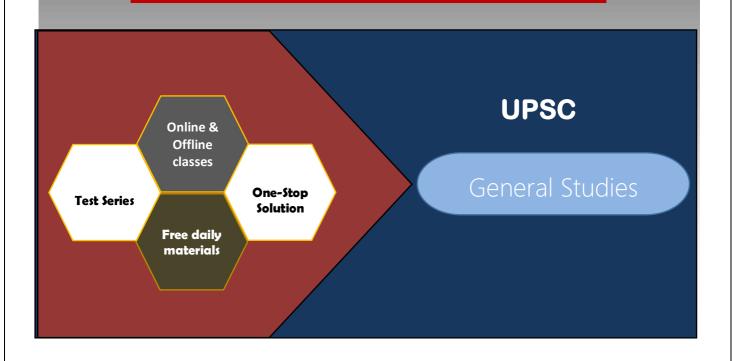**VISHNU IAS**
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SEPTEMBER 2024
Monthly current affairs magazine

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GS 1 : Heritage, culture ,Geography of the World and Society

1. Gandhi vs Ambedkar on Caste

- On September 20, 1932, Mahatma Gandhi began a fast unto death in Yerawada Jail, Pune, to protest against the provision of separate electorates for Scheduled Castes.
- **Gandhi's Views on Caste**: Initially orthodox, Gandhi supported social prohibitions like **restrictions on inter-dining and inter-marriage** but later rejected untouchability, referring to untouchables as "Harijans." However, he did not reject the **institution of caste itself,** as it was tied to Hindu religious practices.
- **Ambedkar's Radical Approach**: Ambedkar believed that to **truly abolish caste,** one needed to attack the divine authority of the Hindu scriptures (shastras) that justified it. He argued that **reforms short of rejecting the religious basis of caste** were insufficient.
- Ambedkar's strategy was to focus on **lower castes** achieving **political power** to challenge their subjugation within the Hindu social order.

Ambedkar's Argument for Separate Electorates

- **Distinct Identity of Depressed Classes**: Ambedkar argued that the **Depressed Classes (Scheduled Castes)** formed a distinct group, separate from the Hindus. Despite being part of Hindu society, they **did not enjoy equal treatment** and were subject to systemic oppression.
- **Political Machinery for Representation**: Ambedkar advocated for separate electorates with a double vote system, where Scheduled Castes would vote for their own candidates as well as in the general electorate.
- **Protection from Majority Rule**: Ambedkar warned that joint electorates would allow the Hindu majority to control the election of Dalit representatives, making it impossible for **lower castes** to effectively protect their interests against the tyranny of the majority.

Why Gandhi Opposed Separate Electorates

- **Integration of Lower Castes**: Gandhi opposed separate electorates because he believed they would **marginalize lower castes further**. Instead of being restricted to a limited share of seats, Gandhi thought lower castes should aim for **broader participation** in **political leadership.**

- **Fear of Dividing Hindu Society**: Gandhi feared that separate electorates would **divide Hindu society**, further weakening it. He believed this division would help the British continue their **"divide and rule" policy,** undermining India's struggle for independence.
- **Strategic Concerns**: The introduction of separate electorates for Scheduled Castes, in addition to those for Muslims, would **fragment the Hindu political base**, reducing the power and influence of upper-caste Hindu leadership.

Culmination of the Debate: The Poona Pact

- **Gandhi's Fast**: In 1932, Gandhi went on a fast unto death to oppose separate electorates, pressuring **Ambedkar to concede**. Ambedkar, despite his misgivings, agreed to the Poona Pact, which provided for **reserved seats for Scheduled Castes** but within a joint electorate.
- **Ambedkar's Dissatisfaction**: Ambedkar was never fully satisfied with the outcome, believing the **joint electorate allowed upper-caste Hindus** to nominate Dalit representatives, effectively controlling their political voice.
- **Conclusion:** The Gandhi-Ambedkar debate on caste culminated in the Poona Pact, with Gandhi opposing separate electorates to maintain Hindu unity, while Ambedkar sought political power for lower castes. Though Ambedkar agreed, he remained dissatisfied with the compromise.

2. 100 years of Discovery of Harappan Civilisation

Harappan Civilisation

- **Civilization** - It is a **bronze age society** that existed along the river Indus, thus rreferred to as the Indus Valley civilization (IVC).
- It is also called Harappan civilization, named after Harappawhich was the first site unearthed in the region.
- **Discovery** – In 1921, John Marshall who was then the Director General of the Archaeological Survey of India authorized an Article called "**New Discoveries of an Unknown Prehistoric Past"**.
- He termed his discovery as "civilization of the Indus Valley."
- This civilization thrived near the Indus and Saraswati rivers.

Geographical extension

- **Geographical area** – It spans about 1.5 million sq.km.
- **Coverage** – It is spread across North West India, Pakistan, and Afghanistan.
- The Southernmost extension is Daimabad on Godavari river basin in Maharashtra.
- **Total sites** – Around 2,000 within this civilization's expanse.

- **Five largest sites** – Mohenjo-daro, Harappa, Ganweriwala (all in Pakistan), Rakhigarhi, and Dholavira (both in India).
- **Heart of the civilization** - It was located in Sind and Punjab in unpartitioned India, from which it radiated in all directions.

Features:

- **Economy –** They engaged in agriculture, animal husbandry, and also involved in trade.
- **Society –** It was matriarchal in nature as a large number of terracotta female figurines have been found from various sites.
- It represent the worship of the Great Mother Goddess.

- **Religion –** They worshipped animals, human figure and trees.
- **Craft –** Development of epigraphy, ceramics, pottery, bead making and bronze & copper crafts
- Detailed lapidary craftsmanship, particularly in micro-drilling long carnelian beads with chemically stained designs were observed.
- **Seals -** Intricately carved stamp seals made of steatite, engraved with life like human and animal motifs along with text or icons were found.
- **Town Planning –** At its Peak, it was a "technological powerhouse," known for town planning, water management, construction of reservoirs, stadiums, underground drainage systems, fortification walls & boat building.

3. Existence of a dockyard at Lothal, Gujarat, during Harappan Civilisation

- Since the discovery of Harappan sites at Lothal, archaeologists have been **divided on whether a dockyard existed** at Lothal during the Indus Valley Civilisation (IVC) period.

Study and findings:

- A new study by the **Indian Institute of Technology-Gandhinagar (IITGn)** has found fresh evidence which suggests the **existence of a dockyard** at the IVC site of Lothal.
- According to the study, **Sabarmati River** used to flow by Lothal during the Harappan Civilisation. Currently, it flows **20 km away** from Lothal.
- Satellite images have unveiled the **old channels of the River Sabarmati**, suggesting Lothal's key location on a significant river route.
- There was also a **travel route** connecting **Ahmedabad, through Lothal, the Nal Sarovar wetland, and the Little Rann, to Dholavira**, according to the study.

About Lothal:

- Lothal is located in the **Bhal region** of modern-day Gujarat.
- Lothal is the **only port town** of Indus valley civilization.
- Said to be built in **2,200 BC**, this port city was a **thriving trade centre** in ancient times with its trade of beads, gems and ornaments reaching West Asia and Africa.
- The port city was discovered in 1950sby a team of archaeologists led by **SR Rao**.

About Sabarmati River:

- The Sabarmati originates in the **Dhebar lake** situated in the southern part of the **Aravalli range** in the Udaipur district of Rajasthan.
- It flows in a south-western direction, and after traveling about 371 km, falls into the **Gulf of Khambhat**.
- The Sabarmati is the name given to the **combined streams the Sabar and Hathmati.**
- Left bank tributaries: **Wakal, Hathmati and Vatrak**
- Right bank tributaries: **Sei**

4. Arctic Sea Ice is Linked to Monsoon Patterns in India

- 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.

Indian Summer Monsoon Rainfall

- The Indian summer monsoon rainfall (ISMR) over the Indian subcontinent, from **July to September**, is one of the most prominent monsoon systems in the world.
- In summer months, sunlight warms the **Central Asian and Indian landmass** more and faster than the surrounding ocean.
- This creates a **low pressure band at the Tropic of Cancer** called the **intertropical convergence zone (ITCZ).**
- **Trade winds** blowing from the southeast are subsequently deflected towards the Indian landmass due to the **Coriolis force** and the low pressure after they cross the equator.
  - As they blow over the **Arabian Sea,** the winds pick up moisture and deposit that as rain over India.
- Over the landmass, the **southwest monsoon splits** into two. The Arabian Sea arm brings rain to the west coast while the other arm travels to the Bay of Bengal and brings rain to India's eastern and northeastern parts.

- **The arms finally converge over Punjab and Himachal Pradesh** as the Arabian Sea arm moves inward and the Bay of Bengal arm moves along the Himalaya.

Complexity of the Indian Summer Monsoon Rainfall

- In the last two decades, climate models have shown that the surface temperatures of the **Indian, the Atlantic, and the Pacific Oceans** affect the ISMR.
- **The circum-global teleconnection (CGT)**, a large-scale atmospheric wave flowing at the mid-latitudes, seemed to significantly influence the monsoon as well.

Role played by climate change

- Climate change, by accelerating the **reduction of Arctic sea ice**, exacerbates the variability and unpredictability of the ISMR.
- Lower Arctic sea ice can lead to more frequent and severe droughts in some regions while causing excessive rainfall and flooding in others.
- Further the study shows the urgent need to expand research on climate dynamics and for scientists to prepare more accurate forecasts of the ever-changing monsoons.

5. Impact of Arctic Sea ice on Indian Monsoon

- New research reveals that changing Arctic Sea level has significant impact on monsoon patterns.

Arctic Sea ice

- **Sea ice** - It is sea water that freezes from the ocean surface down to several feet below, is an integral part of the Arctic Ocean.
- **Importance of sea ice** - Sea ice helps in
  - ○ Regulating Earth's climate
  - ○ Influencing global weather patterns
  - ○ Affecting ocean circulations
- **The Arctic ice –** It is the sea ice cover of the Arctic Ocean and its vicinity.
   During the dark winter months – Sea ice essentially covers the entire Arctic Ocean
- **In summer –** Some of this ice melts because of warmer temperatures and long hours of sunlight.

What is Arctic sea ice change?

- **Arctic Minimum** - Arctic Sea ice reaches its minimum each September and reaches the maximum extent in March.
- **Declining Arctic minimum –** The Arctic is warming faster than anywhere else on the planet.
- As a result, sea ice in the Arctic Ocean is decreasing.

- Shrinking September Arctic Sea ice – It is now decking at a rate of 12.2% per decade, compared to its average extent during the period from 1981 to 2010.
Impact on Monsoon - Arctic Sea ice levels affect atmospheric circulations that in turn influence the Indian Summer Monsoon Rainfall (ISMR).
- Due to the climate change, sea ice concentration (SIC) in the central Arctic Sea is reducing, which is affecting ISMR.
- Less central Arctic sea ice leads to lower rain in western and peninsular India but more rain in central and northern India.
- Lower sea ice levels in the upper latitudes, particularly in the Barents-Kara Sea region delay the monsoon's onset and render it more unpredictable.

How increase in Central Arctic sea ice influence ISMR?

- **Cyclones formations –** Higher SIC triggers a cyclonic circulation at lower latitudes, the heat transferred from the ocean to the atmosphere which in turn strengthens the Rossby waves.

- This enhanced Rossby waves creates
    - **High Pressure over –** Northwestern India
    - **Low pressure over –** Mediterranean region
- **Strengthening of Asian Jet Stream –** It is a narrow band over the Caspian Sea which causes the subtropical easterly jet stream to shift northwards.
- The **Subtropical Easterly Jet Stream** (STEJ) is a high-altitude wind pattern that flows from east to west over the Indian subcontinent during the summer months.

How lower Arctic sea ice impacts ISMR?

- High pressure over China – Low sea ice over the Barents-Kara Sea region triggers a series of air currents that produce an anomalous high pressure over southwest China.
- This correlates with a **positive Arctic Oscillation**, a high pressure over the northern Atlantic and Pacific oceans along with a weakening of the CGT, which connects weather events in different parts of the world.
- **Anticyclones formation –** As sea ice levels decrease in the region, heat rises from the Barents-Kara sea, creating an anticyclonic circulation (calm, clear skies) over northwest Europe.

- This disturbs the upper atmospheric region over subtropical Asia and India.

6. Rain harvesting work reveals megalithic burial site

- A rainwater harvesting project in **Koduvayur**, Kerala unearthed a large number **megalithic of urn burials**. The site is on the **Kundlikkad hill, also known as Malampalla or Malappuram hills** in the Kollengode range of the Nenmara forest division.

Key Findings:

- The burials may go back to **more than 2,500 years**.
- In most hill sites, we see cairn heaps with cists and cairn circles and stone circles containing cists and dolmens. But on this hill, an **unusually large number of classic urn burials** were found.
- Archaeologists suggest that discovery could throw significant insight into **links between Mesolithic and iron age** periods in Kerala.

Megalithic culture:

- The term "Megalith" is derived from the Greek words **"mega" (large) and "lithos" (stone)**, meaning large stone structures, often associated with burials.
- While megalith is often used to describe a **single piece of stone**, it also can be used to denote **one or more rocks hewn in a definite shape** for special purposes.
- Megalithic culture refers to a period characterized by the use of large stones for **monuments and burial practices**.

Timeline:

- Megaliths in India are dated before **3000 BC**, with recent findings dated back to **5000 BC in southern India**. Coincides with the Iron Age in the Indian subcontinent.

Geographical Spread:

- Found extensively in peninsular India, especially in states like **Maharashtra, Karnataka, Kerala, Tamil Nadu, and Andhra Pradesh**.They are also found in the upper Indus valley and central India.

GS 2 : Polity, Governance, International Relations

1. Health Ministry begins work to bring in manpower for its Technical Resource Centres

- The Union Health Ministry along with the Indian Council of Medical Research (ICMR) is working towards establishing Technical Resource Centres (TRC), which are mandated to systematically synthesise and evaluate evidence with the objective of developing and promoting evidence-based guidelines along with enhancing the adoption of these practices in healthcare.

More on News:

- **Calling for Expression of Interest (EoI) from researchers/ faculty/ scientists for the centre, the ICMR** noted that each TRC will have a financial support of up to **20 lakh per year and the duration of the funding will initially be three years, subject to performance reviews, and renewable every year.**
- The **TRC is supposed to conduct systematic reviews and meta-analyses to generate high-quality evidence for the development of clinical guidelines, utilising the GRADE (Grading of Recommendations, Assessment, Development, and Evaluation) approach, organise training programmes and workshops to disseminate best practices in evidence synthesis and the application of the GRADE methodology, supporting effective and rigorous guideline development.**
- Also, **regular monitoring visits will be conducted with corrective actions implemented as needed, training programmes** are to be conducted at least **twice a year, and professional development plans** are to be updated **annually and manuscripts** to be **submitted within three months of completion of evidence tables.**
- The criteria for **evaluation includes expertise in evidence synthesis, infrastructure and resources, publications and collaboration and networking.**

2. 10 years of PM Jan Dhan Yojana (PMJDY)

- Recently, the Pradhan Mantri Jan Dhan Yojana (PMJDY) completed 10 years of its implementation.

Jan Dhan Yojana

- **Launch**- It is a government-led **financial inclusion initiative** launched in 2014.
- **Objective**- It aimed to provide universal access to banking facilities for all households in the country, especially the unbanked.
- **Services**- It offers basic savings accounts, remittance services, and access to credit, insurance, and pensions at affordable costs.
- **Universal coverage-** It covers all households across rural and urban areas.
- **Zero balance accounts-** PMJDY accounts can be opened with zero balance and RuPay debit cards are also issued.
- **Overdraft (OD) facility-** OD facility of Rs 10,000 for Aadhaar-linked accounts after six months of satisfactory operation.
- No conditions for OD up to Rs 2,000.
- OD facility available to individuals aged 18-65 years.
- **Insurance coverage-** It provides personal accident insurance cover of Rs 2 lakh for accounts opened after August 28, 2018 and includes coverage of Rs 1 lakh for permanent partial disability.

Achievements of Jan Dhan Yojana

- **Widens financial access-** It significantly increasing banking penetration, especially in rural and semi-urban areas.
  - o Over 53.1 crore bank accounts have been opened under PMJDY
- **Reduces rural-urban disparity –** It helped narrow the gap in access to the formal banking system that existed between rural and urban areas.
  - o Around 67% of the accounts opened are in rural/semi-urban areas.
- **Bridges gender gap –** It increased financial access to women.
  - o About 56% of the accounts opened under PMJDY belong to women.
- **Enables DBT -** PMJDY has facilitated efficient transfer of subsidies and benefits directly into beneficiaries' bank accounts, ensuring accurate targeting and reducing leakages.
  - o DBT is now being used in hundreds of schemes whose total cumulative transfers amount to Rs 38.5 lakh crore.

- **Support during crisis-** JAM and DBT facilities has also been used by the government to provide support to citizens during times of distress.
  - o For instance, during the initial days of the pandemic, the government had transferred Rs 500 to 20 crore women Jan Dhan account holders. The government aims to open more than 3 crore new accounts under PMJDY during the financial year 2024-25.

What lies ahead?

- Develop tailored financial products and services to the needs of low-income households and those with irregular income streams.
- Continue efforts to close the remaining gaps in financial access, particularly in remote and underserved regions.
- Leverage advancements in technology to enhance the efficiency and reach of financial inclusion initiatives.
- Introduce Unified Lending Interface (ULI) to provide credit to segments of society that remain excluded from formal financial services.

3. India-Pakistan Relations

- A new survey by the Centre for Policy Research (CPR) found that the **relations between India and Pakistan are unlikely to become better in future.**
- The downturn in ties between India and Pakistan since 2016, after which no high-level bilateral talks have been held, is clearly mirrored in the survey.
- Previous surveys in 2011 and 2013 had indicated a much higher optimism for reconciliation in the subcontinent.

Brief on India- Pakistan Relations

- India-Pakistan relations are complex and have been marked by **periods of tension, conflict, and occasional cooperation** since the two countries gained independence from Britain in 1947.

Areas of Cooperation

- **Indus Water Treaty:** This treaty, established in 1960, governs the use of the Indus River and its tributaries.
  - Despite ongoing disputes, it has largely been successful in managing water resources between the two countries.
- **Kartarpur Corridor Agreement (2019):** An Agreement between India and Pakistan for the facilitation of pilgrims to visit Gurdwara Darbar Sahib Kartarpur, Pakistan, was signed in 2019 in order to fulfill the the long-standing demand of the pilgrims to have easy and smooth access to the holy Gurudwara.
- **Cricket:** Cricket matches between India and Pakistan often attract widespread attention and have sometimes been used as a platform to ease tensions and foster goodwill.
- **Bilateral Talks:** Periodic diplomatic dialogues and summits, despite their ups and downs, provide platforms for addressing various issues and finding common ground.

- **Peace Agreements:** Simla Agreement (1972), Lahore Summit Declaration (1999), Agra Summit (2001) are the major peace establishing agreements signed between both the countries.

Way Ahead

- Both countries have significant internal and external challenges that impact their bilateral relations.
- In keeping with its "**Neighbourhood First Policy**", India desires normal neighbourly relations with Pakistan.
- India has made clear that it **will not compromise** on issues relating to **national security** and will take **firm and decisive steps** to deal with all attempts to undermine **India's security and territorial integrity.**

4. New-age gateway devices

- Recently Australia has passed the world-first bill that bans all vapes from general retail later this year.
- **New Age gateway devices** - These are devices that were introduced and marketed as a healthier alternative to smoking that would make it easier to quit tobacco.
- **Forms –** Some of the tobacco product used to describe electronic nicotine delivery systems (ENDS)
- These are highly engineered drug delivery devices.

Impacts of new-age gateway devices

- **Affect development of children** - These new-age gateway devices led to a surge in youth vaping, creating a new pandemic.
  - According to the Centers for Disease Control and Prevention, in 2023, e-cigarettes were most commonly used product among middle and high school students in United States.
- **Health Issues –** Continued use of these devices, poses irreversible health risks like lung damage and the e-cigarette or vaping use-associated lung injury (EVALI).
- **Mental health issues –** It leads to mental health challenges such as depressive symptoms, anxiety, perceived stress, and suicide-related behaviours among adolescents.
- **Social Issues** - Those who vape are more likely to experience feelings of loneliness and social isolation when compared to their peers who abstain from these.

- **Addiction** – E-cigarettes are highly addictive, particularly for individuals up to around the age of 25.
- Benzoic acid in nicotine e-liquid produces protonated nicotine which enhances the addictive potential.

Why children's are highly susceptible to addiction?

- The age group most at risk remains between 10 and 20 years old, a demographic that manufacturers allegedly exploit through appealing advertising and enticing vaping flavours.
- **Targeted advertisements –** The colourful imagery created by these new-age gateway devices suggests that these products will bring happiness and elevate one's social status.
- It is marketed with addition of flavours such as strawberry, cotton candy, pop rocks, and lemonade.
- **Technology Addiction –** Excessive technology usage is driving some children towards these addictive devices.

How India regulates new-age smoking alternatives?

- Indian had passed Prohibition of Electronic Cigarettes (Production, Manufacture, Import, Export, Transport, Sale, Distribution, Storage and Advertisement) Act in 2019.
- **Ban –** It prohibits the production, trade, storage, and advertisement of electronic cigarettes in India.
- **Punishments -** Any person stores any stock of e-cigarettes, will be punishable with an imprisonment of up to six months, or a fine of up to Rs 50,000 or both.
- Any person who contravenes other restrictive provision will be punishable with imprisonment of up to one year, or a fine of up to one lakh rupees, or both.

5. China-Africa Cooperation (FOCAC)

- The 9th edition of the **Forum on China-Africa Cooperation (FOCAC)** is scheduled to be held in Beijing from 4th to 6th September, 2024.
- The Forum on **China-Africa Cooperation (FOCAC) was established in 2000** to enhance the **strategic partnership between China and African nations.** It serves as a platform for collective dialogue and cooperation in various sectors, including **trade, investment, and development.**

Challenges of China-Africa Debt:

- Chinese loans to African countries amounted to **approximately $170 billion from 2000 to 2022.** However, Chinese lenders represent only about **12% of Africa's total public and private debt**, indicating that China is not the primary creditor.
- A significant portion of **Chinese loans is not disclosed in sovereign debt records**, complicating the understanding of Africa's overall debt levels. This lack of transparency raises concerns about the sustainability of these debts.
- Despite concerns over **"debt trap diplomacy,"** China is unlikely to **forgive or cancel debts** but may consider **writing off smaller, interest-free loans.**

African Priorities at FOCAC 2024

- **Economic Goals:** African nations are focusing on **enhancing trade relations with China**, with a **modest goal of $300 billion in imports from Africa between 2022-2024.** As of mid-2024, **trade has reached $167 billion,** primarily dominated by raw materials.
- **Agricultural Development:** There is a pressing need to develop a sustainable **agricultural industry in Africa.** This includes improving the **processing of agricultural commodities** and leveraging the expertise of countries like China and India to **enhance crop resilience and productivity.**
- **Green Energy and Industrialization:** African countries are advocating for the **establishment of refining and processing hubs to increase the value added from their raw materials.**

What are the learnings that India can have?

- **Continuity in Engagement:** India should emphasize **consistent engagement with Africa,** particularly by **organizing the India-Africa Forum Summit (IAFS-IV)** to capitalize on recent momentum, especially after the **African Union's inclusion in the G-20.**
- **Support for Industrialization:** Indian companies are encouraged to invest in **higher value-added sectors in Africa,** such as **agriculture and pharmaceuticals,** to foster local employment and market development.

Conclusion: India should deepen its strategic partnerships with African nations by expanding bilateral and multilateral engagements, focusing on key sectors like healthcare, digital infrastructure, and renewable energy. Leveraging India's experience in these areas can help address African development needs while enhancing India's influence on the continent.

6. India's Policy Transformation in Corporate Governance

- India's economic trajectory was defined by two key policy shifts: the planned development of 1951 and the liberalization of 1991, both catalyzing growth through distinct government roles.

Corporate governance

- **Corporate**- A business organisation having a separate legal entity, ie an identity distinct from its owners, is called a corporation or a company in India.
- **Corporate governance** - It refers to the system of rules, practices, and processes by which a company is directed and controlled.
- It involves balancing the interests of a company's many stakeholders, such as shareholders, management, customers, suppliers, financiers, government, and the community.
- **Importance** - It ensures accountability, fairness, and transparency in a company's relationship with its stakeholders.

How corporates are governed in India

- **Legislations**
    -
        o **Companies Act, 2013 -** It is the primary legislation governing corporate governance in India.
        o It includes provisions related to the composition & functions of the board, appointing auditor, disclosures, & shareholder rights.
        o **Securities Contracts (Regulation) Act, 1956**- It governs the listing of securities and enforces regulations for stock exchanges and listed companies, contributing to corporate governance.
- **Regulations** - SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 apply to listed companies.
- It mandate specific corporate governance norms, including board composition, audit committees, and the role of independent directors.

Challenges associated with corporate governance

- **Conflict of interest-** Directors and management may face conflicts between their personal interests and those of the company, leading to unethical decisions.
- **Lack of independence-** Independent directors may not be truly independent, compromising their ability to provide unbiased oversight.
- **Ineffective board functioning-** Boards may be dominated by a few individuals, reducing their effectiveness in oversight and decision-making.

- **Weak enforcement of regulations-** Although laws are in place, the enforcement of corporate governance regulations can be inconsistent, allowing malpractices to persist.
- **Transparency issues-** Companies may fail to provide adequate and accurate information to stakeholders, undermining trust and accountability.

What lies ahead?

- Shift to a neutral, market-friendly relationship to avoid cronyism and ensure fair competition.
- Reform PLI Scheme to foster a more dynamic corporate environment.
- Encourage the shift from family-managed to professionally managed enterprises through stronger competition.
- Raise the competence of the Competition Commission for enhancing private sector management dynamism.
- Regulate monopoly infrastructure to prevent private exploitation.

7. Gender Budgeting in India

- The Gender Budget reached 1% of GDP in the Budget 2024-25 for the first time, and overall allocations currently stand at more than 3 lakh crore for pro-women programmes.

Gender Budgeting

- **Gender Budgeting –** It is a public finance tool to allocate money in programs/schemes/initiates that attempt to reduce gender disparity.

Features – It is an outcome oriented expenditure.

- It is a tax based incentives for women and girls.
- It is a dissection of the government budgets to establish gender differential impacts.
- It ensures that gender commitments are translated into to budgetary commitments through monitorable targets.
- It is **not a separate budget for women** and not about spending the same on men and women.

Benefits of Gender Budgeting

- GB seeks to view the Government Budget from a gender perspective in order to assess how it will address the different needs of women.

- **Gender Equality** - Gender responsive budgeting is a powerful tool to close the gender gaps in an economy.
- **Equal Resource Allocation –** It is a means of ensuring that public resources are allocated in an equitable way to meet the needs of specific gender groups are satisfied.
- **Gender Mainstreaming** - It uses the Budget as an entry point to apply a gender lens to the entire policy process.
- **Continuous Process** - It must be applied to all levels and stages of the policy process.
- It facilitates a gender sensitive analysis in the formulation, implementation and monitoring of policies, programmes and budgets (expenditure and revenue).
- **Monetary Need –** It recognizes the monetary requirement needed to get desired outcomes from gender sensitive legislations, programmes and schemes.

Challenges in Gender Budgeting

- **Over/under reporting** - 100% reporting of Pradhan Mantri Awas Yojana (PMAY) Under Part A instead of part B.
- Beginning last year, the entire allocation of PMAY has been reported under part A, whereas Only a part of PMAY was reported under Part A earlier.
- Such reporting of PMAY may not be entirely accurate as not all beneficiaries are women.
- **Misallocation –** It deflates the amount spent by programmes on women's needs.

8. India-Singapore Bilateral Relations

- The PM's upcoming visit to Singapore offers a chance to reflect on the current state of the relationship. India-Singapore ties are dynamic, continually presenting new opportunities.

- **Historical Ties:** Diplomatic relations were established shortly after **Singapore's independence in 1965**, with **India being one of the first countries to recognize Singapore.**
  - The relationship has evolved through **high-level visits and collaborations, particularly since the 1990s.**
- **Look East Policy:** Singapore has been pivotal in India's "Look East" policy **initiated in the early 1990s,** which **aimed to strengthen economic and strategic ties with Southeast Asia**.
- **Comprehensive Economic Cooperation Agreement (CECA):** Signed in 2005, CECA has significantly **enhanced trade and investment ties, making**

Singapore India's largest ASEAN trading partner and a key foreign direct investment (FDI) source.

- **Defense and Security Cooperation:** The bilateral relationship includes **extensive defence cooperation, with joint military exercises and training,** particularly in maritime security, reflecting shared strategic interests.

Singapore's contribution to India's Growth Story

- **Economic Hub:** Singapore is India's largest trade partner in ASEAN. Singapore serves as a **crucial gateway for Indian companies seeking to expand in Southeast Asia,** providing a robust platform for trade and investment.
- **Largest Source of FDI:** It is the leading source of FDI, among the largest sources of External Commercial Borrowings and Foreign Portfolio Investment, **accounting for about 17% of total FDI inflows since 2000,** with investments **exceeding USD 136 billion over the last 22 years.**
- **Knowledge exchange:** Singapore's status as a hub for Indian talent, **especially from IITs and IIMs, facilitates knowledge exchange and enhances India's capabilities** in various sectors
- **Cultural Exchange:** The strong cultural ties, supported by the Indian community in Singapore, have enriched bilateral relations. Ethnic Indians constitute **approximately 9.1% of Singapore's resident population.**

(Way forward)

- **Strategic Partnership:** The relationship can be further **strengthened by enhancing strategic dialogues and collaborations in areas like security, technology, and sustainability,** particularly in the context of the Indo-Pacific region.
- **Regional Connectivity:** Initiatives like the **Trilateral Highway, which aims to connect India with Myanmar and Thailand**, can enhance regional connectivity and trade, positioning India and Singapore as central players in ASEAN.
- **Countering Chinese Influence:** As China asserts its **influence in the region, India and Singapore can collaborate more closely to address shared concerns,** leveraging their partnership to promote stability and security in Southeast Asia.

9. Functions of Public Accounts Committee (PAC)

- **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).**

Public Accounts Committee (PAC):

- It is a committee of selected members of parliament, **constituted by** the **Parliament of India**, for the purpose of **auditing the revenue and expenditure of the Government** of India.
- It serves as a **check on the government,** especially with respect to its expenditure bill, and its primary function is to **examine the audit report of** the **Comptroller and Auditor General** (C&AG) after it is laid in Parliament.
- **C&AG assists the committee** during the course of the investigation.
- The **main function** of the committee is to **ascertain whether** the **money granted by parliament** has been **spent by the government within the scope of the demand**.
- **Membership:**
  - PAC consists of **not more than twenty-two members**, **fifteen elected by Lok Sabha**, and not more than **seven members of Rajya Sabha**.
  - The **members** are **elected every year** from amongst its members of respective houses according to the **principle of proportional representation by means of** a **single transferable vote**.
  - The **term of office** of the members is **one year.**
- **Functions:**
  - The functions of the Committee include **examination of accounts showing** the **appropriation of sums granted by Parliament** for the expenditure of the Government of India, the **annual finance accounts of the Government,** and such other accounts laid before the House as the Committee may think fit.

10. Significance of India-Brunei Relations

- Prime Minister Narendra Modi's visit to Brunei in September 2024 marks a significant milestone in India-Brunei relations, commemorating 40 years of diplomatic ties.
- It was the **first bilateral** visit by an Indian Prime Minister to Brunei.
- This visit is pivotal in furthering **India's Act East Policy and Indo-Pacific Vision**, signaling Brunei's importance in India's strategic and economic interests in Southeast Asia.
- Both nations have a long history of friendship and cooperation, dating back to the establishment of diplomatic relations in 1984.

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.
- **Strategic Positioning:** Brunei plays a crucial role in India's Indo-Pacific strategy, particularly in maritime security and regional peace.

11. Pradhan Mantri Schools for Rising India (PM-SHRI)

- After Punjab, the AAP government in Delhi has also relented under financial pressure and agreed to sign a Memorandum of Understanding (MoU) with the Centre to implement the Pradhan Mantri Schools for Rising India (PM-SHRI) scheme in the Capital.

- The Education Ministry had stopped funds under the Samagra Shiksha Abhiyan (SSA), the flagship school education programme, to three Opposition-ruled states — Delhi, Punjab and West Bengal — due to their reluctance to participate in the PM-SHRI scheme.

PM- SHRI Scheme

- The PM SHRI is a centrally sponsored scheme initiated by the Government of India.
- Its objective is to establish over 14,500 PM SHRI Schools, overseen by the Central Government, State/UT Governments, local bodies, as well as Kendriya Vidyalaya Sangathan (KVS) and Navodaya Vidyalaya Samiti (NVS).

- These schools aim to create an inclusive and welcoming atmosphere for every student, ensuring their well-being and providing a secure and enriching learning environment.
- The goal is to offer a diverse range of learning experiences and ensure access to good physical infrastructure and appropriate resources for all students.
- These schools will not only focus on enhancing cognitive development but also creating holistic and well-rounded individuals equipped with key 21st-century skills.

Current issue

- States must confirm their participation in PM SHRI by signing a Memorandum of Understanding (MoU) with the Education Ministry.
- Five states — Tamil Nadu, Kerala, Delhi, Punjab and West Bengal — are yet to sign the MoU. While Tamil Nadu and Kerala have indicated their willingness, Delhi, Punjab and West Bengal had earlier refused, prompting the Centre to stop their SSA funds.
- The AAP-ruled Punjab and Delhi had held out over the implementation of PM-SHRI saying they have their own schemes along similar lines, called Schools of Specialised Excellence in Delhi and Schools of Eminence in Punjab. Both had not received crores worth of SSA funds.
- On September 2, Delhi also relented. Its Secretary (Education) has written saying that Delhi is interested in signing the MoU for establishing PM-SHRI schools in Delhi.
- With this, West Bengal is now the only state holding out on the implementation of the scheme. The state opposes prefixing 'PM-SHRI' to the names of its schools, especially since it bears 40% of the cost.

12. Significance of National Food Security Act (NFSA), 2013

- The National Food Security Act (NFSA), 2013, has brought significant changes to the Public Distribution System (PDS) in India.The Public Distribution System (PDS) is a crucial component of India's food security framework.

National Food Security Act (NFSA), 2013

- The National Food Security Act (NFSA), 2013, is a significant legislation in India aimed at ensuring food and nutritional security.

Objectives

- Food and Nutritional Security: The NFSA aims to provide food and nutritional security by ensuring access to adequate quantities of quality food at affordable prices.
- Human Life Cycle Approach: It covers various stages of life, including children, pregnant women, and lactating mothers.

Coverage

- Rural and Urban Population: The Act covers up to 75% of the rural population and 50% of the urban population, ensuring that a large portion of the population receives subsidized food grains.
- Priority Households and Antyodaya Anna Yojana (AAY): Beneficiaries are categorized into Priority Households (PHH) and AAY households. PHH are entitled to 5 kg of food grains per person per month, while AAY households receive 35 kg per household per month.

Implementation

- Public Distribution System (PDS): The NFSA is implemented through the Targeted Public Distribution System (TPDS), which aims to distribute food grains to eligible households.
- The Food Corporation of India (FCI) procures food grains from farmers at Minimum Support Prices (MSP). FCI stores and transports food grains to various states. State governments distribute food grains through a network of Fair Price Shops (FPS) to eligible households
- Grievance Redressal: The Act establishes grievance redressal mechanisms at the district and state levels to address complaints and ensure accountability.

Significance

- Legal Entitlement: The NFSA converts existing food security programs into legal entitlements, ensuring that eligible individuals have a right to receive food grains.
- Transparency and Accountability: Measures such as digitization of ration cards and online tracking of food grain distribution enhance transparency and reduce corruption.

13. Symptoms of MPOX

- A suspected case of mpox has been identified in India, according to a statement issued by the Union Health Ministry on Sunday.
- Mpox was declared a 'Public Health Emergency of International Concern' — the highest level of alert by the World Health Organization — last month.

- While India has reported at least 30 cases and one death due to the infection since it was first detected in 2022 (Kerala), this is the first suspected case in the current outbreak.

Mpox

- Mpox is a viral zoonotic disease caused by the Monkeypox virus, which belongs to the Orthopoxvirus genus. The disease is similar to smallpox but generally less severe. It can spread from animals to humans (zoonotic transmission) and between humans.

History and Background:

- First Identified: In 1958, the virus was discovered in monkey colonies used for research, hence the name "Monkeypox."
- First Human Case: Detected in 1970 in the Democratic Republic of the Congo (DRC).
- Primarily reported in Central and West Africa, but cases outside Africa have occurred due to international travel and animal trade.

Transmission:

- Zoonotic Transmission: Direct contact with infected animals (rodents and primates are primary carriers).
- Human-to-Human Transmission: Through close contact with respiratory droplets, bodily fluids, or contaminated objects like bedding.

Symptoms:

- Incubation Period: 6-13 days (can range from 5 to 21 days).
- Initial Symptoms: Fever, headache, muscle aches, swollen lymph nodes, and fatigue.
- Rash: Develops 1-3 days after the fever, beginning on the face and spreading to other parts of the body. It evolves into pus-filled sores before crusting over and healing.
- Severity and Risk: The disease is typically self-limiting, with symptoms lasting 2-4 weeks. Fatality rates in Africa range from 1% to 10%, depending on the strain and healthcare access.

Vaccination and Treatment:

- Smallpox Vaccine: Provides cross-protection due to the similarity between the viruses. WHO has recommended the JYNNEOS/Imvanex vaccine for high-risk groups.

- Treatment: No specific antiviral treatment for Mpox, but antivirals like tecovirimat are being investigated.
- 2022 Global Outbreak: First Major Outbreak: Cases of Mpox in non-endemic countries were reported across Europe, the Americas, and Asia in mid-2022.
- WHO Renaming: In 2022, WHO renamed the disease from Monkeypox to Mpox to avoid stigma and inaccuracy, aligning with global naming conventions.

14. Challenges to road safety in India

- Recently, The "India Status Report on Road Safety 2024," prepared by the TRIP Centre at IIT Delhi,
- It highlights India's slow progress in reducing road accident fatalities and emphasizes the link between road construction, mobility, and the need for targeted accident mitigation strategies.
- It analyzed road safety in India, using data from First Information Reports (FIRs) from six States and audits of State compliance with Supreme Court directives on road safety governance.

Key Findings

- **State wise :**It revealed disparities in road traffic death rates across States.
  - High death rates in Tamil Nadu, Telangana, and Chhattisgarh; lower rates in West Bengal and Bihar.
  - Uttar Pradesh, Maharashtra, Madhya Pradesh, Karnataka, Rajasthan, and Tamil Nadu account for nearly half of all traffic fatalities.

- **Vulnerable group:** pedestrians, cyclists, and motorised two-wheeler riders are the most common victims of road accidents, while trucks are responsible for the highest proportion of impacting vehicles.
- **Global Comparison:** India's road safety performance is significantly worse compared to developed countries like Sweden.

Issues and concerns

- Current n**ational road safety data systems are inadequate**.
  - **Only eight States have audited** more than half of their National Highway lengths, and very few States have done the same for their State Highways.
  - Basic traffic safety measures, including traffic calming, markings, and signage, are still lacking in most States
- **Lack of a national crash-level database** and reliance on aggregated police records limit effective analysis and intervention.

- **Helmet usage is low**, especially in rural areas, and trauma care facilities are inadequate.
- Road traffic injuries are a major public health issue with minimal progress in reducing fatalities. Most Indian States are unlikely to meet the United Nations Decade of Action for Road Safety goal to halve traffic deaths by 2030.

Recommendations:

- Road safety education is as vital as other basic survival skills.
- Central and State governments need to prioritise the scale-up of road safety interventions.
- A national database for fatal crashes should be established. Public access to this system will improve understanding of specific risks to road users and the effectiveness of various interventions implemented in the States.
- Tailored strategies are essential to address the unique road safety challenges faced by different States

15. Issues of Centralised Model of Education

- This year, September 5 was marked as Student-Teacher Solidarity Day by many students and teachers wearing black badges to protest against the present education crisis in the country.

Centralised model of education

- Despite the "concurrent" status of education in the Constitution, the government seems to be bulldozing the best-performing States to succumb and conform.

- The last decade has witnessed an unprecedented trend of increasing centralisation and control by the Union government.
- **Centralised model –** It requires states to
  - Be in conformity with NEP.
  - Contribute 40% of a much larger sum for centrally sponsored schemes
  - Implement the CBSE curriculum in case of PM-Shri Schools
- Both Kerala and Tamil Nadu States have been under implicit pressure to sign a MoU to implement the scheme of selected PM-SHRI schools.
- Pradhan Mantri Schools for Rising India (PM SHRI) schemes, a centrally sponsored scheme was launched in 2022 to transform selected existing schools into model institutions to achieve the objectives of National Education Policy 2020.
- Schools from States which are being brought under this exclusive centralised model will be taken away from the State Boards.

Funding issues faced by state education

- **Delays in funding** - Kerala and Tamil Nadu have been facing protracted delays with respect to centrally funded schemes.
- They have not received pending instalments of the Samagra Shiksha Abhiyan (SMSA).

- **Disproportionate funding** - The current budget allocates a large portion of its funds to PM-SHRI, while substantially reducing funding to SMSA.
- According to the 'Centre for Budget Governance and Accountability', the central budget allocations to the Department of School Education budget between the years 2019-20 and 2024-25
  - o **Funding to PM-SHRI** – It increased from 19% to 29%
  - o **Funding share of SMSA** – It dropped from 62% to 51%

What lies ahead?

- Higher education is, undoubtedly, an obligation of the State but State aid is not to be confused with State control over academic policies and practices
- As per Dr. Zakir Hussain, chairperson of the Basic Education Committee (1938), and co-founder of Jamia Millia Islamia, the exclusive control of education by the State has been an important factor in facilitating the maintenance of totalitarian tyrannies.

16. Commission for Scientific and Technical Terminology (CSTT)

- The **Commission for Scientific and Technical Terminology (CSTT)**, under the **Union Education Ministry**, has launched a unique website, **shabd.education.gov.in**, providing **technical terms** in all **22 official Indian languages**.
- The **Union Education Ministry** established the CSTT in **December 1960** to develop scientific and technical terminology in Hindi and other Indian languages.It publishes textbooks, monographs, and glossaries, and releases quarterly journals like **Vigyan Garima Sindhu** and **Gyan Garima Sindhu**.
- It has developed over **450 glossaries**, creating more than **3 million standardized words** in Indian languages.
- It prepares **administrative glossaries for government departments** and institutions to ensure consistent terminology in official documents.

Shabd Portal

- The portal aims to serve as a **central repository** for technical terminologies across Indian languages, hosting glossaries from **CSTT** as well as other institutions and agencies.

- The portal currently hosts **450 dictionaries** comprising **3 million words**, making it a vast resource for users seeking **scientific and technical terms** in Indian languages.
- Search Features:
  - o Users can search for equivalent terms by **language**, **subject**, **dictionary type**, or **language pairs**.
  - o Specific searches can also be made within a particular **glossary** or across the entire collection.
  - o The platform also allows users to provide **feedback** on the terms prepared by the CSTT.

Significance of the Portal

- The launch comes amid efforts to promote **technical education** in Indian languages, including fields like **medicine** and **engineering**.
- The portal is an essential step in ensuring **accessibility** of **scientific and technical education** in regional languages, supporting the vision of **multilingual education**.

17. Public Health Crisis : Challenges and Concern

- An expert group constituted by NITI Aayog has proposed a **new Public Health Emergency Management Act (PHEMA)**.

Public Health Emergency Management Act (PHEMA)

- It will address a range of public health issues, including epidemics, non-communicable diseases, disasters, and bioterrorism, through a holistic approach covering prevention, control, and disaster response.
- The Act would also provide for the creation of skilled public health cadres at national and state levels.
- **Priority Targets:** Developing human resources and infrastructure.
  - o Creating innovative countermeasures and appropriate high-risk financing.
- Strengthening regulatory frameworks and surveillance networks.
- Connecting epidemiological, genomic, laboratory, and clinical data.
- India, with its vast population and diverse healthcare landscape, faces several public health challenges.
- **Infectious diseases :** India grapples with infectious diseases that pose significant threats to public health. For example
  - o **The COVID-19** pandemic has strained healthcare systems, leading to overwhelmed hospitals, shortages of medical supplies, and loss of lives.

- o **Vector-Borne Diseases**: Diseases like malaria, dengue, and chikungunya continue to affect large sections of the population.
- **Infrastructure :** India's healthcare infrastructure faces challenges related to funding, infrastructure gaps, and inadequate staffing.
  - o Rural areas often lack proper medical facilities, leading to disparities in healthcare access.
- **Shortage of Healthcare Workers**: The shortage of doctors, nurses, and other healthcare professionals exacerbates the crisis.

Initiatives

- **National Rural Health Mission (2005)** and **National Health Mission (2013)** focused on strengthening public sector health care.
- Recent policies emphasize publicly funded health insurance (PFHI) schemes like **PMJAY**
- **Economic survey data :** As a percent of GDP, expenditure on social services has increased from 6.7% in 2017-18 to 7.8% in 2023-24.
  - o Correspondingly, health expenditure has increased from **1.4% to 1.9% in the same period.**
- **Budget Allocation:**

Suggestions and Way Forward

- India's public health crisis demands a multi-pronged approach involving government policies, community participation, and international collaboration.
- Lessons need to be learnt from national and global experiences with COVID-19 to inform future preparedness and response strategies.
- **Establishing a strong surveillance network** and improving data management will be essential for effective public health responses.
- **Investing in the training and development of healthcare** professionals is vital.
- Establish health cadres at both national and state levels to improve emergency management.

18. Ground Realities and status of Passive Euthanasia in India

- The debate around the ethics and law that defines passive euthanasia was reignited after the Supreme Court dismissed the plea in Harish Rana's case, who has been in a permanent vegetative state since 2013.

Status of Euthanasia in India

- **In 2011,** the Supreme Court for the first time recognised the legality of passive euthanasia in the case of **Aruna Ramchandra Shanbaug v Union of India.**
- In **2018**, the Supreme Court recognised the legality of 'passive euthanasia' for terminally-ill patients, holding that the **'right to die with dignity'** forms a part of the right to life under **Article 21** of the Constitution of India.
- The court also laid down detailed guidelines for passive euthanasia, both in cases where the patient left an **'advance directive'** or a 'living will' stating that life support should be withdrawn if they fall terminally ill, and in cases where no such directive was left behind.

Arguments in Favour of Euthanasia

- **End of Pain:** Euthanasia provides a way to relieve the intolerably extreme pain and suffering of an individual. It relieves the terminally ill people from a lingering death.
- **Respecting Person's Choice:** The essence of human life is to live a dignified life and to force the person to live in an undignified way is against the person's choice. Thus, it expresses the choice of a person which is a fundamental principle.
- **Treatment for others:** In many developing and underdeveloped countries like India, there is a lack of funds. There is a shortage of hospital space. So, the energy of doctors and hospital beds can be used for those people whose life can be saved instead of continuing the life of those who want to die.

Ethical Challenges

- **Medical Ethics:** Medical ethics call for nursing, caregiving and healing and not ending the life of the patient.
  - In the present time, medical science is advancing at a great pace making even the most incurable diseases curable today.
- **Moral Wrong:** Taking a life is morally and ethically wrong. The value of life can never be undermined.

Concluding remarks

- Euthanasia challenges traditional views on death and medicine. Public discourse that considers religious, ethical, and cultural perspectives is crucial.
- Also there is a need for strict guidelines and safeguards are needed to prevent abuse or coercion.
- Ensuring access to quality palliative care, which focuses on comfort and symptom relief, should be a priority alongside any discussion of euthanasia.

19. African Group Seeks Permanent Solution for Public Stock Holding (PSH) Issue at WTO

- The **African Group**, along with **India and other developing countries**, is pushing for a **permanent solution** to the **Public Stock Holding (PSH)** issue at the **World Trade Organization (WTO).** They seek a solution independent of the ongoing agriculture negotiations, reflecting the need to secure food security and price support measures for small-scale farmers.

Public Stock Holding (PSH)

- **Public Stock Holding (PSH)** refers to a government program in which essential food commodities are purchased at a **Minimum Support Price (MSP)** from farmers and stored to ensure food security. PSH systems aim to maintain an **adequate stock of food grains** to stabilize prices, manage food shortages, and provide food to vulnerable populations during times of crisis.
- The **African Group views PSH** as essential for **ensuring food security** by supporting production and consumption in developing countries.
- PSH helps governments **maintain stocks of essential food items to stabilize prices and prevent food shortages**, especially during times of crises.

Alignment with Developing Nations

- The African Group's stance aligns with countries like India and members of the **G-33 group**, which also advocate for flexibility in **food stock policies at the WTO.**
- **Developing nations** aim for a solution that allows them to **exceed WTO-prescribed Minimum Support Price (MSP) limits** without facing penalties or restrictive conditions.
- **About G-33:** The **G-33 (or the Friends of Special Products in agriculture)** is a coalition of developing countries, **established prior to the 2003 Cancun ministerial conference,** that have coordinated during the **Doha Round of World Trade Organization** negotiations, specifically in regard to agriculture.

WTO-prescribed Minimum Support Price (MSP) limits

- They refer to the restrictions set by the **World Trade Organization (WTO)** on the level of domestic agricultural subsidies that member countries can provide to their farmers. These limits are part of the **Agreement on Agriculture (AoA)**, which aims to prevent trade distortions and unfair competition in the global market.

Key Aspects of MSP Limits Under the WTO:

- **Aggregate Measurement of Support (AMS)**: The **AMS** is the total amount of subsidies or support that a country provides to its agricultural sector, including MSP programs. Countries must report their AMS to the WTO, and they cannot exceed certain levels, which are calculated based on a reference price from the **1986-88 period**.
- **De Minimis Limits**: For developing countries, the **de minimis limit** allows up to **10% of the total value of agricultural production** to be provided as support without it being counted towards the AMS. For developed countries, this limit is set at **5%**.

20. Rights groups slam Centre over delay in filling NHRC posts

- The National Human Rights Commission (NHRC) has not had a full-time chairperson since June and has only one member to fill five positions.
- Human rights groups are warning that the delay in filling vacant posts will hurt India's global reputation.

Lack of transparency

- Earlier this year, the Geneva-based UN-linked **Global Alliance of National Human Rights Institutions** (GANHRI) **deferred the NHRC's accreditation** for the second year in a row.
- The group cited several reasons, including the **lack of transparency** in appointing members to the Commission, and the **poor gender and minority representation** of the panel.

Composition:

- NHRC consists of a **chairperson, five full-time Members** and seven deemed Members.
- The chairperson is a **retired chief justice** of India or a **judge of the Supreme Court.**
- They are **appointed by the President** on the recommendations of a **six-member committee** consisting of: Prime Minister (head), Speaker of the Lok Sabha, Deputy Chairman of the Rajya Sabha, Leaders of the Opposition in both the Houses of Parliament, Union Home Minister.

Term of office:

- They hold office for a term of **three years** or until they attain the age of **70 years**, whichever is earlier.
- The President can remove them from the office under specific circumstances.

Removal:

- The president can remove the chairman or any member from the office under the following circumstances:
  o If he is adjudged an insolvent; or
  o If he engages, during his term of office, in any paid employment outside the duties of his office; or
  o If he is unfit to continue in office by reason of infirmity of mind or body; or
  o If he is of unsound mind and stand so declared by a competent court; or
  o If he is convicted and sentenced to imprisonment for an offence.
- In addition to these, the president can also remove the chairman or any member on the ground of **proved misbehaviour or incapacity**.
- However, in these cases, the president has to **refer the matter to the Supreme Court** for an inquiry.
- If the Supreme Court, after the inquiry, upholds the cause of removal and advises so, then the president can remove the chairman or a member.

21. Progress and Challenges: Legal Rights and Entitlements for Queer Couples in India

- A recent **Finance Ministry advisory, along with a Reserve Bank of India (RBI) circular**, has taken a small but significant **step towards easing** some of the difficulties faced by **queer couples in India.** This includes allowing **LGBTQIA+ individuals to open joint bank accounts and nominate their partners as beneficiaries**. However, there remains a broader struggle for legal recognition and entitlements for queer couples, which continues to be a pressing issue.
- **Formation of Six-Member Panel**: A six-member panel, including Secretaries from various ministries, was established **to define the scope of entitlements for queer couples.**
- **The panel is tasked with addressing issues such as ration cards, medical decisions, jail visitation rights, succession rights, and other legal benefits.**

About LGBTQIA+

- The **LGBTQIA+ acronym** stands for **lesbian, gay, bisexual, transgender, queer or questioning, intersex, and asexual.** The + represents the evolving understanding of gender and sexual identities.

- In 2018, in the landmark decision of **Navtej Singh Johar v. Union of India**, the Supreme Court of India decriminalised consensual homosexual intercourse by **reading down Section 377 of the Indian Penal Code**and excluding consensual homosexual sex between adults from its ambit
- Supreme Court stated that the 'Yogyakarta Principles on the Application of International Law in Relation to Issues of Sexual Orientation and Gender Identity' should be applied as a part of Indian law.
- **Yogyakarta Principles**recognise **freedom of sexual orientation and gender identity** as part of Human Rights. They were outlined in 2006 in Yogyakarta, Indonesia by a distinguished group of International Human Right experts.

Supreme Court Ruling on Same-Sex Marriage (October 2023)

- The **Supreme Court did not recognize same-sex marriage** but acknowledged that the **Constitution protects the right of all individuals, including queer couples, to form unions.**
- The Court highlighted the **need for the State to recognize entitlements associated with such unions** and emphasized the setting up of a committee to address these issues.

Areas Requiring Legal Changes

- **Legal backing is crucial** for enforcing these policies and ensuring **equitable treatment.**
- **Family and Inheritance Laws**: Amendments are needed to **include queer couples** in **family and inheritance laws.**
- **Juvenile Justice Act and Income Tax Act**: Legislative changes in these areas may be required to provide comprehensive rights and benefits.
- **Insurance Regulators**: Similar advisories from insurance regulators could help in making benefits accessible to queer couples.
- **Public Distribution System**: State departments may need to adapt policies to **include queer families.**

22. Pillars of India -Singapore relationship

- Recently, Indian Prime Minister has visited Singapore during the second leg of a two-nation trip to South-East Asia.
- **Historical Connection** - Pre-colonial Singapore was part of Indian Kingdoms like Srivijaya and the Majapahit.

- **Colonial Connection –** Singapore was a crown colony governed from Kolkata till 1867.

- Both the countries have shared colonial history which is reflected in institutions and practices, usage of English and presence of a large Indian community.
- **Political Relations** - India was one of the first countries to recognize Singapore and diplomatic relations were established in 1965.
- Singapore is a **gateway for India** into Asia-Pacific and Southeast Asia and is an important partner in India's Act East Policy and Indo-Pacific vision.

    - o **Consular Services** - Regular Foreign Office Consultations had begun in 1999.
    - o GOI introduced "Tourist Visa-on-Arrival" in 2010 for Singapore.
    - o **Strategic Partnership** - India-Singapore relations were elevated to Strategic Partnership in 2015.
    - o **High-Level Exchanges** - Indian Prime Minister has visited Singapore during ASEAN- India and RCEP and 13th East Asia Summit
    - o In 2022, a 12 member Indian Parliamentary Delegation, led by Speaker (Lok Sabha) visited Singapore.
- **Judicial Cooperation** - Chief Justice of Singapore visited India to deliver the 1st Annual Lecture at the 1st Supreme Court of India Day Celebrations in 2023.
- **Economic Relationship** - Singapore is India's largest trade and investment partner in ASEAN and India's **6th largest** trading partner with 3.2% share of India's overall trade.
- **Defence Cooperation** - India and Singapore conduct Singapore-India Maritime Bilateral Exercise (SIMBEX) and Exercise Bold Kurukshetra annually.

Recent developments

- **Strategic partnership** – Both nations reaffirmed the strength of the Comprehensive Strategic Partnership (CSP) that was established in 2015.
- **Financial integration** – In 2023, India's Unified Payments Interface (UPI) has been linked with Singapore's PayNow.
- It allows seamless cross border transactions and in deepening the digital between peoples of two nations.

- **Investments into India** – Singaporean companies have pledged an additional 60billion USD in investments.
- **Offshore base for Indian companies** – Singapore has been a key hub for Indian companies seeking global expansion as it has favourable tax regime and robust financial infrastructure.
    - o Currently, approximately 9,000 Indian companies operate in Singapore.

- **Cultural ties –** As both countries prepare to celebrate 60 years of diplomatic relations in 2025, contributions of Indian diaspora, including figures like Subhash Chandra Bose and the Azad Hind Fauj are acknowledged and celebrated.
- **Challenges -** Singapore's semiconductor industry is limited to "mature-node chips" (process node technology of 28 nm or more), which are used in appliances, cars, and industrial equipment.
- It is not equipped to make high-end logic chips like the ones used in the AI sector (process nodes of 7 nm and smaller, requiring specialised production methods).

23. Provisions of genocide convention

- A Bench of the filed by former civil servants, academics, and activists. The petition, in Ashok Kumar Sharma and Others vs Union of India, had of existing licences and the withholding of further licences by the government to public sector and private companies, for exporting military equipment to Israel during the ongoing war.

Background of the petition:

- The challenge was in view of the International Court of Justice (ICJ), in January, ordering provisional measures against Israel, for violations in the Gaza strip, of obligations under the Genocide Convention.
- The provisional measures included an immediate halt to all killings and destruction being perpetrated by Israel.
- In light of this judgment, United Nations experts warned against the transfer of weapons to Israel which may "constitute serious violation of human rights…and risk State complicity in international crimes".
- In July, the ICJ rendered a detailed opinion declaring that the sustained abuse by Israel renders "Israel's presence in the Occupied Palestinian Territory unlawful". The ICJ observed that "all States are under an obligation not to render aid or assistance in maintaining the situation created by Israel's illegal presence".

Genocide Convention

- The **Convention on the Prevention and Punishment of the Crime of Genocide (Genocide Convention)** is an instrument of international law that codified for the first time the crime of genocide.
- The **Genocide Convention was the first human rights treaty** adopted by the General Assembly of the UN on 9 December 1948.

- It signified the international community's commitment to 'never again' after the atrocities committed during the **Second World War**.
- Its adoption marked a crucial step towards the development of international human rights and international criminal law as we know it today.
- According to the Genocide Convention, **genocide is a crime that can take place both in time of war as well as in time of peace.**
- The definition of the crime of genocide, as set out in the Convention, has been widely adopted at both national and international levels, including in the **1998 Rome Statute of the International Criminal Court (ICC).**

24. Key Intiatives under Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PMJUGA)

- The **Union Cabinet approved a package** that will provide up to **5 lakh each to tribal households** and villages across the country, to turn their homes into **tourist homestays** or to build new ones under the **Tourism Ministry's Swadesh Darshan scheme**.
- It is meant to **tap the tourist potential of tribal areas** and to provide **alternative livelihood**.
- This is one of the 25 interventions planned under the **Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PMJUGA).**

Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PMJUGA):

- PMJUGA is an umbrella package to implement **existing schemes** in 63,000 **Scheduled Tribe-majority villages**.
- For example, the Swadesh Darshan scheme was launched a decade ago, in 2014-15, though the tribal homestay proposal is a new element.
- The PMJUGA package is aimed at ensuring the **saturation of basic schemes in tribal villages,** through **25 interventions to be implemented by 17 Ministries.**
- The funding comes from each Ministry's allocated share in the **Development Action Plan for Scheduled Tribes.**
- It focuses on the **holistic development** of tribal villages by improving infrastructure, livelihood, education, health, and ensuring sustainable development.

Initiatives under PMJUGA:

- Impart knowledge of **sustainable agricultural practices** to all Forest Rights Act (FRA) pattaholders.

- Impetus to existing development schemes to build **20 lakh pucca homes** for ST families.
- **Broadband connectivity** to 5,000 tribal villages under the BharatNet project.
- Set up 100 tribal **multipurpose marketing centres**.
- The tourism section of the scheme aims to create **five to 10 homestays in each target tribal village**, with an overall goal of setting up 1,000 such homestays.

25. Indian govt opt to modify and review the Indus water Treaty

- In 2023**, India has once again formally notified Pakistan seeking a "review and modification" of the Indus Waters Treaty (IWT).** This marks the second notice issued by India within a year, signalling its intent to renegotiate the 64-year-old treaty. The demand for renegotiation stems from multiple factors, including environmental concerns, terrorism, and the evolving geopolitical landscape.

INDUS WATER TREATY

- In the year **1960, India and Pakistan signed a water distribution agreement** came to be known as **Indus Waters Treaty** which was **orchestrated by the World Bank**.This agreement took nine years of negotiations and **divides the control of six rivers between the two nations once signed.**

Water Distribution:

- India was granted control over the three Eastern Rivers—**Beas, Ravi, and Sutlej**—enjoying "unrestricted use."Pakistan was allocated the three Western Rivers—**Indus, Chenab, and Jhelum**.
- Under the treaty signed between **India and Pakistan in 1960**, all the waters of the three eastern rivers, averaging around 33 million acre-feet (MAF), were allocated to India for exclusive use.
- The waters of the western rivers – **Indus, Jhelum, and Chenab – averaging to around 135 MAF, were allocated to Pakistan except for 'specified domestic, non-consumptive and agricultural use permitted to India,'** according to the treaty.India must allow water to flow into Pakistan from the Western Rivers as per **Article III (1) of the treaty.**

Why India Seeks Renegotiation:

- **Changes in Circumstances**: India argues that significant changes in population demographics, environmental factors, and the urgent need to accelerate clean energy development to meet emission targets warrant a reassessment of the treaty's obligations.

- **Cross-border terrorism:** Impact of these activities have also influenced India's decision to renegotiate the treaty.
- **Hydroelectric Power Projects**: India has initiated two major **run-of-the-river** hydropower projects:
- **Kishanganga Project** (330 MW) on the tributary of Jhelum in Bandipora district, Jammu & Kashmir.

Dispute Resolution Mechanism in the IWT:

- **Indus Commissioners**: First level of resolving disputes.
- **Neutral Expert**: Appointed by the **World Bank** for technical objections.
- **Permanent Court of Arbitration (PCA)**: The final stage for adjudication.
- Pakistan's unilateral retraction of the **Neutral Expert request and insistence on PCA arbitration was** against the sequential process outlined in **Article IX of the treaty.**
- **World Bank's Involvement**: In 2016, the World Bank paused the dual processes (Neutral Expert and PCA) and urged India and Pakistan to resolve the matter through dialogue.

26. Needs for a Judicial Appointments Commission

- Recently Supreme Court asked the Attorney General for India why the names reiterated by the Supreme Court Collegium for appointment as judges were not yet cleared.

Appointment of Supreme court and High court Judges

- **Constitutional Provision –** Article 124 and 217 provides for the appointment of Judges to Supreme court and High court.
- **Memorandum of Procedure (MoP) –** It is an agreement between the judiciary and the government containing a set of guidelines for making appointments to the Supreme Court and High Court.
- **Curation –** The Central government asks for the opinion of state governments and the input from the Intelligence Bureau (IB).
- The government then forwards the files, along with the IB inputs to the Supreme Court collegium.
- While appointing High Courts judges the President consults with CJI, Governor of the State and Chief Justice of that court.

Needs for a Judicial appointments commission

- **Safeguard Democratic System** – Judicial independence could become dangerous and undemocratic unless there is a constitutional discipline with rules of good conduct and accountability.
- **Ensure Accountability** - Judges as persons, or courts as institutions, are entitled to no greater immunity from criticism than other persons or institutions.
- **Warrant Conduct** - Clear statement of the principles of selection is required to ensure the character and conduct of judges in a democracy.
- **Lacks Constitutional Guarantee** – The Collegium system is not mentioned in the constitution and was created through judicial pronouncements in Second Judges Case, 1993.

Characters of a judicial appointments commission

- A commission to select judges for the Supreme Court has to be of high standing and of the highest order having status equal to that of the Prime Minister or a Supreme Court judge.
- **Independent** - The commission has to be totally independent and its ideology should be broadly in accord with the values of the Constitution.
- **Ensure sovereignty** - It should uphold the sovereignty of the Constitution beyond pressures from political parties and powerful corporations without fear or favour.
- **Immunity** - The commission can be immune to legal proceedings, civil and criminal.
- **Removal** - It should be removed only by a high tribunal consisting of the Chief Justice of India and the Chief Justice of all the High Courts sitting together and deciding on any charges publicly made.

27. Advocate-on-Record (AoR)

- **The Supreme Court (SC) recently said that advocates-on-record (AoR) in a given case must mark the appearance of only those lawyers who are authorized to appear and argue that case on the particular day**

Advocate-on-Record (AoR):

- The concept of AoR was **introduced by the SC with the power** given to it **under Article 145(1)** of the Indian Constitution, which states that the SC may, from time to time, make rules for regulating the practices and procedures in the court.
- An AoR is a **legal professional** who is **entitled to represent clients and plead** for **them in the SC.**
- It is a specific category of advocates **with rights of audience in the SC.**

- An AoR has the **exclusive right to file and conduct cases in the SC.**
- **All the procedural aspects need to be completed by AOR** with the assistance of a registered clerk.
  - o This includes **drafting and filing petitions, applications**, and other **legal documents.**
- **Any notice or order**/correspondence **by the SC is sent to the AoR.**
- They **specialize in the** practice and **procedure of the SC.** They are familiar with the rules and regulations governing the court and play a crucial role in navigating legal matters through the highest court of the country.
- **No other High Court** in India **has a similar provision.**
- Order IV rule 5 of the Supreme Court Rules, 2013 lays down the **requirements to be fulfilled to become an AoR**. They are as follows: The Advocate is required to be **enrolled with any State Bar Council**. The Advocate is required to have a **prior experience of at least 4 years.** The Advocate has **undergone a training of 1 year under a senior AoR.** The Advocate has **appeared for the examination conducted by the SC.**
- The Advocate is required to **have an office in Delhi within** a **radius of 10 miles from the SC house** and give an undertaking to **employ a clerk,** who shall be a registered clerk, within one month of being registered as an advocate on record. Once registered, an AOR is **issued a unique identification number** that must be used on all documents filed in the SC.

28. POCSO provisions on Child Pornography

- Recently Supreme Court expanded the scope of POCSO act regarding child pornography.

- **Child Pornography –** The act defines it as any visual depiction of sexually explicit conduct involving a child which include photograph, video, digital or computer-generated image.
- **Child Pornography Offences** - Section 14 and 15 of the POCSO Act provides for the using child for pornographic purposes and possession of pornographic material involving child.
  - o **Possession –** Storage or viewing pornographic material in any form involving a child.
  - o **Non-Reporting –**Failure to report about child pornographic material to the designated authority is also a punishable offence.
  - o **Transmission** - Transmitting or propagating or displaying or distributing child pornographic material in any manner.
  - o **Commercial purpose –** Possessing pornographic material in any form involving a child for commercial purpose.

Interpretations of the supreme court

- **Reversal of HC Judgement** - SC set aside Madras High Court decision and held viewing in private, downloading, storing, possessing, distributing or displaying pornographic acts involving children attract criminal liability under the POCSO Act and IT act.
- **Substitute child pornography** - Supreme Court urged the Parliament to amend the POCSO Act to substitute the term "child pornography" with "Child Sexual Exploitative and Abuse Material" or CSEAM.
- **Inchoate offences** - Section 15 was not limited to punishing the sharing or transmitting of child pornographic material, and could even be used to punish the "intent" to commit such an act.
- **Expansion of Section 15(1)** - Failure to "delete or destroy or report" child pornography would allow the court to "indirectly" infer that the concerned individual intended to share or distribute.

Why use of the term CSEAM is emphasized than child pornography?

- When combating child sexual exploitation, the use of the correct terminology is important to streamline discussions, and research accurately and avoid confusion.
- **Child sexual exploitation material (CSEM) –** It is the recording of the sexual abuse or exploitation of a child or young person.
- This can include images, videos, or live-streamed content that depict real children or young person's being sexually abused and exploited.
- **Reflecting True Reality**- CSEAM would more accurately reflect the reality that these images and videos were not merely pornographic but were records of incidents during which children were sexually exploited and abused.
- **Emphasizing Seriousness** - The term child pornography fails to describe the true nature of the material and undermines the seriousness of the abuse from the child's perspective.

29. Section 107 of the BNSS

- The **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023** introduced **Section 107**, which focuses on properties classified as **"proceeds of crime"**.
- Previously, this term was associated with laws like the **Prevention of Money Laundering Act (PMLA), 2002** or within the **Code of Criminal Procedure (CrPC)** under provisions for **attachment and forfeiture**.

Section 107 of the BNSS

- Section 107 of the BNSS, 2023 pertains to the **attachment and forfeiture of property** categorized as **"proceeds of crime."**

- It grants the **court** the authority to attach property at the request of a **police officer** during an **ongoing investigation**.The request must be approved by a **Superintendent** or **Commissioner of Police**.
- This section gives the **court unbridled powers** to attach any property believed to be derived from **criminal activities** and, under specific conditions, to **forfeit** it to the **government**.
- There is **no requirement** for the police officer to wait until the completion of the investigation (unlike earlier laws). Property can be attached **during the investigation**.
- It differs from the **PMLA, 2002**, in that there are **no preconditions** like documenting the reasons for believing the property is a result of criminal activity.
- After attachment, if the court finds the property to be **proceeds of crime**, it can direct the **District Magistrate** to distribute the proceeds to the **affected persons** within **60 days**. If no claimants are identified, the proceeds are **forfeited** to the government.

Its significance

- **Empowers Law Enforcement:** It allows attachment of property during investigations, preventing criminals from hiding or transferring assets.
- **Faster Relief for Victims:** It enables quick distribution of proceeds of crime to affected persons even before the trial concludes.
- **Stronger Deterrence:** It acts as a deterrent by allowing the forfeiture of criminally acquired assets, impacting offenders financially.
- **State-Level Enforcement:** It empowers State governments to manage proceeds of crime, providing more localized control.

30. Key facts of Supreme Audit Institutions (SAIs)

- **The President of India recently expressed her confidence in the ability of the Supreme Audit Institutions (SAIs) in ensuring the efficiency and integrity of public funds.**

Supreme Audit Institutions (SAIs):

- They are **public oversight institutions** responsible for the a**udit of government revenue and expenditure.**
- They are a critical link in a country's accountability chain.
- By **scrutinizing public financial management** and reporting, they provide assurance that resources are used as prescribed.
- Most SAIs **derives their mandate from** the **constitution and/or legislation.**

- SAIs **undertakes financial audits** of organizations' accounting procedures and financial statements, and compliance audits reviewing the legality of transactions made by the audited body.
- They **also conduct performance audits** to scrutinize the efficiency, effectiveness, or economy of government's undertakings.
- **The independence of the SAI from the executive bodies** it audits is fundamental to its role in holding governments to account and building trust between the organs of the state and society.
- The **Comptroller and Auditor General of India (CAG)** and the **Indian Audit and Accounts Department (IAAD)** functioning under him **constitute the SAI of India.**
- **Nearly every SAI from** a **United Nations-member country** is a **member of the International Organization of Supreme Audit Institutions** (INTOSAI).

International Organization of Supreme Audit Institutions (INTOSAI):

- It is a **voluntary, non-political organization** that works to **promote auditing standards**, **good governance of SAIs,** and **SAI independence**, among other work.
- The INTOSAI was founded in 1953 and has grown from the original 34 countries to a **membership of over 192 SAIs.**
- It operates as an umbrella organization for the external government audit community.
- INTOSAI has numerous committees and working groups which examine issues of particular relevance to SAIs, such as **developing professional standards for public sector auditing,** knowledge sharing, and capacity building.
- It has **special consultative status with** the Economic and Social Council **(ECOSOC) of the United Nations.**

GS 3 : Economy, Science and Technology, Environment

1. Payment Passkey Service

- Mastercard has debuted its **Payment Passkey Service in India**, offering a secure, non-OTP-based solution for online transactions.

Payment Passkey Service

- The **Payment Passkey Service** is a **secure, non-OTP-based method** for managing online transactions. Here's how it works:

1. **Authentication Method:** Instead of using traditional passwords or one-time passwords (OTPs), this service relies on **biometric authentication** (fingerprints, facial scans) or PINs available on the user's device.
2. **Tokenization:** The service uses **tokenization** to replace sensitive financial information with secure, encrypted tokens. This means your actual financial data is not shared during transactions, enhancing security.
3. **Transaction Process:** When making a purchase, the consumer selects their Mastercard at checkout. For payment confirmation, the service utilizes the biometric authentication features on the user's device. Upon successful authentication, the transaction is completed instantly.

Benefits:

- **Simplified Transactions:** Users avoid the hassle of remembering or sharing passwords and OTPs.
- **Enhanced Security:** By not exposing financial data and using secure tokens, the service reduces the risk of fraud.
- **Faster Checkout:** Streamlines the payment process, making online shopping quicker and more efficient.

2. New Target for Cancer Therapy Discovered by IACS Scientists

- Scientists from the **Indian Association for the Cultivation of Science (IACS), Kolkata, have identified a novel target for cancer treatment that could pave the way for new therapeutic approaches.** Their findings, published in **The EMBO Journal,** reveal critical insights into how cancer cells repair DNA

during cell division, offering potential for precision medicine in cancer therapy.

Key Discoveries

Identification of a New Target

- IACS scientists discovered a crucial target in cancer cells that plays a role in DNA repair during cell division. This target could be exploited to develop new cancer therapies.

Role of Topoisomerase 1 in Cancer

- The **enzyme topoisomerase 1 (Top1) is essential for DNA replication and transcription during cell division.** Cancer drugs like **camptothecin, topotecan, and irinotecan target Top1, leading to cancer cell death.** However, cancer cells can develop resistance by utilizing DNA repair mechanisms involving the TDP1 protein.

Targeting DNA Repair Mechanisms

- The study highlights that **cancer cells use TDP1 to counteract the effects of Top1 inhibitors.**
- Researchers found that **targeting both CDK1 and TDP1 proteins simultaneously could enhance the effectiveness of cancer treatments.**
- **What is CDK1 (Cyclin-Dependent Kinase 1)**: CDK1 is a crucial protein kinase that regulates the cell cycle, particularly the transition from the G2 phase (second phase) to the M phase (mitosis). It ensures proper cell division by interacting with cyclins and phosphorylating target proteins.
- **Role in Cancer**: **CDK1 is often overexpressed in cancer cells, leading to uncontrolled cell proliferation.** Inhibiting CDK1 can disrupt the cell cycle, induce apoptosis (cell death), and enhance the effectiveness of cancer therapies.
- **Regulation**: CDK1 activity is tightly regulated by binding to cyclins (especially cyclin B) and by phosphorylation events. Proper regulation is critical for the accurate division of cells.

Advanced Treatment Strategies

- Cancer cells often develop resistance to single-agent therapies by enhancing their DNA repair pathways or altering cell cycle regulation. The combination of Top1 and CDK1 inhibitors may overcome this resistance and improve treatment outcomes.

- The study suggests that personalized combinatorial chemotherapy, which targets different aspects of the cell cycle and DNA replication, could effectively kill cancer cells and reduce the chances of treatment resistance.

Personalized Chemotherapy

- It refers to a tailored cancer treatment approach that targets the specific genetic and molecular characteristics of a patient's tumour, using a combination of drugs to maximize efficacy and minimize resistance.
- This approach considers individual variations in DNA repair mechanisms, drug metabolism, and tumour biology to optimize treatment outcomes.

3. **Fintech Companies in Central Bank Digital Currency (CBDC)**

- Recently, some fintech companies showed interests to join the India's central bank's digital currency project.

E-Rupee / Central Bank Digital Currency

- It is a digital currency issued by the RBI.
- **Need** – It was thought of as an alternative to cryptocurrencies which progressively lose their value.
- **Launch** - It was launched on a pilot basis in 2022.
- **Aim** - It is aimed at creating an additional option for using money.
- **Types** – CBDC Retail and CBDC Wholesale.
- **Features** – It is available entirely in electronic form and does not leave a computer network.
- It is a legal tender like banknotes that can be used for making transactions.
- It could be used for both person-to-person and person-to-merchant transactions.

Trends of e-rupee in India

- **Initial uptake** – At the time of launch, witnessed growing adoption, with transactions using the digital currency rising to over 1 million a day late last year.
- **Gradual decline** - since the initial uptake, its use has declined sharply to about 100,000-200,000 a day.
- **Reasons for decline** - RBI has stopped offering incentives to users and banks that participated in the pilot.
- Limited features and user base compared to a full-scale launch restrict widespread adoption.

- CBDC transaction is not enabled in UPI, which is the most popular digital transaction method.
- Future prospects - RBI is planning to enable the CBDC transactions offline without the need of internet and plans to introduce programmability in CBDC retail payments

Impact of Fintech in CBDC - It will enables payment transactions between users beyond the registered banks in the country.

- It incentivizes private research on central bank digital currency.
- It opens up new platform for startups to rise in financial services sector and can facilitate the invention of new financial products such as insurances, credit services to suit specific needs.
- It enables the Indian fintech companies to provide international services.
- It enhances financial inclusion by making financial services more accessible and promotes the digital economy of the country.

What lies ahead?

- Launch the full-scale version of the digital currency as it is still in pilot basis.
- Include more stake holders and users in the CBDC ecosystem.
- Find more use cases for e–Rupee across the sectors.
- Release the additional features such as off line use, programmability.
- Allow offline capability to enable these transactions in areas with poor or limited Internet connectivity.
- Educate users about using CBDC and its benefits.

4. 2G BIO-ETHANOL

- The Indian government is planning to set up dedicated enzyme manufacturing facilities to boost ethanol production.
- The first plant is expected to be established in Manesar, Haryana. This facility will likely supply enzymes to proposed 2G bio-ethanol plants in Uttar Pradesh, Punjab, and an existing plant in Haryana. This initiative is part of the BioE3 policy, which aims to enhance biotechnology-driven manufacturing in India.

2G (second-generation) bio-ethanol

- 2G (second-generation) bio-ethanol is produced from non-food biomass, such as agricultural residues, wood chips, and other lignocellulosic materials.
- Unlike first-generation bio-ethanol, which is made from food crops like corn and sugarcane, 2G bio-ethanol uses feedstocks that are not part of the human

food chain. This makes it a more sustainable and environmentally friendly option.

- The process involves breaking down the complex carbohydrates in the biomass into simple sugars, which are then fermented to produce ethanol. This typically requires specialized enzymes to convert the lignocellulosic materials into fermentable sugars.

Key benefits of 2G bio-ethanol:

- Reduces waste: Utilizes agricultural residues that would otherwise be discarded or burned.
- Lower greenhouse gas emissions: Produces fewer emissions compared to fossil fuels and first-generation bio-ethanol.
- Energy security: Reduces dependence on imported fossil fuels by providing a renewable energy source.

Ethanol

- Ethanol, also known as ethyl alcohol, is a clear, colourless liquid that is flammable and has a characteristic odour.
- It is produced through the fermentation of sugars by yeast or through chemical processes like the hydration of ethylene.
- Ethanol can be derived from both biological and chemical sources, while bioethanol is exclusively produced from biological sources.

Uses of Ethanol

- Beverages: Ethanol is the type of alcohol found in alcoholic beverages such as beer, wine, and spirits.
- Fuel: It is used as a biofuel and is often blended with gasoline to produce ethanol-blended fuels. This helps reduce greenhouse gas emissions and reliance on fossil fuels.
- Industrial Solvent: Due to its ability to dissolve a wide range of substances, ethanol is used as a solvent in the manufacturing of pharmaceuticals, perfumes, and other products.

5. India's Policy Transformation in Corporate Governance

- India's economic trajectory was defined by two key policy shifts: the planned development of 1951 and the liberalization of 1991, both catalyzing growth through distinct government roles.

Corporate governance

- **Corporate**- A business organisation having a separate legal entity, ie an identity distinct from its owners, is called a corporation or a company in India.
- **Section 2(11) of the Companies Act**, 2013 defines "body corporate" or "corporation" to include
  - o Private companies
  - o Public companies
  - o Personal companies
  - o Small companies
  - o Limited Liability Partnerships (LLPs)
  - o Foreign companies
  - o Companies incorporated outside India
- **Corporate governance** - It refers to the system of rules, practices, and processes by which a company is directed and controlled.
- It involves balancing the interests of a company's many stakeholders, such as shareholders, management, customers, suppliers, financiers, government, and the community.
- **Importance** - It ensures accountability, fairness, and transparency in a company's relationship with its stakeholders.

How corporates are governed in India?

- **Legislations**
  -
    - o **Companies Act, 2013 -** It is the primary legislation governing corporate governance in India.
    - o It includes provisions related to the composition & functions of the board, appointing auditor, disclosures, & shareholder rights.
    - o **Securities Contracts (Regulation) Act, 1956**- It governs the listing of securities and enforces regulations for stock exchanges and listed companies, contributing to corporate governance.
- **Regulations** - SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015 apply to listed companies.
- It mandate specific corporate governance norms, including board composition, audit committees, and the role of independent directors.

Challenges associated with corporate governance

- **Conflict of interest-** Directors and management may face conflicts between their personal interests and those of the company, leading to unethical decisions.
- **Lack of independence-** Independent directors may not be truly independent, compromising their ability to provide unbiased oversight.

- **Ineffective board functioning-** Boards may be dominated by a few individuals, reducing their effectiveness in oversight and decision-making.
- **Weak enforcement of regulations-** Although laws are in place, the enforcement of corporate governance regulations can be inconsistent, allowing malpractices to persist.
- **Transparency issues-** Companies may fail to provide adequate and accurate information to stakeholders, undermining trust and accountability.
- **Cultural and ethical deficiencies-** A lack of emphasis on ethical behavior and corporate responsibility can lead to governance failures.
- Political acceptability comes more readily to a government visibly involved in supporting non-corporate private sector, reducing income inequalities and regional disparities, and addressing caste concerns

What lies ahead?

- Shift to a neutral, market-friendly relationship to avoid cronyism and ensure fair competition.
- Reform PLI Scheme to foster a more dynamic corporate environment.
- Encourage the shift from family-managed to professionally managed enterprises through stronger competition.
- Raise the competence of the Competition Commission for enhancing private sector management dynamism.
- Regulate monopoly infrastructure to prevent private exploitation.

6. Asia Pacific Employment and Social Outlook 2024

- The **International Labour Organization** (ILO) has released the **Asia-Pacific Employment and Social Outlook 2024,** highlighting the region's recovery from the global pandemic and the challenges posed by a rapidly ageing population.

Key Highlights:

Unemployment Rate:

- Projected to remain at **4.2%** in **2024** and **2025**.
- This equates to **87.8 million** people out of work in **2024**.
- **Unemployment rates** vary significantly across subregions and countries.
- The region's jobs gap in **2023** was **164 million**, including individuals unable to work due to care obligations.

Demographic Challenges

- The ratio of people aged **65** and above is expected to double by **2050**.

- This will increase the economic dependency ratio and pose challenges to sustaining economic growth.
- **East Asia** will experience a demographic drag on growth of **0.3 percentage** points per year.
- **South Asia** will see a significant decline in its demographic dividend.

Opportunities and Policy Needs

Income Growth and Productivity:

- Potential for continued income **growth per capita** if productivity growth is maintained.
- **Labour productivity** in emerging economies is less than a **third** of that in high-income countries, indicating significant potential for improvement.
- Structural barriers and lack of **training opportunities** need to be addressed.

Policy Reforms:

- Necessary to reduce **inequalities** and improve labour market prospects for **older workers**.
- Equitable pension systems are needed to manage **demographic changes**.

7. Why India needs adaptive agriculture

- The recent report of Centre for Science and Environment highlights that organic and natural farming offer several advantages over chemical-dependent inorganic methods.

Adaptive agriculture

- **Adaptive agriculture** – It refers to the necessity to adapt to the reality of climate change in our world, and to develop food systems to healthily feed our world.
- It acknowledges the need for individuals to develop and grow their own healthy personal relationships with all aspects of food production.
- **Focus** – It aims to increase the resilience and sustainability of agricultural systems in response to changing environmental conditions and challenges.
- **Methodologies** – It utilizes a broad spectrum of strategies and skill-sets for growing food responsibly.

What are its benefits?

- **Increases water holding capacity** – Sustainable agriculture practices make the soil porous, thus enabling it to hold more water.

- **Better growth of plants –** The porous soil allows the roots to go deeper and absorb more nutrients.
- **Build resilience –** Increased microbial health of soil leads to aggregate stability, making plants stronger and resilient to any weather changes.
- **Enhance productivity-** It can potentially <u>enhance agricultural productivity</u> through improved practices and technologies.
- **Economic viability-** It helps farmers to better manage risks and uncertainties, leading to <u>more stable incomes and livelihoods.</u>
- **Agricultural vulnerability –** 55% of the net sown area <u>relies on rainwater</u>, making it highly vulnerable to climate change.

- Thus, a substantial part of food security and the livelihood of 61% of farmers who rely on rainfed agriculture depends on whether the rain arrives at the right place at the right time in the right quantities.
- **Rural vulnerability –** Almost 70% of rural households depend on agriculture, with 86% being small and marginal farmers.

Challenges in implementing it

- **Adoption challenges** - As per government data, till March 2023,
  - Combined organic area – 4.2% of the net sown area of the country
  - Organic farmers – 3% of the 146 million agricultural landholders

- **Lack of quality inputs –** Farmers find it difficult to prepare organic and bio-inputs due to lack of knowledge and availability of inputs, and due to the time and labour needed for it.
- **Unfair returns –** Issues in securing fair and remunerative prices.
- **Practical difficulties –** There are ineffectiveness of the recommended package of practices in different ground-level scenarios.
- **Marketing issues** - Small and marginal farmers face challenges in marketing their produce due to lengthy supply chains, poor value addition and lack of economies of scale.

8. Use of Drones in Warfare

- Manipur Chief Minister condemned **recent drone bombings on civilians**, calling them acts of terrorism. His comments followed a second day of grenade-laden drone attacks that injured three people in Imphal West.
- **A drone or UAV (Unmanned Aerial Vehicle)** is a remotely controlled flying device that is gradually being adopted in warfare for logistics, surveillance-reconnaissance, and combat roles.

Drone use by state actors:

1. **The USA and Israel** are at the forefront of drone development with Predator and Heron models.
2. The use of **Turkish-made Bayraktar drones** by Ukraine against the Russian invasion has turned the tide of war.
3. **Russia's use of Orion drones** in Syria in 2019 for striking strategic targets.

Drone use by non-state actors:

1. **Houthi rebels** used drones from Iran to attack Saudi oil facilities.
2. **Islamist terror outfits like ISIS and Palestinian Islamic Jihad** (PIJ) have used drones for surveillance and attack.
3. **Even organised narco-traders** like the CJNG cartel of Mexico have used drones for bombing targets.

Security challenges to India:

1. Recently, drones were used for the first time to **drop explosives at the Jammu airbase**.
2. Multiple incidents of **cross-border drone threats from Pakistan-sponsored terror groups** to drop bombs and deliver arms, ammunition, and equipment.
3. **Internal insurgents** too are acquiring DIY (Do-it-yourself) drone kits to increase such capabilities.
4. **Drone Terrorism:** Drones are increasingly used by terrorist groups due to their affordability, manoeuvrability, and payload capacity.
5. **Surveillance and Intelligence Gathering:** Drones monitor military sites, borders, and sensitive government facilities.
6. **Critical Infrastructure Disruption:** They can execute cyber-attacks, jamming, or physical attacks on infrastructure.
7. **Cross-Border Smuggling:** Drones smuggle contraband, drugs, and weapons, particularly from Pakistan.
8. **Privacy Concerns:** Drones with cameras threaten individual privacy and the security of sensitive facilities, like nuclear plants.

Steps taken:

1. **Drone Rules 2021** to regulate the internal movement of drones while incentivizing the indigenous drone manufacturing industry.
2. **Indian Army Aviation Corp** is being made responsible for offensives and drone counter-measures.
3. **Indigenous anti-drone systems** are being developed like **Indrajaal** by Hyderabad-based Grene Robotics.
4. **Drone development by the DRDO** including **Nishant, Rustom, MALE, et al** and acquisition of foreign-made variants like the Heron.

5. **Drone Import Policy 2022:** Bans foreign drone imports, but allows drone component imports.
6. **PLI Scheme**: Incentivizes domestic drone and component manufacturing.

Conclusion:

- Drone warfare is causing a revolution in the nature of warfare in the 21st century, providing asymmetric warfare capabilities to the smallest of state and non-state actors. India must keep pace with the world for its security.

9. Disaster Management Amendment Bill, 2024

- Recently, the Disaster Management (Amendment) Bill, 2024 was introduced in Lok Sabha.

Disaster Management Act

- **Disaster** - Disaster Management Act defines a "disaster" as "a catastrophe arising from natural or manmade causes resulting in substantial loss of life or damage to property beyond the coping capacity of the community of the affected area".
- **Disaster Management** - India envisions the development of an ethos of Prevention, Mitigation, Preparedness and Response.
- **Disaster Management Act**– It was **enacted in 2005** in the backdrop of several catastrophic disasters such as Tsunami (2004), Gujarat Earthquake (2001) and Odisha Super Cyclone (1999).

- **National Disaster Response Force**- It has several battalions or teams, which are responsible for on-ground relief and rescue work in several states.

New provisions of the bill

- **Preparation of disaster management plans** – It shall be done by NDMA and SDMA.
- **Empowers NDMA** – It can make regulations under the Act with prior approval of the central government.
- **New functions to NDMA and SDMA** - It adds new function like
    - Taking periodic stock of disaster risks, including emerging risks from extreme climate events.
    - Providing technical assistance to authorities below them.
    - Recommending guidelines for minimum standards of relief.
    - Preparing national and state disaster databases, respectively.

- **Empowers state government** – To constitute a separate Urban Disaster Management Authority for state capitals and cities with a municipal corporation.
- **Urban Authority** – It will prepare and implement the disaster management plan for the area under it.
- It will comprise chairperson, vice chairperson and other members specified by the state government.
  - **Chairperson** - Municipal Commissioner
  - **Vice Chairperson** - District Collector

Potential benefits of the bill

- **Strengthens authorities** – It enhances the capabilities of the NDMA and SDMA in preparing disaster management plans.
- Statutory status to pre-existing organizations can potentially streamline the chain of command & improve coordination during disasters.
- **Promotes decentralisation** – Establishing of Urban Disaster Management Authorities empowers local authorities in disaster management in urban areas.

What lies ahead?

- Encourage a collaborative approach between the central and State governments in disaster management.
- Ensure adequate financial resources are allocated to State and local authorities to enable effective disaster response.
- Broaden the definition of disaster to include climate-induced disasters like heatwaves to address emerging challenges.

10. Latest ILO Study Links AI to Decline in Labour Income

- **Global Decline in Labour Income**:
  - A recent study by the **International Labour Organisation (ILO)** reveals a **stagnation in labour income** worldwide, contributing to a rise in inequality.
  - A significant factor behind this trend is the increasing use of **Artificial Intelligence (AI)**, which has impacted the share of labour income.
- **Impact of AI and Technological Innovations**:
  - The ILO study, which analysed data from **36 countries** over the last two decades, found that while technological innovations, including AI, have **boosted productivity** and output, they have also **reduced the share of income** earned by workers.

- o The report highlights that **automation-based technological advancements** are driving these effects.
- **Slow Progress on Sustainable Development Goals (SDGs)**:
    - o The report indicates **slow progress** toward achieving key **Sustainable Development Goals (SDGs)** as the 2030 deadline approaches.
    - o The **global labour income share** fell by **0.6 percentage points** from **2019 to 2022**, continuing a long-term downward trend.
    - o If the **labour income share** had remained at 2004 levels, global labour income would have been **$2.4 trillion larger in 2024**.
- **COVID-19 Pandemic's Impact**:
    - o The report notes that the **COVID-19 pandemic** was a key factor in the decline, with **40% of the reduction** in labour income share occurring between **2020 and 2022**.
- **Call for Action**:
    - o ILO Deputy Director-General, stressed the need for policies to counter the declining labour income share.

This study highlights the critical need for policy interventions to **balance the benefits of AI** and **protect labour income** globally.

Sustainable Development Goals (SDGs)

- The **Sustainable Development Goals (SDGs)** are a set of 17 global goals established by the United Nations in 2015 to address major global challenges. These goals are designed to achieve a better and more sustainable future by 2030, focusing on eliminating poverty, protecting the planet, and ensuring that all people enjoy peace and prosperity.

11. Slowdown in Bank Deposit Growth

- Latest data from the Reserve Bank of India (RBI) showed that deposits grew at a lower rate than the bank credit growth rate signifying higher loan-deposit ratio.

Loan-deposit ratio

- **Recent findings** – RBI data shows that Indian banking system has a high loan–deposit (LD) ratio of **about 77.2%.**
- **LDR** – It is the ratio of the total amount of loans given out by the bank to the total amount of deposits held by the bank.

- **Role** – It is used to assess a bank's liquidity by comparing a bank's total loans to its total deposits for the same period.

- It also helps to ensure that banks are not overexposed to risk.
- **Determining factors** - There are several factors like the economy, interest rates, and the bank's lending policies.
  - o For example, during an economic recession, banks may become more risk-averse and tighten their lending policies, resulting in a lower LDR.

Role of capital market in reducing bank deposits

- **Outflow of household savings from banks –** Households and consumers who traditionally leaned on banks for parking or investing their savings are increasingly turning to capital markets and other financial intermediaries.
- Over the last year or so, Indian households have increasingly channelled their savings to capital markets.

- **Easier investment process –** Higher returns and robust digital infrastructure which has eased the investment process
- **Rapid smartphone penetration –** It have facilitated the entry of more retail investors into capital markets.

What are the measures taken?

- **Guidelines –** The government and the RBI have asked lenders to focus more on deposit mobilisation through innovative products.
- They urged banks to garner more deposits by leveraging their wide branch network and offering innovative products.
- **Special retail deposit schemes –** It was launched by lenders such as State Bank of India, Bank of Baroda, Bank of India, Bank of Maharashtra, RBL Bank and Bandhan Banks.
- **Amrit Vrishti** - It was launched by SBI, a scheme that offers 7.25% interest on deposits for 444 days.
- **Monsoon Dhamaka –** It was launched by Bank of Baroda, a deposit scheme, offering interest rates of 7.25% for 399 days and 7.15% for 333 days.

12. Road to Zero Hunger by 2030

- Recent triennial International Conference of Agricultural Economists (ICAE-2024) highlighted malnutrition, hunger are worsening due to geopolitical unrest and climate change, and focused on **'Transformation Towards Sustainable Agri-Food Systems'**.

- **Goal 2 of the United Nations Sustainable Development Goals (SDGs)** is all about creating a world free of hunger by 2030. It's a bold and essential mission—one that resonates with our shared humanity.
- The vision of a **hunger-free world by 2030** is both inspiring and daunting. It's a goal that resonates with the collective desire for a more equitable and compassionate planet.

Why Does Zero Hunger Matter?

- A world with zero hunger positively impacts our economies, health, education, equality, and social development. It's a cornerstone for building a better future for everyone.
- Moreover, hunger limits human development, making it challenging to achieve other sustainable development goals like education, health, and gender equality.
- **Economies:** Productive, well-nourished individuals contribute to economic growth.
- **Health:** Proper nutrition prevents diseases and improves overall well-being.
- **Education:** Hungry children struggle to learn effectively.
- **Gender Equality:** Empowered women play a pivotal role in eradicating hunger.

Challenges Ahead

- Despite progress in agricultural productivity, over two billion people globally still lack access to sufficient, nutritious, and safe food. Projections indicate that the **world is not on track to achieve zero hunger by 2030.**

- **Rising Hunger and Food Insecurity:** Since 2015, the global issue of **hunger and food insecurity** has intensified. Factors such as **geopolitical unrest, climate change, and deepening inequalities** have exacerbated the situation.
  - In 2022, approximately 735 million people—about 9.2% of the world's population—experienced chronic hunger – —a staggering rise compared to 2019.
  - An additional 2.4 billion people faced moderate to severe food insecurity, meaning they lacked access to sufficient nourishment. This number escalated by an alarming 391 million people compared to 2019.

Achieving Zero Hunger

- **Multi-dimensional Approach:** We need a comprehensive strategy. This includes:
  - **Social Protection:** Ensuring safety nets for vulnerable populations.

- o **Sustainable Agriculture**: Promoting practices that enhance food security while safeguarding the environment.
- o **Investment in Agriculture:** Critical for reducing hunger, poverty, and building resilience to disasters.
- o **Nutrition:** Ensuring safe and nutritious food, especially for children.
- o **Transforming Food Systems:** Creating a more inclusive and sustainable world.
- **Social Protection:** Ensuring safety nets for vulnerable populations, especially children, to safeguard access to safe and nutritious food.
- **Transforming Food Systems:** We need inclusive and sustainable food systems that prioritise nutrition, reduce waste, and promote resilience.

Way Forward

- **Food as the Essence of Life:** Food isn't just sustenance; it's woven into our cultures and communities. It has the power to bring people together, nourish our bodies, and sustain the planet.
- **UN Food Agencies' Pledge:** On World Food Day, the food agencies of the United Nations (UN) pledged to work collaboratively to end hunger, eradicate food insecurity, and achieve SDG 2.
- **Shared Commitment:** World leaders, during the SDG Summit in New York, reaffirmed their commitment to eradicating poverty and ending hunger. However, it's clear that concerted efforts are needed to bridge the gap between aspiration and reality.

13. INDIA'S Steel sector

- Commerce and Industry Minister Piyush Goyal recently asked the steel industry to target 500 million tonnes steel production by 2034.
- The steel industry in India dates back to the early 20th century, with the establishment of Tata Steel in 1907, which was the first integrated steel plant in Asia. Post-independence, the sector grew with the establishment of public sector steel plants. Since the liberalization of the 1990s, there has been significant private sector investment.

Indias Global Standing:

- India is the second-largest producer of steel in the world, after China.
- In recent years, India's steel production has exceeded 120 million tonnes per year (2022).

Structure and Capacity of the Industry:

- Integrated Steel Plants (ISPs): These are large steel plants that produce steel from iron ore using blast furnaces and basic oxygen furnaces (BOF). ISPs generally have full-scale operations from raw material processing to finished steel products. Major ISPs include SAIL, Tata Steel, JSW Steel, and JSPL.
- Mini Steel Plants: These are smaller plants that primarily produce steel by recycling scrap metal in electric arc furnaces (EAF) or induction furnaces (IF). Mini steel plants cater to the demand for long steel products used in construction and local markets.

Contribution to the Economy:

- GDP Contribution: The steel sector contributes about 2% to 3% of India's GDP. It is a core industry that has a multiplier effect on other sectors such as construction, manufacturing, and transportation.
- Employment: The sector provides direct and indirect employment to millions of people, including those involved in raw material extraction, steel production, and downstream industries.
- Exports: India is a significant exporter of steel, with major markets in Europe, the Middle East, and Southeast Asia. India also imports certain types of steel, especially specialized steel that is not produced domestically in sufficient quantities.

Recent Trends and Developments:

- Growth in Capacity: India's steel production capacity has increased significantly in recent years, and the country aims to reach a capacity of 300 million tonnes by 2030, according to the National Steel Policy 2017.
- National Steel Policy 2017: This policy aims to encourage the domestic steel industry to become self-reliant and globally competitive. Goals include increasing per capita steel consumption to 160 kg by 2030-31 (from about 74 kg currently), making India a global hub for steel production and exports, and promoting environmentally sustainable practices.

Challenges:

- Raw Material Supply: While India has abundant iron ore, it relies heavily on imported coking coal, making the sector vulnerable to global price fluctuations.
- Environmental Concerns: Steel production is energy-intensive and generates significant emissions, leading to pressures to adopt cleaner technologies.
- Competition: Indian steelmakers face competition from global producers, particularly Chinese steelmakers who dominate the global market.

14. The grave threat from AMR

- Ahead of the UN General Assembly High-Level Meeting on antimicrobial resistance, WHO published its first-ever guidance on Antibiotic pollution from manufacturing.

Common Pathogens Found in India

- The three most common pathogens associated with antimicrobial resistance (AMR) in India, as reported by the Indian Council of Medical Research (ICMR), are:

- **Escherichia coli (E. coli):** Known for causing gut infections, E. coli has shown a significant decrease in susceptibility to antibiotics, particularly carbapenems, from **81.4% in 2017 to 62.7% in 2023.**
- **Klebsiella pneumoniae:** This pathogen can lead to **pneumonia and urinary tract infections**. Its susceptibility to **carbapenem-class antibiotics has also declined**, with rates dropping from 58.5% to 35.6% and from 48% to 37.6% between 2017 and 2023.
- **Acinetobacter baumannii:** Primarily associated with **hospital-acquired infections, this pathogen has a high resistance rate to carbapenems, standing at 88% in 2023.**

Antimicrobial Resistance : A Cause for Concern

- Antimicrobial resistance (AMR) occurs when pathogens evolve to survive despite the presence of antimicrobial drugs, rendering standard treatments ineffective. This situation arises mainly due to the misuse and overuse of antibiotics, leading to the development of resistant strains or **"superbugs."**
- According to the **WHO,** emergence and spread of AMR could significantly undermine the effectiveness of antibiotics globally, impacting healthcare outcomes, especially for patients with multiple diseases.

Several factors contribute to the increasing rates of AMR in India:

- **Self-medication:** Many individuals **self-prescribe antibiotics for conditions** like fever without proper medical consultation, often for viral infections where antibiotics are ineffective.
- **Prescribing habits:** A significant **percentage of antibiotics are prescribed not for treating infections but for prevention**. Doctors often resort to **broad-spectrum antibiotics without conducting necessary diagnostic tests,** leading to inappropriate usage.

- **Lack of regulation:** The management of pharmaceutical waste from **antibiotic manufacturing is largely unregulated,** contributing to environmental pollution and the spread of resistant bacteria.

What needs to be done?

- **Prevention of Infections:** Implementing **better hygiene practices, improving sanitation, and promoting vaccinations** can help reduce the incidence of infections, thereby decreasing the reliance on antibiotics.
- **Education for Healthcare Providers:** Train doctors to prescribe **antibiotics judiciously, reserve stronger antibiotics for hospital patients**, and emphasise the importance of **diagnostic testing**, which can help **ensure appropriate antibiotic use.**
- **Regulatory Improvements:** Strengthening regulations around **antibiotic manufacturing and waste management is crucial** for controlling antibiotic pollution and preventing the emergence of resistant strains.

15. Stick to Fiscal Deficit as the Norm for Fiscal Prudence

- In the 2024-25 Union Budget, the Finance Minister stated, "From 2026-27 onwards, we aim to reduce the fiscal deficit each year to ensure Union government debt declines as a percentage of GDP."
- The speech also says that the **Centre's fiscal deficit** would be reduced to **4.5% of GDP in 2025-26** from its budgeted level of 4.9% in 2024-25.

Fiscal deficit

- Fiscal Deficit is defined as excess of total budget expenditure (revenue and capital) over total budget receipts (revenue and capital) excluding borrowings during a fiscal year.
- Fiscal Deficit = Total Expenditure – (Revenue Receipts + Non-Debt Creating Capital Receipts).

Implications of fiscal deficit

- **Inflationary Pressure:** When a country's government runs a persistently high fiscal deficit, this can eventually lead to **higher inflation** as the government will be forced to use fresh money issued by the central bank to fund its fiscal deficit.
- Higher fiscal deficit causes higher debt which eventually leads to the higher **ratio of interest payment to revenue receipts.** Hence there will be lower shares for financing non-interest expenditures.

- **Crowding Out effect:** When the government borrows a large portion of available funds from financial markets to finance its deficit, it crowds out private investment with reduced access to credit for businesses and individuals.

Benefits of lower fiscal deficit

- A consistent reduction in the fiscal deficit will **improve credit ratings** by international rating agencies. Higher credit ratings make it cheaper for India to borrow in global markets, reducing the cost of external debt.
- When the fiscal deficit is lower, less money is diverted to debt servicing, leaving **more funds for development projects** like infrastructure, education, and healthcare.
- Lower deficits will improve the **balance of payments in favor of India**, by reducing the reliance on foreign borrowing. It will help in **stabilizing the exchange rate** and the overall current account.
- A lower fiscal deficit signals fiscal discipline and responsible government management of finances. This can **enhance investor confidence,** leading to increased foreign and domestic investment.

The reforms needed

- There is a need to follow the recommendations of the **NK Singh committee, 2017** which proposed a draft Debt Management and Fiscal Responsibility Bill, 2017.
- **Incentivizing Financial Savings:** Promoting **higher household financial savings** through tax incentives on financial products, improving returns on long-term savings schemes, and enhancing financial literacy.
- **Infrastructure Finance Reforms:** Improving mechanisms for financing infrastructure projects by involving the private sector through public-private partnerships (PPP), infrastructure bonds, and development of finance institutions.

16. Critical Components of the Mission: Mausam

- The Union Cabinet has approved 'Mission Mausam' with a budget of ₹2,000 crore over two years.

Mission Mausam

- Mission Mausam focuses on strengthening **R&D in weather surveillance**, forecasting, and atmospheric sciences.
- The **Ministry of Earth Sciences (MoES)** will be the nodal body responsible for implementing the mission.

- It aims to set a new benchmark for **high-precision weather forecasting** and management.
- Three institutes under the MoES will **lead the implementation** of Mission Mausam:

1. India Meteorological Department (IMD)
2. Indian Institute of Tropical Meteorology (IITM)
3. National Centre for Medium-Range Weather Forecasting (NCMRWF)

- Next-generation radars and satellite systems equipped with advanced sensors.
- Deployment of high-performance supercomputers to enhance computational capabilities.
- Development of improved earth system AI models and a GIS-based automated Decision Support System for real-time data dissemination.

Benefits and Applications

- Mission Mausam is expected to benefit key sectors, including:
  - Agriculture, through improved weather prediction for farming activities.
  - Disaster management, with better preparedness for natural calamities.
  - Defence, aviation, and shipping, through enhanced forecasting for operational safety.
  - Energy, water resources, power, and tourism sectors.
- The mission will also enhance data-driven decision-making for urban planning, transport, offshore operations, and environmental monitoring.

17. Border Management and Development in India

- While addressing the Border Area Development Conclave, Defence Minister said that **Border area development is the best way to deal with geo-strategic challenges.**
- India's geo-strategic position is such that it is exposed to different kinds of challenges and the best way to deal with them is to **ensure border area development,** as border villages are the country's first villages and not remote areas.
- He highlighted the **objective is to transform the villages along the Northern borders,** especially in Uttarakhand, Himachal Pradesh and Arunachal Pradesh, which are suffering from limited connectivity and infrastructure, into model villages.

Need for Border Management

- **India- Pakistan Border:** The border with Pakistan has been a problematic one since India's independence.
  - o Despite the accession of Jammu and Kashmir (J&K) to India as per the Indian Independence Act of 1947, Pakistan fought four conventional wars with India namely in 1947-48, 1965, 1971 and 1999.
  - o It has also been engaged in a proxy war as well both in the state of J&K and Punjab.
  - o The border is active in the form of LC where the Army has been deployed in addition to the BSF.
- **India- China Border:** India has disputed borders with China in Ladakh, Middle Sector, and in Arunachal Pradesh. Despite many levels of talks, very little progress has been made to resolve the dispute.
- **India-Bangladesh Border:** The relations between India and Bangladesh have been moving up and down based on the government in power.
  - o The current relations with Bangladesh are good but Pakistani efforts to create a religious divide, Chinese inroads and present political situation in the country have made the peace process prone to disruption.
- **India-Bhutan Border:** India is responsible for the defence of Bhutan and therefore responds to Chinese aggression even in Bhutan which happened in Doklam in 2017.
  - o The Chinese threat manifesting through Bhutan always remains which rises the need to secure this border.

Challenges In Managing the Borders

- **Length and Diversity:** India shares borders with multiple countries totaling thousands of kilometers.
  - o Each of these borders has unique geographical features, ranging from mountains to rivers and plains, making effective monitoring and control challenging.
- **Porosity of Borders:** Many parts of India's borders are porous, allowing illegal crossings of people, goods, and contraband such as drugs and weapons.
  - o The difficult terrain, along with dense forests and riverine areas, facilitate such activities, posing a significant challenge to border security forces.
- **Cross-Border Terrorism:** India faces threats of cross-border terrorism, particularly from Pakistan-based militant groups operating in Jammu and Kashmir.
  - o These groups exploit the porous borders to infiltrate into Indian territory and carry out attacks, leading to security concerns and tensions between the two countries.

Conclusion

- **The Border Roads Organisation (BRO)** has constructed over 8,500 kms of roads and more than 400 permanent bridges.
- The transmission and distribution infrastructure of **north-eastern States** is being strengthened.
- Ongoing efforts have not only ensured prompt military deployments in sensitive regions, but have also **connected the people residing in border areas with the rest of the country.**
- Infrastructure development; smart borders comprising communication networks and power supply; economic development with employment generation; border area tourism and empowerment of the next generation by providing skill enhancement and education opportunities **are key pillars of the vision of border area development.**

18. India to set up International Big Cat Alliance

- The Union Cabinet approved the establishment of International Big Cat Alliance (IBCA) with headquarters in India with a one-time budgetary support of Rs.150 crore for a period of five years from 2023-24 to 2027-28.
- Framework of Agreement of IBCA has been drafted largely on the pattern of International Solar Alliance (ISA).

International Big Cat Alliance (IBCA)

- It was **launched** by the Indian Prime Minister in Mysuru on April 9, **2023,** at an event **commemorating 50 years of Project Tiger** in India.
- **Objective**: **Strengthen global cooperation** and efforts for **conservation of seven big cat species** (tiger, lion, leopard, snow leopard, cheetah, jaguar and puma) and their habitats.
  - **Out of the seven big cats**, **five —** tiger, lion, leopard, snow leopard, and cheetah **— are found in India**.
- The alliance **aims to reach** out to **97 range countries** covering the natural habitats of the seven big cats. IBCA has been conceived as a **multi-country, multi-agency coalition** to strengthen global cooperation and **mobilise financial and technical resources** to support the entire ecosystem associated with the conservation of these species and their habitats.
- It will serve as an evolving platform for convergence of knowledge and best practices, supporting existing specific inter-governmental platforms, while also **providing direct support to recovery efforts** in potential range habitats. IBCA would have a multi-pronged approach in broad-basing and establishing linkages in several areas and help in **knowledge-sharing, capacity-building**, networking, advocacy, **finance, and resource support**.

- **IBCA governance** consists of an **assembly of members**, a **standing committee**, and a **secretariat** with **its headquarters in India.** IBCA has secured the Government of India's initial support of Rs. 150 crore for five years (2023-24 to 2027-28).

19. India, not China, is world's largest plastic emitter

- **A recent study published in Nature has identified India as the world's largest contributor to plastic pollution.** The study highlights that **India** accounts for **roughly 20% of the global plastic waste generated.**

Plastic Waste Generation:

1. **India** produces around 9.3 million tonnes of plastic waste annually.
2. Out of this, 5.8 million tonnes are incinerated, and 3.5 million tonnes end up as environmental debris.
3. This rate exceeds that of **Nigeria** (3.5 million tonnes), **Indonesia** (3.4 million tonnes), and **China** (2.8 million tonnes).
4. Per capita waste generation in **India** is approximately 0.12 kg per day.

Global Divide:

1. Plastic waste emissions are notably high in **Southern Asia**, **Sub-Saharan Africa**, and **Southeastern Asia**.
2. **Global South** countries, including **India**, typically use open burning for waste management, whereas the **Global North** relies on controlled disposal methods.

Criticism of the Study:

1. **Narrow Focus**: Emphasizes waste management rather than reducing plastic production.
2. **Misplaced Priorities**: May distract from upstream solutions like banning single-use plastics.
3. **Industry Influence**: Support from plastics industry groups may align with their interests rather than broader environmental goals.
4. **Undermining Comprehensive Solutions**: Focus on waste management might weaken efforts to tackle production and recycling challenges.

Reasons for High Plastic Pollution in India:

1. **Rapid Population Growth and Urbanization:** Increased consumption and waste generation due to rising population and urbanization.

2. **Inadequate Waste Management Infrastructure:** Insufficient infrastructure to manage the large volume of waste, with more uncontrolled dumping sites than sanitary landfills.
3. **Discrepancies in Waste Collection Data:** Official waste collection rates are overstated, with actual rates around 81% as opposed to the reported 95%.
4. **Open Burning of Waste:** Burning 5.8 million tonnes of plastic waste annually releases toxic pollutants.
5. **Informal Sector Recycling:** The unregulated informal sector handles a significant portion of plastic waste, complicating pollution level assessments.

Conclusion: India's status as the world's largest plastic polluter underscores a critical environmental challenge with severe implications for health, economy, and ecosystems.

Despite various regulations and initiatives aimed at managing plastic waste, the scale of pollution necessitates more comprehensive and aggressive measures. Effective implementation of existing regulations, coupled with enhanced efforts in reducing plastic production, improving waste management infrastructure, and promoting public awareness, is crucial. A collaborative approach involving government, industry, and civil society is essential to address this issue holistically and mitigate the environmental and health impacts associated with plastic pollution.

20. Status of Low and High Skill jobs in India

- A new World Bank report released recently has highlighted the decline in low skill related jobs in India over the past decade.

Low and High Skilled jobs

- **Low-skill labor** - This type of labor is characterized by routine tasks, limited skills, and lower educational attainment.
- Low-skilled workers are often employed in low-paid and insecure jobs in manufacturing and other sectors such as clothing, footwear, and light manufacturing.
- **High-skill labor** - This type of labor is characterized by advanced technical, academic, and interpersonal skills.
- High-skill workers often have skills like problem-solving, leadership, teamwork, and systems improvement.
- **Significance of low skilled jobs** - India's labor force is largely unskilled and about 80% of India's working-age population doesn't have a higher secondary education.

Reasons for the rising gap between low and high skilled jobs

- **Decline in traditional industries**- Decline in industries such as apparel and footwear affected the millions of low-skilled workers.
- **Stagnant manufacturing** – Share of Manufacturing in GDP remains at around 14 % and well short of the targeted 25 %.
- This has exacerbated the divide between high-skilled and low-skilled jobs.
- **Dominance of service sectors** – India has emerged as a key market for multinational companies to establish data analytics and software development centres such as Global Capability Centres (GCCs).
- These sectors are less suited to absorbing large portions of the Indian workforce.
- **Weakening labour intensive jobs** – Increasing high-skill manufacturing in India's export basket affects the role of low skilled labour.
- **Global competition** – Stiff Bangladesh in textiles, Thailand in machinery, and Vietnam in electronics

Measures taken to address the gap

- **Promoting Textile sector** - Seven PM Mega Integrated Textile Region and Apparel (PM MITRA) Parks has been planned to develop world-class textile sector infrastructure for a period up to 2027-28.
- **Development of Smart Cities** - 12 industrial smart cities under the National Industrial Corridor Development Programme (NICDP) have been approved.
- **Skill Development** - PM Vishwakarma scheme has been launched to encourage and develop the capacity of artisans.
- Simplify international trade procedures to improve participation.
- Reduce tariff to eliminate disparities and to lower costs for imported intermediate inputs.
- Create employment opportunities in the non-farm sector to accommodate the growing workforce.

21. India's Performances and prevailing issues in Research and Development (R&D)

- Union Budget 2023-24 spurs research and development with the focus on 'Viksit Bharat'.

How India fares in R&D?

- India is on track to become the world's third-largest economy.
- **Increase in patent-** India saw a significant rise in patent grants. It increased from fewer than 25,000 in FY20 to nearly 100,000 in FY24.

- **Growth in patent filings-** India shows increases in patent filings. **World Intellectual Property Organisation –** India achieved the highest growth (31.6%) in patent filings in 2022.
- **Improved global standings-** As per Global Innovation Index India improved its position from 81st place in 2015 to 40th in 2023.
- India moved to 9th place in the Nature Index 2023, surpassing countries like Australia and Switzerland.

Prevailing issues in India's R&D sector

- **Low investment-** Indian firms invest much less in R&D compared to global firms.
  - The Economic Survey 2023-24 pointing out the stark contrast between Indian and global R&D efforts.
- India's R&D investment as a percentage of GDP remains low, standing at **just 0.64%.**
- It lags significantly behind China (2.41%), the United States (3.47%), and Israel (5.71%).
- **Lack of ambition-** Despite economic growth, there is a lack of ambition within India's business sector to invest in R&D.
- **Limited private sector contribution-** Their contribution to India's Gross Domestic expenditure on R&D (GERD) is only 36.4%.
- It is much lower than China (77%) and the United States (75%).
- **Lack of Indian innovation** - There is indeed a lot of cutting edge R&D done in India but not by Indian companies but by the global capability centres (GCCs) of foreign companies.
- **Low R&D Intensity-** A recent analysis by the Foundation for Advancing Science and Technology (FAST) revealed that the global R&D intensity is 2.8 times higher than that of Indian firms.

Provisions for R&D in Union Budget 2024-25

- It has a separate priority entitled "Innovation, Research and Development".
- The space sector has received a massive boost.
- Other priority areas, such as "Productivity and Resilience in Agriculture", "Energy Security", and "Manufacturing and Services", also provide research and development opportunities.
- It also spurs research and development in important areas such as climate-resilient agriculture, critical minerals, miniature and modular nuclear energy technology, energy-efficient technologies, etc.
- The proposed "Critical Minerals Mission" and the exemption of customs duties on 25 critical minerals will significantly boost critical minerals research.

What lies ahead?

- Encourage private sector in R&D to make real progress and enhance its global competitiveness.
- Operationalisation of the Anusandhan National Research Foundation (ANRF) for basic research and prototype development with a corpus of Rs 1 lakh crore will pave the way for private sector-driven research and innovation.

22. Diabetes drug may lower death rate in obese people: study

- Recently, a class of drugs called **GLP-1 agonists**, originally used for diabetes, has gained attention for its role in weight loss.
- The trial included 17,604 obese or overweight participants **with cardiovascular disease but no diabetes.**

- They were randomised to receive **weekly injections of either semaglutide or a placebo** and were followed-up for three years.

Findings:

- Compared to the placebo group, participants **who received semaglutide had lower death rates** from all causes, including cardiovascular, non-cardiovascular, and also COVID-19 deaths.
- A **19% reduction** in cardiovascular mortality, heart attacks, and strokes was recorded in the semaglutide group.

GLP-1 agonists:

- These drugs mimic the **gut hormone GLP-1**, which **enhances insulin release and slows digestion**, promoting a sense of fullness.
- Among these drugs, **Semaglutide** has been in use for diabetes since 2017.
- In higher doses, it is now used as a weight-loss drug in Western countries.

Semaglutide:

- Semaglutide is a **glucagon-like peptide-1 receptor agonist (GLP-1 RA)** drug that increases the secretion of insulin (which helps decrease blood sugar levels) after a meal while reducing the production of glucagon (which helps increase blood sugar levels).
- Besides regulating glucose levels in the body, the **drug also aids in weight loss**, lowers the risk of hypoglycaemia, and improves heart health and kidney function.
- The drug was **approved by the US Food and Drug Administration** in 2017.

- According to a study, semaglutide specifically showed **greater weight loss in subjects than other GLP-1 RA drugs**.
- Apart from regulating glucose, it also increases gastric emptying time, meaning food takes longer to pass through the gastrointestinal tract and it makes you feel full for a longer period of time.

23. Understanding China's Carbon Market and Its Mechanisms

- China is seeking public feedback on a significant plan to include key industries such as **cement, steel, and aluminum in its emissions trading scheme (ETS).** This expansion is expected by the end of the year and aims to boost market liquidity in the **world's largest greenhouse gas (GHG) emitting nation**. This move is pivotal in China's efforts to curb emissions and transition toward sustainable development.

China's carbon market is composed of two major systems:

Mandatory Emission Trading System (ETS)

Voluntary Greenhouse Gas Emissions Reduction Market (China Certified Emission Reduction – CCER).

- These systems operate independently, but they are connected via a mechanism allowing firms to use voluntary market credits (CCERs) to meet their compliance targets under the ETS.
- **About The Emission Trading System (ETS):**China's mandatory carbon market, **ETS**, began operations in **July 2021** on the **Shanghai Environment and Energy Exchange**.**Coverage**: Initially, it included over 2,000 major emitters in the **power generation sector**, each responsible for emissions of at least **26,000 metric tons per year**.
- **Expansion**: The ETS will eventually include eight major sectors: power generation, steel, building materials, non-ferrous metals, petrochemicals, chemicals, paper, and civil aviation.These sectors account for **75% of China's total emissions**.
- **Mechanism of ETS**:Firms receive **free certified emission allowances (CEAs)** based on **industry carbon intensity benchmarks**. These benchmarks are set by the government and reduced over time. If a company's emissions exceed its quota, it must buy additional CEAs from the market. Conversely, companies with emissions below their quotas can sell surplus allowances.

- **Carbon Pricing**:Carbon prices in China's ETS are **typically lower than international markets**. Prices tend to rise when quota allocations are reduced, driving demand for credits and pushing prices higher.
- **About Global Carbon Markets:** Carbon markets **allow for buying and selling of carbon emissions** with the objective of reducing global emissions. Carbon markets under international law were **first set up under the Kyoto Protocol (1996)** and became **operational in 2000.** The protocol **mandated binding reductions in emissions by developed countries, but not in developing ones**, and set up three carbon market instruments: **Emissions trading** under which developed countries could trade abatements exceeding their mandates with others which fell short;
- **Joint Implementation** (JI) covering **negative carbon** generated from individual projects which could be traded between corporates in developed countries; **Clean Development Mechanism (CDM)** by which such credits could be generated from projects in developing countries and traded to corporates in developed countries.

24. Climate Change and factors causes Extreme Rainfall

- Severe flooding events have been occurring across the globe in Europe, Arab and American regions.

Factors causes extreme rainfall

- Winds, high tides, river, groundwater and flash flooding are all linked to heavy rainfall.
- **Water cycle** - The water cycle is a continuous process that involves the evaporation of water from the Earth's surface, the condensation of water vapor into clouds, and the subsequent fall of rain.
- **Air pressure** - Low-pressure systems have less air on top of them, which causes the air to rise into the clouds and condense into rain.
- **Air Temperature** - Air's capacity to hold moisture <u>rises by 7%</u> with every rise of 1 degree Celsius.
- **Air Mass** - When cold air enters an area, it forces warm air into the clouds, causing water vapor to condense into rain.

Climate change impacting global rainfall

- Climate change is impacting the **frequency** of heavy downpours during storms and sudden outbursts through its influence on complex atmospheric and weather patterns.

- **Green House Gases** - Greenhouse gases released by burning fossil fuels into the atmosphere act like a blanket on the earth, trapping heat and causing temperatures to rise.
- **Global Warming** - Since the pre-industrial era, global air temperatures have increased by around 1.3 degrees Celsius.
- Rising global temperatures is making rainfall more frequent and severe across most parts of the world.
- This leads to a more rapid evaporation of water on land and at sea, thus favouring conditions for heavy rainfall.
- **Impact on Climate patterns** - Climate change is likely to increase the warming effects of El Niño and decrease the cooling effects of La Niña.

Impacts of extreme floods

- Flooding, among the most widespread natural disasters, affects people's lives, critical infrastructure, wildlife and fertile soil and causes economic damage.
- **Loss of life** - Since 2000 the proportion of people exposed to floods is estimated to have increased by 24%.
- About 1.8 billion people, just under a quarter of the global population, are directly exposed to one-in-100-year floods.

Mitigation measures

- **Structural measures** - Building flood barriers, levees, seawalls, and floodgates.
- Floodproofing is another strategy that involves elevating critical equipment or placing it in waterproof containers.
- **Non-structural measures** - Removing people and property from areas at risk, such as through zoning, subdivision, and building codes.
- **Green infrastructure** - Using rain gardens, bioswales, and permeable pavements to absorb rainfall and reduce flooding.
- **Nature-based solutions** - Restoring River bends, changing land management practices, and creating saltmarshes.

25. Benefits of Precision farming

- The Centre is contemplating to earmark Rs 6,000 crore to promote precision farming. Apart from offering financial support, the Centre is also considering collaborating with the Netherlands and Israel, where tech-based modern farming solutions are being used, through Centres of Excellences (CoEs)

Key takeaways

- Precision Farming (also called Precision Agriculture) refers to the use of technology to manage farming inputs (like water, seeds, fertilizers, pesticides) more accurately and efficiently.
- It involves technologies like Global Positioning System (GPS), Geographic Information System (GIS), remote sensing, drones, soil sensors, and data analytics to monitor crops, manage variability in the field, and optimize resource use.

Benefits of Precision Farming:

- Increased Productivity: By applying inputs more accurately, farmers can improve crop yields and quality.
- Cost Reduction: It reduces the amount of fertilizers, water, and pesticides used, lowering costs for farmers.
- Environmental Sustainability: Reduces overuse of chemicals, promotes soil health, and limits environmental degradation.
- Efficient Resource Use: Optimizes the use of water, seeds, and other inputs, leading to better resource management.

26. Real Estate Investment Trusts (REITs)?

- **The Indian REITs Association (IRA) recently launched Data Benchmarking Institutions (DBIs) to provide investors with detailed information on real estate investment trusts (REITs).**

Real Estate Investment Trusts (REITs):

- REITs are **companies that own or finance income-producing real estate** across a range of property sectors.
- It **allows investors** to **pool their funds** and **invest in** various **real estate projects.**
- Essentially, it functions **like a mutual fund for real estate** investments.
- These trusts own and oversee a portfolio of income-generating properties, such as office buildings, hotels, shopping malls, etc.
- Unlike other real estate companies, a REIT **does not develop real estate properties to resell** them. Instead, a **REIT buys** and develops **properties primarily to operate them as** part of **its own investment portfolio.**
- When investors invest in a REIT, they become fractional owners of the property equivalent to the amount they've invested, giving them access to the benefits of owning real estate assets in small ticket sizes.
- Most REITs are **publicly traded like stocks**, which makes them highly liquid, unlike traditional real estate investments.

- **REITs in India:**
    - In India, REITs were introduced in 2014 and are **regulated by the** Securities and Exchange Board of India **(SEBI).**
    - For a company **to qualify as a REIT,** the **following criteria** must be satisfied:
    - **90% of the income** must be **distributed to the investors** in the form of dividends.

27. India Not an 'Abuser' of Tariffs: GTRI Counters Trump's Claims

- **Former U.S. President Donald Trump's Statement**:
    - Trump recently labeled India as an "**abuser**" of import tariffs.
    - This echoes his **October 2020** statement where he referred to India as the "**tariff king.**"
    - The **Global Trade Research Initiative (GTRI)** has called this claim **unfair**, citing that **many nations, including the U.S., use high tariffs to protect domestic industries.**
- **India's Free Trade Agreement (FTA) Commitments**:
    - India has shown **openness** to **free trade** by reducing or removing customs duties for imports from FTA partners like **ASEAN**, **Japan**, and **South Korea**.
    - India's **willingness** for free trade contrasts with the **U.S.'s reluctance** to reduce tariffs through FTAs.
- For example, the **Indo-Pacific Economic Framework (IPEF)** did not include **any tariff reductions**, highlighting the cautious approach of the U.S.

Indo-Pacific Economic Framework (IPEF) –

- **Launched**:
    - The **Indo-Pacific Economic Framework (IPEF)** was launched by **the United States** in **May 2022** to strengthen economic ties and cooperation in the **Indo-Pacific region**.
- **Purpose**:
    - The IPEF aims to **promote inclusive economic growth** and foster **economic cooperation** among member countries in the Indo-Pacific region.
    - It focuses on **addressing global challenges** such as **supply chain resilience**, **clean energy**, **decarbonization**, **digital trade**, and **anti-corruption**.
- **Four Pillars** of IPEF:
    - **Fair and resilient Trade**: Focuses on establishing **high-standard digital trade rules**, labor standards, and cooperation on trade facilitation.

- o **Supply Chains**: Aims to **strengthen and diversify supply chains**, ensuring stability and resilience.
- o **Clean Energy, Decarbonization, and Infrastructure**: Seeks to promote **green energy solutions** and investments in **sustainable infrastructure**.
- o **Taxation and Anti-Corruption**: Addresses issues related to **tax policy**, **transparency**, and **anti-corruption measures**.

Global Trade Research Initiative (GTRI):

- **Purpose**:
  - o **GTRI** is a **think tank** focused on analyzing and providing insights into **global trade policies**, especially with respect to **India's role** in the global economy.
  - o It aims to **promote an informed understanding** of **international trade issues**, including tariffs, free trade agreements (FTAs), and other economic policies.
- **Role**:
  - o **Research & Analysis**: GTRI conducts research on **global trade dynamics**, evaluating **tariff structures**, **trade agreements**, and **international trade regulations**.
  - o **Policy Advocacy**: It provides **evidence-based policy recommendations** to governments and trade bodies to ensure better trade practices and policies.
  - o **Trade Insights**: GTRI offers **insights** into **trade policies** of other countries, helping **India** and other nations understand the **global tariff landscape**.

28. Europa Clipper Mission

- **NASA is set to launch the Europa Clipper mission, aiming to explore Jupiter's icy moon, Europa.**

Europa Clipper Mission:

- It is a **NASA mission** to **study Jupiter's icy moon Europa**.
- The mission will place a spacecraft in orbit around Jupiter in order to perform a detailed investigation of Europa.
- The **first NASA spacecraft dedicated to studying an ocean world beyond Earth,** Europa Clipper aims **to find out** if the **ice-encased moon Europa could be habitable.**
  - o Europa shows strong evidence for an ocean of liquid water beneath its icy crust.

- The spacecraft extends 100 feet (30.5 meters) from one end to the other and about 58 feet (17.6 meters) across.
  - It is the **largest spacecraft NASA** has ever **developed for a planetary mission.**
- Europa Clipper will orbit Jupiter and **conduct 49 close flybys of the moon** to gather data needed to determine whether there are places below its thick frozen crust that could support life.
- The spacecraft carries nine science instruments and a gravity experiment that uses the telecommunications system.
- In order to obtain the best science during each flyby, all the science instruments will operate simultaneously on every pass. Scientists will then layer the data together to paint a full picture of the moon.
- The spacecraft has **large solar arrays** to collect enough light for its power needs as it operates in the Jupiter system.

29. Benefits and challenges of Financial Sector Self-Regulatory Organizations (SRO)

- In August, the Reserve Bank of India (RBI) recognised the Fintech Association for Consumer Empowerment (FACE) as a self-regulatory organisation (SRO) in the financial technology (fintech) sector.

Self-regulatory organisation (SRO)

- **Self-Regulatory Organizations (SRO)** - These are usually non-governmental organizations, established to regulate certain professions or industries to promote order among businesses and organizations.
- They act as a bridge between industry players and the regulator.
- SROs accomplish control through internal mechanisms that regulate the flow of business operations.
- **FinTech SRO (SRO FT)** - They have membership from fintech's currently regulated by the RBI, including non-banking financial companies-account aggregators (NBFC-AA), NBFC-peer-to-peer (P2P) lending platforms, among others, excluding banks.
- **Regulations of SRO** - The Reserve Bank of India recognizes SRO in banking and fintech sector and SEBI in the capital market sector.

Benefits:

- **Facilitate open communication** - Through regular consultations, feedback, and policy dialogues, the SROs facilitate open communication and help fintech's remain informed about regulatory expectations.

- **Expertise** – SROs are widely considered experts in their fields and, therefore, know a great deal about the markets they work in.
- **Higher standard of conduct** – With the establishment of SROs, member organizations follow a certain standard of conduct that helps promote ethical ways of doing business.
- **Boost confidence** – High standard of conduct can lead to investors and consumers becoming more confident in the market.

Challenges

- **On Boarding** – There is initial low momentum in onboarding members under the self-regulatory bodies.
- There has not been any SRO for the banking system and most of them functions as mere associations.
- **Heterogeneous entities** - Since NBFC sector is heterogeneous, limiting the number of SROs to two will affect their effectiveness.
- **Big Entitles** - The most influential technology companies such as Alphabet (Google), Apple, Meta (Facebook), Amazon and Microsoft offer various financial and non-financial services.

Way forward

- Encourage and incentivise entities to get registered under self-regulatory organizations. Set up SROs for different segments, based on the principal activities and the chain of entities involved.
- Treat regulated and unregulated entities differently. Avoid overlap for the effective implementation of the SRO regime.

30. Swachh Sagar, Surakshit Sagar 3.0

- The **Ministry of Earth Sciences (MoES)** successfully concluded the Swachh Sagar, Surakshit Sagar 3.0 campaign on September 21st, 2024, organizing beach clean-up drives at more than 80 locations across India's coastline.

Swachh Sagar, Surakshit Sagar 3.0

- It is a **75-day citizen-led campaign** for improving ocean health through collective action.
- It is the **third edition** of a flagship initiative launched to raise awareness about marine pollution and promote the conservation of coastal areas.
- The campaign is **part of** India's broader **Swachh Bharat Mission** and **Swachhata Hi Seva initiative** and aims to promote cleanliness, sustainable practices, and protect marine ecosystems.

- It also commemorated **International Coastal Cleanup Day**.

Key Highlights

- More than **60 tons of waste** were removed, including **plastic, metal, cloth, rubber**, and **wood debris**.
- The campaign promoted **sustainable coastal practices** and encourages communities to adopt **eco-friendly habits**, playing a vital role in reducing **marine debris** and conserving **biodiversity**.