a serious threat to biodiversity, as it can result in injury or death to aquatic organisms.
  - Additionally, the burning of plastic waste releases toxic pollutants into the atmosphere, exacerbating air quality issues and harming ecosystems.
- **Public Health Concerns:**
  - The presence of microplastics in water and food sources poses potential long-term health risks to humans.
  - Microplastics can infiltrate the food chain, leading to their ingestion by humans, which raises concerns about various health effects.
  - Furthermore, plastic waste creates breeding grounds for disease vectors, such as mosquitoes, thereby increasing the risk of diseases like dengue and malaria.
  - The act of burning plastic also emits harmful substances that can adversely affect respiratory health, contributing to a public health crisis.
- **Economic Challenges:**
  - According to a report by the Federation of Indian Chambers of Commerce & Industry (FICCI), India could face a staggering loss of over **USD 133 billion** in material value related to plastic packaging by **2030**.



- Of this, uncollected plastic packaging waste alone accounts for approximately **USD 68 billion** in losses. This economic impact highlights the financial repercussions of plastic waste mismanagement on the economy.

- **Regulatory and Enforcement Challenges:**
  - The inconsistent enforcement of existing plastic waste regulations, along with issues related to the Extended Producer Responsibility (EPR) system, complicates efforts to manage plastic waste sustainably.
  - Without strong regulatory frameworks and compliance, achieving effective waste management remains a significant hurdle.
- **Microplastic Pollution in Agriculture:**
  - The use of plastic in agriculture, combined with inadequate wastewater treatment, contributes to the accumulation of microplastics in soil.
  - This accumulation can have detrimental effects on soil health, impacting crop productivity and food safety.
  - As microplastics infiltrate agricultural systems, addressing their source and prevalence is critical for sustainable agricultural practices.

Global Efforts in Tackling Plastic Waste:

- **London Convention:**
  - The **1972 Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matter**, commonly known as the London Convention, was established to prevent marine pollution caused by the dumping of wastes, including plastics, into the oceans.
  - This treaty sets forth guidelines to protect marine environments and promote sustainable practices in waste disposal.
- **Clean Seas Campaign:**
  - Launched by the **United Nations Environment Programme (UNEP)** in **2017**, the **Clean Seas Campaign** has become the largest global initiative aimed at raising awareness about plastic pollution and marine litter.
  - This campaign mobilizes governments, businesses, and citizens to take action against plastic waste, promoting solutions to reduce plastic usage and improve waste management practices worldwide.
- **Basel Convention:**
  - In **2019**, the **Basel Convention** was amended to include plastic waste as a regulated material.
  - This amendment establishes stringent controls on the movement of plastic waste across borders.
  - The Convention now includes three main entries on plastic wastes in Annex II, VIII, and IX, making the Plastic Waste Amendments binding on **186 states**.
  - This initiative aims to ensure that plastic waste is managed in an environmentally sound manner, reducing its impact on ecosystems and human health.

Initiatives taken by the Government:

- **Extended Producer Responsibility (EPR):**
  - The government has implemented **Extended Producer Responsibility (EPR)**, which holds plastic manufacturers accountable for managing and disposing of the waste generated from their products.
  - This policy encourages manufacturers to design products that are easier to recycle and reduce overall plastic waste.
- **Plastic Waste Management (Amendment) Rules, 2022:**
  - It prohibits the manufacture, import, stocking, distribution, sale, and use of plastic carry bags that have a thickness of less than **120 microns**.
  - This regulation aims to reduce the prevalence of thin plastic bags, which are often not recyclable and contribute significantly to pollution.
- **Swachh Bharat Abhiyan:**
  - The **Swachh Bharat Abhiyan** (Clean India Mission) is a national cleanliness campaign that encompasses the collection and disposal of plastic waste.
  - Launched in **2014**, this initiative promotes sanitation and waste management across urban and rural areas, emphasizing the importance of clean surroundings and responsible waste disposal.
- **Plastic Parks:**
  - India has established **Plastic Parks**, which are specialized industrial zones dedicated to the recycling and processing of plastic waste.
  - These parks provide the necessary infrastructure and support for businesses engaged in plastic waste management, facilitating innovation and the development of sustainable practices within the industry.
- **Project REPLAN** (Recycling Plastic for a Cleaner Environment): An initiative aimed at enhancing plastic waste management through innovative recycling methods.
  - The project focuses on creating sustainable recycling solutions that minimize the environmental impact of plastic pollution while promoting community engagement and participation.
- **Beach Clean-Up Drives:**
  - The government, along with various non-governmental organizations (NGOs), has organized **beach clean-up drives** to collect and dispose of plastic waste from coastal areas.
  - These initiatives not only aim to clean beaches but also raise awareness about the importance of reducing plastic pollution and protecting marine ecosystems.

JAL SANCHAY JAN BHAGIDARI INITIATIVE

Recently, the Prime Minister launched the 'Jal Sanchay Jan Bhagidari' initiative aimed at improving rainwater harvesting and promoting long-term water sustainability.

About:

- **Overview:**
  - The **Jal Sanchay Jan Bhagidari** initiative is a significant program aimed at enhancing water sustainability in the state through the construction of approximately **24,800 rainwater harvesting structures**.
  - This initiative focuses on community involvement and ownership, ensuring that local populations are engaged in the conservation of water resources.
- **Objectives:**
  - **Enhance Rainwater Harvesting:** The program seeks to improve the infrastructure for collecting and storing rainwater, contributing to long-term water sustainability in the region.
  - **Promote Community Partnership:** By emphasizing community participation, the initiative aims to foster a sense of ownership and responsibility among local residents towards water conservation.
- **Approach:**
  - The initiative is driven by a **whole-of-society and whole-of-government approach**, ensuring collaboration across various sectors and stakeholders.
  - This integrated method enhances the effectiveness of the program and promotes a collective effort towards water sustainability.
- **Rainwater Harvesting:** Rainwater harvesting refers to the collection and storage of rainwater runoff from surfaces such as rooftops, parks, roads, and open grounds. This practice is vital for managing water resources effectively, particularly in areas facing water scarcity.
  - **Components of Rainwater Harvesting Systems:**
    - **Catchment Area:** The surface from which rainwater is collected, typically rooftops or other impermeable surfaces.
    - **Conveyance System:** A network of pipes or channels that transports harvested rainwater from the catchment area to the storage or recharge zones.
    - **First Flush System:** A mechanism designed to flush out the initial rainfall, which may contain contaminants, ensuring that only cleaner water is collected.
    - **Filter:** A device used to remove pollutants from the collected rainwater before storage.
    - **Storage Tanks and Recharge Structures:** Facilities for storing harvested rainwater or recharging it back into the groundwater system.

Significance:

- **Water Conservation:**
  - Collecting rainwater significantly reduces the demand on local water supplies, contributing to the conservation of freshwater resources.
  - This practice is essential in areas facing water scarcity, as it helps maintain available water for various uses.
- **Reduced Stormwater Runoff:**
  - Harvesting rainwater effectively decreases the volume of runoff, leading to reduced soil erosion and a lower risk of flooding.
  - By managing stormwater more efficiently, this practice minimizes the adverse effects on local waterways and ecosystems, promoting environmental health.
- **Groundwater Recharge:**
  - Many rainwater harvesting systems are designed to facilitate the natural infiltration of harvested rainwater back into the ground.
  - This process helps recharge groundwater supplies and maintain the water table, ensuring the sustainability of local aquifers.
- **Reduced Infrastructure Strain:**
  - By lessening the demand on municipal water systems, rainwater harvesting alleviates the pressure on existing water infrastructure.
  - This reduction can delay the need for costly upgrades and expansions, making it a cost-effective strategy for water management.
- **Emergency Supply:** In times of drought or natural disasters, having a reserve of harvested rainwater becomes crucial for maintaining water supply for essential needs. This practice provides a reliable backup source of water during emergencies, enhancing community resilience.
- **Sustainability:** As climate change continues to affect water availability, rainwater harvesting emerges as a relevant sustainable practice. It serves as a buffer against the variability in rainfall and water supply, ensuring communities can adapt to changing environmental conditions.

Government Initiatives to Tackle Shortage of Water in India:

- **National Water Mission:**
  - It aims to conserve water, minimize wastage, and ensure equitable distribution across states through integrated water resource development and management.

- **Key initiatives under this mission include:**
  - **"Sahi Fasal" Campaign:** This initiative encourages farmers to cultivate water-efficient crops and use water more judiciously in agriculture, promoting demand-side management.
  - **"Water Talk" Seminar Series:** This monthly seminar series fosters dialogue and information sharing on various water-related topics, aiming to create awareness, build stakeholder capacity, and encourage active participation in water conservation efforts.
- **Atal Bhujal Yojana:**
  - Launched on April 1, 2020, the Atal Bhujal Yojana is a Central Sector Scheme focusing on community participation, demand-side interventions, and the convergence of existing schemes for sustainable groundwater management.
  - It is implemented in seven states: Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh.
- **Har Khet Ko Pani (HKKP):**
  - This initiative, a component of the Pradhan Mantri Krishi Sinchai Yojana (PMKSY), aims to revive irrigation potential through the repair, renovation, and restoration of water bodies.
  - The program enhances tank storage capacity and addresses objectives such as groundwater recharge, increased availability of drinking water, and improvement of catchments in tank commands.
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):**
  - Launched on June 25, 2015, AMRUT focuses on developing basic urban infrastructure in selected cities and towns across India.
  - The mission covers areas such as water supply, sewerage and septage management, stormwater drainage, green spaces, and non-motorized urban transport.
  - Originally set for five years, it has been extended to complete ongoing projects.
- **Jal Jeevan Mission-Har Ghar Jal:**
  - Since August 2019, this mission aims to provide every rural household with potable water through tap connections, delivering at least 55 liters per capita per day of quality water on a regular and long-term basis by 2024.
  - As of February, 2023, around 11.10 Crore (57%) of the 19.36 Crore rural households in India have received tap water connections, a significant increase from 3.23 Crore (17%) at the mission's launch.
- **Jal Shakti Abhiyan:**
  - **Jal Shakti Abhiyan-I (JSA-I):** Launched in 2019, this initiative targets water conservation and resource management in 256 water-stressed districts, focusing on five key interventions: *rainwater harvesting, renovation of traditional water bodies, reuse and recharge of bore wells, watershed development, and intensive afforestation.*
  - **"Jal Shakti Abhiyan: Catch the Rain" (JSA):** Initiated in 2021, this campaign encourages rainwater harvesting and conservation, targeting all blocks in rural and urban areas across the country with similar focused interventions as JSA-I.
- **Interlinking of Rivers (ILR):** The National Water Development Agency (NWDA) has been entrusted with the work of inter-linking of rivers under the National Perspective Plan (NPP).
  - NPP has two components, viz. , Himalayan Rivers Development Component and Peninsular Rivers Development Component.
  - 30 link projects have been identified under NPP.

Way Forward:

- **Enforce Water Conservation Policies:** Develop and enforce policies that promote water conservation practices, including regulations on water usage for agriculture, industry, and domestic purposes. Strengthen penalties for violations to ensure compliance.
- **Incentives for Water-Saving Technologies:** Offer subsidies or tax incentives for the adoption of water-efficient technologies and practices in agriculture, industry, and households. Promote innovative solutions like drip irrigation and smart water management systems.
- **Wastewater Treatment:** Promote the treatment and reuse of wastewater for irrigation, industrial processes, and toilet flushing to reduce the demand for freshwater. Invest in advanced wastewater treatment infrastructure.
- **Greywater Systems:** Encourage households to install greywater systems that allow the recycling of water from sinks, showers, and laundry for landscape irrigation. Provide technical guidance and financial support for installation.
- **Local Water Management Committees:** Establish community-based water management committees to involve local populations in decision-making processes related to water conservation efforts. Facilitate regular meetings for transparency and accountability.
- **Participatory Conservation Projects:** Engage communities in water conservation projects, such as watershed management and river clean-up initiatives, to foster a sense of ownership and responsibility. Provide training and resources for local leaders.
- **Adaptation Measures:** Develop strategies that incorporate water conservation into broader climate resilience plans, ensuring that communities are prepared for changes in water availability due to climate change. Prioritize drought-resistant crop varieties.

MAN ANIMAL CONFLICT

Recently, the Uttar Pradesh government launched 'Operation Bhediya' to capture the wolves responsible for seven deaths in Bahraich to address Man Animal Conflict.

About:

- Human-animal conflict refers to interactions between humans and wildlife that lead to negative outcomes for either side, such as injury, death, or damage to property and ecosystems.
- In many rural and forested areas of India, human-wildlife conflicts are becoming increasingly common.
  - As human populations expand and agriculture extends into wildlife territories, animals such as tigers, elephants, leopards, and wolves stray into human settlements, often leading to fatal encounters.
- A series of wolf attacks in Uttar Pradesh's Bahraich district has created significant alarm.
  - The attacks have resulted in the deaths of at least 10 people, with over 35 others injured.

Key Causes:

- **Habitat Loss and Fragmentation:** Rapid urbanization, deforestation, and agricultural expansion reduce the natural habitats of animals, forcing them into closer contact with human populations.
  - This can lead to attacks on livestock or even people, as animals seek food or territory.
- **Human Encroachment:** As humans build homes, farms, and roads closer to wildlife habitats, the boundary between human and animal spaces blurs.
  - This increases the chances of animals like elephants, tigers, and leopards entering villages or towns, sometimes causing damage or posing threats to people.
- **Competition for Resources:** When food or water becomes scarce in natural habitats, wildlife may venture into human-dominated areas to find these resources, causing conflicts.
- **Climate Change:** Shifts in climate patterns can alter the availability of food and water sources for animals, pushing them into human environments.
- **Revenge or Retaliatory Killing:** In many cases, local communities respond to wildlife attacks on livestock by hunting or killing the animals, exacerbating the conflict and potentially reducing already endangered populations.
- **Agricultural Expansion:** The spread of agricultural land into previously wild areas displaces wildlife, particularly in regions where fertile land overlaps with wildlife corridors.
  - This results in crop raids by herbivores like elephants, and increased predation of livestock by large carnivores.
- **Cultural and Traditional Practices:** In some regions, cultural practices such as hunting, or the gathering of forest products, bring humans into close contact with wildlife.
  - In other cases, local beliefs may either protect or vilify certain species, influencing how communities interact with animals.
- **Infrastructure Development:** The construction of highways, railways, and industrial zones through wildlife habitats disrupts animal movement patterns, increases roadkill, and can lead to aggressive encounters between animals and humans.

ADDITIONAL INFORMATION

- **Elephant and Human Conflicts:**
  - **Elephant-related incidents:** Between 2015 and 2020, elephants were responsible for about **2,300 human deaths** across India.
    - In response, more than **500 elephants** were killed due to conflict with humans, either through electrocution, poisoning, or retaliation.
  - **Crop damage:** Elephants cause extensive damage to crops, particularly in states like Assam, Odisha, and Karnataka.
    - Each year, about **500,000 hectares** of crops are estimated to be damaged by elephants.
- **Tiger Attacks:**
  - India is home to about **70% of the world's tigers**, and human-tiger conflicts have increased in recent years. Between 2014 and 2019, there were **225 tiger-related human deaths** reported.
    - States like Maharashtra and Uttarakhand have been especially affected.
  - Tiger attacks often lead to retaliatory killings. In some regions, **50-60 tigers** are estimated to have been killed annually during the same period.
- **Leopard Conflicts:**
  - Leopards are highly adaptive and frequently enter human settlements. Between **2010 and 2020**, over **500 human deaths** were attributed to leopard attacks in India.
  - In urban regions like Mumbai, leopards are known to attack domestic animals and livestock, creating regular conflict.

Implications of Human Animal Conflict:

- **Human Losses**
  - **Fatalities and Injuries:** Human-wildlife conflicts lead to significant human casualties, especially in rural areas. In India, conflicts with animals like elephants, tigers, leopards, and wolves result in hundreds of deaths and injuries each year.

- **Psychological and Social Impacts:** Frequent encounters with dangerous animals create fear and anxiety in affected communities.
  - This can lead to social unrest, displacement, and a breakdown of the relationship between humans and the natural world.
- **Economic Impact:**
  - **Crop and Livestock Losses:** Wildlife such as elephants and wild boars damage crops, while carnivores like tigers, leopards, and wolves prey on livestock.
    - These damages can lead to significant financial losses for farmers, creating economic instability, especially in rural areas dependent on agriculture.
  - **Cost of Mitigation:** Governments often pay large sums in compensation for crop damage and livestock loss. Additionally, efforts to manage conflicts, such as creating wildlife corridors, using fencing, or relocating animals, require substantial financial investments.
- **Impact on Wildlife:**
  - **Retaliatory Killings:** When humans lose livestock or crops, they often resort to killing wildlife in retaliation, either through poisoning, hunting, or electrocution. This poses a major threat to endangered species like tigers, leopards, and elephants, disrupting conservation efforts.
  - **Habitat Displacement:** Continued human encroachment and the destruction of natural habitats push animals into human settlements, leading to more frequent conflicts. The fragmentation of habitats also threatens wildlife populations by limiting their natural range and reducing genetic diversity.
- **Biodiversity and Ecosystem Imbalance:**
  - **Loss of Key Species:** The killing of apex predators (like tigers) or keystone species (like elephants) can disrupt the ecological balance, leading to overpopulation of certain species and the degradation of ecosystems.
  - **Threats to Conservation:** Human-wildlife conflicts can reduce public support for conservation projects. In regions where wildlife is viewed as a threat, conservation efforts may face resistance from local communities, hindering efforts to protect biodiversity.
- **Social and Cultural Implications:**
  - **Changes in Livelihoods:** Repeated wildlife incursions into farming areas can force people to change their agricultural practices or even abandon farming altogether.
    - This disrupts traditional livelihoods, particularly in indigenous and rural communities.
  - **Loss of Cultural Tolerance:** Historically, many communities in India have coexisted with wildlife.
    - However, as conflicts escalate, there is a growing shift in attitudes toward wildlife, with less tolerance and an increase in negative perceptions of animals.

GOVERNMENT INITIATIVES

- **Project Elephant and Project Tiger:**
  - **Project Elephant:** Launched in 1992, Project Elephant focuses on protecting elephants and reducing human-elephant conflict, particularly in states like Assam, Karnataka, and Odisha. The project includes habitat restoration, securing elephant corridors, and installing early warning systems.
  - **Project Tiger:** Under Project Tiger, the government has set up Tiger Reserves to protect tiger populations and their prey base.
    - This includes the relocation of villages from critical tiger habitats, strengthening anti-poaching measures, and promoting community participation in conservation.
- **Compensation Schemes:**
  - **Compensation for Crop and Property Damage:** Farmers receive compensation for crops damaged by wildlife like elephants, wild boars, and nilgai.
    - In states like Karnataka, compensation schemes are available for losses related to wildlife attacks.
  - **Compensation for Human Injuries and Deaths:** In cases of human injury or death due to wildlife attacks, the government provides monetary support to the victims' families.
    - States like Maharashtra have structured compensation programs for this purpose.
- **Creation of Wildlife Corridors:** To reduce animal movement through human-inhabited areas, the Indian government has focused on developing **wildlife corridors**, especially for large animals like elephants and tigers. These corridors are designed to allow safe movement between fragmented habitats, reducing the likelihood of human encounters.
- **Use of Technology and Early Warning Systems:**
  - **GPS Tracking and Monitoring:** Animals such as elephants are fitted with GPS collars to monitor their movements and prevent their entry into human settlements.
    - In states like Assam and West Bengal, early warning systems have been established to alert villages when elephants are nearby.
  - **Drones and Camera Traps:** The use of drones and camera traps helps monitor wildlife movements in conflict-prone areas, enabling authorities to take precautionary measures before animals reach human settlements.

Strategies to Mitigate Human-Animal Conflict:

- **Habitat Management and Conservation:**
  - **Wildlife Corridors:** Establishing and maintaining wildlife corridors allows animals to move freely between habitats without crossing into human settlements.

- In India, corridors for species like elephants and tigers can reduce encounters with humans by providing safer migratory routes.
- **Protected Areas and Buffer Zones:** Expanding and enforcing protected areas while creating buffer zones around human settlements reduces the risk of conflict.
  - Buffer zones can act as transitional areas where human activity is regulated to prevent wildlife encroachment.

- **Community-Based Solutions:**
  - **Engaging Local Communities:** Involving local communities in wildlife conservation efforts ensures that they have a stake in protecting wildlife.
    - Training communities in conflict management and educating them on wildlife behavior can help reduce negative encounters.
  - **Compensation and Insurance Programs:** Governments can implement compensation schemes to reimburse farmers for crop and livestock losses.
    - Insurance schemes can also provide financial support to communities affected by wildlife, reducing retaliatory killings.
- **Technological Solutions:**
  - **Early Warning Systems:** GPS collars, drones, and camera traps can be used to track and monitor wildlife movements.
    - Early warning systems can alert communities when animals are approaching, allowing them to take preventive measures. Such systems are already being used for elephants in some parts of India.
  - **Fencing and Deterrents:** The use of non-lethal deterrents like electric fencing, beehive fences, or sound alarms can prevent wildlife from entering human areas.
    - In places where elephants are frequent crop raiders, beehive fences have been successful in keeping them away from farms.
- **Sustainable Agricultural Practices:**
  - **Crop Diversification:** Planting crops that are less attractive to wildlife can reduce the likelihood of crop raiding. For example, crops like chili and citrus are less likely to be targeted by animals such as elephants.
  - **Agroforestry:** Integrating trees and wildlife-friendly plants into agricultural landscapes provides habitat for wildlife while reducing their need to venture into crop fields.
- **Animal Translocation and Population Management:**
  - **Translocation of Problem Animals:** In cases where a specific animal poses a threat, relocating it to a less populated area can be an effective solution.
    - This is frequently done with problem leopards or tigers in India. However, translocation must be done carefully to ensure the animal's survival and avoid stress.
  - **Sterilization Programs:** Controlling populations of certain animals, such as monkeys, through sterilization programs has been successful in some urban areas of India.
- **Infrastructure Planning:**
  - **Eco-friendly Infrastructure:** Roads, railways, and other infrastructure should be designed to accommodate wildlife movement.
    - Underpasses and overpasses for animals allow safe passage across human structures and can reduce roadkill and collisions. Elevated roads in protected areas are a prime example.
  - **Sustainable Land Use Planning:** Developing areas near wildlife habitats requires careful planning to minimize conflicts.
    - This can include zoning laws that prevent settlements too close to forests and wildlife reserves.

INDIAN WOLVES

- **Feeding Habits:**
  - Indian wolves are primarily known as **scavengers,** often preying on dead livestock.
  - However, they can also feed on live livestock when their natural prey becomes scarce.
  - This opportunistic feeding behavior has been linked to their adaptability in various environments.
- **History of Preying on Humans:**
  - While their primary diet consists of smaller animals, Indian wolves have a concerning history of preying on children, particularly in rural areas where human-wolf interactions are more common.
  - This predatory behavior poses significant challenges to communities living near wolf habitats.
- **Population Estimates:**
  - The exact population of Indian wolves remains uncertain, with estimates suggesting that there are between **2,000 and 3,000 individuals** spread across several states, including Rajasthan, Gujarat, Maharashtra, and Karnataka.
  - The population is relatively fragmented, which can complicate conservation efforts.
- **Conservation Status:** According to the **International Union for Conservation of Nature (IUCN)**, the Indian wolf is classified as **Least Concern.**
- **Legal Protection:**
  - In India, wolves are classified as **Schedule-I** species under the **Wildlife Protection Act of 1972**.
  - This categorization offers them significant legal protection, aiming to conserve their populations and habitats amid increasing human encroachment and conflict.
  - Chief wildlife warden of a state has the authority to permit hunting of such animals becoming dangerous to human life or disabled or diseased beyond recovery, under Section 11 (1) (a) of the Wildlife (Protection) Act, 1972.

DELAY IN LA NINA PHASE OF ENSO

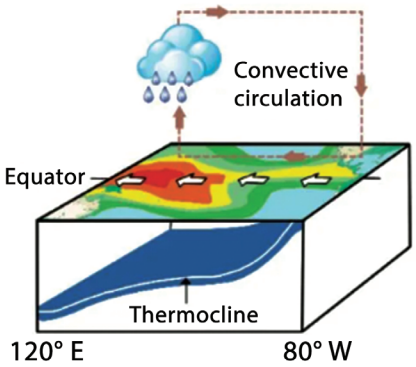
Recently, all major global meteorological agencies have significantly miscalculated their forecasts for La Nina in 2024.

About:

- **Definition:**
  - **La Niña**, meaning "The Little Girl" in Spanish, is one of the three phases of the **El Niño Southern Oscillation (ENSO)**, a climate phenomenon that significantly influences global weather and climate patterns.
  - It is known as the **cool phase** of ENSO, contrasted by the **El Niño** (the warm phase) and the **neutral phase.**
- **ENSO and Its Cycles:**
  - ENSO is characterized by **irregular cycles** ranging from two to seven years, with no fixed timing.
  - It is driven by fluctuations in sea surface temperatures across the **tropical Pacific Ocean**, caused by interactions between the ocean and atmosphere.
  - These changes can disrupt atmospheric circulation, leading to large-scale impacts on weather across different continents.
- **Neutral Phase:**
  - During the **neutral phase** of ENSO, a balance exists in the temperature of ocean waters. In the **eastern Pacific** (near South America's northwest coast), waters remain relatively cool compared to the **western Pacific** (around Indonesia and the Philippines), which stays warmer.
  - The temperature difference is maintained by **prevailing trade winds**, which blow from east to west, pushing warmer water toward the western Pacific, allowing **cooler water to rise to the surface** in the east.
  - This upwelling of cold, nutrient-rich water supports marine ecosystems and influences weather patterns.
- **La Niña Characteristics:**
  - During **La Niña**, these **trade winds intensify**, pushing even more warm water toward the western Pacific, which results in a more significant **cooling of the eastern Pacific** than usual.
  - This cooling leads to shifts in global weather patterns.
  - In La Niña years, regions like the **eastern Pacific** experience **below-average sea surface temperatures**, while the **western Pacific** warms up further.
  - This phase amplifies atmospheric pressure differences, causing cascading effects on weather systems.
- **Effects of La Niña on Global Weather:**
  - In **India**, **La Niña enhances monsoon activity**, often leading to **heavier rainfall** during the monsoon season, benefiting agriculture but also increasing the risk of floods.
  - In **Southeast Asia** and **Australia**, La Niña leads to **wetter conditions**, contributing to **increased rainfall** and sometimes extreme flooding.
  - In contrast, **southern Africa** can experience **wetter and cooler conditions**, while **northern South America** tends to have **above-average rainfall.**

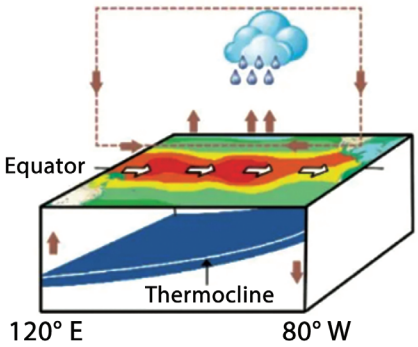
THE THREE PHASES OF EL NINO SOUTHERN OSCILLATION (ENSO)

The illustrations show the Pacific Ocean around the equator and the trade winds above it. The heat map shows water temperature. Thermocline is the layer of water separating the warmer surface water and cooler water below:



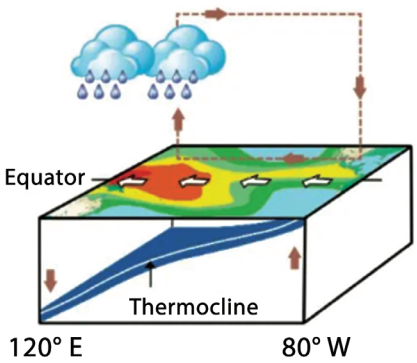
Neutral phase

Eastern Pacific is cooler than Western; thermocline indicates upwelling in the east as trade winds carry surface water westward; normal rainfall in Asia.



El Niño phase

Difference in temperature between East and West Pacific decreases; lesser upwelling in east; rain clouds get pulled towards the Americas, Asia gets less rain.



La Niña phase

Eastern Pacific is much cooler than Western; considerable upwelling in the east as more surface water heads westward; heavy rainfall in Asia.

- However, **La Niña causes droughts** in certain regions, such as the **southern United States**, **Chile**, and **southern Brazil**, as the shift in ocean temperatures alters moisture distribution.

- **El Nino in Contrast:**
  - **El Nino**, the warm phase of ENSO, occurs when trade winds weaken, causing **warm waters** to accumulate along the **eastern Pacific** coast, particularly around **South America**.
  - This results in **warmer sea surface temperatures**, disrupting global atmospheric patterns and typically leading to **drier conditions** in regions like **India** and **Southeast Asia.**
  - The **disruption** caused by El Nino often leads to **reduced monsoon rainfall** in India, **increased drought risk**, and sometimes **devastating impacts** on agriculture.
- **Recent ENSO Events:**
  - The most recent **El Nino event** occurred between **June 2023 and May 2024**.
  - This was significant as it followed one of the **longest recorded La Nina episodes** that lasted from **2020 to 2023**.
  - This extended La Nina phase led to **severe weather changes**, including prolonged **monsoon activity in India**, cooler-than-normal sea temperatures in the eastern Pacific, and **above-average rainfall** in Southeast Asia and Australia.
- **Impact of Climate Change:**
  - **Climate change** has intensified the impacts of both **El Nino and La Nina** phases.
  - Rising global temperatures are contributing to more **frequent and severe weather events**, such as **stronger storms, heavier rainfall, and extended droughts**.
  - Studies suggest that as the planet warms, the **variability of ENSO** phases may increase, making weather patterns more unpredictable and extreme.
- **Global Implications of La Nina:**
  - **Agriculture:**
    - Changes in rainfall patterns can lead to **crop failures** in some regions while benefiting others.
    - For example, while **India's agriculture** may benefit from increased rainfall during La Nina, farmers in **South America** may face drought conditions, leading to **reduced crop yields.**
  - **Marine Ecosystems**: La Nina causes significant shifts in **ocean currents and nutrient cycles**, affecting **fisheries** and marine biodiversity, particularly in the Pacific region.
  - **Natural Disasters**: La Nina often leads to an increased risk of **natural disasters**, such as **floods** in Southeast Asia and **wildfires** in drought-affected areas like **California** and **Australia.**

Reasons behind delay in La Nina Phase:

- **Initial forecasts** from global weather models predicted that **La Nina** conditions would begin around **July 2024**. However, by mid-July, it became evident that La Nina's onset was delayed, prompting revisions in meteorological predictions.
- The delay in La Nina's onset is primarily attributed to its expected **mild intensity**. Weather models are generally more accurate in detecting strong ENSO signals, but predicting **weaker La Nina** or **El Niño** events is more challenging.
- Several **atmospheric and oceanic factors** influence predictions, including variations in **surface and subsurface conditions** across the **Pacific Ocean**.
- These factors are sensitive to **inter-seasonal variability**, meaning that **winds**, **pressure systems**, and other weather patterns can fluctuate unpredictably.
- A key factor affecting the Pacific climate is the **Madden-Julian Oscillation (MJO)**, an **eastward-moving band** of rain-bearing winds and clouds.
  - The **MJO's movement** interacts with ENSO phases, complicating the prediction of La Niña's precise timing.

Way Forward:

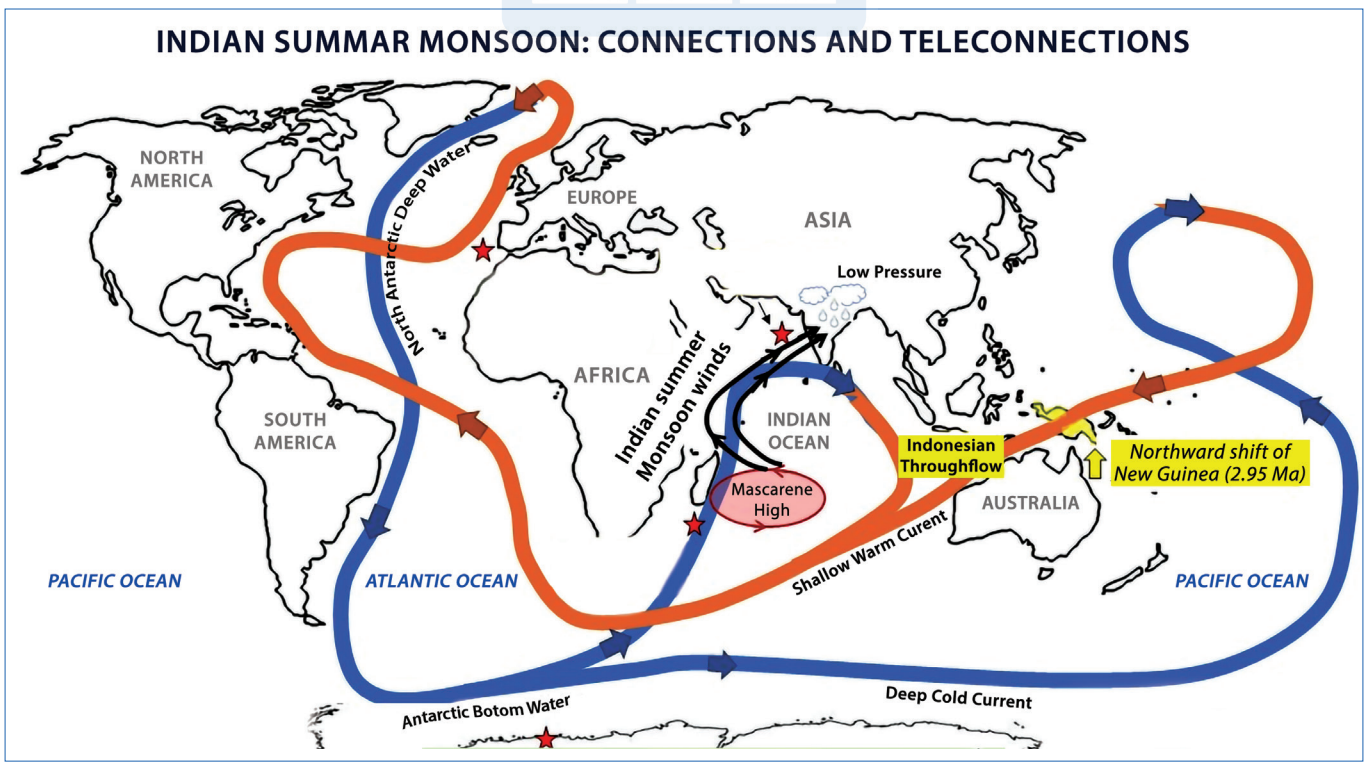
- **Develop Multi-Model Ensembles:** Combine different climate models to enhance prediction reliability, taking into account diverse global conditions and possible scenarios. Use statistical techniques to refine model outputs and reduce uncertainties.
- **Increase Regional Climate Research:** Invest in region-specific studies to understand local impacts of La Niña, since effects can vary by geography. Focus on areas particularly vulnerable to extreme weather, like drought-prone or flood-prone regions.
- **Strengthen Collaboration:** Encourage greater collaboration between regional meteorological agencies, global institutions, and research organizations to share knowledge and improve forecasting precision. Promote data-sharing platforms and joint research initiatives.
- **Track Ocean-Atmosphere Interactions:** Regularly monitor key phenomena like the El Niño–Southern Oscillation (ENSO) and Madden-Julian Oscillation (MJO), which influence La Niña's development. Use satellite data for real-time observation of atmospheric changes.
- **Increase Ocean Buoys and Sensors:** Deploy more ocean buoys and underwater sensors to monitor sea surface temperatures, salinity, and currents, providing real-time data critical for forecasting.
- **Enhance Climate Data Integration:** Improve the integration of oceanic, atmospheric, and terrestrial data to create a holistic view of climate systems. Utilize advanced machine learning algorithms to process and analyze large datasets for better predictions.

ARCTIC-INDIAN MONSOON CLIMATE CONNECTION

In a study researchers from India's National Centre for Polar and Ocean Research (NCPOR), have found that seasonal changes in the Arctic sea ice is affecting the Indian monsoon.

About: Indian Summer Monsoon Rainfall

- **Timing and Importance:**
  - The **Indian Summer Monsoon Rainfall (ISMR)** spans from **July to September**, with the majority of rainfall occurring in **July and August**.
  - It is a key feature of the **global monsoon system**, profoundly impacting the climate and agriculture of the **Indian subcontinent**.
- **Mechanism of Monsoon Formation:**
  - During the **summer months**, the **Central Asian** and **Indian landmass** heat up faster than the surrounding oceans due to increased sunlight.
  - This creates a **low-pressure zone** at the **Tropic of Cancer**, known as the **intertropical convergence zone (ITCZ)**, which attracts moist winds.
- **Role of Trade Winds and Coriolis Force:**
  - **Trade winds** from the **southeast** are deflected towards the Indian landmass by the **Coriolis force** as they cross the equator.
  - The winds, now southwest monsoon winds, carry **moisture** from the **Arabian Sea**, which they deposit as **rainfall** over **India**.
- **Split of the Southwest Monsoon:** Upon reaching India, the **southwest monsoon** divides into two branches:
  - The **Arabian Sea branch** brings rain to **India's west coast**.
  - The **Bay of Bengal branch** brings rain to **eastern and northeastern** regions of India.
  - These branches eventually **converge** over **Punjab** and **Himachal Pradesh**, where rainfall continues as the **Arabian Sea** branch moves inland and the **Bay of Bengal** branch follows the **Himalayan range**.
- **Complexities in Monsoon Patterns:**
  - The ISMR is influenced by more than just local factors.
  - In the last two decades, climate models have shown that surface temperatures of the **Indian**, **Atlantic**, and **Pacific Oceans** have significant impacts on monsoon patterns.
  - Additionally, the **Circum-Global Teleconnection (CGT)**, a large-scale **atmospheric wave** flowing through mid-latitudes, also influences the ISMR.
  - This makes the monsoon system far more complex than initially understood by scientists.
- **Broader Impacts of ISMR:**
  - The monsoon is critical for **agriculture** and **water resources** across India. Variations in ISMR affect **crop yields**, **water supply**, and **economic conditions** throughout the region.



- **Global climate patterns** such as **El Nino** and **La Nina** can also modulate the intensity and timing of the Indian monsoon, leading to fluctuations in seasonal rainfall.

Influence of Arctic Sea Ice on the Indian Monsoon:

- **Overview:**
  - Recent research has suggested that declining Arctic sea ice levels, driven by climate change, may impact the Indian summer monsoon.
  - This influence is mediated through changes in atmospheric circulation patterns.
  - A study using observational data from **1980 to 2020** and climate models *(Coupled Model Intercomparison Project Phases 5 and 6)* investigated how Arctic sea ice levels affect atmospheric circulations and, consequently, the Indian Summer Monsoon Rainfall (ISMR).
- **Findings on Sea Ice and Rainfall Patterns:**
  - **Central Arctic Sea Ice:** Reduced sea ice in the central Arctic is associated with **lower rainfall** in western and peninsular India but **increased rainfall** in central and northern India.
  - **Barents-Kara Sea Region:** Reduced sea ice levels in the Barents-Kara Sea region (including Hudson Bay, Gulf of St. Lawrence, and Sea of Okhotsk) tend to **delay the onset** of the monsoon and make it more **unpredictable**.

Influence of Atmospheric Systems:

- **Rossby Waves and Cyclonic Circulation:**
  - Increased sea ice in the central Arctic triggers **cyclonic circulation** at slightly lower latitudes, such as in the North Atlantic.
  - This enhances **Rossby waves**, which are fast-moving air currents high in the atmosphere.
  - These waves affect weather patterns by creating loops in the air flow, which can steer storms and influence temperature distribution.
  - The enhanced Rossby waves result in **high pressure** over northwest India and **low pressure** over the Mediterranean region.
  - This intensifies the **Asian jet stream** and shifts the **subtropical easterly jet** (a summer jet stream over the Indian subcontinent) northward.
  - This shift creates an **anomalous high-pressure region** over Central Asia, disrupting atmospheric stability over India and increasing rainfall in western and peninsular regions.
- **Effects of Low Sea Ice:**
  - Low sea ice in the Barents-Kara Sea creates **anticyclonic circulation** (clear skies) over northwest Europe, which disturbs the upper atmospheric region over subtropical Asia and India.
  - This disruption, combined with **high surface temperatures** of the Arabian Sea and moisture from surrounding water bodies, leads to **high rainfall** in northeastern India. Conversely, it results in **drier conditions** in central and northwest India.
- **Broader Implications:**
  - The complex interaction between Arctic sea ice levels and monsoon patterns highlights the significant impact of global climate changes on regional weather systems.
  - These findings underscore the need for continued monitoring and modeling to better understand and predict shifts in monsoon behavior and their implications for agriculture and water resources in the Indian subcontinent.

Role of Climate Change in the Indian Monsoon:

- **Changes in Monsoon Onset and Withdrawal:**
  - **Delayed Onset:** Climate change can lead to a delay in the onset of the monsoon season, altering traditional rainfall patterns.
  - **Altered Withdrawal:** The timing of monsoon withdrawal can also shift, impacting crop cycles and water availability.
- **Intensification of Extreme Weather Events:**
  - **Increased Rainfall Extremes:** Climate change can intensify extreme rainfall events, leading to heavier monsoon rains and a higher risk of flooding.
  - **Droughts and Dry Spells:** Conversely, it can also cause prolonged dry spells and droughts, disrupting water resources and agriculture.
- **Shifts in Rainfall Distribution:**
  - **Geographical Shifts:** Changes in global and regional atmospheric circulation patterns can alter the distribution of monsoon rains, leading to uneven rainfall across different regions.
  - **Intensity Variability:** Some areas may experience more intense rainfall, while others may face reduced precipitation.
- **Impact on Monsoon Dynamics:**
  - **Temperature Changes:** Rising sea surface temperatures can influence monsoon dynamics by affecting the strength and position of the monsoon trough.
  - **Atmospheric Circulation:** Altered atmospheric circulation patterns, such as changes in the Indian Ocean Dipole and El Nino-Southern Oscillation (ENSO), can impact monsoon behavior.
- **Implications for Agriculture and Water Resources:**
  - **Crop Yields:** Altered monsoon patterns can affect crop yields and agricultural productivity, impacting food security.
  - **Water Supply:** Changes in monsoon rainfall influence water supply for irrigation, drinking water, and hydropower generation.

HEAT DOME EFFECT

Recently, the intense heat experienced in northeast India has been linked to a phenomenon called the heat dome effect.

About:

- **Definition:**
  - A **heat dome** is a meteorological phenomenon where a high-pressure system forms over a large region in the atmosphere, effectively trapping hot air and preventing it from rising or dissipating.
  - This creates **extremely hot and dry weather conditions** beneath the dome, which can persist for several days or even weeks.
  - As hot air is trapped within the dome, it becomes compressed, heating up further due to the lack of vertical air movement.
  - This creates a **dome-shaped mass of hot air** that intensifies heat and keeps it close to the ground.
  - The trapped air, instead of cooling, remains stagnant and continues to get hotter each day.
- **Factors Contributing to the Heat Dome:**
  - **Clear Skies and Solar Radiation:**
    - High-pressure systems associated with heat domes often bring **clear skies**, which further contribute to heating.
    - With fewer clouds, more sunlight reaches the ground, heating the surface and causing temperatures to spike.
    - The lack of cloud cover also reduces the natural cooling that typically occurs at night, leading to persistently high temperatures even after sunset.
  - **Land Characteristics:**
    - Regions with large land masses, **dry climates**, and relatively low moisture levels—such as **plains or deserts**—are more prone to heat domes.
    - In these areas, the land heats up quickly, creating the ideal conditions for a high-pressure system to form and trap hot air.
  - **Weak Monsoon Circulation:**
    - The monsoonal air circulation, which usually brings **cooling effects** through winds and moisture from the Bay of Bengal, has been absent this year.
    - This absence has allowed the high-pressure system to settle over Assam.
  - **Poor Soil Moisture:** The lack of **soil moisture**, which typically helps cool the region at night, has further exacerbated the situation, contributing to **persistent high night-time temperatures.**
  - **Deforestation:**
    - Assam has lost over **2,690 square kilometers of forests** in the last two decades due to deforestation, rapid industrialisation, and other anthropogenic activities.
    - This has led to the creation of **urban heat islands** and worsened the overall climate conditions.
  - **Climate Change and Air Currents:**
    - Changes in **global air currents**, especially the weakening of the **Gulf Stream** and alterations in the **jet stream** (which influence atmospheric circulation), are affecting monsoon patterns.
    - These disruptions are largely driven by **climate change** and have reduced the monsoon's cooling impact.

Impacts of Heat Dome:

- **Health Risks:** Prolonged exposure to extreme heat increases the risk of heat-related illnesses such as heatstroke, dehydration, and cardiovascular problems, particularly affecting vulnerable populations like the elderly and children.
- **Agricultural Stress:** High temperatures can damage crops, reduce yields, and cause soil moisture depletion, leading to food insecurity. Heat stress affects staple crops such as rice and wheat, impacting livelihoods in rural areas.
- **Water Shortages:** Extreme heat accelerates the evaporation of water sources, leading to drought-like conditions and a reduction in available drinking water, exacerbating water scarcity issues.
- **Wildfires:** Prolonged heat and dryness increase the risk of wildfires, which can devastate forested regions, particularly in northeast India, and lead to air quality deterioration.

HEAT DOME vs. HEAT WAVE

- **Heat Dome:** A heat dome is a specific type of atmospheric high-pressure system that traps hot air over a large area, creating **extreme temperatures**.
  - It is more of a causative factor for heat waves rather than the phenomenon itself.
  - Whereas, a **heat wave** refers to a prolonged period of excessively hot weather, often lasting several days.
  - While heat domes can cause heat waves, heat waves can also result from other conditions, such as warm air masses stagnating over a region due to **tropical weather systems.**
- **Relationship:** Although the terms "heat dome" and "heat wave" are sometimes used interchangeably, they describe different things.
  - A **heat dome creates the atmospheric conditions** for a heat wave, but a heat wave can also occur due to different factors, such as warm air masses from other regions lingering over an area.

INDIA'S MILITARY DIPLOMACY

India has been actively engaged in military diplomacy through a series of high-profile military exercises with various countries.

About:

- **Definition:** Military diplomacy refers to utilizing a nation's military assets and capabilities to support its foreign policy goals and achieve diplomatic outcomes.

Tools of Military Diplomacy:

- **Joint Military Exercises:** Collaborative training activities that enhance interoperability, strengthen military ties, and improve mutual understanding of capabilities and strategies among nations.
- **Defense Cooperation Agreements:** Formal agreements detailing collaboration on defense matters, covering technology transfer, joint operations, and logistical support to deepen strategic partnerships.
- **Military Exchanges:** Personnel exchanges and training programs that foster mutual learning, trust, and expertise-sharing between military officials of different countries.
- **Peacekeeping Operations:** Participation in UN or regional missions that contribute to international stability and security by monitoring ceasefires and providing humanitarian aid.
- **Humanitarian Assistance and Disaster Relief (HADR):** Aid in response to natural disasters or crises, demonstrating a nation's commitment to global welfare and enhancing diplomatic relations.
- **Military Attachés:** Official military representatives in embassies who facilitate defense communication, share information, and assist in defense agreement negotiations.
- **Defense Technology Transfers:** Sharing or selling advanced defense technologies to allies to enhance cooperation, strengthen alliances, and maintain a balance of power.
- **Goals and Aims:** The primary objectives of military diplomacy include building strategic partnerships, influencing security dynamics, and projecting influence through non-combat means to prevent conflicts and maintain stability.

Significance of Military Diplomacy:

- **Building Trust and Strengthening Strategic Ties:** Military diplomacy enhances trust between India and its global partners through collaborative actions like joint exercises and humanitarian missions, improving India's international stature.
  - Notable ***examples*** include the Malabar exercises with the United States, which bolster the Indo-Pacific security framework.
- **Humanitarian Assistance and Disaster Relief (HADR):** India's military plays a vital role in global humanitarian efforts, exemplified by Operation Samudra Maitri in 2018 for earthquake relief in Indonesia and military medical teams deployed during the COVID-19 pandemic as part of the Vaccine Maitri initiative.
- **Regional Influence and Security Cooperation:** Military diplomacy is essential for maintaining stability in India's immediate neighborhood, as demonstrated by Operation Cactus in 1988 to prevent a coup in the Maldives and ongoing security cooperation with Sri Lanka, Nepal, Bhutan, and Bangladesh.
- **Challenges with China and Pakistan:** India manages hostilities with China and Pakistan through military diplomacy. Engagements at the Line of Actual Control (LAC) with China aim to de-escalate tensions, while regular military and diplomatic interactions with Pakistan focus on confidence-building and stability along the Line of Control (LoC).
- **Defense Technology and Self-Reliance:** Initiatives like the Indo-US Defense Technology and Trade Initiative (DTTI) support the co-development of advanced technologies, aligning with India's Atma Nirbhar Bharat initiative.
  - This is evident in the indigenous development of defense equipment, such as the Tejas fighter jets and BrahMos missiles.
- **Joint Military Exercises:** Military diplomacy facilitates exercises with various nations, enhancing interoperability and strengthening strategic partnerships.
  - Recent examples include Exercise Yudh Abhyas with the United States, Indra exercises with Russia, and the Shakti series with France.
- **Defense Agreements and Strategic Partnerships:** India's military diplomacy has led to crucial defense agreements, such as the Logistics Exchange Memorandum of Agreement (LEMOA) with the United States, enhancing military cooperation and strategic partnerships, particularly in the Indo-Pacific region.
- **Training and Capacity Building:** India offers military education and training to foreign officers through institutions like the National Defence College (NDC) and Defence Services Staff College (DSSC), fostering goodwill and deep-rooted military relations with countries like Sri Lanka, the Maldives, and Myanmar.
- **Global Security Role:** India's participation in global security initiatives, such as operations with ASEAN nations and defense assistance to Afghanistan, highlights its commitment to stabilizing volatile regions.
  - Active involvement in multinational maritime security initiatives, like the Quad, underscores India's dedication to maintaining regional security.

Challenges:

- **Dependence on Foreign Defence Systems:** India continues to procure defense systems from abroad to address its national security challenges, largely due to its limited domestic technological and industrial base.
  - This reliance on foreign imports complicates efforts to achieve self-reliance in defense manufacturing and maintain a competitive edge in military capabilities.
- **Limited Institutionalized Mechanisms for Defence Diplomacy:** India still lacks fully institutionalized mechanisms to leverage defense diplomacy in achieving its foreign policy goals.
  - The country primarily relies on conventional diplomatic approaches, missing opportunities to strategically integrate defense diplomacy into its broader international relations efforts.
- **Managing China's Aggression:** India faces significant challenges in managing its military diplomacy with China, particularly following the 2020 **Galwan Valley clash**.
  - Despite holding multiple military-level talks at the **Line of Actual Control (LAC)**, tensions remain high as China continues to expand its infrastructure near the border, making meaningful de-escalation efforts difficult.
- **Balancing Relations with the U.S. and Russia:** India's growing defense cooperation with the **U.S.** , including agreements like **LEMOA**, is complicated by its long-standing military relationship with **Russia**, especially with Russia's increasing closeness to China.
  - This balancing act becomes even more difficult due to **U.S. sanctions on Russia**, which adds another layer of complexity to India's diplomatic efforts.
- **Technological Self-Reliance:** Achieving self-reliance in defense under the **Atma Nirbhar Bharat** initiative remains a challenge, as India still relies heavily on foreign technology and imports for key military systems like **fighter jets** and **missile systems.** This dependency hinders India's progress toward developing advanced indigenous defense technologies.
- **Regional Security Complexities:** China's growing influence in neighboring countries like **Sri Lanka** and **Nepal** presents a challenge for India's military diplomacy. China's involvement in projects like the **Hambantota Port** in Sri Lanka raises security concerns, limiting India's ability to assert its influence in the region and complicating its diplomatic efforts.
- **Coordination Between Civil and Military Institutions:** The lack of seamless coordination between the **Ministry of External Affairs (MEA)** and the Indian armed forces sometimes hampers India's military diplomacy.
  - Delays in policy implementation and a lack of diplomatic engagement on defense issues can slow down joint operations and strategic dialogues with other countries.
- **Humanitarian Missions Amid Political Sensitivities:** India's involvement in **Humanitarian Assistance and Disaster Relief (HADR)** missions often faces political challenges, particularly in countries with complex political environments like **Myanmar**.
  - While offering aid, India must carefully navigate the political sensitivities of the host nation, balancing humanitarian efforts with potential diplomatic repercussions.
- **Peacekeeping Fatigue:** India's significant contributions to **UN peacekeeping missions** are beginning to strain its military resources.
  - With large deployments in volatile regions like **South Sudan**, India faces the challenge of balancing its international peacekeeping commitments with the need to maintain sufficient military capacity for domestic security operations.

Way Forward:

- **Strengthening Domestic Defense Manufacturing:** India needs to accelerate the development of its domestic defense industry under the **Atma Nirbhar Bharat** initiative.
  - By investing in research, technology, and infrastructure, India can reduce its dependency on foreign imports and achieve self-reliance in critical defense systems.
- **Institutionalizing Defence Diplomacy Mechanisms:** To fully leverage military diplomacy, India should establish institutionalized mechanisms that integrate defense diplomacy into its broader foreign policy framework.
  - This can enhance coordination between the **Ministry of External Affairs (MEA)** and the armed forces, enabling more cohesive strategic planning.
- **Expanding Military Cooperation with Key Allies:** India should deepen military cooperation through joint exercises, intelligence sharing, and defense technology exchanges with key allies such as the **U.S., France**, and **Japan**. Expanding such partnerships will help India improve its strategic positioning and technological capabilities.
- **Enhancing Humanitarian Assistance and Disaster Relief (HADR) Capabilities:** India's strong record in **HADR** can be further enhanced by providing specialized training and advanced equipment to its armed forces. This would not only boost India's global standing but also strengthen diplomatic ties with nations receiving aid.
- **Fostering Regional Security Networks:** To counter growing Chinese influence in the region, India should foster regional security networks by increasing military engagement with neighboring countries like **Nepal, Sri Lanka**, and **Bangladesh**. Building these alliances will help reinforce India's leadership in the Indo-Pacific.
- **Leveraging Peacekeeping for Diplomacy:** India's leading role in **UN peacekeeping missions** should be further leveraged for diplomatic gains. By continuing to contribute to global peacekeeping efforts, India can enhance its reputation as a responsible global power and build stronger diplomatic ties with countries in conflict-prone regions.

DRUG DELIVERY WITH NANOTECHNOLOGY

Recently, scientists have harnessed Nikkomycin, a chitin synthesis inhibitor derived from Streptomyces bacteria, and incorporated it into polymeric nanoparticles to specifically target and treat fungal infections.

About:

- **Chitin:** It is a critical component of fungal cell walls but is absent in the human body.
- **Targeted Infection Treatment:** The nanoparticles loaded with Nikkomycin have shown effectiveness against Aspergillosis, a fungal infection caused by ***Aspergillus flavus and Aspergillus fumigatus.***
- **Potential Patient Benefits:** This method is particularly beneficial for patients with compromised immune systems or respiratory conditions, including asthma, cystic fibrosis, HIV, cancer, or those on extended corticosteroid therapy.

POLYMERIC NANOPARTICLES

- These are the tiny particles composed of polymer materials with dimensions typically ranging from 1 to 1000 nanometers.
- They are created through processes such as polymerization or nanoprecipitation and possess unique properties due to their size, surface characteristics, and composition.
- **Examples include:**
  - **Poly (lactic-co-glycolic acid) (PLGA) Nanoparticles:** Widely used in drug delivery systems, these nanoparticles can encapsulate a variety of drugs and provide controlled release over time. They are often used in cancer therapy and vaccines.
  - **Polystyrene Nanoparticles:** Commonly used in diagnostic applications and as carriers for imaging agents. They are also utilized in environmental monitoring due to their stability and ease of functionalization.
  - **Polyethylene Glycol (PEG) Nanoparticles:** Known for their biocompatibility and ability to reduce protein adsorption, PEG nanoparticles are used in drug delivery to enhance circulation time and target specific tissues.

Meaning of Nanotechnology

- Nanotechnology refers to the branch of science and engineering devoted to designing, producing, and using structures, devices, and systems by manipulating atoms and molecules at nanoscale, i. e. having one or more dimensions of the order of **100 nanometres** (100 millionth of a millimeter) or less.

Advantages of Nanotechnology in Medical Field:

- **Targeted Drug Delivery:** Nanotechnology enhances the precision of drug delivery by using nanoparticles to deliver therapeutic agents directly to specific cells or tissues. This approach reduces systemic side effects and improves treatment efficacy.
  - *For example*, **liposomal nanoparticles** can deliver chemotherapeutic drugs specifically to cancer cells, minimizing damage to healthy tissues and improving the overall effectiveness of cancer treatments.
- **Advanced Imaging Techniques:** Nanoparticles improve imaging techniques such as MRI, CT scans, and ultrasounds by enhancing contrast and resolution.
  - **Quantum dots** provide bright and stable fluorescence for detailed imaging at the cellular level, while **superparamagnetic iron oxide nanoparticles** are used in MRI to achieve higher resolution images, aiding in the accurate diagnosis of diseases like tumors and neurological disorders.
- **Diagnostic Tools:** Nanotechnology enables the development of highly sensitive and specific diagnostic tools. **Nanoparticle-based biosensors** can detect minute quantities of biomarkers, facilitating early diagnosis of diseases.
  - ***For example***, **gold nanoparticle-based assays** are used for detecting biomarkers in blood samples, aiding in the early detection of conditions such as cancer and infectious diseases.
- **Tissue Engineering and Regenerative Medicine:** Nanotechnology is crucial in creating scaffolds for tissue engineering and regenerative medicine. **Electrospun nanofibers** are used to create scaffolds that mimic the extracellular matrix, supporting the growth and repair of tissues such as bone and cartilage. Recent innovations include **3D-printed nanofiber scaffolds** that can be tailored to match the specific structure of tissues and promote better integration and healing.
- **Vaccine Development:** Nanoparticles are used as adjuvants to enhance the efficacy of vaccines. **Lipid nanoparticles** in mRNA vaccines, such as those developed for COVID-19, have demonstrated improved delivery and immune response.
  - **Virus-like particle (VLP) vaccines** are also being explored for their ability to provoke a robust immune response without the risk of disease.
- **Wound Healing:** Nanotechnology improves wound care through advanced wound dressings. **Nanofiber-based dressings** promote faster healing and reduce infection risks by providing a moist environment and incorporating antimicrobial agents like **silver nanoparticles.**
  - Recent advancements include **self-healing hydrogels** with embedded nanofibers that adapt to the wound environment and enhance recovery.
- **Personalized Medicine:** Nanotechnology enables personalized medicine by providing tools for tailoring treatments to individual patients.

- **Nanoparticle-based drug delivery systems** can be designed to respond to specific physiological conditions or genetic profiles, ensuring that therapies are customized for each patient. This approach improves treatment outcomes and reduces adverse effects.

- **Gene Therapy:** Polymeric nanoparticles can encapsulate and deliver DNA or RNA molecules, allowing for precise modification of genetic material. This technique is being explored for treating conditions such as cystic fibrosis and certain types of cancer.

Concerns:

- **Environmental Risks:** Nanomaterials can accumulate in ecosystems, leading to unknown environmental consequences. Their tiny size allows them to infiltrate soil and water systems, potentially affecting wildlife, biodiversity, and even entering the food chain.
- **Nanoweapons and Dual-Use Concerns:** The potential use of nanotechnology in military applications, such as nanoweapons or enhanced surveillance tools, raises ethical and security issues. These technologies could be misused, leading to harmful or destructive outcomes.
- **Economic Disparities:** The cost and access to nanotechnology could widen the gap between developed and developing countries, creating inequalities in healthcare, industry, and other sectors where nanotech advancements could be transformative.
- **Privacy and Surveillance Risks:** As nanotechnology enables smaller, more powerful sensors, there is growing concern about potential misuse for surveillance, data collection, and tracking individuals without consent, infringing on personal privacy rights.
- **Unintended Social Consequences:** The widespread adoption of nanotechnology in various industries, particularly in medicine and manufacturing, could lead to job displacement and workforce changes, as traditional roles are replaced by automated or nanotech-based processes.
- **Unpredictable Interactions with Existing Chemicals:** Nanomaterials may interact with existing chemicals in unpredictable ways, potentially creating new compounds or reactions that could be harmful to both human health and the environment. These interactions are not yet fully understood or regulated.

Way Ahead:

- **Advanced Tissue Engineering:** Nanopatterned scaffolds using nanotechnology are revolutionizing tissue regeneration for skin, bone, cartilage, and blood vessels. These structures mimic natural tissue, enhancing cell growth and integration. The technology could reduce reliance on transplants, improve recovery times, and enable the creation of complex organs in the future.
- **Targeted Gene Therapy:** Nanoparticles, like liposomes, deliver DNA or RNA to specific cells for gene therapy, correcting genetic disorders. This precision reduces side effects and enhances efficacy in treating cancers and inherited diseases. Advances in delivery systems promise safer, more personalized treatments.
- **Enhanced Medical Imaging:** Nanoparticles enhance contrast in medical imaging techniques like MRI and ultrasound, providing clearer, more accurate visuals.
  - This allows for earlier detection of diseases such as cancer. Improved imaging resolution leads to better diagnostics and real-time disease monitoring.
- **Neuro-Nanotechnology:** Nanotechnology is advancing neuroscience by delivering drugs across the blood-brain barrier and aiding in brain repair. It holds potential for treating neurological conditions like Alzheimer's and Parkinson's, as well as developing brain-computer interfaces to restore lost functions.
- **Targeted Nano-Vaccines:** Nanocarriers and microneedle arrays improve vaccine delivery and efficacy. These technologies allow for precise, controlled release of antigens, boosting immune responses with fewer side effects. Nano-vaccines are paving the way for needle-free, accessible immunization methods globally.
- **Personalized Medicine:** Nanotechnology enables personalized medicine by integrating nanosensor data with genetics and AI. This allows for tailored treatments based on individual profiles, improving treatment accuracy and reducing side effects. It plays a critical role in fields like oncology and cardiology.
- **Nano Mission:** India's Nano Mission promotes indigenous nanotechnology R&D, focusing on healthcare priorities like cancer and infectious diseases.
  - The initiative supports commercialization and international collaboration, aiming to position India as a leader in nanomedicine while ensuring affordable access to cutting-edge treatments.

STEPS TAKEN BY GOVERNMENT

- **Nano Science and Technology Mission (NSTM):** Launched in 2007, NSTM is a comprehensive program designed to promote research and development in the field of nanotechnology. Its goals include fostering advanced research, building infrastructure to support these efforts, developing nanotechnology applications, training skilled professionals, and facilitating international collaborations.
- **Nano Science and Technology Initiative (NSTI):** Established by the Department of Science and Technology (DST) in 2001, NSTI focuses on infrastructure development and research related to nanomaterials. It also supports applications in areas such as drug development, drug delivery systems, gene targeting, and DNA chip technology.

ANUSANDHAN NATIONAL RESEARCH FOUNDATION (ANRF)

Prime Minister Narendra Modi chaired the inaugural meeting of the Governing Board of the Anusandhan National Research Foundation (ANRF).

Importance of R&D:

- **Economic Growth:** R&D is a key driver of economic growth as it fuels innovation and boosts productivity. Breakthroughs from R&D can lead to the creation of new industries, increase employment opportunities, and contribute significantly to the country's GDP growth.
- **Technological Advancements:** Investments in R&D are essential for the development of cutting-edge technologies and processes that improve efficiency across sectors, enhancing the competitiveness and sustainability of industries.
- **Addressing National Challenges:** R&D plays a crucial role in solving pressing national issues, such as improving healthcare, increasing agricultural productivity, and promoting environmental sustainability.
  - These advancements ensure long-term national resilience and social progress.
- **Global Competitiveness:** A robust R&D sector elevates a country's standing on the global stage by fostering innovation.
  - India's advancements in R&D have contributed to its improved rankings in global indicators like the Global Innovation Index, showcasing its growing influence in scientific and technological innovation.
- **Education and Skill Development:** R&D activities are pivotal for enhancing education and cultivating specialized skills. By engaging in R&D, academic institutions and industries alike contribute to workforce development, preparing individuals for high-skill jobs in emerging fields.
- **Fostering Public-Private Collaboration:** R&D encourages partnerships between the public and private sectors, fostering collaboration that accelerates technological innovations and commercialization, thus boosting economic returns and societal benefits.
- **Promoting Sustainable Development:** Through R&D, countries can develop innovative solutions to support sustainable development goals, including renewable energy, resource conservation, and climate change mitigation, ensuring future generations inherit a more sustainable world.

ANRF

- The Anusandhan National Research Foundation (ANRF) was established **under the ANRF Act 2023**, with the goal of fostering a culture of research and innovation across India.
- The ANRF aims to seed, grow, and foster a culture of research and innovation throughout the country, as outlined in the National Education Policy (NEP).
- The Science and Engineering Research Board (SERB), which previously handled many of the country's research funding activities, has been subsumed into ANRF.
- The ANRF has a funding target of ₹50,000 crore for the period 2023-2028.

FACTS RELATED TO R&D SECTOR

- India's Gross Expenditure on Research and Development (GERD) increased from ₹6,01,968 million in 2010-11 to ₹12,73,810 million in 2020-21.
- R&D investment as a percentage of **GDP is 0.64%**, lower compared to major economies like **China (2.4%), Germany (3.1%), South Korea (4.8%), and the U.S. (3.5%).**
- India produces approximately **40,813 PhDs** annually, ranking third globally. In 2022, India ranked **third in research publications** with over 3,00,000 outputs.
- "According to **WIPO** (World Intellectual Property Organisation), India saw the highest growth (31.6%) in patent filings in 2022," the Survey said.
  - Nearly one lakh patents were granted in FY24, compared to less than 25,000 patent grants in FY20.
  - India's share of high-quality research articles climbed up by 44% in the past four years from 1,039.7 in 2019 to 1,494.7 in 2023.

Issues and Concerns:

- **Declining R&D Expenditure in India:** India's research and development (R&D) expenditure has seen a decline over the years, with current spending at just 0.64% of GDP, down from 0.8% in 2008-09 and 0.7% in 2017-18.
  - This level of investment is significantly lower than that of developed nations, where R&D expenditure typically ranges from 2% to 4% of GDP.
- **Heavy Reliance on Public Funding:** A major portion of India's R&D spending is financed by public funds, while private sector contributions account for only 36.4%. This contrasts sharply with developed economies, where the private sector typically funds over 70% of R&D activities.
  - The imbalance highlights a reliance on government funding and insufficient private sector engagement.
- **Barriers to Private Sector Investment:** The limited private sector contribution to R&D is driven by several factors. Key issues include an unclear and evolving regulatory framework, inadequate intellectual property protection, and a lack of effective mechanisms for evaluating and scaling innovations.

- These challenges deter businesses from making substantial investments in R&D.

- **Slow Transition from Lab to Market:** A major concern raised by the Economic Survey is the slow transition of technologies from laboratories to societal use.
  - The **'Lab to Land' time**—the period required to bring innovations from research labs to practical application—is prolonged, impeding the commercialization of research outputs and reducing their impact on society.

Government Initiatives Taken:

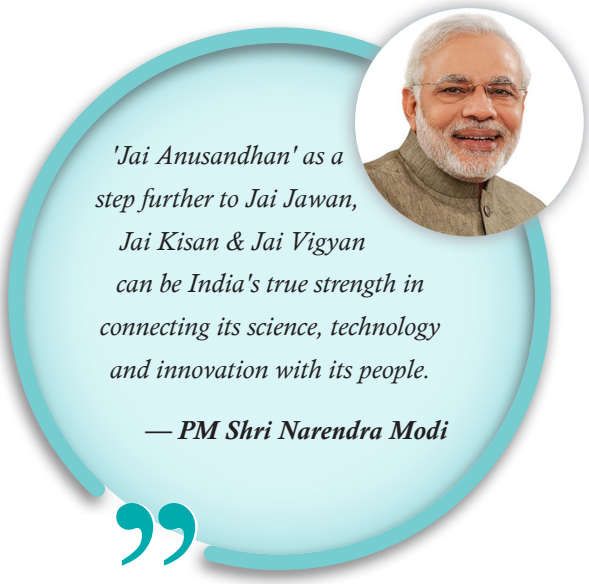
- The **₹50,000-crore National Research Foundation (NRF)** fund was established in 2021 to promote interdisciplinary research.
- **Anusandhan National Research Foundation (ANRF):** It has been established with Anusandhan National Research Foundation (ANRF) Act 2023.
- **Private Sector-Driven Research and Innovation:** The Indian government is providing substantial funding and creating a conducive environment to encourage private sector participation in R&D.
- **Space Program Expansion:** India's space program has achieved significant milestones such as the Mars Orbiter Mission (Mangalyaan) and Chandrayaan missions. The government is now focusing on expanding the commercial potential of the space sector.
- **Nuclear Energy Development:** To meet growing energy demands and reduce carbon emissions, India is investing in small and modular nuclear reactors.

Way Forward:

- **Increase R&D Expenditure:** India must aim to raise its R&D spending to at least 2% of GDP, aligning with global standards. This would require both increased public investment and a more active role from the private sector.
- **Encourage Private Sector Participation:** The government should create a more favorable environment for private companies to invest in R&D by offering incentives such as tax benefits, strengthening intellectual property rights, and simplifying regulatory frameworks.
- **Strengthen Industry-Academia Collaboration:** Encouraging partnerships between academic institutions and industries can bridge the gap between theoretical research and practical application, leading to faster commercialization of innovations and more market-relevant research.
- **Focus on 'Lab to Market' Transition:** Policies must prioritize reducing the 'Lab to Land' time, ensuring faster transitions of technologies from research labs to commercial and societal use through better technology transfer frameworks and commercialization strategies.
- **Diversify Funding Sources:** Apart from government funding, India needs to explore diverse funding mechanisms, such as venture capital, angel investors, and international collaborations, to boost R&D activities across sectors.
- **Build Human Capital and Innovation Infrastructure:** Developing skilled researchers and improving infrastructure for innovation, such as state-of-the-art research labs and incubation centers, is critical for enhancing India's R&D capabilities and fostering long-term sustainable growth.

Conclusion:

- Research and Development (R&D) serves as a crucial pillar for national growth and innovation, driving advancements in technology, industry, and science. India has made notable progress in R&D output, it needs to address funding gaps, increase private sector participation, and leverage recent policies to enhance its research and innovation ecosystem.

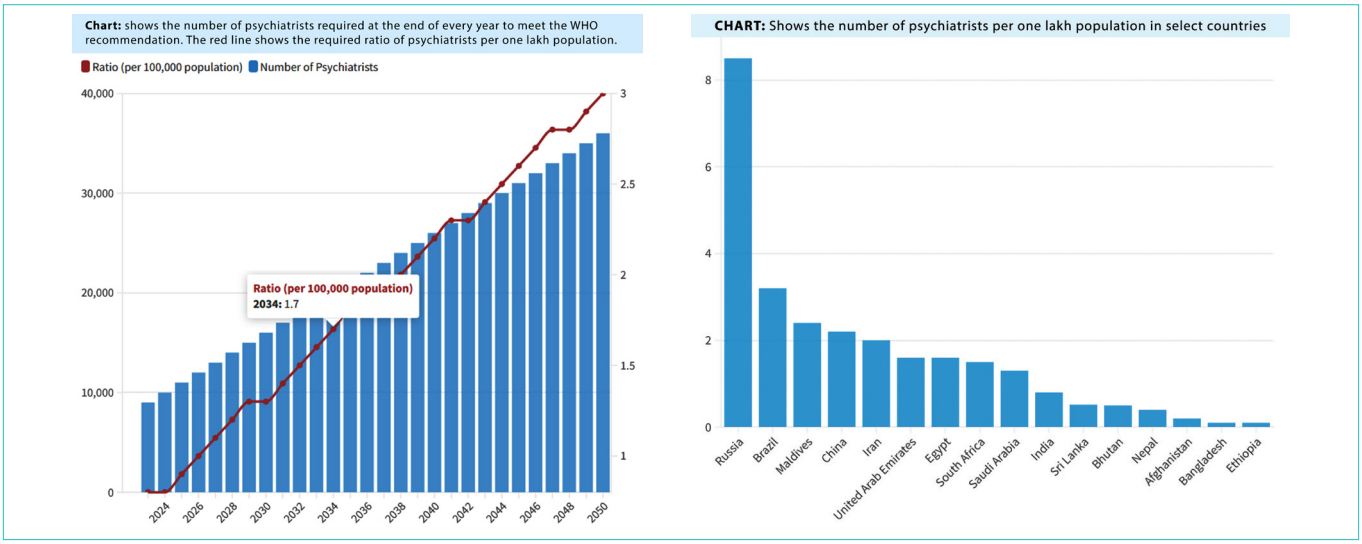


RISING DEMAND FOR MENTAL HEALTHCARE IN INDIA

The demand for mental healthcare in India has been growing recently due to changing attitudes over time. Despite this, data indicates that the number of mental health professionals has not increased at the same pace.

About:

- Mental health, like physical health, is a vital aspect of overall well-being that encompasses an individual's psychological, emotional, and social state.
- According to the **World Health Organization (WHO)**, mental health is defined as a state of well-being in which a person:
  - Recognizes their abilities,
  - Copes with the normal stresses of life,
  - Works productively, and
  - Make a contribution to their community.
- This extends beyond the absence of mental disorders to include a positive state of mental and emotional well-being.
- Mental health issues arise when there is a significant disturbance in an individual's cognition, emotional regulation, or behavior, often leading to distress or impairment. These disturbances are classified as mental health disorders.
- **WHO Recommendation:** The World Health Organization recommends three practicing psychiatrists per 100,000 people for adequate mental healthcare.
- **Current Status in India:** According to the National Mental Health Survey (2015-2016), India has only 0.75 psychiatrists per 100,000 people.
- **Psychiatrist Shortage:** As of the 2023 report, "Mental Healthcare and Its Management in Contemporary Times," India has 9,000 working psychiatrists, while it needs 36,000 to meet WHO standards.
  - **India's Psychiatrist Rate Comparison:** India's psychiatrist rate of 0.75 per 100,000 population is low compared to other BRICS nations. India, along with Ethiopia (0.1 psychiatrists per 100,000), has the lowest psychiatrist-to-population ratio in this group.
- **Annual Growth:** Around 1,000 psychiatrists enter the workforce in India each year.
- **Time to Meet Goal:** Without considering attrition or unemployment, it would take about 27 years for India to reach the WHO-recommended psychiatrist ratio.
- **Need for Policy Intervention:** To achieve this target sooner, India requires policy reforms and incentives to increase the supply of mental health professionals.
- **Better in South Asia:** Despite its low ratio, India fares better in comparison to other countries in South Asia.
- **Outdated Data:** The 2023 Parliamentary Committee's findings were based on the National Mental Health Survey (NMHS), conducted nearly a decade ago (2015-2016).
- **Limited Scope of NMHS:** The NMHS covered only 12 states and around 40,000 people, which the Standing Committee considered a "small sample."
  - **Kerala Leads:** Kerala was the only state among the 12 surveyed in the NMHS to have more than one psychiatrist per 100,000 people.
  - **Lowest Ranking States:** Northern and central states like Uttar Pradesh, Chhattisgarh, Rajasthan, and Madhya Pradesh had the lowest psychiatrist-to-population ratios.
  - **Stagnant Accessibility:** While the data shows that accessibility to mental healthcare has remained stagnant, awareness seems to be growing.
  - **Improvement in Attitudes:** A study by the LiveLoveLaugh Foundation, titled *How India Perceives Mental Health 2021*,



highlighted a notable improvement in attitudes toward mental health and treatment-seeking behavior compared to 2018.

- **Exclusion of Milder Mental Illnesses:** The NMHS data was limited to specific severe mental illnesses, excluding milder conditions such as emotional breakdowns, which also require intervention.
- **Overlooked Vulnerable Populations:** The NMHS did not account for highly vulnerable groups like prisoners, the homeless, or the institutionalized.

Causes of Mental Illness:

- **Genetic and Biological Factors:**
  - **Genetic Predisposition:**
    - Research indicates that mental illnesses, such as schizophrenia, bipolar disorder, and depression, can run in families, impacting 10 percent of the population.
    - Genetic factors can increase the susceptibility to these conditions, though they do not guarantee their development. For instance, individuals with a family history of mental illness may have a higher risk of experiencing similar issues.
  - **Neurobiological Factors:**
    - Imbalances in neurotransmitters (brain chemicals) like serotonin, dopamine, and norepinephrine are linked to mental health disorders.
    - For example, depression is often associated with low levels of serotonin, while schizophrenia involves disruptions in dopamine pathways.
    - Additionally, structural abnormalities in the brain, such as changes in the size of certain brain regions, can contribute to mental illnesses. .
- **Trauma and Abuse:**
  - **Childhood Trauma:**
    - Experiences of abuse, neglect, or other forms of trauma during childhood are linked to various mental health disorders later in life.
    - In India, childhood trauma can result from domestic violence, child labor, or sexual abuse, all of which can have long-lasting psychological effects.
  - **Domestic Violence:** Women and children who experience domestic violence are at higher risk of developing mental health issues such as depression, anxiety, and Post-Traumatic Stress Disorder (PTSD).
- **Medical and Environmental Factors:**
  - **Chronic Illness:** Living with chronic physical health conditions, such as diabetes or cardiovascular diseases, can affect mental well-being. The stress of managing a chronic illness can contribute to mental health problems, including depression and anxiety.
  - **Environmental Stressors:** Environmental factors such as natural disasters (e.g., floods, earthquakes), pollution, and poor living conditions contribute to mental health issues.
    - In India, these stressors can significantly impact mental well-being, particularly in vulnerable populations.

Initiatives taken by the Government:

- **National Mental Health Programme (NMHP):**
  - Launched in 1982, the NMHP aimed to provide affordable and accessible mental healthcare by integrating it with general care at primary health centres.
  - Primary and community health workers received specialised training for mental disorder treatment.
  - The NMHP is operational in 743 districts across 36 States and Union Territories.
  - Services offered include outpatient services, assessments, counselling, psycho-social interventions, continuing care, medication, and ambulance services at community and primary health centres.
- **District Mental Health Programme (DMHP):**
  - The NMHP was restructured into the DMHP to decentralise care, designating districts as the main administering units.
  - It focused on offering mental health services, including case management, counselling, and manpower training, integrated with the National Rural Health Mission.
- **Mental Healthcare Act, 2017:** The act **decriminalised suicide attempts** in India and also included WHO guidelines in the categorisation of mental illnesses.
  - The most significant provision in the act was **"advanced directives",** which allowed individuals with mental illnesses to decide the course of their treatment.
  - It also **restricted the use of electro-convulsive therapy (ECT),** and banned its use on minors, finally introducing measures to tackle stigma in Indian society.
- **Rashtriya Kishor Swasthya Karyakram (RKSK)**: Launched in 2014 under the National Health Mission, RKSK focuses on adolescent health, including mental health.
- **Manodarpan Initiative:** An initiative under Atmanirbhar Bharat Abhiyan, aims to **provide psycho-social support to students** for their mental health and well-being.
- **Kiran Helpline:** The helpline is a **step towards suicide prevention,** and can help with support and crisis management.
- **National Tele-Mental Health Programme:** Launched in 2022, this initiative aims to provide mental health services through telemedicine, expanding access to care, especially in underserved and remote areas.
- **Ayushman Bharat Scheme:**
  - Mental health services are also provided under the Comprehensive Primary Health Care at Ayushman Bharat – Health and Wellness Centres.
  - Guidelines for addressing mental, neurological, and substance use disorders at these centers have been issued.

INVISIBLE BARRIERS: THE OVERLOOKED GENDER DISPARITIES

Recently, the Vice-President of India, in his address at an event, stressed the importance of addressing the widespread yet subtle gender discrimination present in society.

Different form of Subtle Gender Discrimination:

- **Male-Dominated vs. Female-Dominated Sectors:**
  - Certain sectors in India continue to be perceived as male-dominated, such as engineering, defense, and construction, where men are typically seen as more competent or naturally suited for the work.
  - On the other hand, teaching, nursing, and caregiving are traditionally viewed as roles for women, reinforcing the notion that women are better suited for nurturing or supportive roles rather than technical or leadership positions.
  - This ingrained belief restricts both men and women from entering non-traditional fields, and hinders diversity in many professional sectors.
- **Decision-Making Positions:**
  - Gender discrimination often becomes more subtle in professional environments, particularly when it comes to decision-making roles.
  - Women are frequently excluded from key decision-making processes, and their opinions may not carry the same weight as those of their male counterparts.
  - The **"glass ceiling"** phenomenon—where women face invisible barriers to career advancement—remains a significant issue, limiting their ability to rise to top management or executive positions in many organizations.

GLASS CLIFF

- The **"glass cliff"** is a concept that refers to the phenomenon where women are promoted to leadership positions during periods of crisis or instability, when the likelihood of failure is significantly higher.
- **Contrast with the "Glass Ceiling":**
  - While the "glass ceiling" refers to the invisible barriers that prevent women from reaching top leadership roles, the "glass cliff" highlights the risks women face when they do attain such positions.
  - The glass cliff shows that even when women break through the glass ceiling, they may still be placed in positions where their success is highly uncertain, thus limiting the real impact of their advancement.

- **Microaggressions in the Workplace:**
  - Gender discrimination in the workplace can also manifest in the form of **microaggressions**, which are everyday slights, insults, or dismissive comments that may seem minor but cumulatively reinforce gender biases.
  - These subtle forms of discrimination can create a toxic work environment that makes women feel undervalued and less likely to pursue leadership roles.
- **Domestic Responsibilities:**
  - Despite the growing number of women entering the workforce in India, they are still expected to take on the majority of household responsibilities.
  - This **double burden** of professional and domestic work is rarely acknowledged in formal discussions on gender equality.
  - Women often have to balance long working hours with cooking, cleaning, childcare, and other household duties.
  - *For example*, women devote approximately 76.2% of their total hours—three times more than men—on unpaid care work, according to the International Labour Organization (ILO).

KEY INSIGHTS FROM NFHS-5

- **Educational Disparities:**
  - The **National Family Health Survey-5 (NFHS-5)** data (2019-21) reveals that **women are less literate than men by 13%** among those aged 15-49.
  - Though there has been a slight improvement in female education—**females above age six attending school** increased from **68.8% to 71.8%**—the gap remains significant.
  - Only **41% of women aged 15-49** have completed ten or more years of schooling compared to **50.2% of men**.
  - These figures emphasize that **achieving gender parity in education** remains a critical policy priority.
- **Economic Empowerment:**
  - **Ownership of assets:** The data shows improvement, with **43.3% of women owning a house or land** (alone or jointly) in 2019-21, up from 38.4% in 2015-16.
  - **Financial inclusion:** There has been a significant rise in women's financial inclusion, with **77.4% of women** now holding **bank or savings accounts** they can independently access—a **25% improvement** from the previous survey.
  - **Labour force participation:** The Periodic Labour Force Survey Report 2022-23, indicates that the Female Labour Force Participation Rate in the country has risen significantly by 4.2 percentage points, reaching 37.0% in 2023.
    - Women's participation in the workforce is often influenced by the burden of **unpaid domestic work and childcare.**

- **Social Factors Impacting Economic Participation:**
  - The NFHS-5 indicates that **23.3% of women aged 20-24** are married before the legal age, a slight reduction from 2015-16, while **43% of adolescent women aged 15-19** experience fertility, which continues to restrict women's economic participation.
  - Additionally, only **13.6% of children under five** attended pre-primary school in 2019-20, increasing the burden of childcare on women.

Initiatives taken by the Government:

- **Reservation for Women in Local Governance:**
  - The **73rd and 74th Constitutional Amendments** reserve one-third of the seats in **Panchayats and Municipalities** for women, significantly empowering women at the grassroots level.
  - These amendments have played a key role in increasing women's representation in local governance and decision-making processes across rural and urban areas of India.
  - Women are encouraged to actively participate in governance, voicing their concerns and needs.
  - It has led to better gender sensitivity in local administration and decision-making processes, ensuring that issues related to women's health, education, and welfare are given due attention.
- **Maternity Benefit (Amendment) Act, 2017:**
  - The **Maternity Benefit (Amendment) Act, 2017** was introduced to reduce workplace discrimination against women and ensure their well-being during motherhood.
  - **The amendment:**
    - **Increased paid maternity leave** from 12 to **26 weeks** for women working in establishments with 10 or more employees.
    - Aims to provide sufficient time for mothers to care for their newborns, while also supporting their return to work.
    - Introduced provisions for crèche facilities in establishments with 50 or more employees, ensuring childcare support.
    - Requires employers to allow flexible work arrangements post-maternity, further enhancing the support for working mothers.
- **Skill Development and Economic Participation:**
  - The **Skill India Mission** and initiatives such as **Pradhan Mantri Kaushal Vikas Kendras** aim to provide vocational training and skill development to women, increasing their employability.
  - The **National Skill Development Policy** emphasizes inclusive skill development, promoting increased female participation.
  - The **Pradhan Mantri Mudra Yojana** and **Stand Up India** schemes offer financial support to women entrepreneurs, encouraging them to start their own businesses.
- **Infrastructure and Health Programs:**
  - **Water and Sanitation:** The **Swacch Vidyalaya Mission** ensures all schools have functional toilets for girls, addressing hygiene and safety concerns, which are crucial for keeping girls in school.
  - **Health and Clean Cooking Fuel:** The **Pradhan Mantri Ujjwala Yojna (PMUY)** provides clean cooking fuel to safeguard women's health and free them from the time-consuming burden of collecting firewood, improving their overall well-being.
- **Legal and Labor Protections:** India has enacted various labor codes to promote a safe and equitable work environment for women.
  - **Key provisions include:**
    - The Code on Wages (2019), Industrial Relations Code (2020), Occupational Safety, Health and Working Conditions Code (2020), and Code on Social Security (2020), which encourage women's participation in the workforce and ensure safe working conditions.
    - **MGNREGA** mandates that at least **one-third of the jobs** generated be given to women, providing them with employment opportunities, especially in rural areas.
- **Mission Shakti:**
  - The **Mission Shakti** program is an integrated initiative aimed at addressing women's issues throughout their lifecycle and making them equal partners in nation-building.
  - The mission uses a participatory approach to promote convergence across different levels of governance, ensuring women's empowerment through better coordination of policies and services.

Way Ahead:

- **Incorporating Gender Sensitivity in Curricula:** Schools and universities should integrate gender equality lessons in curricula to instill values of equality, respect, and fairness from an early age.
- **Support for Women Entrepreneurs:** Provide financial literacy, access to credit, and mentorship programs specifically targeting women entrepreneurs.
- **Flexible Work Arrangements:** Encourage organizations to offer flexible work hours, maternity leave, and childcare support to enable women to balance professional and personal responsibilities.
- **Closing the Gender Pay Gap:** Implement targeted initiatives to reduce gender pay disparities, ensuring women are fairly compensated for their work.
- **Accessible Legal Services:** Establish support networks and accessible legal services for women facing discrimination, harassment, or violence, ensuring they can seek justice without fear of retaliation. Provide legal aid, counseling, and safe spaces for vulnerable women.

CONCERNS RELATED TO WORK-LIFE BALANCE

Recently, the National Human Rights Commission (NHRC) has taken suo moto cognizance of the reported death of a chartered accountant from Kerala in Pune, allegedly due to excessive workload in a private company.

Key Recommendations by the Commission:

- **Review of Work Culture and Employment Policies:**
  - The **Commission urged businesses** to undertake a comprehensive review of their **work culture**, **employment policies**, and internal **regulations**.
  - This review should aim to ensure that business practices are in **alignment with global human rights standards**.
  - By promoting ethical practices, companies can create more inclusive and fair working environments.
- **Sensitivity and Accountability for Human Rights:**
  - Businesses are encouraged to be **sensitive to** and **accountable for** human rights issues.
  - This involves recognizing the potential impact of corporate actions on individuals and communities and actively working to prevent human rights violations in the workplace and supply chains.
- **Notice to the Ministry of Labour and Employment:**
  - The Commission issued a **notice to the Ministry of Labour and Employment**, requesting a detailed report on the steps taken to address the situation.
  - This notice calls for a proactive approach from the Ministry to ensure that incidents of human rights violations in business practices are addressed effectively.
- **Submission of Report:**
  - The Ministry of Labour and Employment has been asked to submit a report within **four weeks**.
  - The report should outline both the **current steps being taken** and the **proposed measures** to ensure that such incidents of human rights violations do not recur in the future.

About Work-Life Balance:

- **Work-life balance** refers to the ability to effectively manage professional responsibilities while maintaining a fulfilling personal life.
- It encompasses the allocation of time and energy to both **work obligations** and **personal well-being.**
- **Components:** Achieving work-life balance involves a careful balance of several aspects:
  - **Work Obligations:** Meeting professional duties and goals.
  - **Family Time:** Ensuring quality time is spent with family members.
  - **Personal Interests:** Pursuing hobbies, interests, and activities that bring joy or fulfillment.
  - **Self-care:** Focusing on mental and physical health through activities like relaxation, exercise, or personal reflection.

Implications of Work-Life Imbalance:

- **Stress and Burnout:** Chronic stress from work overload can lead to burnout, which negatively impacts mental health, resulting in anxiety, depression, and other psychological issues.
- **Physical Health Problems:** Excessive work hours and lack of rest can cause physical health issues, including high blood pressure, heart disease, sleep disorders, and weakened immunity.
- **Decline in Work Performance:** Constant overwork and fatigue can lead to decreased efficiency, impaired decision-making, and lower productivity at work.
- **Increased Absenteeism:** A poor work-life balance can lead to more sick days and absenteeism, further reducing workplace productivity.
- **Family Life Impact:** Lack of time for family can cause tension and misunderstandings within relationships, potentially leading to conflicts, marital issues, or strained relationships with children.
- **Social Isolation:** Overworking often leads to a lack of time for socializing, which can contribute to feelings of loneliness and isolation.
- **Employee Dissatisfaction:** A poor work-life balance can reduce job satisfaction, resulting in disengaged employees who are less committed to their roles and organizations.
- **High Turnover Rates:** Persistent work-life imbalance can lead to higher employee turnover, as workers seek environments that offer better flexibility and balance.
- **Increased Healthcare Costs:** The physical and mental health issues caused by work-life imbalance can increase healthcare costs for both individuals and organizations.
- **Decreased Social Well-Being:** The broader societal impact includes reduced community engagement and the erosion of social bonds, as individuals struggle to find time for personal and social activities.

COUNTRIES WITH THE LONGEST AVERAGE WORKING HOURS

- **Bhutan:**
  - Bhutan, despite its small population of around **700,000**, ranks as the country with the **highest average working hours** globally.
  - Workers in Bhutan log an average of **54.4 hours per week.**
- **United Arab Emirates and Lesotho:**
  - Following Bhutan, the **United Arab Emirates** records an average of **50.9 hours per week**.
  - **Lesotho** comes next with an average of **50.4 hours per week**.

- **India's Ranking:**
  - **India** is ranked **13th** among the world's most overworked countries.
  - The average Indian worker logs **46.7 hours per week**.
  - About **51% of India's workforce** works **49 or more hours per week**, making India **second** among countries with the **highest rates of prolonged working hours**.
  - **Work-related Stress in India**:
    - A survey highlights that over **62% of Indian employees** experience **burnout** due to **work-related stress** and **poor work-life balance**.
    - This burnout rate in India is **three times** the global average of **20%**.

Reasons for Work-Life Imbalance in India:

- **Excessive Workload:** Many sectors in India, particularly IT, finance, and manufacturing, demand long working hours due to high expectations of output and productivity. This leaves little time for personal life.
- **Cultural Norms:** There is a cultural tendency to equate longer hours with commitment and success, which can pressure employees to work beyond regular hours, leading to imbalance.
- **High Competition:** The fast-paced nature of India's growing economy has led to increased competition in the job market. Many employees work overtime to secure promotions or maintain job security.
- **Startup Culture:** The rise of startups and entrepreneurial ventures often requires employees to put in extra hours as businesses strive to establish themselves.
- **Rigid Work Schedules:** Many Indian companies still adhere to traditional 9-to-5 (or longer) workdays with little flexibility in terms of working from home or flexible hours, which limits personal time.
- **Resistance to Remote Work:** Despite some progress during the COVID-19 pandemic, many organizations are reluctant to adopt remote work on a long-term basis, which could help employees balance their personal and professional responsibilities.

Laws in other countries that India Can Adopt:

- **Right to Disconnect:**
  - In **2017**, **France** made headlines by becoming the **first country** to introduce a law that provides employees with the **right to disconnect** from work after hours.
  - This law was a response to growing concerns about the impact of constant connectivity on employees' personal lives and mental well-being.
  - It allows workers to **ignore emails, calls, and other work-related communications** outside of official work hours without fear of repercussion.
  - The idea behind the law is to help employees **maintain a work-life balance**, reducing burnout, stress, and mental health issues caused by the increasing expectations to be available around the clock.
  - **Other countries** have followed suit, including **Spain, Belgium, Italy, Ireland, and Australia**, enacting similar policies that limit after-hours work communications.
  - In **Portugal**, the government has taken an even stricter approach by making it illegal for employers to contact employees outside working hours.
- **4-Day Work Week:**
  - The concept of the **4-day work week** is gaining traction globally as more companies and governments experiment with reducing the number of workdays while maintaining the same level of productivity.
  - The idea is that by working fewer days, employees can be more focused and efficient during the days they do work, thus increasing productivity.
  - Countries like **Belgium, the Netherlands, and Japan** are at the forefront of this movement. They have introduced pilot programs and policies that allow employees to work just four days a week without any reduction in pay.
  - This work model is designed to foster **happiness, creativity, and work-life balance**. Companies have reported that employees tend to be more motivated and experience lower stress levels, which in turn improves overall performance.
- **Mandatory Vacations:**
  - In **Austria**, there is a strong emphasis on ensuring employees take **sufficient time off** to recharge.
  - The law mandates that employees who have worked for **six months or more** are entitled to at least **five weeks of paid annual leave**.
  - This system ensures that workers get the time they need to relax and spend time with family or pursue personal interests, which ultimately enhances **workplace morale** and **reduces burnout**.
- **Career Break or Time Credit:**
  - In **Belgium**, the concept of **time credit** allows employees to take an **extended career break** without the fear of losing their job.
  - Workers can take **up to one year off**, and in some cases, depending on the circumstances, this time credit can be extended to as long as **six years**.
  - This system gives workers the **flexibility** to take time away from their jobs for various reasons, such as pursuing further education, caring for a family member, or simply taking a sabbatical to focus on personal growth and rejuvenation.
  - By allowing such breaks, Belgium acknowledges the need for **life beyond work** and gives workers the opportunity to return to their positions **refreshed and re-energized**.

MICRONUTRIENTS MALNUTRITION

Recent, Lancet Report reveals that Indian populations have inadequate intake of 15 dietary micronutrients, with women more deficient in iodine and men more lacking in zinc and magnesium compared to each other.

Other Major Highlights of Lancet Report:

- **Global Deficiency Statistics:**
  - **Iodine Deficiency:** 68% of the global population, or over 5 billion people, do not consume enough iodine.
  - **Vitamin E Deficiency:** 67% of people worldwide have inadequate vitamin E intake.
  - **Calcium Deficiency:** 66% of the global population lacks sufficient calcium in their diets.
- **Deficiency in Essential Nutrients:**
  - **Iron Deficiency:** More than 4 billion people (65% of the global population) do not consume enough iron.
  - **Riboflavin and Folate Deficiency:** 55% of people lack riboflavin, and 54% are deficient in folate.
  - **Vitamin C Deficiency:** 53% of the global population has insufficient intake of vitamin C.
- **Gender-Specific Deficiencies:**
  - **Higher in Women:** Women have higher rates of deficiency than men for iodine, vitamin B12, iron, and selenium.
  - **Higher in Men:** Men show higher deficiency rates for magnesium, vitamin B6, zinc, vitamin C, vitamin A, thiamin, and niacin.
- **Regional and Age-Specific Deficiencies:**
  - **Calcium Deficiency by Region:** The highest rates of calcium intake inadequacy are reported in South Asia, sub-Saharan Africa, East Asia, and the Pacific.
  - **Age Group Impact:** Inadequate intake is prevalent across all age-sex groups in these regions, with the highest deficiency rates among individuals aged 10–30 years.

MICRONUTRIENTS

- Micronutrients are vitamins and minerals needed by the body in very small amounts.
- **Vitamins** are organic compounds that are often categorized into two groups:
  - **Water-Soluble Vitamins:** These include Vitamin C and the B vitamins (like B12,B6, folate). They dissolve in water and are typically not stored in the body, so regular intake through diet is necessary.
  - **Fat-Soluble Vitamins:** These include Vitamins A, D, E, and K. They are absorbed along with dietary fat and can be stored in the body's fatty tissues and liver.
- **Minerals are inorganic elements** that are also classified into:
  - **Major Minerals:** Such as calcium, potassium, and magnesium, which are needed in larger amounts.
  - **Trace Minerals:** Such as iron, zinc, copper, and selenium, which are needed in smaller amounts but are still vital for health.

FACTS RELATED TO MALNUTRITION IN INDIA

- According to the **National Family Health Survey (NFHS-5)**, 35.5% of children under five are stunted, 19.3% are wasted, 32.1% are underweight, and 3% are overweight. Among women aged 15-49, malnutrition affects 18.7%.
  - Anemia is prevalent in 25% of men, 57% of women, 31.1% of adolescent boys, 59.1% of adolescent girls, 52.2% of pregnant women, and 67.1% of children aged 6-59 months.
- The **State of Food Security and Nutrition in the World (2023) reports** that 74% of India's population cannot afford a healthy diet, with 39% lacking adequate nutrients.
- India's **2023 Global Hunger Index score is 28.7,** considered serious, with the country having the highest child wasting rate at 18.7%.

Significance of Micronutrients:

- **Support for Growth and Development:** Micronutrients enable the body to produce enzymes, hormones, and other substances essential for normal growth and development. They are crucial in maintaining proper bodily functions.
- **Role in Metabolic Processes and Bone Health:** Micronutrients support vital metabolic processes and bone development. Additionally, they influence cognitive function and contribute to overall brain health.
- **Prevention of Anemia:** Iron, vitamin B12, and folate are vital for the production of red blood cells, playing a critical role in preventing anemia and maintaining a healthy circulatory system.
- **Tissue Repair and Wound Healing:** Vitamins C, A, and zinc are essential for tissue repair and wound healing, ensuring that the body can recover effectively from injuries.
- **Prevention of Chronic Diseases:** Adequate intake of micronutrients helps reduce the risk of chronic diseases. Deficiencies, on the other hand, can lead to lower energy levels, reduced mental clarity, and overall diminished capacity.
- **Mitigating Deficiencies through Nutrition:** Micronutrient deficiencies can lead to significant health issues, but many of these are preventable through proper nutrition, education, food fortification, and supplementation where necessary.

Reasons behind Micronutrient Malnutrition in India:

- **Poverty and Economic Disparities:** Nearly 22% of India's population lives below the poverty line (World Bank data), limiting access to nutritious food.
  - This economic disparity results in widespread deficiencies, such as anemia, which affects 53% of women aged 15-49 years (NFHS-5).

- Poverty drives reliance on calorie-dense, nutrient-poor diets, exacerbating micronutrient malnutrition.
- **Low Dietary Diversity:** Indian diets, particularly in low-income households, are dominated by cereals, lacking fruits, vegetables, and protein-rich foods.
- **Lack of Nutrition Education:** A widespread lack of awareness about the importance of micronutrients compounds the issue. Despite government programs like ICDS, many in rural areas lack knowledge about balanced diets, leading to deficiencies.
  - Around 30% of school-aged children suffer from iodine deficiency (WHO), partly due to low awareness.
- **High Disease Burden:** Diseases like diarrhea and parasitic infections impair nutrient absorption, worsening malnutrition.
  - Vitamin A deficiency causes night blindness, severe blindness, and increases child mortality. It weakens infection resistance, impairs growth, and contributes to maternal mortality, making it a leading preventable cause of childhood blindness globally.
- **Gender Inequality in Nutrition:** Cultural norms often prioritize men and boys for food allocation, leaving women and girls more vulnerable to malnutrition. Women face higher rates of micronutrient deficiencies, particularly in iron and iodine. NFHS-5 data shows that 57% of women are anemic, compared to just 25% of men.
- **Limited Reach of Food Fortification Programs:** Despite efforts to fortify foods like salt and wheat flour, many regions, especially rural areas, remain underserved. Only 37% of children aged 6-59 months received vitamin A supplements (NFHS-5). The uneven implementation of fortification programs limits their impact in addressing deficiencies across the population.

Way Forward:

- **Strengthening Nutrition-Specific Programs:** Expand and enhance initiatives like the Integrated Child Development Services (ICDS), Mid-Day Meal Scheme, and Poshan Abhiyan to ensure delivery of micronutrient-rich food to vulnerable populations, particularly children and women.
- **Food Fortification and Supplementation:** Encourage large-scale fortification of staple foods such as rice, wheat, and salt with essential micronutrients like iron, iodine, and vitamin A. Additionally, implement supplementation programs for high-risk groups like pregnant women and children.
- **Promoting Dietary Diversity:** Raise awareness about the importance of consuming diverse foods, including fruits, vegetables, pulses, dairy, and fortified foods, through community-based programs and campaigns. Encourage sustainable agricultural practices that focus on nutrient-dense crops.
- **Public Health and Nutrition Education:** Invest in community-level nutrition education to increase awareness about the importance of balanced diets and proper food choices. Strengthen outreach through schools, local governments, and healthcare systems to spread knowledge about dietary needs.
- **Addressing Underlying Socioeconomic Factors:** Focus on reducing poverty, improving access to healthcare, clean water, and sanitation, and ensuring better maternal and child health. Implement targeted interventions in rural and low-income communities where malnutrition rates are higher.
- **Monitoring and Research:** Regularly assess the nutritional status of the population through surveys like NFHS and establish real-time monitoring mechanisms to track progress. Invest in research to develop new strategies and innovations for combating malnutrition.
- **Multi-Sectoral Collaboration:** Encourage collaboration between government, private sector, and international organizations to pool resources and expertise for large-scale interventions. Public-private partnerships can help implement and expand fortification and supplementation programs effectively.

PROJECT SAMPOORNA: A CASE STUDY

- In Assam's Bongaigaon district, **Project Sampoorna** was launched to tackle malnutrition among 2,416 children (246 with Severe Acute Malnutrition and 2,170 with Moderate Acute Malnutrition).
- The initiative paired mothers of healthy children with those of malnourished children as **"Buddy Mothers,"** encouraging peer support and shared dietary guidance.
- The project led to significant improvements, reducing maternal deaths from 16 to 3 and infant deaths from 130 to 63. By March 2021, 84.96% of SAM and 97.3% of MAM children had returned to normal health.

GOVERNMENT OF INDIA INITIATIVES

- **National Nutrition Mission (POSHAN Abhiyan):** Launched in 2018, it aims to reduce stunting, undernutrition, anemia, and low birth weight by improving the nutritional status of children, adolescent girls, pregnant women, and lactating mothers.
- **Integrated Child Development Services (ICDS):** It provides comprehensive services for children under six years of age, pregnant women, and lactating mothers. It aims to improve the nutritional status and health of these groups.
- **Food Fortification Programs:** Fortification programs focus on adding iodine to salt (iodized salt), iron and folic acid to wheat flour, and Vitamin A to edible oils. The Food Safety and Standards Authority of India (FSSAI) oversees the implementation of these fortification standards.
- **Mid-Day Meal Scheme (MDMS):** The scheme provides free lunches that are fortified with essential nutrients to schoolchildren, aiming to enhance their nutritional intake and promote regular school attendance.
- **Anemia Mukt Bharat (AMB):** The program includes regular iron and folic acid supplementation, deworming, and efforts to enhance dietary intake of iron-rich foods. It also emphasizes the need for community-based interventions and awareness campaigns.

1 POLITY & GOVERNANCE

23RD LAW COMMISSION

President Droupadi Murmu has sanctioned the constitution of the 23rd Law Commission of India, which will serve from September 1, 2024, to August 31, 2027.

About:

- **Overview:** The Law Commission of India is a non-statutory body formed by the Government of India. It is established through a notification by the Ministry of Law & Justice, Department of Legal Affairs.
- **Purpose and Functions:**
  - The Commission is constituted with specific **terms of reference** to conduct research in the field of law.
  - It is responsible for making recommendations to the government on various legal issues in the form of **Reports**. However, these recommendations are **not binding** on the government.
- **Composition of the 23rd Law Commission:**
  - A full-time Chairperson.
  - **Four full-time Members** (including the Member-Secretary).
  - The **Secretary of the Department of Legal Affairs** as an ex-officio member.
  - The **Secretary of the Legislative Department** as an ex-officio member.
  - Up to five part-time Members.

BACKGROUND

- **Pre-independence:** The first Law Commission was established during colonial rule in India by the East India Company under the **Charter Act of 1833** and was presided over by **Lord Macaulay.**
  - The First Law Commission drafted the **Penal Code in 1837**, the **Limitation Law in 1842** and the **Scheme of Pleading and Procedure in 1848.**
  - After that, **three more commissions** were established in pre-independent India.
- **Post-independence:** The first law commission in independent India was established in **1955**, with its chairman **M.C. Setalvad.**

10 YEARS OF PMJDY

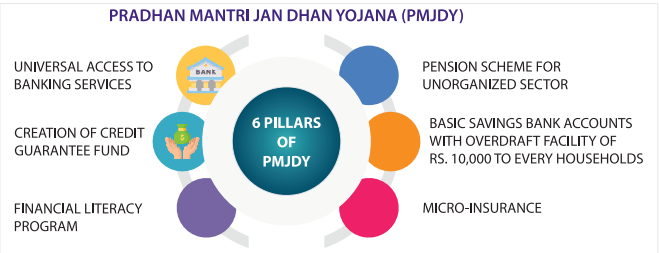
The Pradhan Mantri Jan Dhan Yojana (PMJDY) was launched in 2014 under the Ministry of Finance and has completed a decade of successful implementation.

About:

- PMJDY being the **largest financial inclusion initiative** to provide support to the marginalized and economically backward sections through its financial inclusion interventions.
- PMJDY provides one basic bank account for every unbanked adult.

Key Features of the Scheme:

- Under the PMJDY, individuals can open a **Basic Savings Bank Deposit (BSBD)** account at any bank branch or through a **Business Correspondent ('Bank Mitra').**
- **Key benefits of the scheme include:**
  - No requirement to maintain a minimum balance in PMJDY accounts;
  - Interest earned on deposits in PMJDY accounts;
  - Provision of a RuPay Debit card to account holders;
  - Accident insurance cover of Rs 100,000 (increased to Rs 200,000 for new accounts opened after August 28, 2018) with the RuPay card;
  - Overdraft facility of up to Rs 10,000 for eligible account holders;
  - Eligibility for Direct Benefit Transfer (DBT), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY), and Micro Units Development and Refinance Agency Bank (MUDRA) scheme.



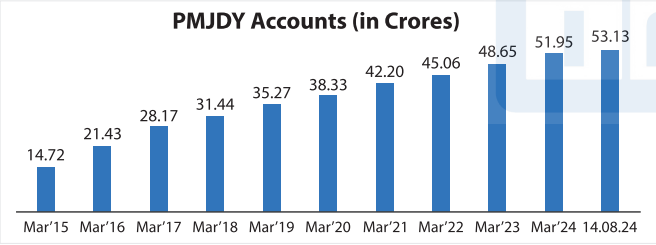
Significance:

- **Financial Inclusion for All:** PMJDY has revolutionized financial inclusion by ensuring that even the marginalized and economically disadvantaged populations can access formal banking services, empowering them to manage their finances securely.
- **Reduction in Informal Credit Dependency:** With the overdraft facility and access to credit schemes like MUDRA, beneficiaries can avoid predatory lending practices, thus reducing their dependence on informal credit sources like moneylenders.

- **Facilitation of Direct Benefit Transfers (DBT):** The scheme facilitates direct transfers of government subsidies, pensions, and other benefits, ensuring timely payments and reducing leakages in the distribution process.
- **Increased Access to Social Security:** By linking accounts with insurance schemes like Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) and Atal Pension Yojana (APY), PMJDY promotes financial security, offering life and accident insurance to economically weaker sections.
- **Promotion of Digital Payments**: The provision of RuPay Debit cards to account holders promotes the use of digital payments, contributing to a cashless economy and enhancing financial transparency.

IMPLEMENTATION OF THE SCHEME

- The success of the initiative is reflected in **53 crore** people having been brought into the formal banking system through the opening of Jan Dhan Accounts.
- These bank accounts have garnered a deposit balance of **Rs. 2.3 lakh crore,** and resulted in the issuance of **over 36 crore free-of-cost RuPay cards,** which also provide for a ₹2 lakh accident insurance cover.
- **67%** of the accounts have been opened in **rural or semi-urban areas,** and **55%** of accounts have been opened by women.



Conclusion:

- PMJDY being the world's largest financial inclusion scheme, with its transformative power and its digital innovations have revolutionized financial inclusion in India.

APARAJITA BILL

The West Bengal Legislative Assembly unanimously passed the Aparajita Women and Child (West Bengal Criminal Laws Amendment) Bill, 2024.

Major Highlights:

- **Proposed Amendments to BNS 2023, BNSS 2023, and POCSO 2012:**
  - The Aparajita Bill 2024 seeks to introduce amendments to three significant laws:
    - The Bharatiya Nyay Sanhita (BNS) 2023, the Bhartiya Nagrik Suraksha Sanhita (BNSS) 2023, and the Protection of Children from Sexual Offences (POCSO) Act 2012.
  - The proposed changes aim to apply to survivors and victims across all age groups, enhancing protection and delivering stricter punishments for sexual offences.
- **Death Penalty for Rape:** The bill introduces capital punishment for individuals convicted of rape if the crime results in the victim's death or leaves her in a vegetative state.
  - **Penalties Under BNS Laws:**
    - **Rape:** A minimum of **10 years imprisonment** with a fine.
    - **Gang Rape:** A minimum of **20 years imprisonment**, extendable to **life imprisonment.**
- **Rape Leading to Death or Vegetative State:** A minimum of **20 years rigorous imprisonment**, with the possibility of **life imprisonment or the death penalty.**
- **Time-Bound Investigations and Trials:**
  - The bill mandates that investigations into rape cases must be **completed within 21 days**, and trials concluded within **30 days**. Extensions are only allowed with **written justification** from a senior police officer.
  - Under **BNSS laws**, the time frame for investigation and trial completion is set at **two months from the date of filing the FIR**.
- **Establishment of Fast-Track Courts:** The bill calls for the creation of 52 special fast-track courts to expedite the adjudication of cases related to sexual violence, ensuring justice is delivered swiftly.
- **Aparajita Task Force:** The formation of a specialized Aparajita Task Force at the district level is mandated. This task force, led by a deputy superintendent of police, will focus on the investigation of rape and other atrocities committed against women and children.
- **Stricter Penalties for Repeat Offenders:** Repeat offenders face life imprisonment, with the possibility of the death penalty if deemed necessary under aggravated circumstances.
- **Protection of Victims' Identities:** The bill includes provisions to safeguard the identities of victims, ensuring privacy and dignity throughout the legal process.
- **Penalties for Delaying Justice:** The bill introduces penalties for police and health officials who fail to act promptly or tamper with evidence, holding authorities accountable for negligence in handling sexual offence cases.
- **Publication Restrictions:** Strict penalties are proposed for the unauthorised publication of court proceedings related to sexual offences, with offenders facing imprisonment of 3 to 5 years.

Challenges Related to the Aparajita Bill 2024:

- **Constitutional Validity:** The Aparajita Women and Child (West Bengal Criminal Laws Amendment) Bill, 2024 proposes to amend central laws, raising questions about its constitutional validity and jurisdictional limits.

- According to **Article 246** of the Indian Constitution, states have the power to legislate on matters in the **State List**.
- However, the **Concurrent List** introduces complexity, as criminal laws fall within its domain.
- If the bill seeks to override central legislation, it would require **Presidential assent** under **Article 254(2)**.

- **Unrealistic Time Frames:** The mandate to complete rape investigations within 21 days poses a significant challenge due to the complexity of such cases and the existing backlog in the legal system, making timely investigation and trial difficult.
- **Legal Challenges:** Several precedents highlight challenges faced by state-level amendments to central laws. For example:
  - In **State of West Bengal v. Union of India (1964)**, the Supreme Court struck down the **West Bengal Land Reforms Act, 1955** due to its conflict with the **central Land Acquisition Act, 1894**, asserting the **supremacy of Parliament** over state laws.
  - In **KK Verma v. Union of India (1960)**, the Supreme Court invalidated the **Madhya Pradesh Agricultural Produce Markets Act, 1958**, for inconsistency with central legislation.
  - These cases underscore the judiciary's firm stance on the **primacy of central laws** over state-level amendments.
- **Implementation Challenges:** Effective implementation of the bill may face obstacles, such as the need for upgraded law enforcement infrastructure and specialized training for police and judicial officers, particularly in handling sensitive sexual offence cases.
- **Legal Rights of the Accused:** The legal system guarantees the right to a fair trial for the accused, which could prolong the judicial process through appeals and mercy petitions, potentially delaying the final outcome.

Way Forward:

- **Strengthening Judicial Infrastructure:** To ensure the swift resolution of cases, it is essential to establish additional fast-track courts and upgrade the existing judicial infrastructure. Adequate funding, staffing, and technological advancements should be prioritized to handle the increased caseload efficiently.
- **Capacity Building for Law Enforcement:** Specialized training programs for police officers, investigators, and judicial officials must be implemented to handle sexual assault cases sensitively and efficiently. Focus should be placed on building forensic capabilities and ensuring compliance with time-bound investigations.
- **Balancing Constitutional Jurisdictions:** A collaborative approach between the state and central governments should be promoted to address concerns over jurisdiction and constitutional validity. Clear guidelines and consensus on amendments to central laws will ensure that such reforms meet constitutional requirements.
- **Victim Support and Rehabilitation:** Alongside legal reforms, a robust support system for victims, including psychological counseling, legal aid, and rehabilitation programs, should be developed. Ensuring the dignity and safety of victims throughout the legal process is crucial for their recovery and reintegration.

NATIONAL AWARDS FOR E-GOVERNANCE

Open Network for Digital Commerce (ONDC) has received the The national awards for e-governance by the Department of Administrative Reforms and Public Grievances (DARPG).

About:

- **Objective of the Award:** The award seeks to recognize and promote excellence in the implementation of e-Governance initiatives, encouraging innovation in successful e-Governance solutions.
- **ONDC Initiative Overview:**
  - ONDC (Open Network for Digital Commerce) is an initiative by the Department for Promotion of Industry and Internal Trade (DPIIT).
  - Its primary goal is to promote an open platform for various aspects of e-commerce retail, enabling small retailers to expand their businesses through digital mediums while reducing the dominance of large players in the sector.
- **Current Impact and Scale:** The ONDC network is facilitating over 12 million orders per month, covering a wide range of product categories such as fashion and electronics, as well as services like ride-hailing and metro ticketing.
- **Seller Onboarding and Reach:** As of now, more than 6 lakh sellers across India have been on-boarded onto the platform, empowering small businesses and enhancing their visibility in the digital marketplace.

NATIONAL TEST HOUSE

Memorandum of Understanding (MoU) signed between the National Test House (NTH) and the Bureau of Energy Efficiency (BEE) to strengthen the Standards & Labelling (S&L) Program to promote energy efficiency in India.

About:

- **Organization Established in 1912:** The organization was founded in 1912, marking over a century of its involvement in scientific testing and quality assurance in India.
- **Affiliation:** Department of Consumer Affairs, Government of India
  - It operates under the Department of Consumer Affairs, which is a part of the Government of India, ensuring adherence to quality standards across various sectors.
- **Role in National Projects:** This organization plays a critical role in testing and quality assurance for major national projects, including:

- **Jal Jeevan Mission**: Ensuring water quality and infrastructure standards.
- **Bullet Train and Metro Projects**: Certifying safety and quality of materials used.

- **Drone Certification:** It is the only government agency in India authorized to provide drone certification, making it a key player in regulating and promoting drone technology in the country.
- **State-of-the-Art Testing Laboratories:**
  - The organization boasts cutting-edge testing facilities located in several major cities across India **Kolkata, Mumbai, Chennai, Ghaziabad, Guwahati, Jaipur, and Varanasi.**
  - These labs support its nationwide initiatives in quality assurance and innovation.

BUREAU OF ENERGY EFFICIENCY (BEE)

- **Establishment and Legal Framework:** Founded in 2002, the organization was created under the provisions of the Energy Conservation Act, 2001, aimed at promoting energy efficiency in India.
- **Objective:** The primary mission of the organization is to reduce energy intensity within the Indian economy, contributing to sustainable growth through improved energy efficiency.
- **Functions and Duties:** The organization works in collaboration with **designated consumers, agencies, and other stakeholders**, leveraging existing resources and infrastructure to perform its duties as outlined in the Energy Conservation Act.
- **Regulatory and Promotional Responsibilities:** The Energy Conservation Act assigns both **regulatory and promotional functions** to the organization, empowering it to lead energy conservation efforts across multiple sectors.
- **Regulatory Functions:**
  - **Setting Minimum Energy Performance Standards:** For equipment and appliances under the **Standards and Labelling program.**
  - **Energy Standards for Commercial Buildings:** Establishing **minimum energy performance standards** for commercial buildings to ensure energy efficiency.
  - **Energy Consumption Norms for Designated Consumers:** Developing and enforcing **energy consumption norms** for consumers designated under the EC Act.
- **Nodal Ministry:** The organization operates under the jurisdiction of the Ministry of Power, which oversees its energy efficiency and conservation initiatives.

NATIONAL EXIT TEST (NExT)

The National Exit Test (NExT) for Ayush students will come into effect for the 2021-2022 batch onward.

About:

- **Mandatory Test for Licensing and Enrollment:** The test is a compulsory requirement for obtaining a license and enrolling in the State or National Registers after completing a one-year internship.
- **License to Practice in Indian System of Medicine:** Successfully passing the test grants a license to practice as a medical professional in the respective disciplines of the Indian system of medicine.
- **National Exit Test (NeXT):** The National Exit Test (NeXT) is mandated to be conducted by the relevant commissions under the provisions of the National Commission for Indian System of Medicine (NCISM) Act, 2020, and the National Commission for Homoeopathy (NCH) Act, 2020.

KONYAK TRIBE

The Konyak Union, the apex body of the Konyak community in Nagaland, has recently raised concerns regarding a boundary line shown on Google Maps, which they claim inaccurately represents the traditional territory of the Konyak tribe.

About:

- **Ethnic and Tribal Identity:** The Konyaks belong to the Mongoloid race and are one of the largest tribes in Nagaland.
- **Historical Practices:** Historically, the Konyak tribe was known for their practice of headhunting, a cultural ritual associated with warfare, honor, and social status.
- **Religious Beliefs:** Before converting to Christianity, which is now the dominant religion among the Konyaks, they practiced Animism, a belief system that involved the worship of natural elements like trees, rivers, and animals.
- **Social Structure:** The Konyaks have a patriarchal society, where authority and leadership typically rest with male members of the community.

SWACHH VAYU SURVEKSHAN AWARDS

Nine best performing NCAP cities were awarded on the occasion of International Day of Clean Air for Blue Skies which is also celebrated as Swachh Vayu Diwas.

About:

- The Swachh Vayu Surveksha Awards is a new initiative launched by the Ministry of Environment, Forest, and Climate Change (MoEFCC) under the National Clean Air Program (NCAP) to rank and recognize cities based on their efforts to improve air quality.
- **Criterias:** Solid Waste Management, industrial emissions, road dust etc.

- **Awards Given:** Under Category-1 (population over 10 Lakhs) to Surat, Jabalpur, and Agra; Category-2 (population between 3 and 10 Lakhs) to Firozabad, Amravati, and Jhansi; and Category-3 (population under 3 Lakhs) to Raebareli, Nalgonda, and Nalagarh.

NATIONAL TESTING HOUSE TO NOW CERTIFY DRONES

National Test House (NTH) has been provisionally approved by the Quality Council of India (QCI) as a Certification Body for unmanned aircraft systems (UAS), including drones.

About:

- **India's Largest Industrial Testing Laboratory:** NTH is India's largest multi-location, multidisciplinary industrial testing laboratory under the central government, offering a comprehensive range of testing, calibration, and quality evaluations in line with international and national standards.
- **Establishment and Institutional Role:** Founded in 1912, NTH operates under the Ministry of Consumer Affairs, Food & Public Distribution. It has a long-standing role in promoting industrial growth by providing essential testing and quality assurance services.
- **Expansion Since Independence:** Post-independence, NTH has expanded its scope significantly, becoming involved in technological advancements related to industry, commerce, trade, import substitution, export promotion, and standardization across multiple sectors.
- **Drone Certification Services:** NTH offers competitive drone certification services at a fee of ₹1.5 lakh, the lowest in the industry, demonstrating its commitment to supporting innovation and growth in the drone sector.
- **Contribution to National Initiatives:** By certifying drones, NTH plays a crucial role in supporting India's "Make in India" and **"Atma Nirbhar Bharat"** initiatives, ensuring that domestically developed drone technologies meet international standards. These efforts contribute to sectors like agriculture, healthcare, logistics, and infrastructure.

INNER LINE PERMIT

The Nagaland State Government has approved the implementation of the Inner Line Permit (ILP) in Chumukedima, Niuland, and Dimapur districts.

About:

- The Inner Line Permit (ILP) is an **official travel document** required for Indian citizens from outside certain **protected states to enter these areas for a limited period.**
- Established under the Bengal Eastern Frontier Regulations, 1873, initially to protect British commercial interests, the ILP now **aims to safeguard tribal cultures in northeastern India.**
- The system was updated post-independence to use **"Citizen of India" instead of "British subjects. "**
- There are **various types of ILPs**, including those for tourism and long-term stays. Tourist ILPs are typically issued routinely.
- **The states which require the permit are**:Arunachal Pradesh, Mizoram, Nagaland, Manipur.

NITI AAYOG ON FUTURE PANDEMIC PREPAREDNESS

Recently, the NITI Aayog released an Expert Group report titled 'Future Pandemic Preparedness and Emergency Response —A Framework for Action', focusing on public health emergencies or pandemics.

Background: Blueprint for Preparedness

- The expert group behind the **'Future Pandemic Preparedness and Emergency Response (PPER) — A Framework for Action'** recognised that **COVID-19 wouldn't be the last pandemic** we face.
- Given the ever-changing planetary dynamics—**ecology, climate, and interactions between humans, animals, and plants**—there is a need to be ready for new infectious threats.
- In fact, the World Health Organization (WHO) has warned that **75% of future public health threats are likely to be zoonotic (originating from animals)**.

Key Recommendations: Four Pillars of Preparedness

- **Governance, Legislation, Finance and Management:** Effective governance structures, legal frameworks, financial mechanisms, and management strategies are crucial.
  - A **well-defined SOP** manual for rapid response to be prepared **Setting up** of a special PPER Fund for all activities of surveillance, data management, forecasting and modelling, research, innovation and manufacture, development of countermeasures, infrastructure and capacity building.
- **Data Management, Surveillance and Early Predictive Warning, Forecasting and Modelling:** Timely data collection, surveillance systems, and predictive models allow us to detect outbreaks early. This information is vital for swift decision-making.
- **Research and Innovation, Manufacturing, Infrastructure, Capacity building/Skilling:** Investing in research, innovation, and domestic manufacturing capacities is essential. We need to develop diagnostic tools, treatments, and vaccines swiftly.
- **Partnership, Community engagement including risk communication, Private sector partnerships, and international collaborations:** Strengthening healthcare capacity, training

healthcare workers, and engaging communities are vital. International collaboration ensures knowledge sharing and resource pooling.

Other Recommendations:

- A separate **Public Health Emergency Management Act (PHEMA)** is proposed to facilitate the management of **any public health crisis beyond epidemics,** including non-communicable diseases, disasters, and bioterrorism, and should be in place for a developed country.
- **Indian Regulatory System:** There is a need for global harmonisation of regulatory norms to allow acceptance of regulatory data across the world's recognised regulatory authorities and a common framework for innovative technologies and accelerated response for emergency approval.
- The **regulatory authority in India (CDSCO)** needs special powers through legislation and requires technical competence strengthening and autonomy in functioning to meet these requirements.

100-Day Action Plan:

- The report emphasises that the first 100 days of an outbreak are critical. During this window, there is a need to have **strategies and countermeasures ready**.
- The report provides a detailed roadmap for preparedness, including how to track, test, treat, and manage outbreaks effectively.

Significance of Future Pandemic Preparedness:

- **Strengthening India's Public Health Infrastructure:** Future pandemic preparedness will focus on enhancing India's healthcare system by expanding rural healthcare facilities and upgrading primary care centers.
  - This will ensure timely access to medical resources, improve disease surveillance, and train healthcare workers to respond swiftly to outbreaks.
- **Securing Economic Growth and Employment:** Pandemic preparedness in India will safeguard the economy by developing resilient supply chains and local production of essential goods. It aims to protect industries like manufacturing, agriculture, and services, minimizing job losses and ensuring economic recovery during health crises.
- **Promoting Technological Innovation and Self-Reliance:** Investing in pandemic preparedness will drive technological innovations in medical research, vaccine production, and healthcare technologies.
  - This can further boost initiatives like 'Make in India, ' reducing reliance on global supply chains for medical supplies and improving self-reliance in critical sectors.
- **Strengthening Federal-State Cooperation:** Effective pandemic preparedness will enhance coordination between the central and state governments, ensuring a streamlined response to health emergencies.
  - This will involve better public health policies, equitable distribution of medical resources, and joint action plans to mitigate the impact of future pandemics.
- **Protecting Vulnerable Communities:** India's future pandemic preparedness will focus on reducing healthcare disparities by ensuring that marginalized and vulnerable populations receive timely healthcare access. Special attention will be given to rural areas, low-income families, and people with pre-existing health conditions to minimize their risk during pandemics.

EVENT/OUTBREAK AND THEIR LEARNING

SARS in 2003:

- Need for International legally binding rules/ regulations.
- Detection of infection among exposed persons is a challenge during the initial phase.
- Need for core capacities for screening, sample collection and quarantine facilities at international airports.

Avian Flu (H5N1) (Since 2006 - present time):

- An effective strategy of surveillance of at-risk populations and culling sick birds was developed as a coordinated surveillance and response plan for both human and animal sectors.
- A standing committee on zoonosis was established following avian influenza

H1N1 Pandemic (2009-10):

- Countries were developing core capacities as per **International Health Regulations (IHR) 2005** at points of entry and inside the country for surveillance and response. **IHR (2005)**, a **legally binding regulation**, was in place.
- Countries adopted **public health measures** like screening at POEs, early detection of suspects, quarantine, contact tracing of suspect surveillance and management of cases in isolation in dedicated wards. Public health measures were helpful in mitigating and delaying the entry of infection.
- Need for coordinated surveillance between Points of entry and in country surveillance systems.

Ebola Outbreaks (2014-16) and (2018-21):

- Efforts to control these outbreaks involved screening, surveillance of exposed, contact tracing, data management, laboratory testing, and health education, including use of PPEs.
- Public health efforts were much more effective, limiting entry into the country.

MERS-CoV (2012-13):

- Zoonotic diseases, particularly highly infectious diseases that spread via respiratory/ droplets route could be challenging to prevent.
- Most of the threats leading to epidemics were due to novel viruses of zoonotic origin, possibly transmitted through the human animal interface.
- Infectious diseases having a respiratory mode of transmission are dangerous.

Zika Virus Disease (2016):

- It is a disease with **over 80% asymptomatic cases** and mild clinical symptoms with full recovery cannot be prevented using public health measures directed towards travellers.
- Effective vector surveillance and control is essential to prevent entry and transmission of vector-transmitted diseases. Need for multi-sectoral collaborative surveillance.

PORT BLAIR TO BE RENAMED AS 'SRI VIJAYA PURAM'

The Indian government has decided to rename Port Blair in the Andaman and Nicobar Islands as Sri Vijaya Puram to remove colonial imprints and honor the islands' role in India's freedom struggle.

About:

- Port Blair is the capital of Andaman and Nicobar Islands.
- It was originally named after **Archibald Blair**, a British naval surveyor who explored the area in the late 18th century.
- **Historical linkages :** Blair initially named the natural harbor Port Cornwallis before it was renamed Port Blair.
  - The East India Company (EIC) used the islands as a penal colony and strategic base.
  - Port Blair was established as a penal colony after the Revolt of 1857, with a significant cellular jail (Kala Pani) built in 1906 housing freedom fighters like Veer Damodar Savarkar.
- **Chola Expeditions:** The Cholas were one of the longest ruling Tamil dynasties of southern India.
  - They reigned approximately from the 9th to the 13th century.
  - A prominent king of the dynasty, **Rajendra Chola,** maintained the Nicobar Islands as a naval base to launch attacks on the Srivijaya kingdom based on the Sumatra islands of present-day Indonesia.
  - This naval expedition was a unique event in Indian history and its legacy of peaceful relations with Southeast Asia.
  - in 1014 AD and 1042 AD, the southern islands of this archipelago were used as a strategic naval base by the Chola Dynasty
- The islands, once a Chola naval base and the site of key events like the first Tiranga unfurling by Netaji Subhash Chandra Bose and the imprisonment of freedom fighters in the cellular jail, are now seen as **crucial for India's strategic and developmental goals.**

Significance:

- **Strategic Importance:**
  - The islands are located at the crossroads of key international maritime routes, making them a crucial point for India's maritime security.
  - Their proximity to the Malacca Strait, a major global shipping lane, enhances India's ability to monitor sea traffic and counteract threats like piracy, smuggling, and military incursions in the Indo-Pacific region.
  - They also serve as a forward base for India's naval and air operations, strengthening India's defense posture.
- **Economic Importance:**
  - The islands have the potential to boost India's "Blue Economy" through fisheries, tourism, and offshore energy exploration. Their rich marine biodiversity and pristine beaches attract tourism, which is a vital economic driver.
  - The islands are also being developed as a maritime trade hub, which could increase India's connectivity with Southeast Asia.
- **Ecological Significance:**
  - The Andaman and Nicobar Islands are a biodiversity hotspot, home to unique flora and fauna, some of which are endemic to the region. The islands play a crucial role in environmental conservation and are part of India's commitment to protecting fragile ecosystems.
  - They also contribute to mitigating climate change by preserving coral reefs and mangroves, which act as natural barriers against coastal erosion and extreme weather events.
- **Geopolitical Significance:**
  - In the context of growing Chinese influence in the Indo-Pacific, the Andaman and Nicobar Islands are central to India's efforts to counterbalance China's expansion.
  - They serve as a base for India's collaborations with global partners like the U.S. , Japan, and Australia, particularly under the Quadrilateral Security Dialogue (Quad).
- **Cultural Significance:** The islands have a rich cultural history, home to indigenous tribes with unique traditions and practices. Preservation of their cultural heritage is important not only for the tribes but also for India's diverse cultural identity.

LAW ON EARLY ELECTIONS

Delhi's Chief Minister has requested that the Assembly elections in Delhi be held alongside those in Maharashtra, where a new legislature must be elected by November 26. However, the term of the Delhi Assembly doesn't conclude until February 23, 2025.

About:

- Under **Article 324** of the Constitution, the **powers of superintendence, direction, and control of elections** are vested in the **Election Commission of India (ECI).**
  - The ECI works backwards from the date on which the five-year term of the existing House ends, ensuring that the election process is completed before then.
- **Section 15(2) of The Representation of the People Act, 1951,** says the election cannot be notified **less than six months before the end of the term** of the Assembly — unless the Assembly is dissolved before it completes its term.
- **Article 174(2)(b) of the Constitution** says the **Governor "may from time to time"** dissolve the Legislative Assembly.
  - **The Council of Ministers can recommend dissolution** of the House to the Governor before the end of its term, forcing a decision.
  - Once the Assembly has been dissolved, the **ECI has to conduct fresh elections within six months.**

Delhi's Scenario:

- In Delhi, the Government of National Capital Territory of Delhi Act, 1991, applies.
- Section 6(2)(b) of the Act says the **Lieutenant Governor may from time to time dissolve the Assembly,** even if a Chief Minister of Delhi recommends the dissolution of the Assembly, the final say is the Centre's (through the LG).

SUPREME COURT JUDGEMENT ON CHILD PORNOGRAPHY

The Supreme Court held that viewing in private, downloading, storing, possessing, distributing or displaying pornographic acts involving children, attract criminal liability under the Protection of Children from Sexual Offences Act (POCSO), 2012 and the Information Technology Act, 2000.

Background:

- The Supreme Court verdict was based on an appeal filed by NGO, **Just Right for Children Alliance**, against a Madras High Court decision.
- The High Court had concluded that watching or downloading pornographic acts involving children in private domains was not a crime under the POCSO Act.

Supreme Court Ruling:

- **Expanding the Scope of Section 15:** The Supreme Court ruled that Section 15 is not confined to penalizing the sharing or transmission of child pornography. It also covers cases where there is an "intent" to commit such acts.
  - This means that individuals can be punished even if they do not actively distribute the material but show intent to do so.
- **Indirect Inference of Intent:** The court clarified that failing to "delete, destroy, or report" child pornography can lead to an inference of intent to share or distribute the material. Such a failure would allow the court to infer the individual's intention under Section 15.
- **Overturning the Madras High Court Judgment:** The Supreme Court expanded the definition of "possession" in child pornography cases, overturning the Madras High Court's previous ruling. It stated that possession does not require physical control over the material.
- **Constructive Possession Defined:** The court introduced the concept of **"constructive possession, "** where an individual may not physically possess the material but has control and knowledge over it.
  - According to the ruling, **"viewing, distributing, or displaying"** such content still qualifies as "possession" under Section 15.

Supreme Court's Recommendations to the Centre:

- **Amend the POCSO Act:** The court recommended replacing the term "child pornography" with "child sexual exploitation and abuse material" (CSEAM) to more accurately reflect the gravity of the crime.
- **Support for Victims:** The SC suggested offering psychological counselling, therapeutic interventions, and educational support to help victims heal and reintegrate into society.
- **Cognitive Behavioural Therapy (CBT) for Offenders:** Implement CBT programmes to address the cognitive distortions that contribute to problematic sexual behaviour in offenders.
- **Promoting Coordinated Efforts:** Encouraging collaboration between educators, healthcare providers, law enforcement, and child welfare services to identify individuals with problematic behaviours early and apply appropriate intervention strategies.
- **Raising Public Awareness:** Launch public campaigns aimed at destigmatizing the reporting of child sexual exploitation and encouraging community vigilance.
- **Formation of an Expert Committee:** The court called for the establishment of an expert committee to:
  - Devise comprehensive health and sex education programmes.
  - Increase awareness of POCSO among children from an early age.
  - Implement aforementioned recommendations effectively.

Actions taken by Government:

- **Cyber Crime Unit (CCU):** It handles cases under the Protection of Children from Sexual Offences (POCSO) Act and the Information Technology (IT) Act.
- **Cyber Crime Prevention against Women and Children (CCPWC) Scheme:** The objective is to have an effective mechanism to handle cyber crimes against women and children in the country.
- **National Commission for Protection of Child Rights (NCPCR):** It works with law enforcement agencies, conducts awareness campaigns, and intervenes in cases to ensure children's safety.
- **Indian Cyber Crime Coordination Centre (I4C):** Coordinates law enforcement efforts across the country to address cybercrime, including child pornography.
- **Cyber Tipline:** It is the place to report child sexual exploitation and is operated by The National Center for Missing and Exploited Children (NCMEC).

PM E-DRIVE SCHEME

The Union Cabinet approved a new scheme called PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-DRIVE) for the promotion of Electric Vehicles (EV) in India.

About:

- **The PM E-DRIVE will replace** Faster Adoption and Manufacturing of Electric Vehicles in India Phase II **(FAME India Phase II)**.
- The Ministry of Heavy Industries (MHI) will implement the new scheme with a total outlay of **Rs 10,900 crore** over a period of two years.
- The scheme will focus on **promoting electric buses, trucks, and ambulances. Electric cars** for private or shared mobility will **not be covered** under this new scheme.
- The government has introduced **e-vouchers for EV buyers** to avail of demand incentives under the scheme.
  - These vouchers will be generated at the time of purchase and **authenticated via Aadhaar,** ensuring transparency in the subsidy process.

Major Components of the Scheme:

- Subsidies/Demand incentives worth **Rs. 3,679 crore** have been provided to incentivize electric two-wheelers, electric three-wheelers, e-ambulances, e-trucks and other emerging EVs.
- The scheme will support **24.79 lakh e-2Ws, 3.16 lakh e-3Ws,** and **14,028 e-buses.**
- The scheme allocates **Rs. 500 crore** for the deployment of **e-ambulances.**
- A sum of **Rs. 4,391** crore has been provided for procurement of **14,028 e-buses** by STUs/public transport agencies.
- **Rs. 500 crore** has been allocated for incentivising e-trucks.
  - Incentives will be given to those who have a scrapping certificate from MoRTH approved vehicles scrapping centers.
- The scheme proposes the installation of **22,100 fast chargers for e-4 Ws, 1800** fast chargers for e-buses and **48,400** fast chargers for e-2W/3Ws.
- The outlay for electric vehicle public charging stations will be **Rs. 2,000 crore.**

Significance of the Scheme:

- The scheme promotes an efficient, competitive and resilient **EV manufacturing industry** thereby promoting Aatmanirbhar Bharat. This will be achieved by incorporating a **phased manufacturing programme (PMP)** which encourages domestic manufacturing and strengthening of EV supply chain.
- The initiative is poised to **address concerns regarding environmental pollution** and **fuel security** as well as to make significant progress in promoting sustainable transportation solutions.
- The scheme shall **create significant employment opportunities** along the value chain.

OTHER INITIATIVES TAKEN

- **Electric Mobility Promotion Scheme 2024 (EMPS)** with an outlay of ₹ 778 Crore for a period 6 months (April 2024-September 2024) which provides incentives to buyers of e-2W and e-3W.
- **Production Linked Incentive Scheme for Automobile and Auto Component Industry (PLI-AAT)** with a budgetary outlay of ₹ 25,938 Crore. The scheme incentivises various categories of electric vehicles including e-2W, e-3W, e-4W, e-buses & e-trucks also.
- **Production Linked Incentive Scheme for manufacturing of Advanced Chemistry Cell (PLI-ACC)** in the country with a budgetary outlay of ₹18,100 Crore.
- **Scheme to Promote Manufacturing of Electric Passenger Cars** to attract investments from global EV manufacturers and promote India as a manufacturing destination for e-vehicles.

PRADHAN MANTRI JANJATIYA UNNAT GRAM ABHIYAN

The Union Cabinet approved Pradhan Mantri Janjatiya Unnat Gram Abhiyan for improving the socio-economic condition of tribal communities.

About:

- **Financial Outlay of the Scheme:** The scheme's total outlay is Rs. 79,156 crore, with the Central Government contributing Rs. 56,333 crore and the State Governments contributing Rs. 22,823 crore.
- **Coverage and Beneficiaries:** The initiative aims to cover

approximately 63,000 villages, benefiting over 705 tribal communities, as highlighted in the Budget Speech for 2024-25. India has a Scheduled Tribe population of 10.45 crore according to the 2011 Census.

- **Multi-Ministry Collaboration:** The mission consists of 25 interventions that will be executed by 17-line ministries, ensuring a comprehensive and multi-sectoral approach to tribal development.
- **Ministry-Specific Implementation:** Each Ministry/Department will implement the schemes under the Development Action Plan for Scheduled Tribes (DAPST) over the next five years, using funds allocated to achieve key goals for tribal welfare. The goals are as follows:
  - **Goal 1: Housing and Infrastructure**
    - The mission seeks to provide a pucca (permanent) house for eligible households, alongside enhancing village infrastructure for better living conditions in tribal areas.
  - **Goal 2: Economic Empowerment**
    - Through skill development, entrepreneurship promotion, and livelihood support, the scheme focuses on enhancing economic opportunities and self-employment for tribal populations.
  - **Goal 3: Access to Quality Education**
    - The mission aims to ensure universal access to quality education for tribal communities, bridging gaps in literacy and educational opportunities.
  - **Goal 4: Health and Dignified Ageing**
    - The initiative prioritizes the promotion of healthy lives and dignified aging for tribal populations by improving access to healthcare and social services.

Promotion of schemes under PMJUGA:

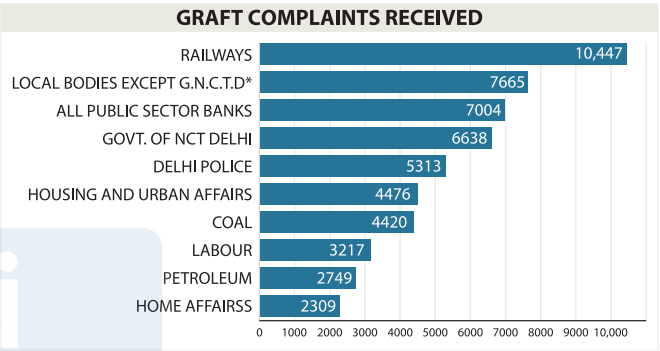
- **Tribal Home Stay:** To tap the tourist potential of tribal areas and to provide an alternate livelihood to the tribal community, 1000 Home stays will be promoted under Swadesh Darshan through the Ministry of Tourism.
- **Sustainable Livelihood Forest Right Holders (FRA):** It intends to bring sustainable agricultural practices to all Forest Rights Act (FRA) patta holders to enable them for maintenance and conservation of forest
- **Improving infrastructure of Govt residential Schools and Hostels:** The Abhiyan aims to Improve infrastructure of Ashram schools/hostels/Tribal schools/Govt residential schools for upgradation on the lines of PM-Shri Schools.
- **Tribal Multipurpose Marketing Centre (TMMCs):** For Effective marketing of tribal products and for improving marketing infrastructure, awareness, branding, packaging, and transportation facilities 100 TMMCs will be set up.

CVC REPORT ON CORRUPTION COMPLAINTS

Central Vigilance Commission (CVC) has released the report revealing the corruption complaints against various government officials in 2023.

Major Highlights:

- Of the total corruption complaints received, the highest number of complaints was against **railway employees, followed by those in Delhi's local bodies and public sector banks.**
  - Of the total complaints received against railway employees, 9,881 were disposed of and 566 were pending.



- As many as 74,203 graft complaints were received against all categories of officers/employees in 2023, of which 66,373 were disposed of and 7,830 were pending.

Corruption:

- Corruption may be defined as an **act of bribery or misuse of public position** or power for the fulfillment of selfish motives or to gain personal gratifications.
- India **ranked 93 out of 180 countries** on the **corruption perceptions index for 2023** according to a Transparency International report.

Steps taken to Combat Corruption:

- **Prevention of Corruption Act (1988):** This act aims to prevent corruption in public life by criminalizing the act of accepting or giving bribes. It has undergone amendments to address emerging challenges in corruption.
- **Right to Information Act (RTI) (2005):** This act empowers citizens to seek information from public authorities, thereby promoting transparency and accountability in government functioning.
- **Digital India Program:** Launched to improve governance and transparency through technology, this program aims to digitize public services and reduce opportunities for corruption.
- **e-Governance:** The implementation of online platforms for government services (e.g., passport applications, income tax returns) reduces bureaucratic red tape and minimizes the chances of corruption.
- **Whistleblower Protection:** The Whistleblowers Protection Act (2014) safeguards individuals who expose corruption and wrongdoing in government and public sector enterprises.

- **Government e-Marketplace (GeM):** This online platform aims to make public procurement more transparent and efficient by enabling direct procurement by government departments and public sector enterprises.
- **Anti-Corruption Units:** Various state governments have established their own anti-corruption bureaus and vigilance commissions to handle corruption cases at the state level.

CENTRAL VIGILANCE COMMISSION (CVC)

- **Established:** It was set up by the Government of India (Ministry of Home Affairs) vide Resolution in **1964** on the recommendation of the **Santhanam Committee.** It aims to promote integrity, transparency, and accountability in the public sector.
- **Mandate:** The CVC is tasked with overseeing and ensuring the proper functioning of various government departments and public sector enterprises. It investigates allegations of corruption and malpractices against public servants.
- **Appointment of Members:** The Central Vigilance Commissioner and the Vigilance Commissioners are appointed by The President of India on the basis of the recommendation of a committee consisting of:
  - Prime Minister as Chairmen of the Committee.
  - The Minister of Home Affairs as a member of the committee.
  - Leader of the Opposition in the House of the People as member of the committee.
- **Autonomy:** The CVC operates independently of the government to ensure impartiality in its investigations and recommendations.
- **Term of Office:** The Central Vigilance Commissioner shall hold office for a term of **four years** from the date on which he enters upon his office or till he attains the age of sixty-five years, whichever is earlier.
- **Removal of Members:** Only the President has the power to remove the Central Vigilance Commissioner or any vigilance commissioner from the office under the following circumstances:
  - If proved an insolvent.
  - If he has been convicted of an offense which, in the opinion of the Central Government, involves moral turpitude.
  - If holds any Office of Profit.
  - If he is unfit to continue in office by reason of infirmity of mind or body.

SIX YEARS OF AYUSHMAN BHARAT PM-JAY

Over six years, PM-JAY has transformed healthcare by offering essential coverage to millions and reducing financial burdens from medical expenses.

About: AB PM-JAY

- The Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY) was launched on September 23,2018. The scheme is a key component of India's commitment to achieving **Universal Health Coverage (UHC).**
- **Emergence:** PM-JAY is part of the broader Ayushman Bharat initiative, which was established under the National Health Policy 2017.
- **Target Population:** The scheme aims to cover over 12 crore families, translating to nearly 55 crore individuals. The scheme prioritizes the poorest 40% of the population, determined by the Socio-Economic Caste Census 2011.
- **Coverage and Benefits:** PM-JAY is recognized as the largest health assurance scheme globally. It provides health coverage up to ₹5 lakh per family annually for secondary and tertiary care hospitalization. The scheme focuses on providing healthcare to India's most vulnerable sections of the population.

Feature:

- **Cashless Access to Healthcare:** Beneficiaries enjoy cashless healthcare services at the point of care, eliminating the need for out-of-pocket payments during treatment.
- **Mitigating Catastrophic Health Expenditure:** By covering significant medical costs, PM-JAY helps prevent over six crore Indians from falling into poverty yearly due to healthcare expenses.
- **Pre- and Post-Hospitalization Coverage:** The scheme covers up to 3 days of pre-hospitalization and 15 days of post-hospitalization expenses, including diagnostics and medications.
- **No Family Size or Age Restrictions:** PM-JAY imposes no restrictions on family size, age, or gender, ensuring inclusivity for all.
- **Coverage from Day One:** All pre-existing medical conditions are covered from the very first day of enrolment, ensuring timely treatment.

Achievements:

- Over the past six years, PM-JAY has aimed to address deep-rooted health inequities in India.
- PM-JAY represents a shift from segmented healthcare services to an integrated, need-based approach. It aligns with India's commitment to the Sustainable Development Goals (SDGs).
- The scheme ensures that "no one is left behind", **supporting health equity for all.**
- As of September 9, 2024, over **35.4** crore Ayushman cards have been issued, improving healthcare accessibility for millions.
- The scheme operates in **33** States and Union Territories, excluding NCT Delhi, West Bengal, and Odisha.

2 INTERNATIONAL RELATIONS

CHINA–HOSTED FOCAC SUMMIT

Chinese President Xi Jinping pledged $51 billion of funding to African countries at the ninth edition of the Forum on China-Africa Cooperation (FOCAC) in Beijing.

About:

- China will support **30 infrastructure projects across the continent,** with 360 billion yuan ($50.7 billion) to be offered as financial assistance.
- The **theme this year** is "Joining Hands to Advance Modernization and Build a High-Level China-Africa Community with a Shared Future."

About FOCAC:

- The Forum on China-Africa Cooperation was established in **2000** to formalise the strategic partnership between China and African nations.
- A summit is conducted **every three years**, with the host alternating between China and an African member.
- The FOCAC counts **53 African nations** as its members – the entire continent except **Eswatini**.
  - Eswatini has diplomatic ties with Taiwan against Beijing's "One China" Policy.
  - The African Union Commission is also a member.

China's Investment in Near Future in Africa:

- **China's approach has changed for investment in African Nations:** China wishes to narrow the country's investment portfolio away from big-ticket infrastructure to "small and beautiful projects." It also hopes to sell advanced, green technologies which Chinese firms have heavily invested in.
- **Reasons for Change in China's Approach:** The summit comes at a time when China is experiencing a prolonged economic slowdown post-pandemic, with China's growth target for the year looks out of reach.
  - Its manufacturers are battling deflationary pressures and unemployment challenges.
  - There are also concerns about loan defaults — in 2020, Zambia defaulted on its loan , while Ghana defaulted on most of its $30 billion external debt in 2022.

EASTERN ECONOMIC FORUM

The Eastern Economic Forum 2024 was held in Vladivostok, Russia.

About:

- It is an annual international event held in Vladivostok, Russia, since 2015.
- Its primary aim is to promote economic development in the Russian Far East and to encourage investment, collaboration, and cooperation between Russia and Asia-Pacific nations.
- The forum brings together government officials, business leaders, investors, and policymakers to discuss key economic issues, opportunities in various sectors, and enhance regional connectivity.
- It plays a vital role in shaping economic diplomacy and fostering partnerships in the Asia-Pacific region. It borders two oceans, the Pacific and the Arctic, and five countries (China, Japan, Mongolia, the United States and North Korea).

INTERNATIONAL COOPERATIVE ALLIANCE'S GENERAL ASSEMBLY

India will host the International Cooperative Alliance's General Assembly and global conference for the first time in November this year, at Bharat Mandapam, New Delhi.

About:

- The theme for this year's conference is **"Cooperatives Build Prosperity for All, "** which is in line with the Prime Minister Narendra Modi's vision of **'Sahakar se Samriddhi'.**
- The Conference will also mark the official launch of the **UN International Year of Cooperatives – 2025.**
  - A **commemorative stamp** celebrating the International Year of Cooperatives – 2025 will be launched during the event.
- The Conference will be used to showcase Indian Cooperatives' products and services in the **'Haat'** setup with the theme of Indian Villages.
  - India is home to **one-fourth of the world's cooperatives**, both in terms of numbers and membership, and this move will further strengthen the cooperative movement in the country.

INTERNATIONAL COOPERATIVE ALLIANCE (ICA)

- It is the premier body for the Global Cooperative movement.
- It was **established in 1895** as a non-profit international association to advance the cooperative social enterprise model.
- The ICA's General Assembly meets **every year** whereas global conferences happen **every two years.**

INDO-PACIFIC OCEANS INITIATIVE (IPOI)

Recently, the Indo-Pacific Oceans Initiative (IPOI) completes five years since its launch in 2019.

About:

- It was launched by India in November 2019 at the East Asia Summit (EAS) in Bangkok, and aims to foster cooperation for a free, open, and rules-based Indo-Pacific.
- IPOI emphasizes maritime security, stability, and development, building on India's **Security and Growth for All in the Region (SAGAR) vision.**
- It operates as a non-treaty-based, voluntary arrangement, relying on existing frameworks like the EAS mechanism.

Key Pillars and Leadership of IPOI:

IPOI has seven pillars, with countries taking the lead in specific areas:

- **Maritime Security:** UK and India
- **Maritime Ecology:** Australia and Thailand
- **Maritime Resources:** France and Indonesia
- **Capacity Building and Resource Sharing:** Germany
- **Disaster Risk Reduction and Management:** India and Bangladesh
- **Science, Technology, and Academic Cooperation:** Italy and Singapore
- **Trade, Connectivity, and Maritime Transport:** Japan and the US

Significance of IPOI:

- **Rules-Based Regional Order:** The IPOI aims to establish a rules-based order in the Indo-Pacific, ensuring the free movement of goods, services, and people, while protecting the sovereignty of all nations in the region.
- **Strengthening Maritime Security:** The IPOI promotes regional maritime security through cooperation among nations to tackle shared threats such as piracy, illegal fishing, smuggling, and other maritime crimes, enhancing collective safety at sea.
- **Disaster Risk Reduction and Management:** IPOI seeks to bolster regional capacity for disaster preparedness and response, fostering cooperation in disaster risk reduction and management to mitigate the impact of natural disasters in the Indo-Pacific.
- **Flexible, Non-Treaty-Based Initiative:** As a voluntary, non-treaty-based initiative, IPOI offers flexibility for countries to participate based on mutual interests, without imposing new institutional or regulatory burdens on member states.

AFGHANISTAN SET TO BEGIN WORK ON TAPI PIPELINE

The Afghanistan government said that work would begin on a $10 billion TAPI gas pipeline traversing South Asia.

About:

- **The Turkmenistan-Afghanistan-Pakistan-India (TAPI)** natural gas pipeline project is a significant regional energy initiative.
- It aims to transport up to **33 billion cubic meters (bcm) of natural gas** annually from the **Galkynysh gas field in Turkmenistan**, through a pipeline spanning approximately 1,800 kilometers.
- The route includes passing through key regions **like Herat and Kandahar in Afghanistan,** and **Balochistan in Pakistan,** before terminating in **Fazilka, Punjab**, in India.

Significance:

- **Meeting South Asia's Energy Demands:** The project is designed to address the rising energy needs of South Asia, with Pakistan and India each expected to receive 42% of the gas supplies, while Afghanistan will receive 16%.
- **Economic Boost for Afghanistan:** Afghanistan is set to benefit from transit fees estimated at $500 million annually, which could significantly contribute to its economy and infrastructure development.
- **Enhancing Regional Cooperation:** The TAPI project fosters regional cooperation by connecting energy-rich Central Asia with energy-deficient South Asia, promoting closer economic and political ties among participating nations.
- **Improving Energy Security:** By diversifying energy sources, the TAPI pipeline enhances energy security for Pakistan and India, reducing their dependence on volatile energy markets and strengthening energy resilience.
- **Promoting Economic Development:** The project holds the potential to drive economic growth in all participating countries by creating jobs, improving infrastructure, and stimulating local economies through the construction and operation of the pipeline.
- **Geopolitical Stabilization:** TAPI could contribute to regional stability by fostering interdependence among countries with historical tensions, potentially reducing conflict over energy resources and promoting peace through economic collaboration.
- **Environmental Benefits:** With natural gas being a cleaner energy source compared to coal and oil, the TAPI pipeline also contributes to lowering carbon emissions in the region, supporting global climate goals.

UN OBSERVES INTERNATIONAL DAY OF SOUTH-SOUTH COOPERATION

The United Nations International Day of South-South Cooperation was observed. This year's theme is "A better tomorrow through South-South Cooperation. "

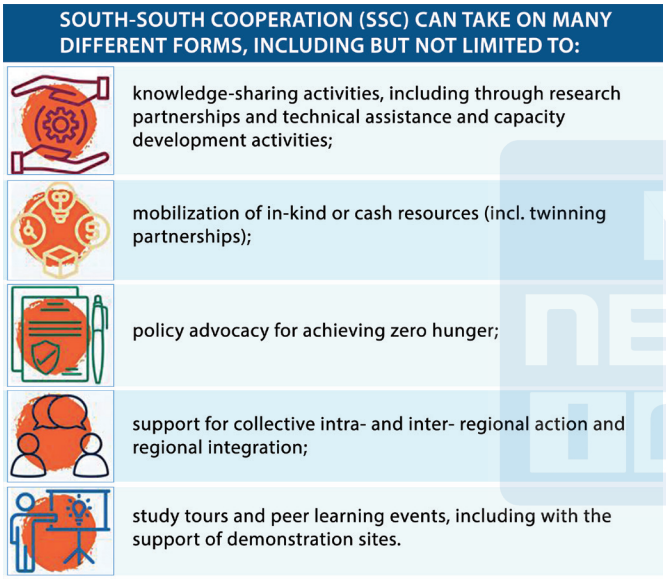
About:

- It is observed annually on September 12, as established by General Assembly resolution 58/220.

- This date commemorates the adoption of the Buenos Aires Plan of Action (BAPA) in 1978, which promotes technical cooperation among developing countries.

South-South Cooperation:

- It refers to the collaboration among countries in the Global South to address common development challenges, share knowledge, and build collective capacities.
- The **concept of cooperation among developing countries** originated from the Afro-Asian Conference held in Bandung in 1955.
  - This Conference led to the establishment of the Non-Aligned Movement in 1961 and the creation of the Group of 77 (G-77) in 1964. The G-77 mainly promoted South-South Cooperation in the 1960s and 1970s.



Global Efforts:

- **The United Nations Office for South-South Cooperation (UNOSSC):** It was created in 1974 to promote, coordinate and support South-South and triangular cooperation globally and within the United Nations system.
- **The "South-South Galaxy" :** It is a global knowledge-sharing and partnership platform launched in 2019. The project aims to give systematic and effective support to countries of the South, so they can connect, learn and collaborate with potential partners in the wider digital world.
- **South-South and Triangular Cooperation (SSTC):** SSTC supports development across sectors like agriculture, health, and education. It fosters mutual benefit, respect, and non-conditional partnerships, contributing to more resilient and sustainable societies.
  - **The World Food Programme (WFP)** has been actively involved in facilitating SSTC, utilizing mechanisms like the South-South Trust Fund. In 2023, it supported 60 of 85 countries in engaging in SSTC initiatives.

India's Approach:

- Principles of global "South-South cooperation" guided India's warm and friendly relations with all African countries.
- India has played a significant role in SSTC through projects like the Pan-African e-Network, India-Brazil-South Africa Fund, and International Solar Alliance (ISA). India has invested about $107 billion in SSTC since 1947.
- The G20 summit has solidified India as a leading voice for developing nations.
- The inclusion of the African Union in the G20 strengthens India's global position and partnerships.

OPERATION SADBHAV

India has launched Operation Sadbhav to provide humanitarian assistance and disaster relief (HADR) to Laos, Myanmar and Vietnam.

About:

- **Laos, Myanmar and Vietnam** have been hit by **severe flooding caused by Typhoon Yagi.**
- Operation Sadbhav is part of India's broader effort to contribute to HADR within the ASEAN (Association of Southeast Asian Nations) region, in line with its longstanding **'Act East Policy'.**
- **Typhoon Yagi** has been termed the **strongest tropical cyclone** that has hit Asia in 2024. It started as a tropical storm in the western Philippine Sea and turned into a **Category 5 typhoon** and made landfall in **China's Hainan province** with winds of 223 kmph. It has displaced millions across South East Asia and caused widespread devastation.

2024 QUAD LEADERS' SUMMIT

Leaders of the Quad group of countries met at their sixth summit-level meeting at Archmere Academy, Delaware, to announce a broad range of outcomes.

About:

- It is an **informal multilateral grouping** of **India, the U.S. , Australia, and Japan** aimed at cooperation for a free and open Indo-Pacific region.
- **Origin:** The Quad began as a loose partnership after the **2004 Indian Ocean tsunami** when the four countries joined together to provide humanitarian and disaster assistance to the affected region.
  - It was formalized by former Japanese Prime Minister **Shinzo Abe in 2007**, but then fell dormant.
- After a decade it was **resurrected in 2017,** reflecting changing attitudes in the region toward China's growing influence.

Key Initiatives of QUAD 2024:

- **Quad Cancer Moonshot,** a groundbreaking partnership to save lives in the Indo-Pacific region.
  - Under this, India will provide **$7.5 million** worth of HPV sampling kits, detection kits and cervical cancer vaccines to countries in the Indo-Pacific.
  - A commitment from the Serum Institute of India, in partnership with Gavi and the Quad, to support orders of up to **40 million HPV vaccine doses** for the Indo-Pacific region.
- **Coast Guard Cooperation:** The First-ever **"Quad-at-Sea Ship Observer Mission"** in **2025** to improve interoperability and advance maritime safety between our Coast Guards across the Indo-Pacific.
- **The Quad Indo-Pacific Logistics Network pilot project**, in order to support civilian response to natural disasters more rapidly and efficiently across the Indo-Pacific region.
- **The "Quad Ports of the Future Partnership"** will harness the Quad's collective expertise to support sustainable and resilient port infrastructure development across the Indo-Pacific.
- **The "Semiconductor Supply Chains Contingency Network Memorandum of Cooperation"** to enhance Quad resilience in semiconductor supply chains.
- **Reform at the UN Security Council:** The Leaders recognised the urgent need to make it more representative, inclusive, and democratic through expansion in permanent and non-permanent categories of membership
- **Quad Principles for Development and Deployment of Digital Public Infrastructure** were welcomed for the region and beyond.
- The **Maritime Initiative for Training in the Indo-Pacific (MAITRI)** to enable regional partners to monitor and secure their waters, enforce their laws, and deter unlawful behavior.
  - India will host the first MAITRI workshop in **2025.**

Strategic Significance of QUAD:

- **Act East policy:** India's participation in the Quad emphasizing deeper engagement with East Asian nations and strengthening maritime security cooperation.
- **Military cooperation:** It provides a platform for military cooperation, intelligence sharing, and joint exercises aimed at maintaining maritime security and ensuring the rule of law.
- **Counterbalancing China's Influence:** QUAD is crucial for India's interests in safeguarding its maritime trade routes and ensuring freedom of navigation in international waters.
- India has supported a **rule-based multipolar world** and QUAD can help it in.

'PACT OF THE FUTURE' PROMISING TO REFORM THE UNSC

The United Nations' General Assembly adopted the 'Pact of the Future', promising to "reform the UNSC.

About:

- In the **'Pact of the Future'**, world leaders agreed to redress the historical injustice against **Africa as a priority** and improve the representation of the under-represented and unrepresented regions and groups including **Asia-Pacific, Latin America and the Caribbean.**
- They also agreed to **enlarge the Security Council** to be more representative of the current United Nations membership and reflective of the realities of the contemporary world.

Key Issues for Reform at UNSC:

- Categories of membership,
- The question of the veto held by the five permanent members,
- Regional representation,
- The size of an enlarged Council and its working methods, and
- The Security Council-General Assembly relationship.

UNITED NATIONS SECURITY COUNCIL (UNSC)

- It is one of the **UN's six main organs** and is aimed at maintaining international peace and security.
- It held its first session on **17th January 1946** in Westminster, London.
- **Headquarters:** New York City.
- **Membership:** The Council is composed of 15 Members.
  - **Five Permanent members with veto power:** China, France, Russia, the United Kingdom and the United States.
  - Ten Non Permanent members

Election of Non-Permanent Members:

- Each year the General Assembly elects five non-permanent members (out of 10 in total) for a two-year term.
- The 10 non-permanent seats are distributed on a regional basis as follows:
  - Five for African and Asian States;
  - One for the Eastern European States;
  - Two for the Latin American and Caribbean States;
  - Two for Western European and other States.
- To be elected to the Council, candidate countries need a **two-thirds majority** of ballots of the Member States that are present and voting in the Assembly.
  - The elections were held with each of the **193 member states casting its vote in a secret ballot.**
- More than 50 United Nations Member States have never been Members of the Security Council.
  - **India** last sat at the UN high table as a non-permanent member in **2021-22.**

Need for UN Reforms:

- **Non-representative Council membership:** When the UN was founded in **1945,** the Council consisted of **11 members out of 51 members** of UN; around **22%.**

- Today, there are 193 member-states of the UN, and only 15 members of the Council — **fewer than 8%.**

- **More financial contribution of non permanent members:** There are countries whose financial contributions to the UN outweigh those of four of the five permanent members.
  - *For example*, **Japan and Germany** have for decades been the second and third largest contributors to the UN budget.
- **Unable to discharge basic functions:** The Security Council cannot discharge its basic function as one of the permanent members of the Security Council attacked its neighbour. **Russia**, a permanent member of the UN, has vetoed UNSC resolutions on Ukraine issues.
- **Im-balance of Power:** The composition of the Council also gives undue weightage to the balance of power of those days.
  - Europe, accounting for **5%** of the world's population, controls **33%** of the seats in any given year (and that does not count Russia, another European power).
- **India's contribution & representation:** Opportunities are also denied to other states such as India, which by its sheer size of population, share of the world economy, or contributions to the UN have helped shape the evolution of world affairs in the seven decades since the organisation was born.

Conclusion:

- **The U.N. Secretary-General**, in his remarks warned that the 15-nation United Nations Security Council, which he described as **"outdated"** and whose authority is eroding, will eventually lose all credibility unless its composition and working methods are reformed.

MINERALS SECURITY FINANCE NETWORK (MSFN)

India has joined the US-led Minerals Security Finance Network, an initiative aimed at strengthening global cooperation in securing critical mineral supply chains.

About:

- It is a new initiative **emerging from the Minerals Security Partnership (MSP)**, a framework established by the US in 2022.
- **The network aims** to bring together institutions from the Indo-Pacific region and Europe, promoting cooperation, information exchange, and co-financing.

Meaning of Critical Minerals:

- These are minerals that are **essential for economic development and national security.** The lack of availability of these minerals or the concentration of extraction or processing in a few geographical locations could potentially lead to "**supply chain vulnerabilities and even disruption of supplies".**

MINERAL SECURITY PARTNERSHIP (MSP)

- **It is a US-led collaboration that** would focus on the supply chains of minerals such as Cobalt, Nickel, Lithium, and also the 17 'rare earth' minerals.
- **Members:** Australia, Canada, Estonia, Finland, France, Germany, India, Italy, Japan, the Republic of Korea, Norway, Sweden, the UK, U.S. , and the EU.
  - **India** was inducted to the MSP in **2023.**
- **Mandate:** To catalyze public and private investment in critical mineral supply chains globally. It directly addresses four major critical minerals challenges:
  - Diversifying and stabilizing global supply chains;
  - Investment in those supply chains;
  - Promoting high environmental, social, and governance standards in the mining, processing, and recycling sectors; and
  - Increasing recycling of critical minerals.

Applications of Critical Minerals:

- **Clean Energy Technologies:** Critical minerals are essential in the production of clean energy technologies such as zero-emission vehicles, wind turbines, and solar panels. These minerals enable energy storage, efficient power generation, and renewable energy adoption on a global scale, contributing to reducing carbon footprints.
- **Battery and Semiconductor Manufacturing:** Minerals like Cadmium, Cobalt, Gallium, Indium, Selenium, and Vanadium are integral to producing batteries for electric vehicles, energy storage systems, and semiconductors. These components are vital for powering the next generation of electronics, making energy use more efficient.
- **Advanced Manufacturing and Defense:** Critical minerals play a crucial role in defense applications and advanced manufacturing. For instance, minerals like Beryllium, Titanium, Tungsten, and Tantalum are used in aerospace components, permanent magnets, and high-performance ceramics, enhancing strength and resistance in harsh environments.
- **New Technologies and Electronics:** Critical minerals are indispensable in new technologies and electronic devices, from smartphones to aerospace technologies. Minerals like Tungsten and Tantalum are key to miniaturizing electronic components and ensuring high conductivity and heat resistance.
- **Medical Devices and Pharmaceuticals:** Platinum Group Metals (PGMs) have critical applications in healthcare, especially in medical devices such as pacemakers and stents, cancer treatment drugs, and dental materials. These minerals contribute to the advancement of modern medicine, improving treatment outcomes.

3 ECONOMY

VisioNxt

Recently, the Union Minister of Textiles inaugurated India's first fashion forecasting initiative, 'VisioNxt'.

About:

- **Funding:**
  - This initiative is funded by the **Ministry of Textiles, Government of India**, under the **Research & Development** scheme.
  - It is affiliated with the **National Institute of Fashion Technology (NIFT)**, which leverages its **18 campuses**, in-house expertise, and extensive alumni network to enhance the program's reach and effectiveness.
- **Pioneering AI and EI Integration:**
  - This initiative marks India's first-ever effort to combine **Artificial Intelligence (AI)** and **Emotional Intelligence (EI)** to generate fashion trend insights and forecasts.
  - By integrating these two fields, it aims to provide a nuanced understanding of fashion trends that resonate with Indian consumers.
- **Mission:**
  - The mission of this initiative is to **identify, map, and analyze geo-specific trends** that reflect the positive plurality, cultural diversity, and socio-economic nuances of India.
  - It aims to collate comprehensive trends and insights that cater specifically to the Indian market, moving beyond generic global trends.
- **Development of 'Deep Vision':**
  - A key outcome of this initiative is the development of **'Deep Vision,'** an indigenous trend forecasting system that synthesizes AI and EI.
  - This system is designed to analyze vast amounts of data, offering insights that are both data-driven and empathetic to consumer emotions and cultural contexts.
- **Importance of the Initiative:**
  - This initiative significantly reduces dependence on global forecasting agencies by providing unique insights into Indian fashion consumers.
  - By integrating India's strengths in **information technology** with the **textile industry**, it combines artificial intelligence with human intelligence, resulting in a more holistic approach to fashion forecasting.
- **Enhancing Global Presence:**
  - The initiative aims to enhance India's global presence in the fashion industry.
  - By fostering healthy competition and showcasing Indian culture and design, it promotes a rich tapestry of Indian fashion that resonates both locally and internationally.
  - This initiative not only seeks to empower Indian designers but also positions India as a significant player in the global fashion landscape.

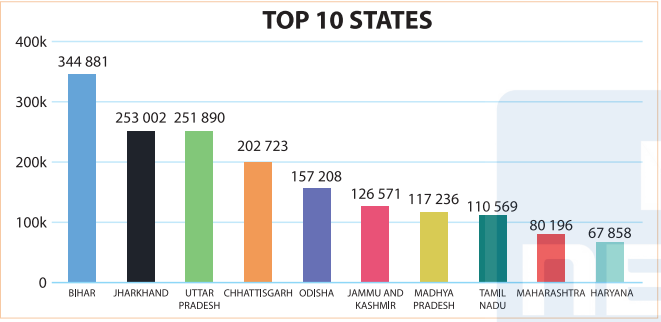
5 YEARS OF PRADHAN MANTRI KISAN MAANDHAN YOJANA

Recently, the Pradhan Mantri Kisan Maandhan Yojana (PM-KMY) marked five years since its implementation.

About:

- **Overview:**
  - Launched on **September 12, 2019**, the **Pradhan Mantri Kisan Maandhan Yojna (PM-KMY)** aims to provide social security to all land-holding **Small and Marginal Farmers (SMFs)** across India.
  - This **old-age pension scheme** is voluntary and contributory, allowing eligible farmers to secure a fixed monthly pension of **₹3,000** upon reaching the **age of sixty.**
- **Contribution Mechanism:**
  - To qualify for the pension, farmers must contribute monthly to the pension fund throughout their working years, with the central government making matching contributions.
  - Farmers aged between **18 and 40 years** can enroll by paying a monthly subscription ranging from **₹55 to ₹200** until they reach sixty years of age.
- **Implementation Success:**
  - Once enrolled, farmers who meet the scheme's exclusion criteria will receive their monthly pension starting at age sixty.
  - The **Life Insurance Corporation (LIC)** manages the pension fund, while beneficiary registration occurs through **Common Service Centres (CSCs)** and state governments.
- **Eligibility Criteria:**
  - Farmers with cultivable land holdings of up to **2 hectares** and listed in state/UT land records as of **August 1, 2019,** are eligible for the scheme.
  - As of **August 6, 2024**, approximately **23.38 lakh farmers** have joined the PM-KMY. Bihar leads in registrations with over **3.4 lakh**, followed by Jharkhand with more than **2.5 lakh**.
  - Uttar Pradesh, Chhattisgarh, and Odisha also show significant participation, indicating a robust uptake of the scheme.

- **Key Benefits Under PM-KMY:**
  - **Minimum Assured Pension:** Subscribers are guaranteed a minimum pension of **₹3,000** per month upon reaching age sixty.
  - **Family Pension:** If a subscriber passes away while receiving their pension, their spouse is entitled to a family pension of **₹1,500** per month, provided the spouse is not already a beneficiary of the scheme.
  - **PM-KISAN Benefit:** SMFs may use their PM-KISAN benefits to make voluntary contributions to the PM-KMY scheme by signing and submitting an enrolment-cum-auto-debit-mandate form, allowing automatic deductions from the bank account receiving PM-KISAN benefits.
  - **Equal Contribution by Government:** The Central Government contributes an equal amount to the pension fund as that contributed by the eligible subscriber.



Conclusion:

- Over five years of implementation, the PM-KMY has significantly empowered **Small and Marginal Farmers (SMFs)** in India.
- One of its key achievements is enhancing financial stability for farmers, who often face uncertain futures due to the seasonal nature of agriculture and fluctuating incomes.
- By securing a pension for their retirement years, the scheme addresses a critical gap in social security for the rural population.
- Its success underscores its vital role in improving the quality of life for India's **'Annadata'** (food providers).

NANO DAP VS CONVENTIONAL GRANULAR FERTILIZER

Recently, the Government is promoting nano DAP as a cost-effective, homegrown alternative to the imported granular version of the fertilizer.

About:

- **Overview of DAP:**
  - **Common Usage:** Di-Ammonium Phosphate (DAP) is recognized as the second most widely used fertilizer in India, following urea, which is the most prevalent nitrogenous fertilizer.
  - **Nutritional Composition:**
    - DAP is particularly valued for its nutrient profile, containing approximately 18% Nitrogen (N) and 46% Phosphorus (P).
    - Both nitrogen and phosphorus are primary macronutrients essential for plant growth and development.
    - Nitrogen is critical for leaf growth and overall plant vigor, while phosphorus is vital for root development, flowering, and fruiting.
  - **Manufacturing Process:** DAP is produced through a chemical reaction between ammonia and phosphoric acid in controlled conditions within fertilizer manufacturing plants.
- **Importance of DAP in Agriculture:**
  - **Primary Nutrients:**
    - DAP serves as a rich source of two of the most crucial nutrients for plant health.
    - The presence of both nitrogen and phosphorus contributes significantly to improving soil fertility and boosting crop yields, making it a preferred choice among farmers for various crops.
  - **Part of Essential Nutrients:**
    - DAP is not only a source of nitrogen and phosphorus but is also integral to the 18 essential nutrients required for optimal plant health.
    - These nutrients include various micronutrients that support various physiological and biochemical processes in plants.
- **Nano DAP:**
  - **Specialized Formulation:**
    - Nano DAP is an innovative, specialized form of DAP that has been developed to enhance the fertilizer's effectiveness in promoting plant growth and development.
    - It is a liquid fertilizer designed to improve nutrient absorption and utilization by plants.
  - **Ease of Use:**
    - The liquid formulation of Nano DAP makes it logistically easier to handle compared to traditional granular fertilizers.
    - This user-friendly aspect can significantly reduce the labor and effort involved in application.
  - **Coverage and Pricing:**
    - A 500 ml bottle of Nano DAP, which is priced at Rs 600, is sufficient to cover one acre of land.
    - In contrast, one 50 kg bag of traditional granular DAP, costing Rs 1,350, is necessary to fertilize one acre of wheat.
    - For crops such as potatoes, farmers may require 2.5 to 3 bags per acre.
    - This stark difference in coverage highlights the potential cost savings associated with Nano DAP.

- **Reduced Handling and Transportation Costs:**
  - Farmers opting for Nano DAP can benefit from lower handling and transportation costs.
  - The lighter liquid form and smaller volume required for application make it more convenient for farmers to transport and apply, further enhancing their profit margins.
- **Current Fertilizer Demand and Supply:**
  - **Annual Consumption:**
    - India consumes approximately 10.5-11.5 million tonnes of DAP annually, reflecting the high demand for this essential fertilizer.
    - However, domestic production is limited, with estimates ranging from 4 to 5 million tonnes, leading to substantial imports to bridge the gap.
  - **Regional Demand:**
    - In states like Punjab, the demand for DAP is particularly significant, with the region requiring about 5.50 lakh tonnes annually.
    - A large portion of this demand arises during the Rabi season (October-March), primarily for crops such as wheat and potatoes.
- **Challenges with Traditional DAP Supply:**
  - **Supply Issues:**
    - The supply of conventional granular DAP has faced numerous challenges, primarily due to its heavy reliance on imports.
    - These supply chain issues have led to shortages and delays, creating panic among farmers who depend on timely access to fertilizers for their crops.
  - **Alternatives Exploration:**
    - In light of these supply challenges, agro-scientists and policymakers have been exploring alternatives to conventional DAP, such as the innovative Nano DAP developed by IFFCO, which could provide a more reliable and effective solution for farmers.
- **Government Recommendations:**
  - The Government has currently recommended that Nano DAP be used to replace only 25-50% of conventional DAP.
  - Specifically, at least 50% of the recommended DAP dose should consist of traditional DAP applied during sowing, while the remaining 50% should comprise Nano DAP, which can be used as a foliar spray once the crop's leaves have emerged.
  - This balanced approach aims to optimize nutrient delivery while maintaining crop health.
- **Reducing Subsidy Burden:**
  - The widespread adoption of indigenously produced nano fertilizers like Nano DAP is expected to alleviate India's financial burden associated with fertilizer subsidies, which are projected to be Rs 1.88 lakh crore in FY 2024.

INDIAN FARMERS FERTILISER COOPERATIVE (IFFCO)

- **Founded:** It was established in 1967 and is headquartered in New Delhi, India.
- **Member Cooperatives:** IFFCO comprises approximately 35,000 member cooperatives.
- **Beneficiary Farmers:** The cooperative model reaches over 50 million farmers across India, providing them with essential fertilizers and promoting sustainable agricultural practices.
- **Market Share:** It holds a substantial position in the Indian fertilizer market, with nearly 29% market share in complex fertilizers and 19% market share in urea.

CENTRAL SILK BOARD

Recently, Union Minister of Textiles, Shri Giriraj Singh, launched a commemorative coin in Mysuru to celebrate the Platinum Jubilee of the Central Silk Board (CSB).

About:

- **Establishment and Legal Status:**
  - The **Central Silk Board (CSB)** was established in **1948** under an **Act of Parliament**, making it a statutory body.
  - This legal status grants it specific authority and responsibilities in regulating and promoting the silk industry in India.
- **Operational Jurisdiction:** The CSB operates under the Ministry of Textiles, which is responsible for formulating policies and programs to enhance the development of textiles in India.
- **Role in Silk Industry Development:** The CSB plays a crucial role in the development of India's silk industry, which is an essential sector for rural employment and economic development. Its responsibilities include:
  - **Advising the Government:** The CSB provides guidance to the Government of India on various matters related to sericulture (silk farming) and the overall silk industry. This advisory role is vital for shaping policies that support silk production and sustainability.
  - **Research and Development:** The Board is involved in research activities aimed at improving silk production techniques, enhancing quality, and exploring innovative practices in sericulture.
- **Support for Sericulture:** The CSB focuses on promoting sericulture as a viable livelihood option, especially for rural communities. Its initiatives often include:
  - Providing **technical assistance** and training to silk farmers to improve their practices.
  - Facilitating access to **funding and resources** for small and marginal farmers engaged in sericulture.
- **Headquarters:** Bengaluru, Karnataka

Silk Production in India

- **Global Standing:** India ranks as the second-largest producer of silk globally, showcasing its significance in the international silk market.
- **Employment Generation:**
  - The sericulture industry in India employs approximately **9.2 million people** in rural and semi-urban areas.
  - This highlights the sector's vital role in providing livelihoods and supporting rural economies.
- **Economic Contribution:**
  - The silk industry is one of the largest **foreign exchange earners** in India, contributing significantly to the country's economy.
  - The diverse range of silk products enhances its market potential both domestically and internationally.
- **Geographical Spread:** Sericulture activities in India are widespread, encompassing around **52,360 villages** across the nation, demonstrating the sector's deep-rooted presence in rural communities.
- In **FY23**, India produced **36,582 metric tons (MT)** of silk, reflecting an increase from the **34,903 MT** produced in the 2021-2022 fiscal year, which was a **3.4% year-on-year (YoY)** growth from the previous year's production of **33,770 MT.**
  - **Mulberry silk** constitutes the largest share of total silk production in the country.

NIDHI COMPANIES

Recently, the Registrar of Companies (RoC) imposed penalties on more than two dozen Nidhi companies for breaching the Companies Act.

About:

- **Definition:**
  - **Legal Framework:** Nidhi companies are a specific category of companies defined under the Companies Act, 2013 in India.
  - **Objective:** As per Sub-Section (1) of Section 406, a "Nidhi" is defined as a company incorporated with the primary objective of promoting the habit of thrift and savings among its members.
  - **Membership Focus:** Nidhi companies operate on a mutual benefit basis, meaning they accept deposits from and provide loans exclusively to their members.
- **Operational Restrictions:**
  - **Chit Funds and Finance:** Nidhis cannot engage in businesses related to chit funds, hire purchase finance, leasing finance, insurance, or acquire securities issued by any body corporate.
  - **Debt Instruments:** They are not allowed to issue preference shares, debentures, or any other form of debt instruments.
  - **Current Accounts:** Opening current accounts for members is prohibited.
- **Acquisition and Control:**
  - **Acquisition of Companies:** Nidhi companies cannot acquire another company or control its Board of Directors unless they pass a special resolution in a general meeting and obtain prior approval from the relevant Regional Director.
  - **Business Limitations:** They are restricted to conducting only borrowing and lending activities in their own name.
- **Additional Restrictions:**
  - **Locker Facilities:** While Nidhi companies can provide locker facilities to their members, the rental income from such services must not exceed 20% of the Nidhi's gross income during any financial year.
  - **Membership Limitation:** Nidhis are not permitted to accept deposits from or lend money to individuals or entities that are not their members.
  - **Asset Management:** They cannot pledge any assets lodged by their members as security, nor can they engage in deposit-taking or lending activities involving any corporate bodies.
  - **Partnerships:** Entering into partnership arrangements concerning borrowing or lending activities is prohibited.
  - **Advertising Restrictions:** Nidhi companies are not allowed to issue advertisements soliciting deposits.
    - However, private circulation of fixed deposit scheme details among members, labeled **"for private circulation to members only,"** is permitted.
  - **Brokerage and Incentives:** Nidhi companies cannot pay any brokerage or incentives for mobilizing deposits from members or for lending funds. This ensures that their operations remain transparent and focused on mutual benefit.

NPS VATSALYA SCHEME

Recently, the Union Finance Minister has launched the NPS Vatsalya scheme.

About:

- **Introduction and Objective:**
  - **NPS Vatsalya** is a new initiative under the **National Pension System (NPS)**, introduced in the **Union Budget 2024-25.**
  - It is specifically designed to promote **long-term financial security** for minors by allowing parents and guardians to invest in a pension account on behalf of their children.
  - The scheme is launched by the **Ministry of Women and Child Development** and managed by the **Pension Fund Regulatory and Development Authority (PFRDA).**

PENSION FUND REGULATORY AND DEVELOPMENT AUTHORITY (PFRDA)

- **Nature:**
  - It is a statutory regulatory body established under the PFRDA Act, 2014.
  - It operates under the jurisdiction of the Ministry of Finance, Government of India.
  - **Headquarters:** New Delhi, with regional offices across the country.
- **Objective:**
  - To promote old age income security by establishing, developing, and regulating pension funds.
  - To protect the interests of subscribers to pension schemes and related matters.
- **Composition:**
  - The PFRDA has a Chairperson and a maximum of six members, of whom at least three are whole-time members.
  - All appointments are made by the Central Government.
- **Functions of PFRDA:**
  - **Regulation of Pension Schemes:** Regulates the National Pension System (NPS) and other pension schemes covered under the PFRDA Act.
  - **Education and Training:**
    - Undertakes steps to educate subscribers and the general public on pensions, retirement savings, and related matters.
    - Provides training for intermediaries involved in the pension sector.
  - **Provision of Pension Schemes:** Offers pension schemes not regulated by any other legislative framework.
  - **Protection of Subscriber Interests:** Safeguards the interests of NPS subscribers and other approved pension schemes.

  - The initiative aims to encourage parents and guardians to build a **financial corpus** for their children's future, particularly focusing on **retirement planning** from an early age.
  - This long-term investment provides a structured, disciplined approach to savings for minors, offering them financial security as they transition into adulthood.
- **Eligibility Criteria:** The scheme is open to **minors** (children under the age of 18) who possess both a **PAN card** and an **Aadhar card**.
- **Minimum and Maximum Contribution:**
  - The **minimum annual contribution** required for the NPS Vatsalya account is **Rs 1,000**.
  - This allows parents and guardians from all economic backgrounds to participate in the scheme and start building savings, making it accessible to a broad section of society.
  - **There is no upper limit on the contributions**, giving flexibility to families who wish to invest more for a higher return over the long term.
    - This feature is particularly beneficial for parents looking to accumulate a sizable fund for their child's future expenses, such as higher education or significant life events.
- **Contributors to the Scheme:**
  - Contributions to the NPS Vatsalya account can be made by **parents or legal guardians** on behalf of their minor children.
  - This ensures that parents have the ability to directly manage their child's long-term financial planning until the child becomes an adult and takes control of the account.
- **Transition After Age 18:**
  - Upon reaching the age of 18, the minor's NPS Vatsalya account automatically transitions into a **standard NPS account**.
    - This allows the individual to continue managing their pension fund as an adult, providing them with a head start on retirement savings.
- **Partial Withdrawals:**
  - After the account has been active for at least **three years**, partial withdrawals are permitted for specific purposes.
  - The account holder (or their guardian, until the child turns 18) can withdraw up to **25% of the total corpus** for needs such as:
    - **Education:** Funds can be used for educational expenses, ensuring that the savings can be utilized for the child's development and future career prospects.
    - **Healthcare:** Withdrawals are allowed for medical emergencies or health-related expenses, ensuring financial support during critical situations.
    - **Disability:** If the child experiences a disability or special needs, the funds can be withdrawn to cover related expenses, offering a safety net for unforeseen challenges.

ADB RAISES INFLATION FORECAST FOR INDIA

Recently, The Asian Development Bank (ADB) forecasts that India's GDP will grow by 7.0% in FY2024 (ending March 2025) and 7.2% in FY2025.

About:

- **Inflation Projections:**
  - The **Asian Development Bank (ADB)** has revised India's **retail inflation forecast** for **2024-25** to **4.7%**, an increase from the previous estimate of **4.6%**.

- This adjustment is primarily attributed to **elevated food prices**, which have been a significant factor in inflation dynamics.
- For **2025-26**, the inflation forecast remains **unchanged**, with expectations that **core inflation** (inflation excluding food and energy prices) will increase as **food inflation** begins to moderate.
- This indicates a shift in inflationary pressures, suggesting that while food prices may stabilize, other sectors could see increased price levels.

- **Monetary Policy Outlook:**
  - The ADB does not anticipate an **immediate cut in interest rates**, diverging from the expectations of some agencies predicting a potential **rate cut** by the **Reserve Bank of India (RBI)** by October.
  - This suggests a cautious approach by the ADB regarding the short-term monetary policy stance.
  - While there is an expectation for monetary policy to become **less restrictive**, such a shift is contingent on the easing of **food price pressures**.
  - This indicates that the RBI may maintain higher interest rates to combat inflation until food prices stabilize, thereby delaying any accommodative measures.
- **Impact of Elevated Food Prices:**
  - The persistence of **high food prices** has been a critical factor affecting the RBI's inclination toward a more accommodative monetary policy.
  - Despite increased imports and positive expectations for higher agricultural output, the elevated prices have created a challenging environment for policymakers.
  - The ADB notes that the ongoing high food prices hinder the RBI's ability to lower interest rates, as inflation remains a primary concern that needs to be addressed to stabilize the economy.
- **GDP Growth Outlook:**
  - The ADB maintains its **GDP growth projection** for India at **7% for 2024-25** and **7.2% for 2025-26**.
  - These figures suggest a robust growth outlook, reflecting optimism about India's economic resilience despite inflationary pressures.
  - The growth projections indicate confidence in the underlying economic fundamentals, supported by structural reforms and recovery in various sectors.
- **Industrial and Agricultural Outlook:**
  - **Industrial growth** has experienced a slowdown due to **rising input costs**, which have negatively impacted **manufacturing margins**.
  - This highlights the challenges faced by the industrial sector in maintaining growth amidst inflationary pressures.
  - However, the **mining** and **construction sectors** have shown gains, indicating a mixed performance across different industrial segments.
  - The ADB expects **La Niña**, a climate pattern, to enhance India's agricultural output, particularly for key crops like **rice**, **wheat**, and **sugarcane**.
  - This anticipated boost in agricultural productivity could alleviate some food price pressures in the longer term.
- **Potential Risks:**
  - The ADB identifies **geopolitical** and **weather-related shocks** as potential risks that could disrupt **global supply chains** and affect agricultural output.
  - Such risks highlight the interconnectedness of global markets and the vulnerabilities that can impact domestic economies.
  - These shocks could lead to fluctuations in food prices and economic stability, necessitating vigilant monitoring and preparedness by policymakers.

ASIAN DEVELOPMENT BANK (ADB)

- **Establishment:** ADB is a multilateral development bank founded on December 19, 1966.
- **Role:** It serves as the primary international development finance institution for the Asia-Pacific region.
- **Vision:** ADB aims to create a prosperous, inclusive, resilient, and sustainable Asia and the Pacific while continuing its efforts to eradicate extreme poverty in the region.
- **Headquarters:** Located in Manila, Philippines.
- **Membership:**
  - **Eligibility:** Open to members and associate members of the United Nations Economic Commission for Asia and the Far East, as well as other regional and non-regional developed countries that are UN members or part of its specialized agencies.
  - **Growth:** ADB has expanded from 31 members at its inception in 1966 to 68 members today, with 49 from Asia and the Pacific and 19 from outside the region.

SCHEMES FOR IMPROVING FARMERS' LIVES AND LIVELIHOODS

Recently, the Cabinet approval of seven major schemes with a total budget of Rs. 14,235 crore outlines a comprehensive approach by the Indian government to enhance agricultural productivity, and improve farmers' incomes.

Key Schemes:

- **Digital Agriculture Mission:** This ₹ 2,817 crore mission emphasizes the use of technology such as AI, big data, and geospatial tools to modernize agriculture.

- **Crop Science for Food and Nutritional Security:** With a budget of ₹3,979 crore, this program focuses on climate-resilient crops, plant genetic improvements, and securing food supply by 2047.
- **Strengthening Agricultural Education**: This ₹2,291 crore program seeks to modernize agricultural education in line with the New Education Policy 2020.
- **Sustainable Livestock Health and Production**: The ₹1,702 crore allocated to livestock management aims to increase farmers' incomes from livestock and dairy production.
- **Sustainable Horticulture Development:** With ₹1,129 crore set aside, this initiative promotes the growth of horticulture crops, which are known to be of high value.
- **Krishi Vigyan Kendras:** The ₹1,202 crore for KVKs aims to strengthen over 700 Krishi Vigyan Kendras (KVKs), which play a crucial role in disseminating agricultural knowledge and training.
- **Natural Resource Management:** This ₹1,115 crore scheme targets the sustainable management of natural resources like soil and water, crucial for long-term agricultural productivity.

Benefits:

- **Digital Agriculture Mission:**
  - **Enhanced Decision-Making:** The integration of technologies like Agri Stack, Krishi Decision Support System, and digital crop estimation could significantly improve decision-making processes for farmers, providing them with accurate weather forecasts, soil profiling, and real-time crop management insights.
  - **Improved Loan Access:** The digitization of crop data and land registries simplifies access to credit, ensuring timely financial support for farmers.
- **Crop Science for Food and Nutritional Security:**
  - **Climate Resilience:** Focuses on developing climate-resilient crops, protecting against changing weather patterns and ensuring long-term food security.
  - **Increased Productivity:** By enhancing the genetic quality of food and fodder crops and promoting research on pulse and oilseed crops, this initiative aims to increase yields and improve food quality.
- **Strengthening Agricultural Education:**
  - **Modernized Training:** Agricultural students and researchers will be trained in cutting-edge technologies, including AI, big data, and remote sensing, ensuring a workforce ready for future challenges.
  - **Alignment with NEP 2020:** Integration of modern agricultural techniques and climate resilience strategies into education will create a more sustainable and informed agricultural sector.
- **Sustainable Livestock Health and Production:**
  - **Increased Livestock Income:** Focuses on improving dairy production, animal health, and genetic resource management, contributing to higher income from livestock and dairy farming.
  - **Veterinary Support:** Investments in animal health management will reduce disease outbreaks and improve overall livestock health.
- **Sustainable Horticulture Development:**
  - **Higher Value Crops:** Focuses on high-value horticultural crops, including vegetables, floriculture, and medicinal plants, which can provide better returns compared to traditional crops.
  - **Diversified Income:** Expanding into diverse crop categories reduces dependency on traditional crops and opens new income streams for farmers.
- **Krishi Vigyan Kendras (KVKs):**
  - **Knowledge Dissemination:** Strengthening KVKs helps in spreading modern agricultural knowledge and training farmers on new techniques, contributing to better on-ground implementation.
  - **Capacity Building:** Farmers will be better equipped with skills and technologies to address modern farming challenges.
- **Natural Resource Management:**
  - **Sustainable Practices:** Promotes efficient management of resources like water, soil, and land to improve long-term agricultural productivity.
  - **Environmental Conservation:** Helps reduce environmental degradation and preserves essential resources for future agricultural use.

Challenges Associated:

- **Digital Agriculture Mission:** While digital tools promise great benefits, the digital divide in rural areas may hinder the full adoption of these technologies. Bridging this gap through education and infrastructure will be crucial.
- **Crop Science for Food and Nutritional Security:** Climate-resilient agriculture is necessary as India faces increasing climate variability. However, developing these crops may take time and involve extensive research and testing, which will need sustained funding and scientific expertise.
- **Strengthening Agricultural Education:** Adapting the education system to include advanced technology requires significant investments in infrastructure, teacher training, and curriculum development.
- **Sustainable Livestock Health and Production:** Proper implementation will require widespread veterinary support and infrastructure, which can be a challenge in remote areas.
- **Sustainable Horticulture Development:** Developing robust market linkages and supply chains for horticulture produce will be essential to ensure that farmers realize profits from these high-value crops.
- **Krishi Vigyan Kendras (KVKs):** Ensuring that KVKs are well-equipped and staffed to meet the growing demands of modern agriculture will be a logistical challenge.

4 ENVIRONMENT

NAGAR VAN YOJANA (NVY)

The Ministry of Environment, Forest and Climate Change has achieved 100-Day Target of 100 Nagar Vans.

About:

- **Purpose:**
  - The **Nagar Van Yojana** was launched in **2020** as part of an initiative to enhance **urban greenery**.
  - The primary goals of the scheme are to improve the **quality of life** for residents and to foster **social cohesion** within cities.
- **Financial Support:**
  - The scheme provides **financial assistance** of **Rs. 4 lakh per hectare** for the creation and maintenance of urban forests.
  - This funding aims to incentivize the establishment of green spaces within urban settings.

Key Features of the Scheme:

- **Target Areas:**
  - **Nagar Van** areas are designated green spaces that range from a **minimum of 10 hectares** to a **maximum of 50 hectares**.
  - This size is intended to create significant urban forests that can effectively contribute to local ecology and community well-being.
- **Coverage:** The scheme encompasses all cities with **Municipal Corporations**, **Municipalities**, and **Urban Local Bodies (ULBs)**, ensuring a wide reach and impact across various urban areas.
- **Biodiversity Focus:**
  - The initiative emphasizes biodiversity by promoting the planting of **fruit-bearing**, **medicinal**, and **native species**.
  - This approach aims to attract wildlife and maintain ecological balance, creating a rich urban ecosystem.
- **Community Participation:**
  - Community engagement is a core component of the Nagar Van Yojana. It encourages the involvement of citizens, students, and other stakeholders in:
    - **Tree planting** activities.
    - **Educational programs** related to environmental conservation and urban forestry.
    - **Sustainable management** practices to ensure the longevity and health of the urban forests.

Design and Components of Nagar Van:

- **Tree Cover Requirements:** Each Nagar Van must ensure that at least **two-thirds** of its area is under **tree cover**. This requirement guarantees substantial green space that contributes to urban biodiversity.
- **Additional Features:** Nagar Vans will include various components such as:
  - **Biodiversity Parks**: Areas focused on preserving a wide range of plant and animal species.
  - **Smriti Vans**: Commemorative gardens dedicated to individuals or events.
  - **Butterfly Conservatories**: Spaces designed to attract and support butterfly populations.
  - **Herbal Gardens**: Areas showcasing medicinal plants for educational and therapeutic purposes.
  - **Matri Van**: A new addition created under the **Ek Ped Ma Ke Naam** initiative, further promoting the planting of trees.

Future Goals and Support:

- **Development Targets:**
  - The current aim of the Nagar Van Yojana is to establish **1000 Nagar Vans** by the year **2027**.
  - This ambitious target reflects the commitment to enhancing urban greenery and promoting sustainable living in cities.
- **Funding Sources:**
  - The financial support for the initiative comes from the **National Fund of the National Compensatory Afforestation Management and Planning Authority (National CAMPA).**
  - This funding source is crucial for the successful implementation and maintenance of the urban forests.

AIR QUALITY MANAGEMENT EXCHANGE PLATFORM (AQMx)

Recently, the Climate and Clean Air Coalition (CCAC) has created and introduced an Air Quality Management Exchange Platform (AQMx).

About:

- **Overview:**
  - This platform serves as a resource for the latest guidance and tools on air quality management, designed to align with the interim targets set by the World Health Organization (WHO) Air Quality Guidelines.

- It was established in response to a resolution from the recent United Nations Environment Assembly, emphasizing the need for increased regional collaboration and action to improve air quality worldwide.

- **Significance of the Platform:**
  - **Capacity Building:** The platform addresses gaps in air quality management capabilities by providing curated guidance on essential themes such as air quality monitoring, inventory development, and health impact assessments.
  - **Informed Decision-Making:** It enables decision-makers to obtain a comprehensive understanding of the impacts of air pollution, which is crucial for developing policies that effectively address public health needs on a global scale.
  - **Knowledge Exchange:** The platform is designed to evolve, facilitating knowledge sharing among regional and sub-regional communities regarding best practices in air quality management.

CLIMATE AND CLEAN AIR COALITION (CCAC)

- **Overview:** Founded in 2012 and convened under the United Nations Environment Programme (UNEP).
- **Members:** It is a voluntary partnership comprising over 160 governments, intergovernmental organizations, and non-governmental organizations.
- **Objectives:**
  - **Pollutant Reduction:** The coalition focuses on reducing powerful but short-lived climate pollutants (SLCPs), including methane, black carbon, hydrofluorocarbons (HFCs), and tropospheric ozone, which significantly contribute to both climate change and air pollution.
  - **Integrated Approach:** It aims to align ambitious agenda-setting with targeted mitigation actions within specific countries and sectors, ensuring effective implementation of strategies to combat these pollutants.

WORLD OZONE DAY

Recently, the Ministry of Environment, Forest and Climate Change hosted an event in New Delhi to commemorate the 30th World Ozone Day.

About:

- World Ozone Day is celebrated on **16th September** each year to commemorate the signing of the **Montreal Protocol**, an international environmental treaty for phasing out of production and consumption of Ozone Depleting Substances, that came into force on this day in 1987.
- **Theme:**
  - The theme for World Ozone Day 2024 is **"Montreal Protocol: Advancing Climate Actions."**
  - This theme highlights the Montreal Protocol's essential role in not only protecting the ozone layer but also in spearheading broader climate action initiatives worldwide.
- **India's Leadership:**
  - India has emerged as a leader in the implementation of the Montreal Protocol, particularly in achieving the **reduction targets for controlled substances** ahead of schedule.
  - This proactive approach has not only contributed to the safeguarding of the ozone layer but has also played a significant role in the global fight against climate change.
- **Mission LiFE:**
  - A key initiative in promoting sustainability is **Mission LiFE (Lifestyle for Environment)**, a campaign aimed at fostering an environmentally conscious lifestyle.
  - It encourages individuals to make **mindful choices** in their daily lives that contribute to a healthier environment.
- **National Initiative:**
  - The **'Ek Ped Maa Ke Naam'** initiative, launched by the Prime Minister, underscores the importance of tree planting as vital for a sustainable future and for the protection of **Mother Earth**.
  - This initiative is aligned with broader environmental goals and reflects India's commitment to ecological preservation.

OZONE

- **Chemical Composition:** Ozone, represented by the chemical formula O_3, is distinct from breathable oxygen (O_2), which is vital for life.
- **Stratospheric Ozone:**
  - **Location:** Most of the Earth's ozone is concentrated in the **stratosphere**, at altitudes ranging from **10 to 40 kilometers** above the Earth's surface.
  - **Function:** In this layer, ozone absorbs harmful **ultraviolet (UV) radiation** emitted by the Sun, effectively shielding living organisms from its damaging effects.
    - This protective role is why stratospheric ozone is often referred to as "good" ozone.
- **Tropospheric Ozone:** Conversely, excess ozone at the Earth's surface, primarily formed from pollutants, is termed "bad" ozone.
  - It can have adverse health effects and contribute to environmental degradation.

- **Commitment to the Montreal Protocol:**
  - India has been a Party to the Montreal Protocol since **June 1992** and has been effectively implementing its provisions, particularly in **phasing out ozone-depleting substances**.
  - The country has successfully eliminated substances such as: *Chlorofluorocarbons (CFCs), Carbon tetrachloride, Halons, Methyl Bromide, Methyl Chloroform.*

- Currently, India is working towards phasing out **Hydrochlorofluorocarbons (HCFCs)** as part of the **accelerated schedule** outlined by the Protocol.

MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER

- **Overview:** It is an international agreement aimed at safeguarding the Earth's delicate ozone layer by regulating the production and consumption of Ozone-Depleting Substances (ODS).
- **Historical Context:**
  - **Adoption Date:** The original Montreal Protocol was established on **September 16,1987**.
  - **Implementation:** It came into force on **January 1, 1989** and has undergone eight revisions (amendments and adjustments) since its inception.
  - **Global Endorsement:** It is notable for being the first international environmental agreement to receive universal support from all countries.
- **Achievements:** The Protocol has led to the successful closure of the ozone hole, demonstrating the effectiveness of collaborative international environmental governance.
- **Flexibility and Funding:**
  - The Montreal Protocol includes a **unique adjustment provision** that allows its parties to quickly respond to new scientific findings and accelerate the reduction of harmful chemicals already covered under the Protocol.
  - These adjustments apply automatically to all member countries. Furthermore, the Protocol has been amended to include new chemicals and to establish funding mechanisms to assist developing nations in meeting compliance requirements.
- **Annual Meetings:** The parties convene annually to make decisions that ensure the continued and effective implementation of this vital legal agreement.

Vienna Convention for the Protection of the Ozone Layer:

- **Background:**
  - The **Vienna Convention**, adopted in **1985** and enforced in **1988**, serves as a foundational element of the international ozone protection regime.
  - In **2009**, it achieved universal endorsement, becoming the first Convention of its kind to do so.
- **Objectives:**
  - The Convention's primary goal is to encourage parties to implement legislative or administrative measures to mitigate activities harmful to the ozone layer.
  - This is to be achieved through systematic observations, research, and information exchange.
- **Non-Binding Nature:** Unlike the Montreal Protocol, the Vienna Convention does not mandate concrete actions for controlling ozone-depleting substances.
- **Role in International Cooperation:**
  - As a vital component of the international ozone framework, the Vienna Convention facilitates discussions on scientific research and observations related to the ozone layer.
  - Its parties meet every three years, aligning their sessions with those of the Montreal Protocol, to make decisions regarding the administration of the Convention.

PHRYNARACHNE DECIPIENS

Recently, a new species of spider called Phrynarachne decipiens, commonly known as the bird-dung crab spider, has been discovered in Assam.

About:

- **Common Name:** Bird dung or bird-dropping crab spider
- **Distribution:**

  - This spider species has been primarily found in Malaysia and Indonesia, specifically on the islands of Java and Sumatra.
  - Recently, it has been recorded for the first time in India, with sightings in Assam's Sonapur (Kamrup Metropolitan district) and the Chirang Reserve Forest (Kokrajhar district).
- **Habitat and Behavior:**
  - The bird dung crab spider typically rests motionless 1 to 2 feet above the ground on the upper surfaces of broad leaves.
  - Its chalky white coloration, combined with the whitish appearance of its web, resembles bird droppings, making it challenging to spot in its natural habitat.
- **Morphological Features:**
  - Notably, this spider possesses stout spermathecae, which are sac-like organs in the female reproductive tract that store sperm received during copulation.
  - In this species, the posterior heads of the spermathecae are almost touching each other.
- **Taxonomy:** The genus *Phrynarachne* comprises 35 accepted species, among which three have been identified and re-described based on female specimens collected from Assam: *P. ceylonica, P. ceeliana,* and *P. tuberosa.*

ELONGATED TORTOISE (INDOTESTUDO ELONGATA)

Recently, the elongated tortoise was observed in the Damdama area of Haryana during a research survey in the Aravalli region.

About:

- **Physical Features:**
  - Medium-sized body with a yellowish-brown or olive-colored shell.
  - Characterized by black blotches at the center of each scute.
  - During the breeding season, a distinctive pink ring appears around the nostrils.

- **Habitat:**
  - Typically found in Sal deciduous and hilly evergreen forests.
  - Distribution extends across Southeast Asia, northern India, Nepal, Bhutan, Bangladesh, and other regions.
  - Present in the Chhota Nagpur plateau and Himalayan foothills, inhabiting areas at elevations of up to 1,000 meters.
- **Threats:**
  - Subject to human exploitation for food and traditional medicine.
  - Hunting practices, often conducted with the assistance of dogs, pose a significant threat.
  - Habitat degradation and illegal wildlife trade further endanger the species.
- **Ecological Role:** Plays a crucial role in its ecosystem but is highly vulnerable to environmental changes and human pressures.
- **Population Decline:** Experiences significant population decline due to hunting, habitat degradation, and illegal wildlife trade, despite its extensive distribution.
- **Conservation Status:**
  - Classified as **Critically Endangered** on the IUCN Red List.
  - Listed under **Appendix II** of the CITES, indicating it requires international cooperation for conservation.
  - **Wildlife (Protection) Act of 1972:** Schedule IV.

ARAVALIS

- **Overview:**
  - The Aravali Range stretches across a distance of 692 km from Gujarat to Delhi, passing through Rajasthan and Haryana.
  - The range varies in width between 10 to 120 km, acting as a natural green wall that separates different ecological regions.
- **Geographical Distribution:**
  - Approximately 80% of the Aravalis are located in Rajasthan, with the remaining 20% extending into Haryana, Delhi, and Gujarat.
  - The mountains are divided into two main ranges: the Sambhar Sirohi Range and the Sambhar Khetri Range, which collectively extend about 560 km in Rajasthan.
- **Ecological Significance:**
  - The Aravali Range serves as an ecotone between the Thar Desert and the Gangetic Plain.
  - Ecotones are regions where two or more ecosystems, biological communities, or biotic regions converge, fostering biodiversity and unique ecological interactions.
- **Highest Peak:** Gurusikhar, situated in Rajasthan, is the highest peak in the Aravali Range, reaching an elevation of 1,722 meters.

ASSAM CASCADE FROGS

Recently, scientists from the Wildlife Institute of India conducted a study on the Assam Cascade Frog (Amolops formosus) in two Himalayan streams within the Churdhar Wildlife Sanctuary (Himachal Pradesh).

About:

- **Distribution:** The **Amolops** species, commonly referred to as the **hill stream frog**, primarily inhabits the **Himalayan belt in India** and is also found in the **high-flowing and gradient streams** of northern **Bangladesh**, **Bhutan**, and **Nepal**.
- **Ecological Significance:**
  - This species serves as an **indicator species**, meaning it can be utilized for **long-term monitoring of the health** of hilly streams.

  - Its presence and well-being reflect the ecological condition of its habitat, making it crucial for assessing environmental changes.
- **Diversity:** The genus **Amolops** consists of **72 distinct species** that thrive in the **hilly regions** with fast-flowing streams across **southern and Southeast Asia**.
- **Adaptations:**
  - Amolops frogs are **highly adapted** to their swift aquatic environment.
  - They possess **adhesive disks** on the tips of their digits, featuring **circum-marginal grooves** that enable them to cling effectively to **rocks and other substrates** in fast-flowing waters.
  - This adaptation is vital for their survival in such challenging habitats.
- **Common Names:** Assam sucker frog, Beautiful stream frog, Assam cascade frog, Hill stream frog.
- **Conservation Status:** According to the **International Union for Conservation of Nature (IUCN)**, the conservation status of the Amolops species is categorized as **Least Concern**, indicating that they are currently not at immediate risk of extinction.

TARDIGRADES

Recent studies of amber-encased fossils have shed light on the period when tardigrades first evolved their capacity to enter the tun state, a development that has allowed them to endure through mass extinction events.

About:

- **Classification:**
  - Tardigrades, commonly known as "water bears" or "moss piglets, " are microscopic, water-dwelling animals belonging to the phylum Tardigrada.
  - They are renowned for their resilience and unique ability to survive extreme environmental conditions.
- **Physical Characteristics:** Tardigrades are typically about 0.5 to 1.5 millimeters long and have a distinctive appearance, featuring a segmented body and eight stubby legs with claws.
- **Unique Abilities:**
  - One of the most remarkable traits of tardigrades is their ability to enter a cryptobiotic state known as the "tun" state.
  - When faced with extreme conditions—such as high radiation, extreme temperatures, desiccation, or lack of oxygen—they can dehydrate and curl into a ball, significantly reducing their metabolic activity.
  - In this state, they can survive temperatures ranging from near absolute zero to over 150 degrees Celsius, high levels of radiation, and even the vacuum of space.
- **Reproduction:**
  - Tardigrades reproduce both sexually and asexually, depending on the species.
  - They can lay eggs that are often resistant to harsh conditions, ensuring the survival of their offspring in challenging environments.
- **Ecological Importance:**
  - Tardigrades play a crucial role in their ecosystems by contributing to the decomposition process and nutrient cycling.
  - They are also indicators of environmental health, as their presence and abundance can reflect the conditions of their habitats.
  - Tardigrades likely survived major events such as the "Great Dying" (around 250 million years ago), which wiped out 90% of Earth's species.

AMUR FALCONS

Recently, Manipur's Tamenglong district implemented a ban on the hunting of Amur Falcons.

About:

- **Scientific Name:**
  - Amur falcons belong to the **falcon family**, with the scientific name **Falco amurensis**.
  - These birds are small in size compared to other raptors but are known for their exceptional long-distance migration.
- **World's Longest Travelling Raptors:**
  - Amur falcons hold the distinction of being the **longest-travelling raptors** in the world.
  - Their migratory journey spans thousands of kilometers, making them endurance champions among avian species.
  - They undertake this extensive migration annually with the onset of winter, covering a greater distance than any other bird species.
- **Named After the Amur River:**
  - These falcons are named after the **Amur River**, which forms the border between **Russia** and **China**.
  - The river region is significant as it is near their primary breeding grounds.
- **Breeding and Migration Route:**
  - **Breeding Grounds:** Amur falcons breed in **southeastern Siberia** and **northern China** during the warmer months.
  - **Migration Path:**
    - They migrate through **India** and then over the **Indian Ocean** to reach their wintering grounds in **southern Africa**.
    - Once winter ends, they return to **Mongolia** and **Siberia** to breed, completing an annual cycle of remarkable travel distances.
    - Their migration is an extraordinary feat, as they cover more than 22,000 kilometers, including crossing vast open water over the Indian Ocean.
- **Doyang Lake, Nagaland** – The Falcon Capital of the World:
  - **Doyang Lake** in **Nagaland**, India, is internationally recognized as a critical stopover point for the Amur falcons during their annual migration.
  - Large flocks of these birds gather here in the autumn months, creating a spectacular natural event that has earned Nagaland the title of the **"Falcon Capital of the World".**
  - The earlier practice of hunting falcons has been curtailed thanks to conservation initiatives, transforming Nagaland into a safe haven for these birds.
- **Conservation Status:**
  - **IUCN Status:** It is classified as **Least Concern** on the **International Union for Conservation of Nature (IUCN)** Red List.
  - **Convention on Migratory Species (CMS):** The species is also **protected** under the CMS, an international agreement that safeguards migratory species and encourages cooperation between countries along their migratory routes.

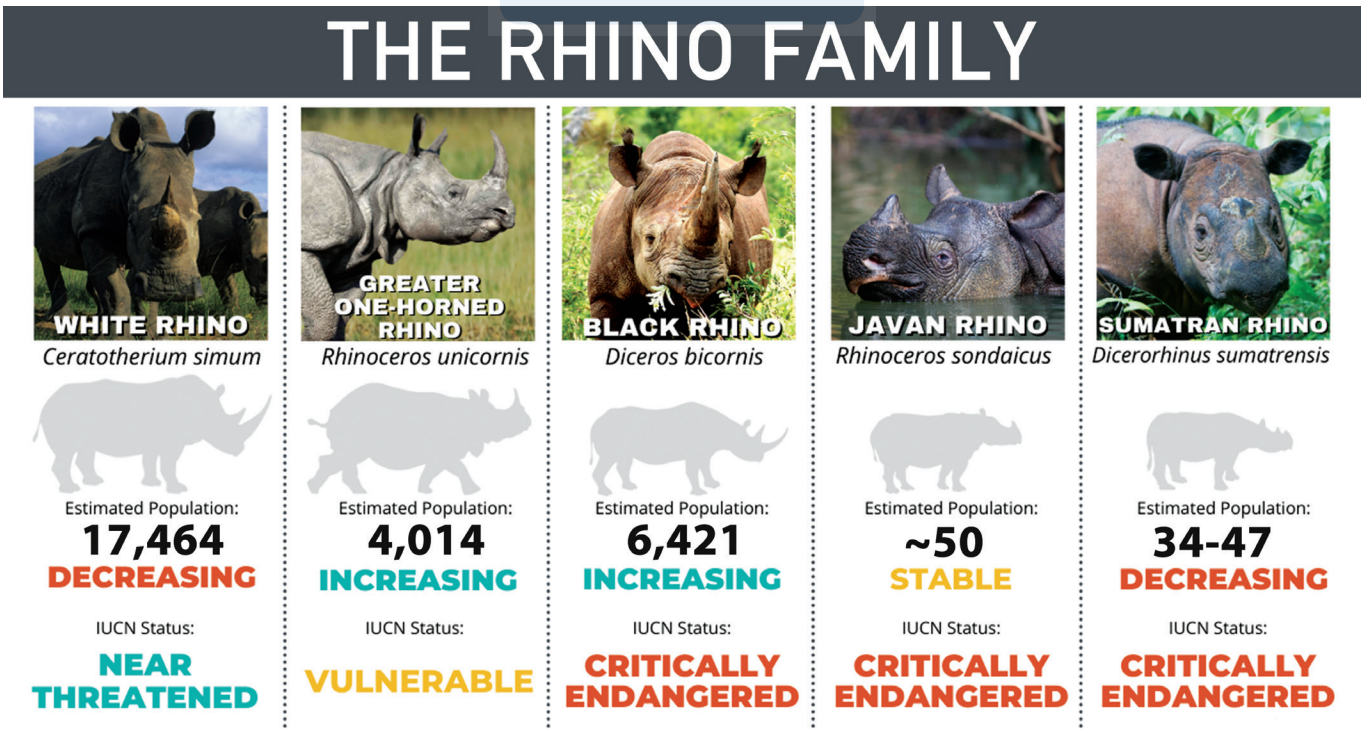
- **Ecological Importance:**
  - As part of the global ecosystem, Amur falcons play a critical role in maintaining ecological balance.
  - Their migratory behavior connects diverse ecosystems across continents, from the forests of Siberia to the wetlands of southern Africa.

GREATER ONE-HORNED RHINO

Recently, the International Rhino Foundation (IRF) released its 'State of the Rhino' report, emphasizing positive progress for the Greater One-Horned Rhino.

About

- **Habitat and Distribution:**
  - **Primary Regions:** Greater one-horned rhinos (**Rhinoceros unicornis**) mainly inhabit **India** and **Nepal**, though a smaller population occasionally crosses into **Bhutan.**
  - These three countries **(Bhutan, India, and Nepal)** collaborate on a **trans-boundary management strategy** to ensure the effective conservation and management of the species.
- **Population Growth:**
  - **Historical Low:** Over the past century, the population of greater one-horned rhinos was critically low, with fewer than **100 animals** surviving.
  - **Recent Growth:** Due to strict government protection and effective management, the population has seen steady growth, increasing by about **20% over the past decade.**
- **Conservation Status:** Despite the positive trend in population growth, the greater one-horned rhino is still classified as **Vulnerable** on the **IUCN Red List**.
- **Poaching Threat:**
  - Poaching remains one of the most significant threats to the species.
  - Rhino horns are highly sought after, particularly in **illegal wildlife trade**, making the rhino vulnerable to organized poaching networks.
  - The species has been driven out of many areas where it once thrived, indicating that recovery efforts must focus on both protection and **reintroduction** to former habitats.
- **Landscape-Level Threats:**
  - **Invasive Species:** The prevalence of **invasive plant species** in rhino habitats has become a growing concern. These non-native plants **choke out native rhino food plants**, reducing the amount of available habitat and food sources.
  - **Habitat Disruption:** Stronger **monsoon seasons** and **resource scarcity** are disrupting rhino habitats, further compounded by **limited space** for the species to roam and thrive.
- **Climate Change Impact:**
  - There is rising concern that greater one-horned rhinos could be severely impacted by **climate change**.
  - Increased intensity in **monsoon seasons** may flood their habitats, reduce access to food, and displace populations.
- **Human-Wildlife Conflict:** As human settlements expand and rhino habitats shrink, the risk of **human-wildlife conflict** rises, putting both rhinos and local communities at risk.



5 GEOGRAPHY

MORE FREQUENT CYCLONES IN ARABIAN SEA

Recently, the Arabian Sea experienced an unusual cyclone named Asna, which attracted significant attention because of its atypical timing and origin.

Cyclone Activity in the North Indian Ocean:

- **Moisture Source:**
  - **Role of the North Indian Ocean:**
    - The North Indian Ocean provides a significant portion of the moisture required for the Indian summer monsoon.
    - This moisture is crucial for the generation of approximately 200 lakh crore buckets of water during the monsoon season.
  - **Evaporation:** The warm temperatures of the Arabian Sea and Bay of Bengal are essential for evaporation, which fuels monsoon rainfall and cyclogenesis.
- **Cyclone Frequency:**
  - **Cyclone Activity:** Despite the favorable conditions for cyclogenesis (i. e. , warm waters and significant evaporation), the North Indian Ocean is one of the least active regions globally concerning cyclone frequency.
  - **Cyclone Factors:** Factors such as vertical wind shear and other atmospheric conditions suppress cyclone development, leading to fewer cyclones compared to other oceanic regions.
- **Vertical Wind Shear:** It refers to the variation in wind speed and direction with altitude.
  - **Impact on Cyclones:**
    - **Disruption of Cyclone Formation:** High vertical wind shear disrupts the vertical alignment and organization of cyclones. Effective cyclogenesis requires a consistent wind structure to support the development of cyclonic systems.
    - **Difficulty in Intensification:** Strong shear forces can prevent cyclones from consolidating their structure and intensifying. This disrupts the cyclonic process, leading to weaker storms.
- **Proximity to Landmasses:**
  - **Impact on Cyclones:** The Bay of Bengal and the Arabian Sea are located near major landmasses, including India, Bangladesh, and Myanmar.
  - When cyclones move over land, they encounter increased friction. This friction slows down the cyclone and leads to a rapid loss of energy and intensity.

Unique Characteristics of the Indian Ocean:

- **Oceanic Tunnels:**
  - **Pacific and Southern Ocean Influence:**
    - The Indian Ocean is linked to the Pacific Ocean and Southern Ocean through 'oceanic tunnels. '
    - The Pacific tunnel contributes warm water to the upper 500 meters of the Indian Ocean, while the Southern Ocean tunnel supplies cooler waters below approximately 1 kilometer.
- **Temperature and Convection:**
  - The Arabian Sea warms rapidly during the pre-monsoon season, while the Bay of Bengal also warms but produces more atmospheric convection and rainfall.
  - This warming and convection lead to the monsoon onset over Kerala by mid-May.
- **Post-Monsoon Season:** During the post-monsoon season, significant rainfall occurs in several Indian states due to the northeast monsoon.

Cyclogenesis and Climate Change:

- **Cyclogenesis Patterns:**
  - The North Indian Ocean experiences two main cyclone seasons—pre-monsoon and post-monsoon.
  - The Arabian Sea is cooler during the pre-monsoon season due to strong southwesterly winds that mix cold subsurface waters with surface waters.
  - Conversely, the Bay of Bengal produces many low-pressure systems during the monsoon, though these rarely become cyclones due to vertical wind shear.
- **Climate Change Impact:**
  - **Warming Trends:**
    - Climate change accelerates the warming of the Indian Ocean, with increased heat input from both the Pacific Ocean and Southern Ocean.
    - This warming affects global ocean heat uptake and influences climate patterns.
  - **Cyclone Dynamics:**
    - The warming of the Indian Ocean contributes to changes in cyclone frequency and intensity.
    - The Arabian Sea, despite having lower cyclonic activity, shows signs of increasing cyclone numbers in recent years.
- **Unusual Cyclone Events:**
  - **August Cyclone 'Asna':** This cyclone developed from a strong land-born depression that transitioned onto the warm Arabian Sea.

- The land-born depression grew unusually powerful over land, fueled by soil moisture and then intensified over the warm Arabian Sea.

DEVELOPMENT CYCLE OF TROPICAL CYCLONES

Formation and Initial Development Stage:

- **Warm Sea Conditions:**
  - **Temperature Requirements:** The sea must be warm, with temperatures exceeding 26°C to a depth of at least 60 meters.
  - **Evaporation and Moisture Transfer:** Abundant evaporation from the warm sea surface transfers water vapor into the overlying atmosphere, creating conditions conducive to cyclonic development.
- **Atmospheric Instability:**
  - **Vertical Cumulus Clouds:** Instability in the atmosphere promotes the formation of towering cumulus clouds through convection.
  - **Condensation of Rising Air:** As warm, moist air rises from the ocean surface, it cools and condenses, forming cloud structures and initiating the cyclonic process.

Mature Tropical Cyclones:

- **Intensification Process:**
  - **Rising Air and Horizontal Spread:** As the storm intensifies, vigorous thunderstorms cause air to rise and spread horizontally at the tropopause level.
  - **Positive Perturbation Pressure:** This horizontal spread creates a positive perturbation pressure at high levels, which accelerates downward air motion due to convection.
- **Formation of the Eye:**
  - **Subsidence and Warming:** With the downward motion of air, subsidence occurs, warming the air through compression, leading to the formation of a warm 'Eye' at the cyclone's center.
  - **Eye Shapes:** The 'Eye' can take on various shapes, including circular, concentric, or elliptical.
- **Physical Features:**
  - **Turbulent Thundercloud Bands:** Mature tropical cyclones in the Indian Ocean are characterized by a concentric pattern of highly turbulent giant cumulus thundercloud bands surrounding the 'Eye. '

Modification and Decay:

- **Weakening Process:**
  - **Loss of Warm Moist Air:** The cyclone begins to weaken once its supply of warm, moist air diminishes, which can occur after landfall or when the cyclone moves over cooler waters.
  - **Decreasing Central Low Pressure:** As the source of energy wanes, the central low pressure, internal warmth, and wind speeds decrease.

MISSION MAUSAM

Recently, the Union Cabinet approved the 'Mission Mausam' initiative to develop a more weather-resilient and climate-smart India.

About:

- **Budget and Timeline:**
  - With a budget of ₹2,000 crore, Mission Mausam is planned for implementation over two years, from 2024 to 2026.
  - This initiative by the Government of India is designed to make the country "Weather Ready" and "Climate Smart" by enhancing weather and climate forecasting capabilities.
- **Cutting-Edge Technology Development:**
  - **Advanced Weather Surveillance:** The mission focuses on developing next-generation weather surveillance technologies and systems.
    - This includes improving atmospheric observations, ensuring better spatial and temporal coverage, and enhancing the accuracy of weather data.
    - Cutting-edge tools like Doppler Weather Radars, advanced satellites, and radio sondes will be incorporated to achieve precise and real-time data collection.
  - **High-Performance Computing (HPC):** The use of HPC systems will significantly boost the efficiency of climate and weather models, providing faster and more accurate predictions.
  - **Higher-Resolution Observations:** The mission aims to implement systems that allow for more detailed atmospheric observations, helping capture weather patterns more accurately.
    - By improving temporal (time-based) and spatial (location-based) sampling, it will enable meteorologists to predict weather events more precisely.
- **Improved Earth System Models:** Through advanced models and tools, including the use of AI and machine learning, better forecasting capabilities will be developed, enabling faster decision-making and preventive actions.
- **Development of Weather Management Technologies:**
  - The mission seeks to create state-of-the-art technologies specifically for weather management.
  - These technologies will help in real-time monitoring, prediction, and potential interventions to mitigate weather impacts.
- **Last-Mile Connectivity for Weather Dissemination:**
  - A robust system will be established to ensure that weather forecasts and warnings reach every corner of the country, including remote areas.
  - The goal is to create a seamless communication network that provides timely and accurate weather information to citizens, ensuring preparedness for extreme weather events.

- **Capacity Building:**
  - One of the primary focuses of Mission Mausam is enhancing the skills and expertise of personnel involved in weather observation and forecasting.
  - Training programs and educational initiatives will be launched to build capacity among stakeholders, ensuring the sustainability of the mission's objectives.

INTEGRATED OCEAN ENERGY ATLAS

Recently, the Indian National Centre for Ocean Information Services (INCOIS) announced the creation of an 'Integrated Ocean Energy Atlas' for the Indian Exclusive Economic Zone.

About:

- **Indian EEZ and Ocean Energy Potential:**
  - The Indian Exclusive Economic Zone (EEZ) holds vast potential for ocean energy resources, including marine meteorological energy (solar and wind) and hydrological energy (wave, tide, currents, ocean thermal, and salinity gradients).
    - An "exclusive economic zone, " or "EEZ" is an area of the ocean, generally extending 200 nautical miles (230 miles) beyond a nation's territorial sea, within which a coastal nation has jurisdiction over both living and nonliving resources.
  - Estimates suggest that the Indian EEZ can generate approximately 9.2 lakh terawatt hours (TWh) of energy from various ocean renewable energy sources.
  - The newly created ocean Energy Atlas identifies high-potential areas for energy generation within India's EEZ and serves as a reference tool for policymakers, researchers, and industries.
- **Scope and Mapping Details:**
  - **Resolution and Coverage:** The energy potential mapping was conducted at a 5 km x 5 km resolution, covering sites along India's EEZ, which extends up to 220 km from the coast.
  - **Coastline and ocean Economy:**
    - India has a vast coastline of over 7,000 km, offering significant opportunities for ocean energy generation.
    - The Ocean Energy Atlas is integral to India's broader efforts to strengthen its ocean economy, focusing on sustainable use of ocean resources.
- **World's First Integrated ocean Energy Atlas:** This atlas is the first of its kind globally, offering an integrated and individual assessment of ocean energy reserves across India's EEZ.
  - The atlas also accounts for critical factors such as fishing zones, shipping lines, cyclone-prone zones, eco-sensitive areas, and existing ports and harbours.
  - These considerations are essential for industries planning infrastructure for energy generation.
- **Significance of the Ocean Energy Atlas:**
  - **Energy Potential Identification:** The atlas provides vital information for identifying energy-rich areas, helping to enhance ocean energy production.
  - **Support for Net Zero Goals:** This resource plays a significant role in India's journey towards achieving its net zero emissions goal by utilizing sustainable ocean energy sources.
  - **Policymaker and Researcher Utility:** The atlas will aid policymakers and researchers by offering detailed energy generation estimates and guidance for designing more effective strategies to harness ocean-based renewable energy.
- **Regional Energy Potential Insights:**
  - **Tidal Wave Energy:** Coastal areas along West Bengal and Gujarat were identified as suitable for tidal wave energy generation.
  - **Salinity Gradient Energy:** Salinity gradient potential was noted to be favorable along the coasts of Andhra Pradesh and West Bengal, offering additional opportunities for harnessing energy from ocean resources.

INDIAN NATIONAL CENTRE FOR OCEAN INFORMATION SERVICES (INCOIS)

- **Establishment and Organizational Structure:**
  - Founded as an **autonomous body in 1999** under the Ministry of Earth Sciences (MoES), this organization is a unit of the **Earth System Science Organization (ESSO)**.
  - It plays a pivotal role in delivering crucial **ocean information and advisory services** to various sectors, including society, industry, government agencies, and the scientific community.
- **Mandate:**
  - The primary goal is to provide the **best possible ocean information** and advisory services through sustained ocean observations.
  - The body continually **improves its services** by conducting systematic and focused research, thereby advancing its technological and scientific capabilities.
- **Key Activities:**
  - **Tsunami, Storm Surge, and Wave Warnings:** It offers **24/7 monitoring and warning services** for tsunamis, storm surges, high waves, and similar ocean hazards through its in-house **Indian Tsunami Early Warning Centre (ITEWC)**.
  - **Fishing Advisory Services:** Daily advisories are issued to **fisherfolk**, helping them locate abundant fish areas in the ocean, significantly aiding in their livelihoods.
  - **Short-Term Ocean State Forecasts:** The organization issues forecasts of ocean conditions such as waves, currents, and sea surface temperature.

NAMIBIA

Recently, Namibia is experiencing its worst drought in a century, exacerbated by El Niño.

About:

- **Geographical Context:**
  - **Location:**
    - Namibia is situated in southern Africa, characterized by its arid to semi-arid climate.
    - This geographic condition makes the country particularly vulnerable to drought.
  - **Historical Droughts:** Namibia has a history of severe droughts, with significant national emergencies declared in 2013, 2016, and 2019 due to extreme drought conditions.
- **Current Drought Situation:**
  - **Initiation:** The current drought began in Botswana in October 2023 and quickly spread to neighboring countries including Angola, Zambia, Zimbabwe, and Namibia.
    - **Spread:** The drought has intensified across southern Africa, affecting the majority of the region.
  - **El Niño Influence:**
    - **Weather Pattern:** The primary cause of the current drought is the El Niño weather pattern, which re-emerged in 2023 after a seven-year hiatus.
    - **Effects of El Nino:** El Nino is known for causing extreme weather conditions, including elevated temperatures and reduced rainfall. In this case, it has led to above-average temperatures and minimal precipitation across southern Africa, exacerbating the drought conditions.
  - **Climate Change:**
    - Research indicates that climate change is making extreme weather events, such as droughts and floods, more frequent and severe.
    - Rising global temperatures contribute to more intense and prolonged droughts.

Impact on Namibia:

- **Food Security:**
  - **Seasonal Food Availability:**
    - **Typical Low Periods:** Namibia typically experiences low food availability from July through September. The current drought has worsened this seasonal scarcity.
    - **Crop Failure:** Staple crops such as maize, which are crucial for food security, have dried up. The failure of these crops has led to severe food shortages.
    - **Livestock Losses:** The drought has caused significant losses in livestock due to insufficient water and feed, further straining food resources.
  - **Food Reserves Depletion:** By August 23, 2024, approximately 84% of Namibia's food reserves were reported to be exhausted. This depletion has led to heightened food insecurity and scarcity.
- **Economic and Social Consequences:**
  - **Price Surge:**
    - As food stocks diminish, prices have soared, making basic food items increasingly unaffordable for many Namibians.
    - This price surge compounds the economic hardship faced by the population.
  - **Acute Food Insecurity:** The Integrated Food Security Phase Classification (IPC) estimated in July 2024 that between April and June 2024, approximately 1.2 million people in Namibia would experience high levels of acute food insecurity.
- **Health and Vulnerability:**
  - **Malnutrition:**
    - Severe acute malnutrition rates among children under five have risen due to the ongoing food crisis.
    - Some areas have reported deaths among young children as a result of malnutrition and inadequate food supplies.
  - **Gender-Based Violence:**
    - The drought has increased the vulnerability of women and girls.
    - As they are required to travel longer distances to fetch food and water, their risk of encountering gender-based violence has also risen.
    - The extended distances and harsh conditions place women and girls at greater risk, highlighting the need for targeted support and protection measures.

NAMIBIA'S PLAN FOR WILDLIFE CULLING

- **Objective:** To provide much-needed meat for the population, the Namibian government has decided to cull hundreds of wild animals. This measure aims to address the food scarcity exacerbated by the drought.

- **Total Animals to be Culled:** The government plans to cull 723 animals, including: Hippopotamuses (30), Buffaloes (60), Impalas (50), Blue Wildebeest (100), Zebras (300), Elephants (83), Elans (a type of antelope) (100).
  - **Current Status:** Over 150 animals have already been culled, resulting in approximately 63 tonnes of meat being processed and distributed.
  - Namibia is home to about 24, 000 elephants, one of the largest populations globally.
- **Rationale:**
  - **Mitigating Drought Effects:** The government fears that as the drought worsens, wild animals will migrate in search of food and water, potentially leading to conflicts with human populations.
  - **Wildlife Management:** By culling certain species, the government aims to manage the pressure on grazing areas and water resources, particularly in parks and communal areas where animal populations exceed the available resources.

GALATHEA BAY

Recently, the government has classified the international trans-shipment hub at Galathea Bay as a 'Major Port'.

About:

- **Location:**
  - **Geographic Setting:** It is situated on Great Nicobar Island, which is part of the Union Territory of Andaman and Nicobar Islands, India.
  - **Regional Context:**
    - The islands are located in the eastern Indian Ocean, specifically within the Bay of Bengal.
    - The Andaman and Nicobar Islands consist of about 836 offshore islands, with Great Nicobar being the southernmost island.
- **Environmental Significance:**
  - Galathea Bay is recognized as one of the *"Important Marine Turtle Habitats in India."*
  - This designation highlights its ecological importance for marine turtle conservation.
- **Project Phases and Capacity:**
  - **Phase 1:** Expected to be operational by 2028. It will handle approximately 4 million Twenty-foot Equivalent Units (TEUs) of cargo.
  - **Future Expansion:** The capacity is projected to increase to 16 million TEUs by 2058 as the subsequent phases are completed.
- **Objective:** The facility aims to capture a significant portion of the transshipped cargo that is currently processed at foreign ports.
- **Management and Funding:**
  - **Governance:** The project will be managed by the Union Ministry of Ports, Shipping, and Waterways.
  - **Funding Model:** It will receive central funding and is structured under a public-private partnership (PPP) model. This approach combines public oversight with private sector investment and expertise.
- **Strategic Importance:**
  - **Economic Impact:** By expanding the capacity to handle large volumes of cargo, the Galathea Bay project is expected to enhance India's maritime infrastructure and reduce reliance on foreign ports for transshipment.
  - **Infrastructure Development:** The project reflects a strategic investment in port infrastructure to bolster regional trade and logistics capabilities.

PORTS IN INDIA

- **Types of Ports:**
  - **Major Ports:**
    - There are 12 major ports in India. These ports are under the administrative control of the Ministry of Shipping.
    - All 12 major ports are operational and play a critical role in the country's maritime trade.
  - **Minor Ports:** India has approximately 200 non-major (minor) ports.
    - These ports are managed by respective State Maritime Boards or State Governments.
    - Around 65 of these non-major ports handle cargo, while the remaining are used primarily by fishing vessels and small ferries for passenger transport across creeks and other bodies of water.
- **Regulatory Framework:**
  - **Major Ports:** All 12 major ports are governed under the Major Port Trusts Act of 1963. This act provides a framework for the administration and regulation of major ports in India.
  - **Non-Major Ports:** The Indian Ports Act (IPA) of 1908, which includes 69 sections and two schedules, regulates the non-major ports.
    - **Port Operations:** The IPA Act governs the operations of berths, stations, anchoring, fastening, mooring, and unmooring of vessels at non-major ports.
    - **Rates and Fees:** It fixes the rates to be paid for using government moorings at these ports.
    - **Regulations:** The Act also covers the regulation of catamarans (boats) operating for hire and the management of fires and lights within the port areas.


MAJOR PORTS IN INDIA
N
AFGHANISTAN
JAMMU & KASHMIR
HIMACHAL PRADESH
CHINA (Tibet)
PUNJAB
CHANDIGARH
UTTARA KHAND
PAKISTAN
HARYANA
DELHI
NEPAL
SIKKIM
BHUTAN
ARUNACHAL PRADESH
ASSAM
NAGALAND
MEGHALAYA
MANIPUR
RAJASTHAN
UTTAR PRADESH
BIHAR
BANGLADESH
TRIPURA
MIZORAM
JHARKHAND
WEST BENGAL
Kandla
GUJARAT
MADHYA PRADESH
CHHATTISGARH
MYANMAR (BURMA)
Kolkata
DAMAN & DIU
DADRA & NAGAR HAVELI
MAHARASHTRA
ODISHA
Paradip
Bay of Bengal
Mumbai
JNPT
TELANGANA
Visakhapatnam
Arabian Sea
Mormugao Port Trust
KARNATAKA
ANDHRA PRADESH
Ennore (Kamarajar Port)
Mangalore
Chennai
PUDUCHERRY
LAKSHADWEEP (INDIA)
KERALA
TAMIL NADU
ANDAMAN & NICOBAR ISLANDS (INDIA)
Tuticorin (V.O.Chidambaranar Port)
Kochi
SRI LANKA
MALDIVES
INDIAN OCEAN
INDONESI

6 INTERNAL SECURITY

PEACE PACT WITH TRIPURA INSURGENT GROUPS

A Memorandum of Settlement was signed between the Government of India, Government of Tripura and the National Liberation Front of Tripura (NLFT) and the All Tripura Tiger Force (ATTF).

About:

- **Reintegration of Armed Cadres:** More than 328 armed cadres from NLFT and ATTF will lay down their arms and reintegrate into mainstream society.
- **Financial Package:** A dedicated financial package of ₹ 250 crore has been sanctioned to support the development of Tripura's tribal communities.
- **12th agreement for the Northeast:** The peace pact is the 12th agreement for the Northeast and the third agreement related to Tripura in the past ten years.
  - Through these agreements, about 10,000 insurgents have joined the mainstream by giving up arms.

NATIONAL LIBERATION FRONT OF TRIPURA (NLFT)

- **Formation:** Established in 1989.
- **Objective:** Aimed to create an independent Tripura through armed struggle, seeking liberation from Indian neo-colonialism and imperialism and promoting a distinct and independent identity.
- **Internal Conflicts:** Experienced multiple splits due to personal ambitions and parochial religious considerations.
- **Legal Status:** Outlawed in April 1997 under the Unlawful Activities (Prevention) Act, 1967, and also proscribed under the Prevention of Terrorism Act (POTA), 2002.
- **Splits:** In February 2001, divided into two factions—one led by Biswamohan Debbarma and the other by Nayanbasi Jamatiya.

ALL TRIPURA TIGER FORCE (ATTF)

- **Formation:** Founded in 1990.
- **Demands:** Called for the removal of illegal migrants from electoral rolls and the implementation of the 1949 Tripura Merger Agreement.
- **Operations:** Operated in North and South Tripura districts, becoming a significant terrorist group by 1991.
- **Legal Status:** Banned in April 1997 under the Unlawful Activities (Prevention) Act, 1967.

Significance of Agreement:

- **Promotion of Tribal Development:** The Centre's approval of a **₹250 crore special package** aims to foster the **overall development of the tribal population** in Tripura, addressing socio-economic disparities and ensuring inclusive growth.
- **Reduction of Insurgency in the Northeast:** This marks the **12th peace agreement** for the Northeast, contributing significantly to reducing insurgency and militancy, helping over **10,000 insurgents** reintegrate into society over the past decade.
- **Strengthening Peace in Tripura:** Being the **third agreement related to Tripura** in the last ten years, it highlights consistent efforts to secure long-term peace and stability in the region, reducing future conflict potential.
- **Regional Security and Development:** The peace pact enhances **regional security** by curbing insurgent activities and promoting the **economic development** of the region, thereby contributing to overall national security and prosperity.
- **Reintegration of Armed Cadres:** Over **328 armed cadres** from the **NLFT** and **ATTF** will renounce violence, leading to enhanced peace and stability in Tripura by joining the mainstream of society.

MALPE AND MULKI

The fourth and fifth ships of the Anti-Submarine Warfare Shallow Water Craft (ASW SWC) project, named Malpe and Mulki, were launched by M/s Cochin Shipyard Ltd for the Indian Navy. The first three ships in the ASW SWC project are Mahe, Malvan, and Mangrol.

About:

- **Ports of Strategic Importance:** Malpe and Mulki, named after strategically important ports along India's coast, are part of the Mage-class ships. These vessels are set to replace the in-service Abhay-class ASW Corvettes of the Indian Navy.
- **Designed for Multiple Maritime Operations:** The ships are designed to conduct anti-submarine warfare in coastal waters, low-intensity maritime operations, and mine-laying missions. They are also equipped for search and rescue operations.
- **Advanced Weaponry and Capabilities:** Malpe and Mulki are armed with lightweight torpedoes, anti-submarine warfare rockets, a close-in weapon system, and remote-controlled guns. These ships can reach a top speed of 25 knots and have an endurance of up to 1,800 nautical miles.

Significance:

- **Strategic Coastal Defense:** Malpe and Mulki enhance the Indian Navy's coastal defense capabilities by replacing older Abhay-class corvettes, ensuring continued protection against submarine threats in shallow waters.
- **Multi-Mission Flexibility:** Designed for anti-submarine warfare, mine-laying, and low-intensity maritime operations, these ships contribute to versatile naval operations in both peacetime and conflict scenarios.
- **Modern Combat Systems:** Equipped with advanced weaponry, including torpedoes, anti-submarine rockets, and remote-controlled guns, the ships significantly bolster the Indian Navy's combat readiness in coastal waters.
- **Enhanced Endurance and Speed:** With a top speed of 25 knots and endurance up to 1,800 nautical miles, Malpe and Mulki ensure sustained naval presence and operational reach in strategically vital coastal zones.

INDUS-X INITIATIVE

Recently, the third edition of India-US Defence Acceleration Ecosystem (INDUS-X) Summit concluded in the USA.

About:

- The INDUS-X Initiative was launched in June 2023 by the U.S. Department of Defense (DoD) and Indian Ministry of Defense (MoD).
- The initiative aims to expand the strategic technology partnership and enhance defense industrial cooperation between India and the USA by fostering collaboration among governments, businesses, and academic institutions.
- It connects defense startups from India and the USA, encouraging innovation and technology sharing in defense sectors.
- **Part of iCET:** The INDUS-X initiative is aligned with the U.S.-India initiative on Critical and Emerging Technology (iCET).
- **Steering Agencies:**
  - **iDEX (India):** Innovation for Defence Excellence, representing India's Ministry of Defence.
  - **DIU (USA):** Defense Innovation Unit, under the U.S. Department of Defense.

INDIGENOUS LIGHT TANK 'ZORAWAR'

India has successfully conducted the field firing trials of its new indigenous light tank 'Zorawar', a highly versatile platform capable of deployment in high-altitude areas.

About:

- Zorawar has been developed by the **Combat Vehicles Research & Development Establishment** (CVRDE), and DRDO, in collaboration with Larsen & Toubro Ltd.
- It is named after the 19th century **Dogra General Zorawar Singh**, who led military expeditions to Ladakh and Western Tibet.
- The tank will be able to navigate steep mountains and cross water bodies like rivers far more easily than its forerunners such as the heavy-weight **T-72 and T-90 tanks.**

OPERATION CHAKRA III

The Central Bureau of Investigation (CBI) in its ongoing Operation CHAKRA-III has taken action to successfully dismantle a sophisticated cyber-enabled financial crime network.

About:

- This operation was executed with cooperation from other international law enforcement agencies including the **FBI (USA) and INTERPOL.**
- The network has been targeting victims in foreign countries since **2022,** with their operations involving **cryptocurrencies and bullion.**

INDIA ELECTED TO GlobE NETWORK'S STEERING COMMITTEE

India has been elected to the GlobE Network's steering committee in Beijing, gaining a pivotal role in shaping global anti-corruption efforts.

About:

- **Background:** The Global Operational Network of Anti-Corruption Law Enforcement Authorities (GloBE Network) was an **initiative of G-20.**
  - It was officially launched on June 3,2021, during a special event at the UN General Assembly Special Session against Corruption.
- **Member:** It now has **121 member countries** and 219 member authorities.
- **Objective:** The GloBE Network is a platform where agencies from across the world share criminal intelligence, develop strategies, and support in the common cause of combating corruption.
- **Governance:** The Network has **one chair, one vice-chair and 13 members** in the Steering Committee for providing leadership to the organization.

Indian Representation:

- The **Ministry of Home Affairs** is the central authority for GloBE Network, while the **CBI** and the **Enforcement Directorate** are its member authorities from India.
- During India's G-20 Presidency in 2023, **two high-level principles** for combating corruption were adopted which detailed leveraging of the GloBE Network.

EXERCISE VARUNA

The Indian and French navies held their 22nd edition of bilateral naval exercise 'VARUNA' in the Mediterranean Sea.

About:

- The bilateral exercise VARUNA, which began in **2001,** has evolved significantly over the years and a series of advanced naval operations were conducted during the present edition.
- The conduct of 'VARUNA' in the **Mediterranean Sea** marks a significant milestone in the maritime domain between India and France displaying Indian Navy's outreach and commitment towards sustained operations far away from the Indian Ocean Region (IOR).

Significance:

- **Strengthening Military Cooperation:** Bilateral exercises foster close military collaboration between participating nations, improving coordination, trust, and interoperability during joint operations or future missions.
- **Enhanced Tactical Expertise:** These exercises provide opportunities to exchange knowledge on advanced military tactics, technologies, and operational strategies, leading to improved combat and defense capabilities for both nations.
- **Boosting Regional Security:** By conducting joint drills, countries signal their commitment to regional stability and security, deterring potential threats and enhancing collective defense postures in strategically important areas.
- **Crisis Response Preparedness:** Bilateral exercises simulate various crisis scenarios, from humanitarian missions to conflict situations, enhancing the ability of both nations to effectively respond to natural disasters, piracy, or military conflicts.

EXERCISE EASTERN BRIDGE VII

The 7th edition of Exercise Eastern Bridge, between the Royal Oman Air Force and the Indian Air Force, began at Air Force base Masirah, Oman.

About:

- The 1st edition of bilateral exercise Eastern Bridge was held at Oman in 2009.
- Exercise Eastern Bridge VII aims to improve tactical and operational skills, foster mutual understanding and bolster the ability of both air forces to collaborate effectively in diverse scenarios.
- The exercise will include complex aerial maneuvering, air to air and air to ground operations, and logistical coordination, reflecting the evolving defense needs and strategic interests of both nations.

EXERCISE AL NAJAH

The 5th edition of India-Oman joint military Exercise AL NAJAH began in Salalah, Oman.

About:

- Exercise AL NAJAH has been held **biennially** since **2015**, alternating between India and Oman. Last edition of the same exercise was conducted at Mahajan in Rajasthan.
- Aim of the Joint Exercise is to enhance joint military capability of both sides to undertake counter terrorism operations under **Chapter VII of the United Nations Charter.**
- **Exercise AL NAJAH V** will allow both sides to exchange best practices in tactics, techniques and procedures for joint operations.

Significance of Defence Exercises

- **Strengthens Military Preparedness:** Defense exercises help military forces enhance their operational capabilities, readiness, and response to real-world threats by practicing scenarios that mirror potential conflicts or disasters.
- **Improves Interoperability:** Joint military exercises, especially with international partners, foster cooperation and coordination between forces, allowing them to work seamlessly together during combined operations or peacekeeping missions.
- **Tests and Validates Strategies:** These exercises provide an opportunity to test and refine military tactics, strategies, and technologies, identifying areas of improvement in planning and execution.
- **Enhances Diplomatic Relations:** Defense drills, particularly multinational ones, build diplomatic ties, trust, and mutual understanding between countries, contributing to broader regional or global stability.
- **Boosts Morale and Discipline:** Engaging in rigorous and realistic exercises improves troop morale, discipline, and confidence, ensuring they are mentally and physically prepared for real-life combat or crisis situations.
- **Evaluates Equipment and Technology:** Defense exercises allow military forces to assess the performance of their equipment, weaponry, and new technologies in simulated combat scenarios, ensuring they are reliable and effective when deployed in real operations.
- **Promotes Crisis Management:** By simulating emergency situations like natural disasters or terror attacks, defense drills help military and civilian agencies improve coordination and decision-making in crisis management, ensuring a swift and efficient response during real emergencies.

7 SCIENCE & TECHNOLOGY

VISHANU YUDH ABHYAAS

The central government conducted a five-day mock drill named Vishanu Yudh Abhyaas (Virus War Exercise).

About:

- The drill took place over five days in Ajmer district, Rajasthan.
- It is conducted under the National One Health Mission (NOHM).
- It aims to assess pandemic preparedness and response to zoonotic disease outbreaks.
  - **Zoonotic Diseases** include infections spread between people and animals, such as avian influenza, Nipah, and Zika, caused by viruses, bacteria, parasites, and fungi.
- **Objective:** To evaluate the readiness and response of the National Joint Outbreak Response Team (NJORT), which includes experts from human health, animal husbandry, and wildlife sectors.
- **Outcome:** The drill provided valuable insights to improve India's preparedness and response to zoonotic disease outbreaks and promoted a coordinated and efficient approach across relevant sectors.

OpenAI'S PROJECT STRAWBERRY

OpenAI is reportedly planning to release its most powerful AI model codenamed Project Strawberry and could integrate it into ChatGPT-5.

About:

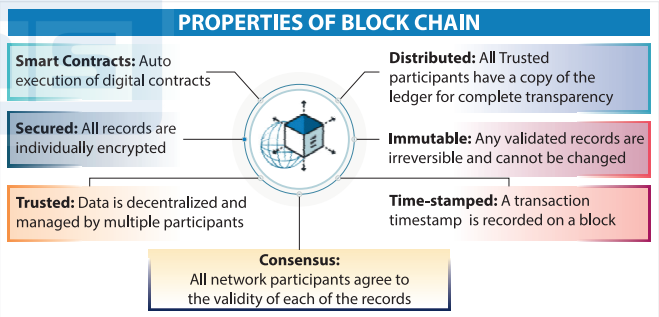
- Earlier known as **Project Q*** (Q-star), it has been billed as OpenAI's push to create **Artificial General Intelligence** with capabilities similar to that of the human brain.
- It will be able to solve math problems **even if it has never been trained on them**, perform high-level tasks like designing market strategies and solving complex word puzzles and do "deep research. "
- It will also help the AI firm develop their next large language model (LLM) called **Orion.**

VISHVASYA-BLOCKCHAIN TECHNOLOGY STACK

The Ministry of Electronics and Information Technology (MeitY) launched the Vishvasya-Blockchain Technology Stack.

Blockchain Technology:

- **Definition:** Blockchain is a shared, immutable ledger that records transactions and tracks assets within a business network.
  - It stores information electronically in a digital format to ensure secure transactions and is commonly referred to as Distributed Ledger Technology (DLT).
  - This technology digitizes and stores anything of value, including currency.
- **Historical Background:** Blockchain was first proposed in 1991 as a research project. However, it became widely known and implemented in 2009 with the advent of Bitcoin, a cryptocurrency built using blockchain technology.
- **Structure and Security:**
  - **Data Blocks:** Blockchain consists of interconnected data blocks, where each block is linked to the previous one, forming a continuous chain.
  - **Security:** The design of these blocks ensures security and resistance to tampering or hacking, making blockchain a robust solution for secure digital transactions.



Applications:

- **Finance and Banking: Financial institution:** Testing blockchain for trade finance, foreign exchange, cross-border settlement, and securities.
  - India, with its large underbanked population, can leverage blockchain for financial inclusion.
  - Blockchain has been used in the creation of various cryptocurrencies, decentralized finance applications, non-fungible tokens and smart contracts.
- **Governance and Public Services:** Blockchain's potential to enhance transparency and accountability in governance is being actively explored. Applications include land record management, voting systems, and identity verification.
- **Healthcare:** In healthcare, blockchain can be used to securely manage patient records, ensure data integrity, and facilitate the secure sharing of medical information between institutions.

- **Transparent Elections:** Blockchain can enhance election processes by providing transparent and tamper-proof voting records.
- **Supply Chain Management:** Tracking goods from origin to destination becomes more reliable using blockchain.
  - India's vast supply chains can benefit from increased transparency and traceability.

BepiColombo

The spacecraft, BepiColombo, gave scientists their first clear view of Mercury's south pole. It also captured several of the planet's craters, including those with unusual rings of peaks within the basin's rim.

About:

- It is a joint mission between the **European and Japanese space agencies,** launched in **2018.**
- It will go into orbit around Mercury in **2026,** about a year after its original arrival time.
  - The delay was prompted by efforts to overcome problems with the spacecraft's thrusters.
- It has **two orbiters**, one more focused on Mercury's landscape and the other collecting data about its surrounding space environment. Scientists hope to use the BepiColombo mission to learn about the **planet's origins and evolution** by studying its composition, geology and magnetic field.

MERCURY

- Mercury is the **closest planet** to the Sun, and the smallest planet in the solar system - only slightly larger than Earth's Moon.
- Despite its proximity to the Sun, **Mercury is not the hottest planet** in the solar system – it is Venus.
- A day on Mercury lasts **59 Earth days.**
- A year on Mercury lasts **88 Earth days.**
- Along with Venus, Earth, and Mars, Mercury is one of the **rocky planets.**
- Instead of an atmosphere, Mercury possesses a **thin exosphere** made up of atoms blasted off the surface by the solar wind and striking meteoroids.
- Mercury's exosphere is composed **mostly of oxygen, sodium, hydrogen, helium, and potassium.**
- Mercury **doesn't have any moons.**

POLARIS DAWN MISSION

The Polaris Dawn mission, led by Jared Isaacman and SpaceX, is making history by attempting the first private spacewalk.

About:

- Spacewalks, also called extravehicular activities (EVAs), involve astronauts leaving their spacecraft to conduct experiments, repairs, or tests.
- The first spacewalk was done by Soviet cosmonaut Alexei Leonov in 1965. Today, spacewalks are crucial for advancing space science and technology.
- The Polaris Dawn mission will test new spacesuits designed by SpaceX to protect astronauts from high radiation levels encountered in the **Van Allen Belts.**

VAN ALLEN BELTS

- The Van Allen Belts are two regions of charged particles that encircle Earth, held in place by the planet's magnetic field. These belts were first discovered in 1958 by American physicist James Van Allen.
- They form part of the magnetosphere, a protective shield around Earth that deflects harmful solar radiation and cosmic rays.

SATELLITE CHAMRAN-1

Iran successfully launched its Chamran-1 research satellite into orbit.

About:

- The Chamran-1 satellite, weighing 60 kg, was placed into a 550-kilometer orbit to test orbital maneuver technology.
- It used the **Qaem-100 rocket** which is a solid-fuel carrier designed and built by the Aerospace Force of the Revolutionary Guards.
- Western nations, especially the United States, express concern that Iran's space program could be used to develop ICBMs.

INTERCONTINENTAL BALLISTIC MISSILES (ICBMS)

- ICBMs are missiles with a range over 5,500 kilometers, designed to deliver nuclear warheads.
- They are possessed by several countries, including the US, Russia, China, India and others.

SIGNAL MODULATION

Signal modulation streamlines the technology needed to transmit information, such as news on TV or music on the radio.

Modulation:

- Modulation, in electronics, technique for impressing information (voice, music, pictures, or data) on a radio-frequency carrier wave by varying one or more characteristics of the wave in accordance with the information signal.

- There are various forms of modulation, each designed to alter a particular characteristic of the carrier wave.
- Modulation allows multiple signals to coexist without interference. Digital transmissions are less affected by static noise, enhancing communication technologies.

Modulation Types:

- **Frequency Modulation (FM):** It involves changing the frequency of the waves to convey information (e.g., Morse code with closely spaced waves for dots). FM is widely used in FM radio broadcasting, where the quality of sound is crucial.
  - It provides better resistance to noise and interference compared to AM.
- **Amplitude modulation (AM):** It involves varying the amplitude of the waves while keeping frequency constant (e.g., using heavy and light stones to represent dots and dashes).
- **Phase Modulation (PM):** It changes the phase of waves to encode messages, allowing for clearer digital transmission since it's less affected by amplitude fluctuations. PM is used in certain digital communication systems and radar applications.

Uses of Modulation:

- **Radio Broadcasting:** Both AM and FM modulation are used for radio transmission. AM covers long distances but is susceptible to interference. FM provides better sound quality and is ideal for music.
- **Television Broadcasting:** TV signals are also modulated (usually using vestigial sideband modulation). This allows us to watch our favorite shows with clear audio and video.
- **Cellular Communication:** Mobile phones use various modulation techniques to transmit voice and data over cellular networks.
- **Wireless Internet (Wi-Fi):** Wi-Fi signals are modulated to carry data wirelessly between devices.
- **Satellite Communication:** Satellites use modulation to relay signals across vast distances.

ADDITIONAL INFORMATION

- Digital transmission uses discrete signals (0s and 1s), while analog transmission uses continuous signals.
- PM is digital and better for data transmission, whereas AM and FM are used for analog radio and TV broadcasts.

Bio-RIDE SCHEME

The Union Cabinet approved the Biotechnology Research Innovation and Entrepreneurship Development (Bio-RIDE) scheme to support cutting-edge research and development in biotechnology.

About:

- **Bio-RIDE** combines two existing schemes — **Biotechnology Research and Development (R&D) and Industrial** and **Entrepreneurship Development (I&ED)** — with a new component, **Bio-manufacturing and Bio-foundry.**
- **The outlay** for the implementation of the scheme is **Rs. 9197** crore during the 15th finance Commission period from **2021-22 to 2025-26.**

Significance:

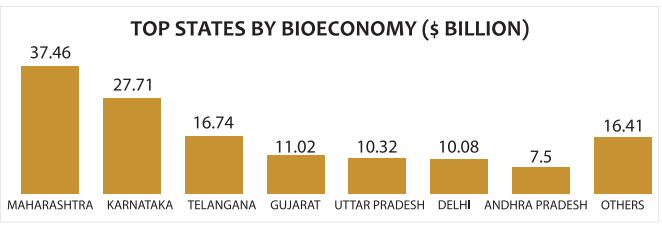
- **Promote Bio-Entrepreneurship:** Bio-RIDE will nurture a thriving ecosystem for startups by providing seed funding, incubation support, and mentorship to bio-entrepreneurs.
- **Advance Innovation:** The scheme will offer grants and incentives for cutting-edge research and development in areas like synthetic biology, biopharmaceuticals, bioenergy, and bioplastics.
- **Facilitate Industry-Academia Collaboration:** Bio-RIDE will create synergies between academic institutions, research organizations, and industry to accelerate the commercialization of bio-based products and technologies.

BIOTECHNOLOGY

- Biotechnology deals with the application of biological knowledge and techniques pertaining to molecular, cellular and genetic processes to develop significantly improved products and services.
- The Biotechnology industry in India is divided into the following segments – Biopharmaceuticals, Bio-services, Bio-agriculture, Bio-Industrials and Bio-IT.

Status of Biotechnology in India:

- India ranks **3rd in the Asia-Pacific region** and 12th globally in terms of biomanufacturing.
  - **Biotechnology,** a sunrise sector, has achieved a valuation of **Rs 75,000 crore** over the past 10 years.
- The Indian Biotechnology industry was valued at **$93.1 billion in 2022,** with expectations of reaching **$300 billion by 2030.**
- In the Global Innovation Index, India has climbed from 81st place in 2015 to **40th out of 132** economies in 2023.
- In 2022, BioEconomy accounted for **4%** of India's gross domestic product (GDP) of **$3.47 trillion** and **employs over 2 million** people.



Government Initiatives:

- **Biotechnology Industry Research Assistance Council (BIRAC)** established by the Department of Biotechnology (DBT) is aimed at strengthening and empowering emerging biotechnology enterprises to undertake strategic research and innovation.
- Policy initiatives of the Government of India (GoI) such as **Startup India and Make in India programs** are aimed to develop India as a world-class Biotechnology and Bio-manufacturing hub.
- Favorable Government Policies like **Draft R&D Policy 2021, PLI Schemes and Clinical trial rules** have propelled India to be the **'pharmacy of the world'.**
- **FDI Policy:** 100% FDI is allowed under the automatic route for greenfield pharma. Also **100% FDI** is allowed under the government route for brownfield pharma. **Up to 74% FDI** is under the automatic route and beyond **74%** is under the government approval route.

CIRCUMNUTATIONS

The study reveals the role circumnutations could play in plant growth patterns. In this study, researchers found that sunflowers grown in a dense row naturally formed a near-perfect zigzag pattern, with each plant leaning away from the row in alternating directions.

About:

- It refers to the slow, repetitive, and often spiral movement observed in the growing tips of plants, such as shoots, tendrils, and roots.
- This movement is caused by differential growth rates in different parts of the plant, particularly in the apical meristem, leading to a helical or circular motion.
- **Examples:**
  - Tendrils of climbing plants exhibit circumnutation to locate and coil around supports.
  - Roots may use circumnutation to navigate through soil, finding the best path for growth.

BHARTIYA ANTRIKSH STATION (BAS)

The union cabinet chaired by Prime Minister Narendra Modi has approved the building of the first unit of the Bhartiya Antriksh Station (BAS) by extending the scope of Gaganyaan program.

About:

- The first module of BAS will be **launched in 2028** and by 2035 the fully operational indigenous space station will be created.
- The BAS will be placed in **low earth orbit**, at 400 km above the earth's surface.
- The **revised Gaganyaan Programme** to include the scope of development and precursor missions for BAS, and factoring one additional uncrewed mission and additional hardware requirement for the developments of ongoing Gaganyaan Programme. Now the human spaceflight program of technology development and demonstration is through eight missions to be completed by December 2028 by launching the first unit of BAS-1.
- The **52-tonne space station** will serve as a research platform for Indian astronauts and scientists to conduct experiments in microgravity, astronomy and Earth observation, and will allow astronauts to stay in orbit for **15-20 days.**

ADDITIONAL INFORMATION

Currently, there are **only two operational space stations** – the **International Space Station** (ISS), developed in cooperation by the United States, Russia, Japan, Europe and Canada; and **China's Tiangong Space Station (TSS).**

RECOMMENDATIONS TO ADDRESS AI-RELATED RISKS AND GOVERNANCE GAPS

The United Nations AI advisory body released a final report with seven recommendations to address AI-related risks and governance gaps.

Key Recommendations:

- **Scientific Panel:** Create an impartial panel of leading AI researchers, ethicists, and technologists to provide accurate, unbiased scientific knowledge about AI. This panel would aim to bridge the information gap between AI labs and the global community, ensuring transparency and accessibility to AI advancements.
- **Policy Dialogue:** Initiate an international policy dialogue on AI governance to promote cooperation among countries. By engaging stakeholders, including governments, private sectors, and civil society, this dialogue would work to establish consensus on regulatory frameworks and ethical standards for AI deployment.
- **AI Standards Exchange:** Establish a global platform where nations and organizations can share AI standards, safety protocols, and best practices. This would help create harmonized guidelines for AI development and application, promoting accountability and interoperability across borders.
- **Global AI Capacity Development Network:** Strengthen AI governance capacities by building a network of experts, policymakers, and institutions. This network would offer technical assistance and training to nations or organizations with limited expertise, ensuring that AI knowledge is disseminated equitably.

- **Global AI Fund:** Set up a dedicated fund to address capacity gaps in AI governance, research, and implementation, particularly in under-resourced countries. The fund would ensure inclusive access to AI technologies and support the development of local expertise.
- **AI Data Framework:** Develop a transparent and accountable global framework for managing AI data, emphasizing privacy, security, and ethical use. This framework would help regulate data collection, sharing, and usage while promoting trust in AI systems worldwide.
- **AI Office:** Establish a small but strategic AI office to coordinate and oversee the implementation of AI-related initiatives. This office would act as a central body for monitoring progress, resolving challenges, and ensuring alignment with global AI governance objectives.

Emerging Challenges:

- **Ethical Concerns and Bias:** AI systems can inherit biases from the data they're trained on, leading to unfair or discriminatory outcomes, particularly in areas like hiring, law enforcement, and lending. Addressing these biases and ensuring ethical use remains a significant challenge.
- **Job Displacement:** AI's ability to automate tasks threatens job markets, particularly in sectors like manufacturing, customer service, and even skilled professions like accounting and law. The challenge is to manage the societal impact of automation and ensure reskilling opportunities.
- **Data Privacy and Security:** AI systems rely heavily on large amounts of data, raising concerns about how this data is collected, stored, and used. Ensuring that AI complies with data protection regulations and safeguards personal information is critical.
- **Regulation and Accountability:** The rapid pace of AI development has outpaced regulatory frameworks, creating challenges in establishing clear accountability, especially when AI systems make decisions autonomously. Governments and institutions struggle to regulate AI without stifling innovation.
- **Weaponization and Misuse:** AI has the potential to be misused for malicious purposes, such as autonomous weapons, surveillance, or disinformation campaigns. Preventing the militarization and misuse of AI technologies is a pressing global security concern.

India' Approach:

- **Deep-Tech StartUps:** India is emerging as a key player in AI regulation and development, with its large consumer base and labor force being crucial for technology companies. By 2030, India will host over 10,000 deep tech start-ups.
- **India AI Mission Funding:** The government has allocated ₹10, 300 crore to the India AI mission to bolster AI innovation and strengthen the public-private partnership ecosystem.
- **Technological Investments:** The funds will be used to deploy 10,000 Graphic Processing Units (GPUs), Large Multi-Models (LMMs), and promote AI-based research collaboration and innovative projects.
- **Balancing Economic Growth and SDGs:** India's AI strategy must align with the Sustainable Development Goals (SDGs), ensuring responsible AI use that supports innovation while managing associated risks.
- **Phased Approach to AI Governance:** India is likely to adopt a gradual, phase-led approach to AI governance, promoting a fair and inclusive AI system that supports economic growth without compromising ethical and social responsibilities.

Conclusion:

- The rapid advancement of AI technologies has significant economic, societal, and ethical implications. Effective governance is necessary to maximize AI's benefits while mitigating its risks. AI systems must be fair, unbiased, and accountable.

WOMEN IN SPACE LEADERSHIP PROGRAMME

A Women in Space Leadership Programme (WiSLP) was launched by the Department of Science and Technology (DST) in collaboration with the British Council.

About:

- It was launched as part of the UK-India Education and Research Initiative (UKIERI).
- The initiative focuses on supporting institutions in strengthening gender-inclusive practices to foster women's leadership in space sciences by developing a strategic leadership framework.

Implementation of WiSLP:

- The programme will **aid 250 early career researchers** to become better equipped to take up leadership roles and navigate gender biases and associated barriers.
- The programme is underpinned by three foundational pillars:
  - Intersectionality or understanding of different aspects of women's identities;
  - Collaborative culturally sensitive approaches that respond to opportunities and challenges in India;
  - Using leadership theory from both social science and STEM to support female scientists to become more confident about their leadership abilities.

NEURALINK'S BLINDSIGHT

Elon Musk's start-up Neuralink has been granted approval from the US Food and Drug Administration (FDA) for its upcoming product Blindsight.

About:

- Blindsight is a **brain-computer interface (BCI) device**, or a chip, surgically implanted in the brain, that will enable those who are blind to see.
- It will only work for those who have suffered damage to their **optic nerve,** but not the **visual cortex** of the brain which processes imagery and input from the eyes.
- The device will enable transmission of signals by bypassing the optic nerve and directly stimulating the visual cortex of the brain to make imagery visible to those without eyesight.

Neuralink:

- Neuralink is a neurotechnology company that develops implantable Brain-Computer Interfaces (BCIs).
- These devices connect the brain and a computer, and instructions through the computer can be utilized to send electrical signals to the device, and vice-versa.

GLOBAL CYBERSECURITY INDEX 2024

India has achieved Tier 1 status in the Global Cybersecurity Index (GCI) 2024, with a score of 98.49 out of 100, marking it as a global leader in cybersecurity.

About:

- India's success is driven by robust cybercrime laws, sector-specific Computer Incident Response Teams (CSIRTs), education initiatives, and international collaborations.
- India's global leadership is reinforced by international partnerships and agreements to enhance cybersecurity capacity and information sharing.
- The GCI evaluated countries based on five pillars—legal, technical, organizational, capacity development, and cooperation—using a detailed questionnaire covering 83 questions and 20 indicators. It is published by the **International Telecommunication Union (ITU)**.

DIFFERENTIAL ROTATION OF THE SUN

Astronomers mapped the variation in the Sun's chromosphere rotation speed from the equator to the poles using 100 years of data from the Kodaikanal Solar Observatory.

Data Source and Technique:

- **Indian Institute of Astrophysics (IIA)** astronomers used solar plages and network cells features from daily Sun records at 393.3 nm (Calcium K spectral line). These features allowed them to measure rotation speed even at the poles, unlike sunspots.
- The 100-year-long data from Kodaikanal Solar Observatory has been digitized, enabling detailed analysis of chromospheric features.

Sun's Differential Rotation:

- The Sun rotates at different speeds at different latitudes: the equator rotates faster (25 days) than the poles (35 days).
- This differential rotation is key to understanding the solar dynamo, the 11-year solar cycle, and solar magnetic storms.
- **Discovery:** Differential rotation was first discovered in the 19th century by Carrington, but earlier methods were limited in studying latitudes above 35 degrees.
- **Findings on Rotation Rates:** The rotation rate was faster at the equator (13.98 degrees/day) and slower towards the poles (10.5 degrees/day at 80 degrees latitude). Both plages and network features showed similar rotation rates, suggesting a common origin possibly rooted deep inside the Sun.

Plages and Network Cell:

- Plages are bright regions in the chromosphere, larger than sunspots, with weaker magnetic fields.
- Network cells are slightly larger than sunspots and have weaker magnetic fields, present continuously across the Sun's surface.

Significance of the Study:

- **Comprehensive Solar Rotation Mapping:** This study marks the first time that chromospheric network cells have been used to map the Sun's rotation across its entire surface, providing a more complete and accurate understanding of solar rotation, particularly at high latitudes where previous methods had limitations.
- **Insights into Solar Dynamo and Magnetic Activity:** By measuring the differential rotation of the chromosphere, the study enhances our understanding of the solar dynamo, which drives the Sun's magnetic field and 11-year solar cycle. This contributes to the prediction and study of solar magnetic storms and their impact on Earth.
- **Long-term Solar Data Utilization:** The use of 100 years of digitized data from the Kodaikanal Solar Observatory offers a rare, extensive historical perspective on the Sun's behavior. This long-term dataset provides invaluable insights into solar dynamics over an extended period, improving the accuracy of solar models.
- **Confirmation of Consistent Rotation Patterns:** The similar rotation rates observed for both plages and network cells suggest a common origin for these features, potentially rooted deep inside the Sun. This discovery deepens our understanding of the Sun's internal structure and magnetic activity.

GLOBAL INNOVATION INDEX 2024

India has risen to 39th position among 133 global economies in the Global Innovation Index 2024.

About:

- The Global Innovation Index (GII) is published by the **World Intellectual Property Organization (WIPO),** a specialized agency of the **United Nations.**
- It **measures innovation based on criteria** that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

Global Innovation Index 2024:

- **Top performer:** Switzerland, Sweden, the United States, Singapore and the United Kingdom
- **Fastest 10-year climbers:** China, Turkiye, India, Viet Nam and the Philippines.

India's Performance:

- India has been on a rising trajectory, over the past several years in the Global Innovation Index (GII), from a rank of **81 in 2015 to 40 in 2023.**
- **India's strengths** lie in key indicators such as **Information and Communications Technology (ICT) services exports** (at **1st place,** globally), venture capital received and intangible asset intensity. India's unicorn companies also secure the country the **8th rank** globally.

Initiatives taken by India:

- The **Atal Innovation Mission** has played a major role in expanding the Innovation ecosystem.
- **The Anusandhan National Research Foundation (ANRF)** was established to foster a culture of research and innovation throughout India's universities, research institutions, and R&D laboratories.
- **Biotechnology Industry Research Assistance Council (BIRAC)** established by the Department of Biotechnology (DBT) is aimed at strengthening and empowering emerging biotechnology enterprises to undertake strategic research and innovation.
- **National Research Foundation (NRF):** Announced as part of the National Education Policy 2020, NRF aims to promote a culture of research and innovation in universities and higher education institutions by funding interdisciplinary research.

WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO)

- It is a **self-funding agency of the United Nations,** that serves the world's innovators and creators, ensuring that their ideas travel safely to the market and improve lives everywhere.
- **Members:** The organization has **193** member states including India.
- **In 1974,** WIPO joined the United Nations (UN) family of organizations, becoming a specialized agency of the UN.
- **Headquarters:** Geneva, Switzerland.

CDSCO RELEASES A LIST OF "NOT OF STANDARD QUALITY" DRUGS

A recent quality control check by the Central Drugs Standard Control Organisation (CDSCO) has raised alarms over the safety and effectiveness of 53 medicines, including widely used drugs like Paracetamol and Pan D.

About:

- Several medicines were found to be **"Not of Standard Quality" (NSQ)**, with some being declared spurious by drug testing labs.
- This raises serious **public health concerns** and it also highlights **failure of several states** in submitting data on quality of drugs.
- Earlier, the drug regulator has actively **banned risky fixed-dose drug combinations**, further highlighting the **need for stricter quality control measures in pharmaceuticals.**

Drug Regulation Framework in India:

- **Governing Laws:** Drug regulation in India is governed by the Drugs and Cosmetics Act, 1940 (DC Act) and the Drugs and Cosmetics Rules, 1945 (DC Rules), which provide the legal foundation for drug control and safety.
- **Central Drugs Standard Control Organization (CDSCO):** The CDSCO, headed by the Drugs Controller General of India (DCGI), is responsible for overseeing drug quality and safety at the national level. It regularly issues a "Not of Standard Quality" (NSQ) list to monitor and assess drug standards.
- **National Pharmaceutical Pricing Authority (NPPA):** The NPPA is tasked with regulating and revising the prices of controlled bulk drugs. It also ensures the availability of essential drugs, identifies shortages, and implements necessary remedial measures.
- **State-Level Drug Regulation:** As public health is a state subject in India, state governments also play a key role in drug regulation through their respective State Drug Regulatory Agencies (SDRAs), complementing the efforts of national regulatory bodies.

Issues Associated with Drug Regulation in India:

- **Quality Control Issues:** Frequent reports of **substandard and spurious drugs** highlight the gaps in quality control.
- **Inadequate Monitoring and Enforcement:** The capacity of both **CDSCO** and **State Drug Control Authorities** is limited in terms of resources and manpower.
- **Lack of Comprehensive Post-Market Surveillance:** There is a lack of a robust **post-marketing surveillance system** to ensure that drugs continue to meet safety standards after they are marketed.
- **Fragmented Regulation:** The division of regulatory responsibilities between the **central** and **state governments** often leads to **coordination issues**, inefficiencies, and variations in enforcement across states.

- **Other issues:** Like, lack of trained manpower, lack of transparency in clinical trials, pressure on the regulatory bodies for approval etc. The **Mashelkar Committee (2003)** identified the lack of trained and adequate personnel as a significant issue in India's drug regulatory framework.

Way Ahead:

- **Strengthening Regulatory Infrastructure:** India needs to **augment the capacities** of both central and state drug regulatory authorities, with better resources, skilled personnel, and infrastructure to ensure robust drug regulation.
- **Enhanced Coordination Between Central and State Agencies:** Improved **collaboration** and sharing of information between CDSCO and State Drug Control Authorities is necessary to address issues like inconsistent regulation and enforcement.
- **Focus on Quality Assurance:** There should be a stringent focus on improving **Good Manufacturing Practices (GMP)**, ensuring that manufacturers adhere to the highest quality standards.
- **Robust Post-Marketing Surveillance:** A **comprehensive post-marketing surveillance system** needs to be established to continuously monitor the safety, efficacy, and quality of drugs after they are approved and released in the market.
- **Establishment of National Drug Authority:** As recommended by the Mashelkar committee to revamp the structure of drug regulation.

PARAM RUDRA SUPERCOMPUTERS

Prime Minister Narendra Modi recently inaugurated three PARAM Rudra Supercomputers worth ₹130 crore under the National Supercomputing Mission (NSM).

About:

- These indigenously developed supercomputers, **deployed in Pune, Delhi, and Kolkata**, will drive advanced research in physics, cosmology, earth sciences, and other scientific fields.
  - The **Giant Metre Radio Telescope (GMRT)** in Pune, Inter-University Accelerator Centre (IUAC) in Delhi, and S. N. Bose Centre in Kolkata will utilize these systems for **cutting-edge research, enhancing India's scientific capabilities.**
- Additionally, the Prime Minister launched a High-Performance Computing (HPC) system focused on weather and climate research.
  - They are located at the Indian Institute of Tropical Meteorology (IITM) in Pune and the National Center for Medium Range Weather Forecast (NCMRWF) in Noida.
- These systems, named '**Arka' and 'Arunika'**, are tailored to provide more accurate predictions for tropical cyclones, thunderstorms, heat waves, and other critical weather phenomena.

Key Facts on Supercomputers:

- A **supercomputer** is a powerful computing machine that performs at the highest operational rate, typically measured in **floating-point operations per second (FLOPS)**.
- **Key Performance Indicators:**
  - **FLOPS (Floating-point Operations per Second):** The performance of supercomputers is measured in **teraflops** (trillions of FLOPS) or **petaflops** (quadrillions of FLOPS).
  - **Top500:** A bi-annual ranking of the **top 500 supercomputers** globally, based on their performance.

India's Supercomputers:

- **PARAM Rudra:** Recently launched under India's **National Supercomputing Mission**, these supercomputers are deployed in **Pune, Delhi, and Kolkata.**
- **Pratyush and Mihir:** India's major supercomputers, installed for weather forecasting, housed at the **Indian Institute of Tropical Meteorology (Pune)** and **National Centre for Medium-Range Weather Forecasting (Noida)**.
- **PARAM Yuva-II:** Developed by the **Centre for Development of Advanced Computing (C-DAC)**, it was one of the fastest supercomputers in India, used for scientific research.

Top Supercomputers in the World:

- **Frontier (USA):** As of 2023, **Frontier**, developed by **Oak Ridge National Laboratory**, is the **fastest supercomputer** in the world, with a performance exceeding **1 exaFLOP** (1 quintillion operations per second).
- **Fugaku (Japan):** Developed by **Riken** and **Fujitsu**, **Fugaku** was previously the fastest supercomputer and is still among the top performers, widely used for various applications like drug discovery and climate modeling.

NATIONAL SUPERCOMPUTING MISSION (NSM)

About:

- It is an important initiative by the Government of India to boost indigenous efforts to be in the forefront of supercomputing capability for socio-economic development of the nation.
- The mission was jointly steered by the Ministry of Electronics and IT and Department of Science & Technology.

Key Features:

- **Indigenous Development:** A core focus of NSM is on developing indigenous hardware and software for supercomputing systems, including processors, networks, and storage solutions.
- **Collaborative Effort:** The mission is jointly led by the Ministry of Electronics and Information Technology (MeitY) and the Department of Science and Technology (DST), with implementation support from the Centre for Development of Advanced Computing (C-DAC) and the Indian Institute of Science (IISc), Bengaluru.

8 SOCIETY

MEASURES FOR THE LGBTQIA+ COMMUNITY

Recently, the Department of Social Justice and Empowerment (DoSJE) has requested feedback from stakeholders and the general public to improve inclusivity in policies concerning the LGBTQIA+ community.

About:

- **Supreme Court's Directives on LGBTQIA+ Rights:** In the 2023 *Supriyo@Supriya vs. Union* case, the Supreme Court's directives aimed to expand the entitlements and rights of LGBTQIA+ individuals, focusing on areas where they faced discrimination.
- **Same-Sex Marriage:** The Supreme Court did not recognize same-sex marriages but acknowledged the government's plan to form a committee to examine entitlements for LGBTQIA+ individuals and Queer couples.
- **Government's Response:** Following the Court's directives, the government established a committee in April 2024, chaired by the Cabinet Secretary, to address discrimination in social welfare, healthcare, public services, and policing.
- **Sub-Committee:** A sub-committee under the Home Secretary was also formed to monitor and implement these measures for the LGBTQIA+ community.

ADDITIONAL INFORMATION

- LGBTQIA+ stands for lesbian, gay, bisexual, transgender, queer, intersex, and asexual. Each letter represents a different sexual orientation or gender identity.
- The "+" symbol is included to acknowledge and encompass other identities that fall outside of these categories and are still being recognized and understood.

Interim Actions by the Government:

- **Department of Food and Public Distribution (D/oF&PD):** Issued an advisory to States and UTs to treat queer partners as part of the same household for ration card purposes and ensure no discrimination in issuance.
- **Supreme Court Decriminalizes Homosexuality:**
  - In the **Navtej Singh Johar & Ors vs. Union of India case (2018)**, a five-judge bench of the Supreme Court partially struck down **Section 377** of the Indian Penal Code.
  - This landmark ruling **decriminalized same-sex relations** between consenting adults, marking a significant victory for LGBTQIA+ rights in India.
- **Same-Sex Unions:** In October 2023, the Supreme Court rejected the plea to legalize same-sex unions, leaving the status of such unions unrecognized.

SAHARIYA TRIBE

Recently, more than 172 cases of malnourished children have been reported among the Sahariya tribal community in Baran district of Rajasthan.

About:

- The **Sahariya tribe**, one of India's **Particularly Vulnerable Tribal Groups (PVTGs)**, is spread across the states of **Madhya Pradesh**, **Rajasthan**, and **Chhattisgarh**.
  - The tribe is known by various names, including **Seher, Sair, Sawar, Saor**, and **Sahara**, indicating their deep-rooted historical presence in the region.
  - Historically, the Sahariyas trace their lineage back to the times of the **Ramayana** and even beyond, highlighting their ancient cultural origins.
  - Despite this rich heritage, they are considered one of the most disadvantaged and **vulnerable population groups** in the country, facing severe socio-economic challenges.

ADDITIONAL INFORMATION

- **Tribal Population in India:** Constitutes **8.6%** of India's total population.
- **Particularly Vulnerable Tribal Groups (PVTGs):** PVTGs are a subset of tribal groups identified as being **more vulnerable** compared to other tribal communities.
- **Historical Background:**
  - **1973:** The **Dhebar Commission** created the category of **Primitive Tribal Groups (PTGs)** for less developed tribal groups.
  - **2006:** The Government of India renamed PTGs to **PVTGs**.
  - **Identification of PVTGs:**
    - **1975:** The Government of India identified and declared **52 PVTGs**.
    - **1993:** An additional **23 groups** were added, making a total of **75 PVTGs** out of **705 Scheduled Tribes**.
- **Characteristics of PVTGs:**
  - **Homogeneity:** PVTGs are generally homogeneous in terms of social and cultural practices.
  - **Isolation:** They are relatively **physically isolated**.
  - **Lack of Written Language:** They often do not have a written language.
  - **Slower Rate of Change:** They experience a **slower rate of change** in their lifestyle.
- **Geographic Distribution:** The highest number of PVTGs are found in the state of **Odisha.**

9 CULTURE & HISTORY

MUNICH AGREEMENT

On September 1st, 1939, German forces invaded Poland, marking the onset of World War II. This event exposed the shortcomings of the Munich Agreement, signed less than a year earlier, and underscored its failure to maintain peace.

About:

- The Munich Agreement was signed on September 29-30, 1938, by ***Germany, France, Italy, and Great Britain***.
- It aimed to appease Nazi Germany and prevent the outbreak of war in Europe.
- Great Britain's Prime Minister, Neville Chamberlain, was a prominent supporter of this policy of appeasement, believing it would secure peace.
- **Key Highlights of the Agreement:**
  - **Annexation of Sudetenland:**
    - As part of the agreement, Germany was allowed to annex the Sudetenland region, a part of Czechoslovakia with a significant ethnic German population.
    - This was perceived as a concession to maintain peace.
  - **Chamberlain's "Peace with Honour":**
    - After the agreement, Neville Chamberlain famously declared that the Munich Agreement represented ***"peace with honour"*** and that it would bring ***"peace for our time."***
    - He believed this concession would satisfy Hitler's ambitions and stabilize Europe.
  - **Czechoslovakia Excluded:**
    - Despite being the country most affected by the agreement, Czechoslovakia was not represented during the negotiations.
    - Pressured by its allies, Great Britain and France, the Czechoslovak government reluctantly accepted the deal.
    - Prime Minister Jan Syrový expressed deep regret, lamenting that his country had been abandoned, while Jan Masaryk (Foreign Minister of Czechoslovakia) declared, **"We are not ready to accept peace at all costs!"**
- **Outcomes:**
  - **Occupation of Sudetenland:**
    - The agreement allowed for the German occupation of Sudetenland in stages between October 1-10, 1938.
    - In some regions, plebiscites were to be held to determine if people wished to join Germany.
    - The Czechoslovak government had to release Sudeten Germans from their military and police forces, as well as any Sudeten German prisoners.
  - **Hitler's Betrayal:**
    - Just six months after the signing of the Munich Agreement, Hitler violated its terms and occupied the entirety of Czechoslovakia.
    - This marked the failure of appeasement and foreshadowed the imminent outbreak of World War II.
  - **Accelerated the Path to World War II**
    - The failure of the Munich Agreement emboldened Hitler, as he saw the Allies' willingness to capitulate to his demands as a sign of weakness.
    - This encouraged further aggression, culminating in Germany's invasion of Poland in September 1939.
    - The invasion prompted Britain and France to declare war on Germany, marking the beginning of World War II.
  - **Weakened Trust in Western Powers:**
    - The Munich Agreement led to deep disillusionment in smaller European states.
    - Countries like Poland and the Baltic States felt that Britain and France could not be trusted to protect them from Nazi aggression.
    - Czechoslovakia, which had not been consulted in the decision to cede the Sudetenland, felt betrayed by the Western powers.
  - **Shift in Soviet Foreign Policy:**
    - The Soviet Union, excluded from the Munich talks, perceived the agreement as a sign that Britain and France were trying to direct German aggression eastward.
    - This distrust led the Soviet Union to seek its own security arrangements, culminating in the **Nazi-Soviet Pact (Molotov-Ribbentrop Pact)** of August 1939.
    - This non-aggression pact between Germany and the USSR shocked the world and cleared the way for the invasion of Poland.

ROLE OF INDIANS IN THE WORLD WAR II

Indian Soldiers and Military Contributions:

- **Largest Volunteer Army:**
  - Over 2.5 million Indian soldiers served in the British Indian Army, making it the largest volunteer force in history.
  - These troops fought in various theaters of war, including Europe, North Africa, the Middle East, and Southeast Asia.
- **Key Campaigns:**
  - **North African Campaign:** Indian soldiers played a crucial role in battles against Axis forces, including in the pivotal Battle of El Alamein (1942), against the Germans and Italians.
  - **Southeast Asia:** Indian forces were heavily involved in defending British colonies in Burma (Myanmar) and Southeast Asia, notably fighting in the Battle of Imphal and the Battle of Kohima in 1944, which were instrumental in halting Japan's advance into India.
  - **Italy:** Indian soldiers also participated in the Italian Campaign, fighting in battles such as Monte Cassino and contributing to the eventual defeat of German forces in the region.
- **Awards and Honors:** Indian soldiers were highly decorated for their bravery. Several soldiers received the Victoria Cross, the highest military award for valor in the British Empire.

Economic and Industrial Contribution:

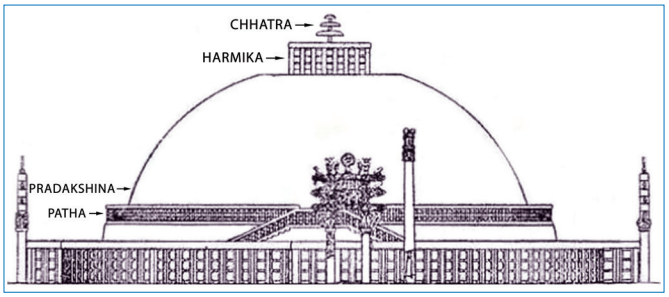
- **Resources and Supplies:**
  - India was a major supplier of materials, food, and resources to the Allied war effort.
  - Indian industries were mobilized to produce textiles, steel, and other materials necessary for the war, and the country's ports and railways were vital to moving troops and supplies.
- **Financial Aid:**
  - India also provided substantial financial support to the British war effort.
  - However, the economic strain of the war, combined with wartime inflation and shortages, had a severe impact on the Indian population, contributing to hardships like the Bengal Famine of 1943, which claimed millions of lives.

GREAT STUPA OF SANCHI

Recently, the External Affairs Minister visited the replica of the East Gate of Sanchi's Great Stupa located in front of the Humboldt Forum museum in Berlin.

Definition:

- A **stupa** is a distinctive architectural structure in Buddhism, primarily serving as a **commemorative monument** that typically contains sacred relics of the Buddha or other esteemed figures in the Buddhist tradition.
- Stupas play a crucial role in Buddhist practice, symbolizing the path to enlightenment and the spiritual journey of the Buddha.
- They serve as places for meditation, reflection, and pilgrimage, embodying key teachings and philosophies of Buddhism.



Historical Origins:

- The stupa's origins can be traced back to ancient **pre-Buddhist burial mounds** found in India, where they were used to mark sacred sites and memorialize the dead.
- Over time, stupas evolved to symbolize not just burial sites but also the enlightenment of the Buddha, incorporating various architectural elements that reflect Buddhist cosmology and philosophy.

The Great Stupa of Sanchi:

- The **Great Stupa at Sanchi**, located in Madhya Pradesh, is one of the most significant examples of stupa architecture, commissioned in the **3rd century BCE** by **Emperor Ashoka**.
- This stupa stands as the **largest** and **oldest** structure within a complex that includes several other stupas, temples, and monasteries, with construction and enhancements continuing up to the **12th century CE**.
- Believed to be one of the oldest stone structures still standing in India, the Great Stupa was constructed to house the relics of the Buddha, signifying the importance of his teachings and the reverence in which he is held.
- **Construction and Design:**
  - The Great Stupa is characterized by its **hemispherical mound**, which represents the dome of heaven and symbolizes the universe.
  - At its apex, it features a **chhatra**, a parasol symbolizing protection and enlightenment.
  - The stupa's design emphasizes simplicity and harmony, allowing the structure to blend with its surroundings while inviting contemplation and reverence from visitors.
- **Gateways of the Great Stupa:**
  - A notable feature of the Great Stupa is its **ornamental gateways** or **toranas**, which are intricately designed entrances that enhance the stupa's spiritual and aesthetic significance.

- **Four toranas** are oriented to align with the four cardinal directions (east, west, north, south), symbolizing the universality of the Buddha's teachings.
- Constructed in the **1st century BCE**, they are representative of the **Satavahana dynasty's** artistic achievements.

- **Architectural Features of the Toranas:**
  - Each torana consists of two robust **square pillars** supporting a superstructure made of three curved **architraves** (horizontal beams).
  - The pillars and architraves are adorned with elaborate **bas-reliefs** and sculptures that depict:
    - Important scenes from the **Buddha's life**, such as his birth, enlightenment, and teachings.
    - Tales from the **Jataka**, which narrate the previous lives of the Buddha, illustrating moral lessons and the principles of compassion and selflessness.
    - Various symbols and motifs associated with Buddhism, providing a rich tapestry of visual narratives that educate and inspire visitors.
- **East Gate: Historical Context:**
  - The **East Gate** of the Great Stupa is particularly famous and holds historical significance, especially in European contexts.
  - Its fame is linked to its discovery and subsequent restoration efforts.
  - The Sanchi complex was largely forgotten and in ruins until **Henry Taylor**, a British officer, rediscovered it in **1818**.
  - This prompted further interest and investigation, leading to **Alexander Cunningham's** formal surveys and excavations in **1851**.
  - Restoration efforts began in earnest in the **1910s**, with funding from the **begums of Bhopal**, who recognized the cultural and historical importance of the site.
  - Prior to its restoration, Sanchi faced challenges from treasure hunters and amateur archaeologists, many of whom sought to transport its gates to Europe.
  - Although these efforts were thwarted, plaster casts of the toranas were created, enabling wider access to their artistic features.
  - The **East Gate** was cast in plaster by **Lieutenant Henry Hardy Cole** for the **Victoria and Albert Museum** in the late **1860s**, leading to the creation of multiple copies that circulated across Europe.
  - The **Berlin replica** of the East Gate, for instance, originates from this initial cast and underwent modern restoration processes, including 3D scanning and the involvement of skilled craftsmen.
- **Architectural Significance of the East Gate:**
  - The **upper architrave** of the East Gate features representations of the **seven Manushi Buddhas**, preceding incarnations of the historical Buddha, emphasizing the cyclical nature of existence and the concept of enlightenment.
  - The **middle architrave** vividly illustrates the **Great Departure**, capturing the moment when Prince **Siddhartha** leaves his life of luxury in **Kapilavastu** to pursue the path of asceticism and enlightenment.
  - The **lower architrave** depicts **Emperor Ashoka's** visit to the **Bodhi tree**, a pivotal moment marking the Buddha's enlightenment.
  - The gate's decorations also include symbols such as the **shalabhanjika**, representing fertility and prosperity, along with motifs of elephants, winged lions, and peacocks, enhancing its visual splendor and cultural significance.

KARMA FESTIVAL

Recently, tribal populations in several states celebrated the harvest festival of Karma, also known as Karam Parv, on September 14-15.

About:

- **Overview:**
  - The **Karma Festival**, also known as **Karam Parv**, is a significant harvest celebration observed by various tribal populations in **Jharkhand**, **West Bengal**, **Bihar**, **Madhya Pradesh**, **Chhattisgarh**, **Assam**, and **Odisha.**
  - This festival highlights the deep-rooted cultural practices of these communities and reflects their reverence for nature and agriculture.
- **Significance of the Karam Tree:**
  - Central to the Karma festival is the **Karam tree**, which symbolizes **Karam Devta** (or **Karamsani**), the deity representing strength, youth, and vitality.
  - The tree not only serves as the spiritual connection of the tribal communities with nature and their agricultural practices.
- **Celebrated Communities:**
  - The festival holds particular importance among various tribal groups, including the **Munda**, **Ho**, **Oraon**, **Baiga**, **Kharia**, and **Santhal** peoples.
  - These communities engage in traditional rituals that are integral to their cultural identity and agricultural calendar.
- **Timing of the Festival:** Karma is celebrated on the **Ekadashi tithi** (the eleventh day) of the lunar fortnight during the month of **Bhado/Bhadra**, aligning with August-September in the Gregorian calendar.
- **Rituals and Preparations:**
  - The celebration begins about a week before the festival when **young women** collect **clear sand** from the river to prepare for the rituals.

- They sow **seven types of grains** in this sand, representing fertility and abundance.
- On the festival day, a branch of the Karam tree is ceremoniously planted in the **courtyard** or **akhra** (a designated open area for celebrations), serving as the focal point of the festivities.

- **Worship and Offerings:**
  - Devotees bring **jawa (hibiscus) flowers** as offerings to the Karam Raja (the deity), while the **pahan** (priest) conducts rituals to honor the Karam tree and invoke blessings for strength and prosperity.
  - The worship includes **dancing** and **singing traditional Karam songs**, creating a vibrant atmosphere filled with cultural expressions.
  - The festival culminates with the immersion of the Karam branch into a river or pond, symbolizing the return of the energy to nature and the continuation of the cycle of life.
  - The jawa flowers are distributed among the devotees as a blessing, reinforcing community bonds and shared cultural identity.
- **Agricultural Significance:**
  - Towards the end of the festival, participants often plant branches from **sal** or **bhelua** trees in their fields, invoking the Karam Raja/Devta for protection over their crops.
  - This act demonstrates the community's deep respect for agricultural practices and their reliance on the deities for good harvests and prosperity.

BHAGAT SINGH

Shaheed Bhagat Singh's anniversary is observed every year on September 28.

About:

- **Background:**
  - Born on **September 28, 1907**, in **Bhaganwala**, Punjab and was raised in a progressive environment that emphasized the importance of political activism.
  - His family, particularly his father **Kishan Singh** and uncle **Ajit Singh**, were actively involved in the freedom struggle against British colonial rule.
  - Kishan Singh was imprisoned in 1910 for disseminating seditious literature, while Ajit Singh was deported to **Mandalay** for his anti-colonial speeches.
- **Political Environment:**
  - Growing up in a politically charged atmosphere, Singh was inspired by the revolutionary ideas of his family members and the broader context of the Indian independence movement.
  - This early exposure instilled in him a sense of duty towards the country and its freedom.

Role in Freedom Struggle:

- **Education:**
  - In **1923**, Bhagat Singh enrolled in the **National College** in **Lahore**, founded by prominent leaders **Lala Lajpat Rai** and **Bhai Parmanand** as a counter to colonial educational institutions.
  - This college was imbued with the principles of **Swadeshi**, promoting national pride and self-sufficiency.
- **Joining Revolutionary Groups:**
  - In **1924**, he became a member of the **Hindustan Republican Association (HRA)**, an organization dedicated to overthrowing British rule through armed struggle.
  - He developed a close relationship with **Chandra Shekhar Azad**, a key figure in the HRA.
  - It was through the HRA that Singh began to engage deeply with the **Philosophy of the Bomb**, influenced by revolutionary thinker **Bhagwati Charan Vohra**, who wrote extensively on the subject.
- **Militant Activities:**
  - In **1925**, Singh returned to Lahore and co-founded the **Naujawan Bharat Sabha**, a militant youth organization aimed at mobilizing the youth for revolutionary activities.
  - By **April 1926**, he connected with **Sohan Singh Josh**, which led to the establishment of the **Workers and Peasants Party**, through which they published the monthly magazine **Kirti** in Punjabi.
  - This magazine served as a platform for revolutionary ideas and propaganda.
- **Early Arrest and Ideological Developments:**
  - In **1927**, he was arrested for his alleged involvement in the **Kakori Case** due to an article he had written under the pseudonym **Vidrohi** (Rebel).
  - This marked the beginning of his repeated confrontations with the colonial legal system.
  - In **1928**, Singh played a crucial role in transforming the HRA into the **Hindustan Socialist Republican Association (HSRA)**, advocating for a more socialist and revolutionary approach to the struggle for independence.
- **Revenge for Lala Lajpat Rai's Death:**
  - After the death of **Lala Lajpat Rai** in **1928** due to police brutality during a protest against the **Simon Commission**, Singh and his associates plotted to assassinate **James A. Scott**, the Superintendent of Police responsible for the lathi charge.
  - However, they mistakenly killed **J. P. Saunders**, which became known as the **Lahore Conspiracy Case**.
- **Protests and Trials:**
  - On **April 8, 1929**, Singh and **B. K. Dutt** threw non-lethal bombs in the **Central Legislative Assembly** to protest two oppressive bills.
  - Their intent was to draw attention to the injustices of British rule, not to cause harm.

- After this act, they surrendered, seeking to use their trial as a platform for their revolutionary message.
- Despite being awarded life imprisonment for this incident, Singh was re-arrested for his involvement in the **Lahore Conspiracy Case** and subsequently sentenced to death.

- **Execution:**
  - On **March 23,1931**, Bhagat Singh, along with **Sukhdev** and **Rajguru**, was hanged in **Lahore**.
  - Their execution sparked widespread protests and has since been commemorated as **Martyrs' Day** in India, honoring their sacrifices for the country's freedom.

ADDITIONAL INFORMATION

- **Scholar and Revolutionary:**
  - Bhagat Singh was not just a revolutionary; he was also a voracious reader and a prolific writer.
  - He contributed to several newspapers and pamphlets, criticizing colonial rule and advocating for independence.
  - His writings included discussions on **anarchism**, socialism, and Marxism, reflecting his ideological breadth.
  - He expressed his views through various pseudonyms, including **Balwant**, **Ranjit**, and **Vidhrohi**, making significant contributions to the revolutionary literature of the time.
- **Influence of Ideologies:**
  - Influenced by thinkers like **Marx**, **Lenin**, and **Trotsky**, Singh articulated a vision of **social reconstruction** based on Marxist principles, while also critiquing orthodox Marxist positions on authoritarianism.
  - In his writings, he defined **anarchism** as a path to complete independence, advocating for the elimination of state control and private property, and promoting a society free from the chains of organized religion.
- **Support from National Leaders:**
  - Despite the lack of support from leaders like **Mahatma Gandhi**, who distanced himself from violent methods, Singh received backing from influential figures like **Md. Ali Jinnah** and **Jawaharlal Nehru** during his trial.
  - Jinnah's eloquent defense of Singh highlighted the injustices of the British legal system, while Nehru later condemned the execution and acknowledged Singh's contributions to the freedom struggle.
- **Commemoration and Impact:**
  - Bhagat Singh's legacy endures in India, symbolizing the spirit of resistance and the quest for justice.
  - His writings and revolutionary acts continue to inspire generations, making him an enduring icon in the narrative of India's struggle for independence.

JIVITPUTRIKA FESTIVAL

Recently, approximately 46 individuals, including 37 children, drowned while performing ritual baths in rivers and ponds across various districts in Bihar during the 'Jivitputrika' festival.

About:

- **Jivitputrika Vrat (Jitiya Vrat),** is a significant festival dedicated to the well-being and prosperity of children, observed primarily by mothers.
  - It involves women fasting and taking a **holy dip.**
- **Significance:**
  - **Devotion to Children:** The vrat (fast) is performed by mothers to pray for the long life and health of their children.
    - It reflects the deep maternal love and devotion that mothers have for their offspring.
  - **Cultural Heritage:** Jivitputrika is an integral part of the cultural and religious practices of many Indian families, symbolizing the bond between mothers and children.
- **Celebration Date:** Jivitputrika Vrat is celebrated annually on the **Ashtami** (eighth day) of the **Shukla Paksha** (waxing phase of the moon) in the month of **Ashwin** (September-October), coinciding with the festive season in India.
- **Social Gathering:** The festival fosters a sense of community, as families often gather for prayers, share meals, and participate in communal celebrations.
- **Cultural Events:** Various cultural activities, including folk songs and dances, may also be organized during the festival, enhancing the sense of togetherness.
- **Symbol of Protection:** The vrat is believed to invoke divine protection for children, ensuring their health, safety, and prosperity throughout their lives.

10 MISCELLANEOUS

NATIONAL FLORENCE NIGHTINGALE AWARDS 2024

The President of India has conferred the National Florence Nightingale Awards 2024 to Nurses at Rashtrapati Bhavan, New Delhi.

About:

- The Award was instituted by the **Ministry of Health and Family Welfare** in the year **1973.**
- This award is given as a mark of recognition for the meritorious services rendered by the **nurses and nursing professionals** to society.
- Each **award consists** of a Certificate of Merit, Cash Award of Rs. 1,00,000/- and a medal.

MAGSAYSAY AWARD 2024

Hayao Miyazaki, the acclaimed Japanese animator and co-founder of Studio Ghibli, has been honoured with the Ramon Magsaysay Award of 2024.

About:

- The **Ramon Magsaysay Award** is considered Asia's premier prize, recognizing individuals and organizations for their outstanding contributions in various fields.
- It is often referred to as **Asia's Nobel Prize**, symbolizing the highest honour for humanitarian service and leadership.
- This award is presented in **formal ceremonies in Manila, Philippines on August 31st,** the birth anniversary of the much-esteemed Philippine President whose ideas inspired the Award's creation in 1957. Ramon Magsaysay was the **Third President of the Philippines** after World War II.
- **Purpose and Spirit:** The award celebrates greatness of spirit in selfless service to the people of Asia. It acknowledges those who have demonstrated generosity, integrity, and commitment to helping others without seeking public recognition.
- **Ramon Magsaysay Award Foundation (RMAF):** It is based in the Philippines, and is responsible for selecting the awardees. The RMAF board of trustees annually selects the winners, recognizing both individuals and organizations across the continent.
- **Fields of Recognition:** The award recognizes contributions in diverse fields such as Environmental protection, Peace and conflict resolution, Public service, Community leadership, Journalism, Literature and Arts and culture.
- **Inclusivity and Scope:** The award honours individuals and groups from all Asian nations, irrespective of race, creed, gender, or nationality.
  - It highlights those who have achieved distinction and helped others generously across Asia.

INDIANS WHO WON THE AWARDS

Vinoba Bhave in 1958; Mother Teresa in 1962; Kamaladevi Chattopadhyay in 1966; Satyajit Ray in 1967; Mahasweta Devi in 1997; Arvind Kejriwal in 2006; Anshu Gupta of Goonj in 2015; Bezwada Wilson (human rights activist) in 2016; and Ravish Kumar (journalist) in 2019.

EMMY AWARDS 2024

The 76th Primetime Emmy Awards were handed out at the Peacock Theater in Los Angeles.

About:

- The Emmy Awards are the most renowned accolades given to **television and emerging media performances**. Unlike Oscars and Golden Globe awards, they aren't given for films.
- **History:** The Emmy Awards were conceived in **1948** and the first ceremony took place in 1949.
- **Types of awards:** Apart from the **International Emmy Awards** and the **Primetime Emmy Awards**, the Emmys are also given in the following categories like sports, news and documentary, technology and engineering, and regional.
- **Award Given by:** These awards are given by three sister organizations; **First is the Television Academy,** which administers the Primetime Emmy Awards. **Second is the National Academy of Television Arts & Sciences,** which oversees daytime, sports, news and documentary categories. **Third is the International Academy of Television Arts & Sciences**, which is responsible for International Emmys.
- **Some of the Winners of Emmy Awards 2024:**
  - **Outstanding Drama Series:** Shogun
  - **Outstanding Comedy Series:** Hacks

EXERCISE AIKYA

The National Disaster Management Authority (NDMA) and the Southern Command of the Indian Army are set to host Exercise AIKYA in Chennai.

About:

- **Meaning: "Aikya, " meaning "Oneness" in Tamil,** embodies the exercise's goal of uniting India's Disaster Management community.
  - It gathered key stakeholders from across Peninsular India to strengthen disaster preparedness and improve response capabilities.
- **Objective:** To foster collaboration, enhance preparedness, and integrate various stakeholders involved in disaster management across India.
- **Participation:** Representatives from six southern states/UTs (Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, and Puducherry) participated.
- **Key agencies involved:** NDMA, Indian Army, Navy, Air Force, NDRF, IMD, INCOIS, and various research institutions including IIT Madras and NIOT.
- **Disaster Scenarios:** The exercise simulated emergency situations such as tsunamis, landslides, floods, cyclones, industrial incidents, and forest fires to test response strategies and improve coordination among agencies.

INDIA'S HISTORIC DOUBLE GOLD IN CHESS OLYMPIAD

India has bagged its first ever gold medal in both the men's and the women's team categories at the 45th Chess Olympiad in Budapest.

Chess Olympiad:

- It is the world's most prestigious team event for chess and India has been participating in the **biennial event** since 1956 and has played in every Olympiad since 1980.
- Now with this win, India also became the **third country** to win gold in both men's and women's categories in the **same edition** of Chess Olympiad after the Soviet Union and China.

Origin of Chess:

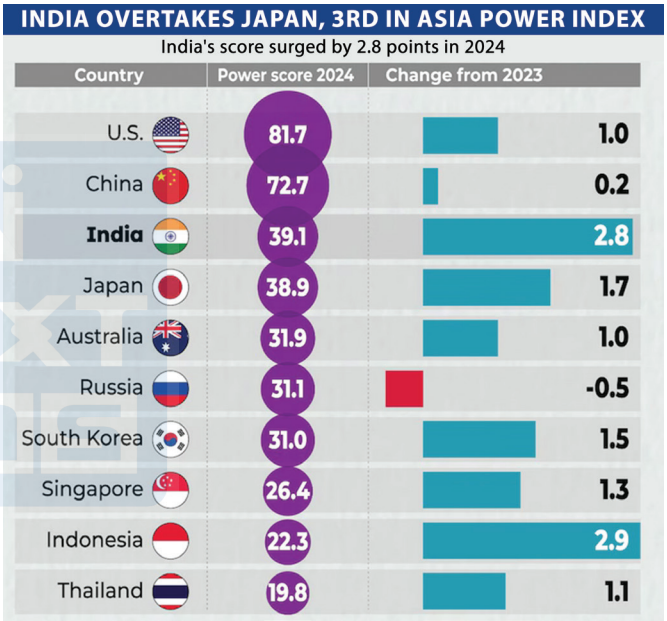
- The history of chess in India can be traced back to **1600 years** ago during the **Gupta dynasty.** It was called 'chaturanga' in earlier times.
- Chess, via India, reached many countries of the world and became very popular.
  - Today, chess is being used in schools as an **education tool** for children.

ASIA POWER INDEX, 2024

India has become the third most powerful nation in Asia, surpassing Japan in the Asia Power Index. USA and China have been ranked at 1st and 2nd place, respectively.

About:

- **Launched by:** Lowy Institute in 2018.
- **Scope:** It is an annual measure that examines power dynamics in the Asia-Pacific region.
- **Coverage:** The Index evaluates 27 countries across the region, analyzing their ability to shape and respond to their external environment.
- **Objectives:** A country's overall power score is derived from a weighted average of 8 measures, which are divided into resource-based and influence-based determinants, encompassing 131 individual indicators.
  - The Asia Power Index provides valuable insights into the geopolitical landscape of the Asia-Pacific region, highlighting the growing influence of countries like India.



ABHED

The Defence Research & Development Organisation (DRDO), in collaboration with researchers from IIT Delhi, has developed the ABHED (Advanced Ballistics for High Energy Defeat) bulletproof jacket.

About:

- These are the **lightweight bulletproof jackets.**
- The jacket uses a combination of polymers and **boron carbide ceramic materials**, known for their high **strength-to-weight ratios.**
- It is capable of withstanding high-velocity projectiles, enhancing soldier safety during combat.
- ABHED's indigenous development strengthens India's defence capabilities and positions the country as a potential competitor in the global defence market.

NAMING ARUNACHAL PEAK AFTER THE SIXTH DALAI LAMA

Recently, a team of intrepid Indian mountaineers scaled an unnamed and unclimbed peak in Arunachal Pradesh, decided to name this majestic summit 'Tsangyang Gyatso Peak' after the 6th Dalai Lama.

About:

- China expressed its long standing claim over the region, which it refers to as Zangnan, and considered any attempt by India as **'illegal and null and void'**.

Historical Background:

- India shares a **3,488-kilometre**-long border with China, which runs along several states: **Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh.**
  - This border, known as the **Line of Actual Control (LAC)**, has been a source of tension and occasional conflict between the two nations.
- **1962 Sino-Indian War:** The most significant conflict occurred in 1962 when China invaded India across the Himalayan border.
  - India suffered a military defeat, and the war left scars on bilateral relations.
- **Post-War Diplomacy:** After the war, diplomatic efforts aimed at resolving the boundary issue began.
  - However, progress was slow due to differing perceptions of the border alignment.
- **Agreements and Disputes:** Over the years, India and China signed several agreements to maintain peace along the border.
  - These included the **Agreement on the Maintenance of Peace and Tranquillity (1993) and the Agreement on Political Parameters and Guiding Principles (2005).** Despite these agreements, disputes persisted.

Recent Developments:

- **Galwan Clash in Ladakh (2020):** A violent clash between Indian and Chinese troops resulted in casualties on both sides. This incident significantly strained bilateral relations.
  - Since then, both countries have engaged in **disengagement talks to de-escalate tensions**. These negotiations aimed to withdraw troops from contentious areas along the LAC.
  - The External Affairs Minister of India mentioned that **75% of the disengagement issues had been sorted out**. However, it's essential to clarify that this progress pertains specifically to troop disengagement.
  - The **broader boundary issue remains unresolved.**
- **Tawang Region in Arunachal Pradesh:** Tawang, strategically **located between China and Bhutan,** is a significant Indian territory. It lies within the **unsettled India-China border.**
  - The **Yangtse plateau within Tawang** is crucial for both Indian and Chinese militaries. Its peak altitude of over 5,700 metres provides visibility over much of the region.
  - India's control of the ridgeline along the LAC allows it to prevent Chinese overwatch of roads leading to the **Sela Pass — a critical mountain pass that serves as the only access in and out of Tawang.**
- **Territorial Claim of Arunachal Pradesh:** China's territorial claims over Arunachal Pradesh have been a point of contention for years. Since 2017, China has been renaming places within the region as part of its strategy to assert control.
  - India, on the other hand, firmly maintains that Arunachal Pradesh is an integral part of its territory, dismissing China's renaming efforts as mere semantics.
  - The naming of **Tsangyang Gyatso Peak** adds another layer to this complex geopolitical landscape.

India's Stance:

- **Rejection of China's Claims:** India has consistently rejected China's claims, emphasising that Arunachal Pradesh is an integral part of its sovereign territory. India contends that assigning 'invented' names to geographical features does not alter the ground reality.
- **Cultural and Historical Integrity:** For India, Arunachal Pradesh remains a vibrant state with its own cultural heritage, history, and people, regardless of the nomenclature imposed by external forces.
- **Strengthening Border Infrastructure:** India has reinforced its position by bolstering infrastructure and defense capabilities along the border in Arunachal Pradesh, showcasing its commitment to safeguarding its territorial integrity and ensuring the security of the region.

India's Approach and Mechanisms:

- **Diplomatic Relations:** India established diplomatic relations with the People's Republic of China in 1950, becoming the first non-socialist bloc country to do so.
  - Despite occasional tensions, both sides have engaged in dialogue to manage border issues.
- **Mechanisms for Conflict Resolution:** India has mechanisms in place to address 'friction' related to the international border with China in Arunachal Pradesh. Diplomatic channels and bilateral agreements are used to resolve disputes.
- **Working Mechanism for Consultation & Coordination (WMCC):** It is an institutional framework established to facilitate communication, coordination, and management of border-related issues **between India and China**. It emerged as a response to the need for improved institutionalised information exchange regarding border matters.
  - The discussion was 'in-depth, constructive and forward-looking', and both sides agreed to maintain the momentum through established diplomatic and military channels.

11 DATA RECAP

Malnutrition in India:

- According to the **National Family Health Survey (NFHS5)**, 35.5% of children under five are stunted, 19.3% are wasted, 32.1% are underweight, and 3% are overweight. Among women aged 15-49, malnutrition affects 18.7%.
- Anemia is prevalent in 25% of men, 57% of women, 31.1% of adolescent boys, 59.1% of adolescent girls, 52.2% of pregnant women, and 67.1% of children aged 6-59 months.
- The **State of Food Security and Nutrition in the World (2023) reports** that 74% of India's population cannot afford a healthy diet, with 39% lacking adequate nutrients.
- India's **2023 Global Hunger Index score** is 28.7, considered serious, with the country having the highest child wasting rate at 18.7%.

Facts Related to Digital India Mission:

- **Internet Connectivity:** Expansion of broadband connectivity to rural areas through the Bharat Net project, connecting over 1.5 lakh gram panchayats. **Bharat Net has laid 6.83 lakh kilometers** of optical fiber network, enough to circle the Earth over 17 times.
- **Pradhan Mantri Jan Dhan Yojana (PMJDY):** Opened over 450 million bank accounts, promoting financial inclusion and access to banking services.
- Urban literacy is 61%, compared to just 25% in rural areas.
- As per **NCRB,** cybercrime cases surged by 24.4% in 2022, with 65,893 cases reported, mostly cyber fraud (64.8%).

Global Edible Vegetable Oil Economy:

- The global edible vegetable oil sector has been experiencing consistent growth over the years, and for 2024-25, it is projected to see a 2% increase in production, reaching a total of 228 million tonnes (MT).
- This growth is primarily driven by increased output in soybean, palm, and rapeseed oil, which are major contributors to the vegetable oil market.
- The modest growth in sunflower oil reflects its smaller share of the global market but contributes to the overall positive trend.

Fisheries and Aquaculture Infrastructure Development Fund:

- Launched in 2018-19, the FIDF aims to support infrastructure development in the fisheries sector with a total fund size of **₹7,522.48 crores.**

Status of Dairy Sector in India:

- India holds the position as the world's largest milk producer, with milk production reaching 230.58 million tonnes in 2022-23.
- This marks a significant increase from 17 million tonnes in 1951-52, reflecting substantial growth in the dairy sector over the decades.
- The per capita availability of milk in India is 459 grams per day, significantly higher than the global average of 323 grams per day.
- **Milk Sector's Contribution to Agricultural GDP:** The milk sector plays a pivotal role in the country's agricultural economy. Milk and related products, such as ghee, butter, and lassi, contribute almost 40% (Rs 11.16 lakh crore) to the total GDP of agriculture and related sector

Plastic Waste Generation:

- India generates approximately 9.3 million tonnes of plastic waste annually.
- Out of this total, 5.8 million tonnes are incinerated, while 3.5 million tonnes are released into the environment as debris.
- This figure places India among the top contributors to global plastic pollution, significantly higher than other countries such as Nigeria (3.5 million tonnes), Indonesia (3.4 million tonnes), and China (2.8 million tonnes).

Jal Jeevan Mission:

- As of February, 2023, around 11.10 Crore (57%) of the 19.36 Crore rural households in India have received tap water connections, a significant increase from 3.23 Crore (17%) at the mission's launch.

PM JAY:

- **Achievements:** As of September 9, 2024, over 35.4 crore Ayushman cards have been issued, improving healthcare accessibility for millions.
- The scheme operates in 33 States and Union Territories, excluding NCT Delhi, West Bengal, and Odisha.
- 49% of Ayushman cards have been issued to women. 30,529 hospitals are empanelled, including 17,063 public and 13,466 private hospitals, offering beneficiaries a wide range of healthcare options.
- The Ayushman Bharat program has resulted in a 21% reduction in out-of-pocket healthcare expenses.

India-Singapore Relation:

- Bilateral trade between the two countries grew significantly from USD 6.7 billion in FY 2004-05 to USD 35.6 billion in FY 2023-24.
- Singapore ranks as India's 6th largest trade partner, accounting for 3.2% of India's total trade.

Ramon Magsaysay Award of 2024:

- Hayao Miyazaki, the acclaimed Japanese animator and co-founder of Studio Ghibli, has been honoured with the Ramon Magsaysay Award of 2024.

Test Yourself

Objective Questions

Visit: www.nextias.com for monthly compilation of Current based MCQs

Mains Questions

PAPER-I

1. Examine the significance of the discovery of the Indus Valley Civilization in shaping our understanding of ancient Indian history. **(15 Marks, 250 Words)**
2. Discuss the historical and cultural significance of the Sanchi Stupa, focusing on its architectural features and religious importance. **(10 Marks, 150 Words)**
3. Evaluate the role of Shaheed Bhagat Singh in India's freedom struggle. **(10 Marks, 150 Words)**
4. Analyze the impact of the Munich Agreement of 1938 on European geopolitics, with emphasis on its role in appeasement and territorial concessions. **(15 Marks, 250 Words)**
5. Analyze the increasing frequency of cyclones in the Arabian Sea, discussing the contributing factors, environmental impacts, and implications for coastal regions in India. **(15 Marks, 250 Words)**
6. Discuss the heat dome effect, its mechanism, and the consequences for climate patterns and human health. **(10 Marks, 150 Words)**
7. Evaluate the factors contributing to the rising demand for mental healthcare in India, and analyze the challenges in addressing mental health needs effectively. **(15 Marks, 250 Words)**
8. Evaluate the role of invisible barriers in reinforcing gender disparities, highlighting their influence on decision-making, workplace dynamics, and social norms in contemporary society. **(10 Marks, 150 Words)**

PAPER-II

9. Analyze the evolution of the Supreme Court of India, emphasizing landmark judgments, judicial activism, and its influence on the Indian legal system. **(10 Marks, 150 Words)**
10. Analyze the challenges faced by the National Human Rights Commission (NHRC) in India, exploring its capacity to address contemporary human rights issues and the need for institutional strengthening. **(15 Marks, 250 Words)**
11. Examine the role of the Law Commission of India in legal reform, focusing on its function in proposing legislative changes and addressing contemporary legal challenges. **(10 Marks, 150 Words)**
12. Evaluate the objectives of the Pradhan Mantri Janjatiya Unnat Gram Abhiyan, focusing on its role in promoting sustainable development and improving the living standards of tribal communities. **(10 Marks, 150 Words)**
13. Examine the challenges and opportunities in India-Singapore relations, particularly in light of global geopolitical shifts and their implications for ASEAN and South Asian cooperation. **(10 Marks, 150 Words)**
14. Examine the challenges and opportunities presented by civil nuclear cooperation between India and the UAE. **(15 Marks, 250 Words)**

PAPER-III

15. Discuss the significance of the Blue Revolution in enhancing India's fish production, examining its role in food security, export potential, and environmental sustainability. **(15 Marks, 250 Words)**
16. Evaluate the opportunities and obstacles in developing a robust semiconductor manufacturing ecosystem in India. **(10 Marks, 150 Words)**
17. Analyze how human activities contribute to man-animal conflict, considering factors such as habitat destruction, climate change, and agricultural methods. **(15 Marks, 250 Words)**
18. Discuss the challenges and opportunities in utilizing nanotechnology for drug delivery. **(10 Marks, 150 Words)**
19. Analyze the challenges and advancements in electronic warfare technology, considering its implications for national security and defense strategies. **(15 Marks, 250 Words)**
20. Discuss the role of ethnic identity and local grievances in fueling insurgency in Northeast India, and suggest measures for effective governance and integration. **(15 Marks, 250 Words)**