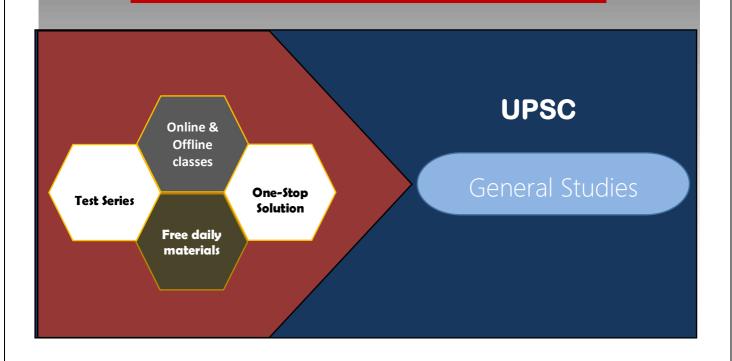**V | VISHNU I A S**

MARCH 2024

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

1. Delisting of Monuments by ASI

Archaeological Survey of India (ASI) plans to declassify 18 monuments from protected status citing diminished national significance.

Monument of national importance

- **AMASR Act, 1958**- Section 4 of the Act states that ancient monuments or archaeological sites which are of historical, archaeological or artistic interest and which have been in existence for not less than 100 years may be declared as of national importance.
- **Coverage**- It covers temples, cemeteries, inscriptions, tombs, forts, palaces, step-wells, rock-cut caves, and even objects like cannons and mile pillars ("kos minars") that may be of historical significance.
- **Designation importance**- If designated by ASI, it authorises the central government to "maintain, protect and promote the site", which may be considered of significant historical importance, as mandated by the Act.
- **Protection**- The monuments of national importance are to be conserved and maintained by the ASI as an important site pertaining to history and culture, and any kind of construction-related activity is not allowed around the protected site.
- **Regular inspection**- ASI should regularly inspect protected monuments to assess their condition, and to conserve and preserve them.
- **Prohibit encroachments**- In cases of encroachment, the ASI can file a police complaint, issue a show-cause notice for the removal of the encroachment, and communicate to the local administration the need for demolition of encroachments.
- **Delisting monuments**- ASI plans to delist 18 monuments demand no longer of national importance, drawn from a list of 24 traceable monuments.

Why ASI plans to delist monuments?

This is the first such large-scale delisting exercise in several decades.

- ASI has invoked section 35 under AMASR Act to delist the 18 monuments, stating that these "have ceased to be of national importance".

- **Section 35**- It states that if the Central Government is of the opinion that any ancient monument or archaeological site and remains have ceased to be of national importance, it may, by notification in the Official Gazette, declare that such a monument or site and remains shall no longer be considered to be of national importance.
- **Delisted monuments**- The precise location of these monuments, or their current physical state, is not known.

- **Untraceable**- It refers to those sites that have been lost due to various factors such as urbanisation, encroachments, construction of dams and reservoirs, or sheer neglect.
- **Lost monuments**- Some lesser-known sites have deteriorated or disappeared, with no public memory remaining to identify their locations.
- **Impact-**Delisting means the ASI will no longer protect these monuments, allowing for regular construction and urbanization activities in the area.
- **Public feedback**- A gazette notification invites public objections or suggestions within 2 months regarding the delisting of these monuments.

Challenges faced by ASI

- **Historical dysfunctionality**- ASI focused more on uncovering new archaeological sites rather than conserving and protecting existing ones.
- **Poor resource allocation**- Post independence, the government's allocation of resources prioritized sectors like health, education, and infrastructure over heritage protection which resulted in limited funding and attention towards preserving historical monuments.
- **Loss of monuments**- The Ministry of Culture's report to a parliamentary committee revealed that 50 out of India's 3,693 centrally protected monuments were missing which underscores the challenges in adequately safeguarding these sites against various threats such as urbanization, encroachment, and neglect.
- **Shortage of security personnel-** Only 6.71% of the protected monuments have security guards, this compromises the ability to monitor and protect these sites effectively, leaving vulnerable to damage and theft.
- **Urban development**- The Parliamentary panel suggested that the Barakhamba Cemetery in Delhi Cemetery in Delhi might have been compromised due to the redevelopment of the New Delhi railway station
- **Remote monuments**- While high-profile monuments may receive more attention, smaller and remote sites are often neglected, increasing the risk of their loss.
- **Failed guardianship**- Supreme Court observed that Archaeological Survey of India (ASI) failed to act as guardian of India's heritage in the context of Taj Mahal as it faces threats from political interference and encroachments.

What lies ahead?

- A comprehensive holistic approach is required to increase funding, improved coordination between government agencies, community engagement, and leveraging technology for better monitoring and conservation efforts.
- The recent delisting of monuments reflects larger effort to rationalize and categorize monuments based on their significance and heritage value.
- However it also underscores the need for better preservation strategies and resources to protect India's rich cultural heritage.

2. A women's urban employment guarantee act

- Reducing gender gaps and increasing women's empowerment are part of the Sustainable Development Goals. Notwithstanding ethical and constitutional imperatives, there is also evidence suggesting that increasing women's employment rates can be an engine for economic growth.

- Despite functioning at a fraction of its intended capacity, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has been pivotal in providing financial autonomy to women in rural areas.
- More than half the MGNREGA workforce are women. However, urban realities are different. Social norms, lack of safety, and hostile transportation options are some of the factors inhibiting urban women to enter the workforce.

What data is explaining?

- The Periodic Labour Force Survey (PLFS) pegs women's employment rate in urban areas at 22.9% in the last quarter of 2023. There are clear signs of high **unmet demand** for employment among urban women.
- First, the unemployment rate in urban areas, which is a measure of how many would like employment (irrespective of whether they are actively seeking it or not), is 9% compared to 4% in rural areas.
- Second, there are two types of unemployment individuals who would like to work and are actively seeking a job versus those who would like to work but may not be actively seeking a job.
- A much larger share of unemployed women in urban areas are seeking employment compared to rural areas. Further, nearly 25% of urban women have completed higher secondary education compared to 5% in rural areas. The low urban employment rates among women also points to wastage of much potential.
- The article presents statistics from the Periodic Labour Force Survey (PLFS) indicating that approximately 10.18 crore women in urban areas aged 15-59

are out of the workforce. When including those who are self-employed or engaged in casual labor, this number rises to around 11.65 crore.

Introducing the Women's Urban Employment Guarantee Act (WUEGA)

The proposal outlines a comprehensive plan to address urban unemployment through the implementation of a Women's Urban Employment Guarantee Act (WUEGA). This act aims to provide employment opportunities specifically targeted towards women in urban areas.

- **Programme Management and Decentralization**: The proposal suggests that women should form at least 50% (ideally 100%) of the programme management staff under WUEGA. This approach not only ensures women's active participation but also strengthens the constitutional mandate of decentralization by involving local communities in decision-making processes.
- **Ensuring Accessibility and Supportive Infrastructure:** The proposal emphasizes the importance of providing essential worksite facilities, including childcare facilities, to enable women's participation in the program. It also advocates for the availability of work within a 5-km radius and proposes free public transportation for women to facilitate their commute to worksites.
- **Diversifying Employment Opportunities**: The proposal highlights the need to diversify urban works to cater to local needs and wider consultation. It mentions existing examples such as plantation and harvesting reeds on floating wetlands and suggests supplementing the list based on local requirements.
- **Incentives and Welfare Measures**: This section discusses the creation of incentives, such as automatic inclusion in welfare boards, to encourage women's participation in the program. It proposes utilizing welfare boards to provide maternity entitlements, pensions, and emergency funds for program participants.
- **Skill Development and Apprenticeships:** The proposal emphasizes the importance of addressing skill gaps among women to facilitate their transition from school to work. It suggests implementing apprenticeship programs for college students from various disciplines, providing them with opportunities to join as program functionaries and improve their job readiness.
- **Information Facilitation Centers and Capacity Building:** Here, the proposal suggests establishing Information Facilitation Centers at each urban local body, run by women who have completed Class 10, to provide computer training facilities and bridge the gap in skills. It also advocates for regular

capacity-building initiatives to empower these centers and enhance women's job readiness.

- **Social Audit and Monitoring Mechanisms:** The proposal recommends the establishment of a social audit unit within WUEGA, comprising at least 50% women staff, for independent monitoring of the program. It suggests that social audits could serve as opportunities for women who have completed Class 12 to join part-time or full-time roles and enhance their job readiness through acquiring various skill sets.

Successful Women-Led Initiatives in Waste Management

- The article highlights successful women-led initiatives, such as the end-to-end waste management program in Karnataka's gram panchayats. It emphasizes that women not only manage waste collection but also drive 'Swacch' vehicles, leading to the acquisition of driving licenses and contributing to the success of the initiative.

Wayforward

- The article discusses the financial implications of the proposed program, estimating that the wage component funded by the Union government would cost around 1.5% of the GDP. When adding material and administrative costs, the total cost is expected to be around 2% of the GDP. It advocates for a phased rollout of the scheme with periodic assessments to smoothen costs.
- Here, the article suggests that the proposed women's employment program could serve as a foundation for a broader urban employment program encompassing both genders. It argues that the benefits of such a program outweigh fiscal concerns and calls for a shift towards ensuring income assurance, especially for women.

3. JORC classification vs. UNFC

In a bid to spur private investment in India's mining sector, representatives of Vedanta Group pushed the Mines Ministry to consider the adoption of Joint Ore Reserve Committee (JORC) classification, as opposed to the currently used United Nations Framework Classification (UNFC).

A Mineral is any substance occurring naturally in or on the Earth, in or under water or in tailings, residue or stock piles, having been formed by or subjected to a geological process and includes sand, stone aggregates, gravel, clay, and soil but excludes, water, oil and gas .

Indian Mineral Industry Code (IMIC)

- The IMIC indicates the required minimum standard for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves.
- **Published by** - National Committee for Reporting Mineral Resources and Reserves in India (NACRI)
- **Published on**- July 05, 2019
- A resource classification code is necessary to assess resources and reserves in a mineral block, to prepare geological reports to facilitate its auction for both exploration and mining, and for a mining company to evaluate its assets.

United Nations Framework Classification for Resources (UNFC)

- **UNFC –** It is a global classification and management system applicable to mineral, petroleum, nuclear fuel, renewable energy and anthropogenic resources, as well as injection projects for geological storage.
- **Criteria -** It is a three digit code based system with 3 axes:
  - o Geological Assessment
  - o Feasibility Assessment
  - o Economic viability
- **Features**- Under UNFC, all resources including mineral occurrences and mineral zones that have very low level of confidence in terms of estimation of quantity and quality are also reported.
- The highest category of resources under UNFC system will have the code (111) and lowest category the code (334).
- India's current resource classification rules is based on the UNFC.
- **Issues** - It fails to provide any degree of economic certainty, which in turn has hindered the flow of private investment in the sector.

JORC classification

- The JORC Code is produced by the **Australasian** Joint Ore Reserves Committee (Committee).
- It sets minimum standards for Public Reporting of minerals Exploration Results, Mineral Resources and Ore Reserves.
- The JORC Committee is a member of **CRIRSCO**, the Committee for Mineral Reserves International Reporting Standards to ensure international consistency in the development of reporting standards.
- The JORC classification require the reporting of reserves, which are economically viable deposits with high geological confidence confirmed through studies at least to a pre-feasibility level.

- Scientists in Portugal have uncovered a concerning revelation about the fate of the Atlantic Ocean, highlighting **a potential 'Ring of Fire' (a Subduction Zone).**
- Researchers caution that the Atlantic may be on the brink of closure due to subduction activity.

Subduction Zones

- Subduction zones occur at **convergent plate boundaries**, where two tectonic plates move toward each other.
- This convergence is often between an **oceanic plate and a continental plate** or between **two oceanic plates**.
- Subduction Process:

1. **Collision of Tectonic Plates:** When two tectonic plates collide, the denser oceanic plate is forced beneath the less dense continental plate or another oceanic plate.
2. **Partial Melting:** As the oceanic plate descends into the mantle, it generates intense heat and pressure, causing partial melting of the mantle material.
3. **Volcanic Activity:** The molten material formed by the subduction process rises through the Earth's crust, leading to volcanic eruptions at the surface.
4. **Formation of Volcanic Arcs:** These eruptions often occur in chains known as volcanic arcs, which parallel the subduction zone. Ex. Andes in S. America; Cascade Range in North America.

Implications of this Activity

- **Earthquakes:** Subduction zone earthquakes can be particularly destructive and may trigger tsunamis due to the displacement of large volumes of water.
- **Trench Formation:** The surface expression of a subduction zone is often a deep oceanic trench, where the descending plate bends and plunges into the mantle.
- **Mountain Building:** Over time, the continuous subduction of oceanic crust can lead to the uplift and deformation of the overriding plate, resulting in the formation of mountain ranges adjacent to the subduction zone. These mountains may exhibit complex geological structures, including folds and faults.
- **Recycling of Oceanic Crust:** As oceanic plates are subducted, they are gradually consumed by the mantle, releasing minerals and elements that are eventually returned to the surface through volcanic activity.

5. Hate Speech: Interpreting Section 153A IPC

- The Supreme Court reiterated that to constitute an offence under Section 153A of the Indian Penal Code (IPC), the essential ingredient is to create a sense of enmity and disharmony amongst two or more groups or communities.
- Quite often, politicians are arrested under section 153 A of IPC for alleged hate speech.

Section 153A of the Indian Penal Code (IPC)

- Section 153A of the IPC deals with the offence of promoting enmity between different groups on grounds of **religion, race, place of birth, residence, language**, etc.
- The primary is to prevent the promotion of disharmony or feelings of enmity, hatred, or ill-will between different groups in society.
- It was **enacted in 1898** and was **not in the original** penal code.

Prohibited Acts:

The section prohibits several acts:

1. Engaging in activities that promote or attempt **to promote feelings of enmity or hatred** between different religious, racial, linguistic, or regional groups.
2. Committing **acts prejudicial to the maintenance of harmony** between different groups or communities.
3. Doing anything that disturbs or disrupts **public tranquillity** or creates **unrest among various groups**.

Essential Elements:

To constitute an offence under Section 153A, the following essential elements must be established:

1. Promotion of enmity or hatred between different groups.
2. Such promotion must be based on religion, race, place of birth, residence, language, etc.
3. The intention behind the act must be to disrupt public tranquillity or to create disharmony among groups.

Punishment:

- **Jail Term:** Any individual found guilty of committing an offence under Section 153A may be punished with imprisonment for a term which may extend to 3 years, or with a fine, or with both.
- **Cognizable and Non-Bailable:** The offence is a cognizable offence and the punishment for the same may extend to three years, or with fine, or with both. Further, the offence is non-bailable in nature, wherein the accused is tried by the magistrate of the first class.
- **Burden of Proof:** It lies with the prosecution to demonstrate that the accused's words, actions, or conduct were aimed at promoting enmity or hatred between different groups based on the specified grounds.

GS 2 : Polity, Governance, International Relations

1. UNDP's Human Development Report 2023/2024

The United Nations Development Programme (**UNDP**) recently released its **Human Development Report 2023/2024** "Breaking the gridlock Reimagining cooperation in a polarized world".

Key Highlights of the report:

HDI Advancements:

- India's **HDI** (**Human Development Index**) value increased from **0.633** to **0.644** in **2022**, placing it in the **medium human development** category.
- The rise in **HDI** is attributed to improvements in **life expectancy**, **education**, and **Gross National Income (GNI) per capita**.
- **Life expectancy** rose to **67.7** years, **expected years of schooling** reached **12.6**, **mean years of schooling** increased to **6.57**, and **GNI per capita** saw an increase from **$6,542** to **$6,951**.

Global Ranking:

- India secured the **134th** position out of **193 countries** in the **HDI ranking**, reflecting progress compared to previous years.
- Despite advancements, India lags behind some South Asian neighbors such as **Bangladesh**, **Bhutan**, **Sri Lanka**, and **China**.

Gender Inequality Reduction:

- India demonstrated progress in reducing **gender inequality**, with a value of **0.437**, surpassing global and South Asian averages.

- However, challenges persist, notably in the significant **gender gap** in the **labor force participation rate**.

Global Context:

- The UN report highlights a global trend of rising **inequality**, posing challenges to inclusive development.
- Despite overall progress, the world remains divided and faces challenges exacerbated by **political polarization** and **conflict**.

Future Prospects:

- There is a call for collective action to address **inequality** and ensure equitable development globally.
- India's progress in human development underscores the importance of investing in **social infrastructure** beyond **GDP growth**.

Other key facts:

- The concept of **human development**, pioneered by economists like **Mahbub al Haq** and **Amartya Sen**, emphasizes the importance of enhancing people's choices and well-being beyond economic indicators.
- **UNDP** is an organ of the **UN**, that was established in **1965**, to eradicate poverty, reduce inequalities, and foster inclusive growth.

2. Rajya Sabha Elections

The recent Rajya Sabha election in several States raised concerns about the sanctity of election process as it witnessed cross-voting by MLAs.

How are Rajya Sabha elections held?

- **Indirect election-** As per Article 80, the members of Rajya Sabha elected indirectly by the elected members of the Legislative Assembly of each State and the respective Union Territories.
- **Proportional Representation System-** Each MLA's vote is counted only once (Single Transferable Vote) with members casting their votes in order of preference.
- **Preference Voting-** MLAs submit a list of candidates based on their preferences. The first preference carries the most weight.

- **Quota requirement**- A candidate must secure a certain number of votes (the "quota") to be elected.
- **Elimination process**- If no candidate reaches the quota, the candidate with the fewest votes is eliminated. Their votes are redistributed based on subsequent preferences.
- **By-elections**- In case of a member's death, disqualification, or resignation, by-elections are held to fill the vacant seat.

What are the issues with the Rajya Sabha elections?

- **Cross voting**- It occurs when members vote for a candidate from a party different from the one to which they belong which questions the integrity of election process.
- **Open ballot system**- To prevent cross-voting, an amendment to the Representation of the People Act, 1951 in 2003 introduced an open ballot system for Rajya Sabha elections.
- Members are required to show their ballot paper to the authorized agent of their party. Failure to do so may result in disqualification of the vote.

Independent MLAs are barred from showing their ballots to anyone.

- **Outside the purview of anti-defection law**- The Tenth Schedule of the Constitution, introduced in 1985, contains the anti-defection law, but this law is not applicable to Rajya Sabha elections.
- **Election Commission's stand**- It drew reference to Supreme Court judgments and specified that the provisions of the Tenth Schedule, with respect to voting against the instruction of the party, will not be applicable for a Rajya Sabha election.
- It also specified that the political parties cannot issue any 'whip' to its members for such elections.

What lies ahead?

- There is a need to being in amendments and strengthen the Constitution against such voting practices since ruling parties benefit from cross voting.
- The Supreme Court can take proactive measure by initiating a suo motto Public Interest Litigation (PIL) in response to the threat posed by cross voting.

3. Understanding the world of the informal waste picker

- On March 1, International Waste Pickers Day, waste pickers across the world will pay homage to fellow pickers who were murdered in Colombia in 1992.

Who are informal waste pickers?

- The International Labour Organization defines the informal sector in waste management as 'individuals or small and micro-enterprises that intervene in waste management without being registered and without being formally charged with providing waste management services'

- Informal waste pickers, often overlooked and marginalized, play a crucial but unseen role in India's waste management systems. They are vital yet often forgotten members of the waste value chain ecosystem, deserving recognition and understanding.
- These workers are the primary collectors of recyclable waste, playing a critical role in waste management and resource efficiency by **collecting, sorting, trading** and sometimes even reinserting discarded waste back into the economy.
- Yet, they face systemic marginalisation due to non-recognition, non-representation, and exclusion from social security schemes and legal protection frameworks.

What data shows?

- While reliable estimates of informal waste pickers are difficult to come by, the Centre for Science and Environment reported that the informal waste economy employs about **5%–2%** of the urban population globally.
- Many are women, children and the elderly, who are often disabled, are the poorest of the urban poor, and face violence and sexual harassment often. The Periodic Labour Force Survey 2017-18 indicates that there are nearly 1.5 million waste pickers within India's urban workforce, with half a million being women.

Challenges Faced by Waste Pickers

- **Work Conditions**: Waste pickers labor for 8 to 10 hours daily, collecting 60 kg to 90 kg of waste, often without safety equipment, exposing themselves to hazards.
- **Health Issues:** They suffer from dermatological and respiratory problems, alongside regular injuries, due to their hazardous work conditions.

- **Socioeconomic Factors**: Low income, irregular work, and harassment exacerbate their precarious livelihoods, compounded by their subordinate position in the caste hierarchy.

Impact of Private Sector Participation in waste collection

- **Exclusion:** Private sector involvement in waste management alienates waste pickers, depriving them of their rights and exacerbating their vulnerability.
- **Marginalization:** As noted by the Alliance of Indian Waste Pickers (AIW) 2023 report, Private actors employ expensive machinery, marginalizing informal waste pickers by offering competitive rates to waste generators, forcing them into hazardous scavenging activities.
- **Loss of Rights:** Private players and municipal authorities often cordon off dump sites, further limiting waste pickers' access and exacerbating their vulnerability.

Importance of Waste Pickers in Plastic Management

- **Global Contribution:** Waste pickers globally collect and recover up to 60% of all plastic waste, contributing significantly to its recycling efforts, as highlighted in the 2022 World Economic Forum report.
- **Underappreciated Role:** Despite their crucial contribution to sustainable recycling, waste pickers' work is undervalued, and they struggle to earn a decent livelihood.
- **Quantitative Impact:** Reports by the United Nations Development Programme (UNDP) and Pew state that informal waste pickers collected 27 million metric tonnes of plastic waste in 2016 alone, representing 59% of all plastic material collected for recycling, thereby preventing it from ending up in landfills or oceans.
- **Relevance in India's Context:** In India, where per capita plastic waste generation is rising, waste pickers' role becomes even more critical, especially considering that the country is among the top 12 responsible for 52% of the world's mismanaged waste, as per a recent CPCB report.
- **Harnessing Traditional Knowledge:** Waste pickers possess traditional knowledge about waste handling, which could significantly enhance the effectiveness of the EPR system if integrated properly.
- **Rethinking EPR Norms:** In light of this, there is a need to reconsider the formulation of EPR norms to ensure the inclusion and empowerment of millions of informal waste pickers within the new legal framework.

Understanding Extended Producer Responsibility (EPR)

- **Objective:** EPR aims to enhance plastic waste management by transferring the responsibility of waste management from municipal authorities to commercial waste producers.
- **Promises of EPR:** EPR holds the potential for social inclusion for waste pickers and other informal grassroots actors by promoting accountability among commercial waste producers.

Analysis of Extended Producer Responsibility (EPR) Guidelines

- **Stakeholder Identification**: The EPR guidelines in India recognize various stakeholders, including the Central Pollution Control Board (CPCB), producers, brand owners, industry, industry associations, civil society organizations, and citizens.
- **Uncertainty Regarding Inclusion**: It remains unclear whether these stakeholders include informal waste pickers or their representing organizations, raising questions about the extent of their involvement in the EPR framework.
- **Discrepancies with Solid Waste Management Rules 2016**: While the Solid Waste Management Rules 2016 mandate the inclusion of waste pickers in municipal solid waste management systems, informal waste pickers are evidently missing in the prioritization within the EPR guidelines.
- **Omission in EPR Guidelines 2022:** The EPR Guidelines 2022, published by the Ministry of Environment, Forest, and Climate Change, have blatantly ignored the role of informal waste pickers in waste management and recycling, further exacerbating their exclusion from the formal waste management framework.

Challenges in Implementation

- **Redirection of Waste**: Despite its promises, EPR often redirects waste away from the informal sector, posing a threat of large-scale displacement for informal waste pickers.
- **Concerns Raised by WIEGO:** Women in Informal Employment: Globalizing and Organizing (WIEGO) have noted the potential negative impacts of EPR on informal waste pickers, highlighting the need for careful consideration and mitigation of such effects.

In conclusion, acknowledging waste pickers' crucial role in plastic recycling is imperative for sustainable waste management. Efforts should focus on integrating them into formal systems like the Extended Producer Responsibility mechanism while addressing their socio-economic vulnerabilities for a more equitable and environmentally sound future.

4. SC's Stand on Stay Order

The Supreme Court has recently issued guidelines concerning interim orders of stay in High Court.

Interim order

- **Temporary relief**- Interim orders are temporary in nature and only provide immediate relief.
- **Benefits-**It is intended to address immediate concerns, maintain the status quo, or prevent irreparable harm until a final judgment can be rendered.

- These reliefs are designed to address urgent situations and ensure that justice is done while the case is ongoing.
- **Delays trail procedure-** If a High Court in a case had to consider the challenge against an order framing charges by the trial court, it would first grant a stay of trial and then grant a date for hearing arguments on framing charges.

What are the guidelines issued by Supreme Court for interim relief?

- **Limited duration-** Ex-parte ad-interim relief should be granted for a specific period.

Ex-parte ad-interim relief is granting interim order without hearing the affected parties

- **Hear both sides**-High courts should hear both parties before granting or vacating interim relief.
- **Vacation of interim orders**-Even if interim relief is granted after hearing both sides, the aggrieved party is not prevented from applying for vacating the same on available grounds.
- **Priority for vacating orders**-Applications for vacating stay orders should be given priority.
- **Ensure transparency-** If a party applies for vacating an interim order due to suppression of facts, it should be taken up promptly to prevent the misuse of interim relief.
- **Reversal of Asian resurfacing case, 2018-** The 2018 ruling mandated that interim orders automatically expire after 6 months unless extended by the high courts.
- The direction for the automatic expiration of interim orders cannot be issued under Article 142 of the Constitution.

Article 142 empowers the Supreme Court of India with a discretionary power to pass any such order that it deems as 'necessary for complete justice', in any matter pending before it.

Why Supreme Court reversed 2018 judgement?

- **Need of the 2018 ruling**- The intention was to address the problem of undue delays in trials caused by stays.
- **Not achieve its goal**- The 2018 judgment did not achieve its goal of reducing case pendency in ensuring speedy disposal of matters.
- **Discretion for lower courts-** The Supreme Court should refrain from laying down precise timelines for deciding cases, as lower courts are more aware of grass root issue it must be given discretion in handling cases.
- **Caseload dynamics**-The Court acknowledged that different courts have varying patterns when it comes to their pending caseload, hence the concerned court is best positioned to determine which cases require immediate attention.
- **Prevent injustice**-It recognizes the need for flexibility and acknowledges that imposing precise timelines for deciding cases can sometimes lead to injustice.
- **Against separation of powers**- The power of deciding timelines for judicial proceedings is a decision for Parliament, the intervention of judiciary would amount to court created legislation.

What lies ahead?

- The Supreme Court through the guidelines for interim relief aims to strike a balance between granting interim relief and ensuring fair and just legal process.
- The recent guidelines underscores the importance of allowing lower courts flexibility in managing cases, recognizing their awareness of local issues.

5. Defamation in the Digital Age

- In a recent legal development, the Supreme Court of India intervened in a defamation case involving Delhi Chief Minister Arvind Kejriwal.
- This case highlights the intricate intersection of online communication, legal frameworks, and freedom of expression in the digital era.

Right to Free Speech

- **Freedom:** Article 19(1) (a) guarantees the freedom of speech and expression to all citizens. It is the first condition of liberty and plays an important role in forming public opinion.

- **Restrictions:** As per Article 19(2), restrictions can be imposed upon the freedom of speech and expression in the interests of:

1. Sovereignty and integrity of India,
2. Security of the state,
3. Friendly relations with foreign states,
4. Public order, decency or morality, or
5. In relation to contempt of court,
6. Defamation, or
7. Incitement to an offense

- **Online Discourse**: The proliferation of social media platforms necessitates a nuanced understanding of free speech rights in the digital realm, balancing individual liberties with societal interests.
- **Immunity for Politicians:** For politicians, while they enjoy the right to free speech, they are also subject to certain limitations. Criticism of the government or its policies is generally allowed as long as it does not incite violence or hatred.

Legal Conundrum over Digital Defamation

- **Background**: Kejriwal faced defamation charges for retweeting a video by a YouTuber Dhruv Rathee, alleging defamatory statements against the BJP's IT cell.
- **Legal Proceedings**: The Delhi High Court upheld the summons issued to Kejriwal, citing the widespread impact of retweets by public figures.
- **Constitutional Considerations**: The right to free speech, protected under Article 19(1)(a) of the Indian Constitution, is subject to reasonable restrictions, including defamation laws under Article 19(2).
- **Retweeting vs. Endorsement**: The court's intervention underscores the distinction between retweeting and endorsing content. While retweeting may not always signify endorsement, public figures are held to a higher standard of responsibility for their online actions.
- **Defamation Laws**: Indian law, as delineated in Section 499 of the Indian Penal Code, criminalizes statements intended to harm an individual's reputation. However, applying these laws to online communication poses unique challenges.

Legal Precedents and Interpretations

- **Shreya Singhal vs. Union of India (2015):** Section 66A of The IT Act, 2000, had criminalised sending "offensive messages" utilizing "a computer

resource or a communication device". This provision was quashed by the SC given the ambiguity in the definition of the term "offensive".

- **Subramanian Swamy vs. Union of India (2016)**: The Supreme Court affirmed the constitutionality of criminal defamation laws, balancing the right to reputation with freedom of expression.
- **Kaushal Kishore vs. Union of India (2017)**: The Court clarified that additional restrictions on free speech must align with Article 19(2) and cannot be arbitrarily imposed.

Implications for Online Discourse

- **Scope of Defamation**: Online retweets amplify the dissemination of allegedly defamatory content, raising questions about liability and accountability.
- **Responsibility of Public Figures**: Public figures like Kejriwal face heightened scrutiny for their online activities, given their influence and reach on social media platforms.

Conclusion

- This defamation case underscores the evolving dynamics of communication in the digital age.
- As online discourse continues to shape public opinion, striking a balance between freedom of expression and legal safeguards against defamation remains a pressing challenge.
- The Supreme Court's intervention provides an opportunity to reassess existing laws and norms governing online speech, ensuring that rights and responsibilities are harmonized in the digital realm.

6. White Revolution 2.0

Recent Household Consumption Expenditure Survey (HCES) 2022-23 highlights the growing importance of White Revolution 2.0 as the top food item both in urban and rural areas is milk.

Why there is a need of white revolution 2.0?

- **Inflation**- The all-India modal price of milk has risen significantly, from Rs 42 to Rs 60 per litre over the last five years.
- **Reduction in demand**- Higher prices may result in consumers cutting back on their milk consumption, impacting the overall demand for dairy products.

- **Increased production cost**- The costs associated with fodder, feed, and raw materials have seen a significant increase, prompting dairies to raise procurement prices paid to farmers.
- **Impact on consumers**- Inflation and increased production cost falls on consumers, as there is a limit on how much more consumers can pay for milk before it causes demand destruction.

How India can implement white revolution 2.0?

- **New breeding technologies**- The genetic improvements like sex sorted semen, embryo transfer and in vitro fertilisation can produce more female calves and high yielding cows from existing genetic resources.
- **Sex sorted semen**- There is a 90%-plus probability of only female calves being born, as against 50:50 with conventional semen.
- **Adoption of embryo transfer (ET) technology**- It exploits the high genetic merit (HGM) of existing cows, resulting in multiple calves from a single HGM cow.
- **In vitro fertilization (IVF) -** It is the method of mature ova outside the cow's body, leading to higher embryo production and more calves.
- **Bovine breeding centres**- This would breed a nucleus herd of high-genetic-merit bulls and cows through production of superior semen and in vitro-fertilized embryos for artificial insemination (AI) or transferring to farmers' animals.
- **Animal Nutrition-** There is a need to encourage farmers to cultivate high-yielding protein-rich green fodder grasses.
- **Lower feed cost**- This can be done by reducing the reliance on expensive compound like cattle feed and oil-meal concentrates.
- **Balanced diet**- Farmers are encouraged to implement Total Mixed Ration (TMR) plants to provide a balanced diet in a ready to eat farm, saving farmers the cost of purchasing and storing fodder separately.
- **Lower overall cost-** The government should emphasis on lowering the overall costs of producing milk at the farm-gate, rather than solely relying on increasing procurement prices.

7. Legislators Immunity against Criminal Prosecution

- The Supreme Court is set to decide if legislators (MPs and MLAs) enjoy immunity from bribery charges in connection with votes made in Parliament and Legislative Assemblies.

Legislators Immunity: Background and Context

- **Constitutional Provisions**: Articles 194(2) (for MLAs) and 105(2) (MPs) of the Constitution grant legislators immunity from legal proceedings concerning their speeches and votes in Parliament and Legislative Assemblies.
- **P.V. Narasimha Case**: In 1998, the Supreme Court upheld this immunity in the case of P.V. Narasimha Rao v State (CBI/SPE), ruling that legislators are shielded from criminal prosecution for bribery linked to their parliamentary actions.

Reasons for Reconsideration

- **Sita Soren's Case**: The appeal by JMM MLA Sita Soren, accused of accepting bribes during Rajya Sabha elections, prompted a reevaluation of the Narasimha verdict.
- **Interpretation Issues**: Concerns were raised about the broad interpretation of immunity and its implications for combating bribery in legislative bodies.

Arguments Supporting Immunity

- **Absolute Protection**: Advocates contend that legislators enjoy complete immunity from legal action under constitutional provisions. They argue that the Speaker holds authority to address moral infractions through expulsion.

- **Interpretation of Articles**: The dissenting opinion in Narasimha sought to narrow the scope of immunity, but proponents stress adherence to the literal interpretation of constitutional language.

Arguments against

- **Completion of Offence**: Critics argue that the offence of bribery is consummated upon acceptance of the bribe, irrespective of subsequent actions. They advocate holding legislators accountable from the moment the bribe is accepted.

Legitimate Legislative Actions: Distinguishing between legitimate and illegitimate actions, advocates assert that actions stemming from criminal conduct, such as vote-buying, should not be shielded by immunity.

Legal Interpretation and Statutory Compliance

- **Prevention of Corruption Act, 1988**: Critics highlight inconsistencies between the Narasimha ruling and the provisions of the PCA, emphasizing the need for alignment with anti-corruption legislation.

Intent and Performance: Solicitor General Mehta underscored the disconnect between the Narasimha verdict and the intent of the Prevention of Corruption Act, particularly regarding the timing of criminal liability.

Way Forward

- **Balancing Integrity and Immunity:** The court's ruling will determine the delicate balance between upholding legislative immunity and ensuring accountability for criminal acts.
- **Interpretative Scrutiny:** A nuanced interpretation of constitutional provisions is essential to address the evolving complexities of legislative conduct and accountability.

Conclusion

- The Supreme Court's forthcoming decision on legislators' immunity from bribery charges holds significant ramifications for India's legal landscape.
- Balancing constitutional provisions, legislative intent, and anti-corruption imperatives, the court's ruling will shape the accountability framework for lawmakers and the integrity of the legislative process.

8. SC's stand on Parliamentary Privileges

Recently the Supreme Court ruled that legislators cannot claim immunity from criminal prosecution for bribery related to their speech and votes in the House.

What are the provisions that grant legislators immunity from prosecution?

- **Article 105 –**It deals with the powers, privileges, etc. of the Houses of Parliament and of the members and committees thereof.
- **Article 105(2)-** No MP shall be liable to any proceedings in any court in respect of anything said or vote given by him in Parliament and no person shall be liable in respect of the publication by or under the authority of either House of Parliament of any report, paper, votes or proceedings.
- This provision exempts MPs from any legal action for any statement made or act done in the course of their duties.
- **Article 194(2)-** A corresponding provision giving immunity to members of state legislatures is contained under Article 194(2).
- **Defamation –** The defamation suit cannot be filed for a statement made in the House
- **Immunity to non-members-** Attorney General of India or a Minister who may not be a member but speaks in the House.

- **Role of Speaker-** In cases where a member oversteps or exceeds the contours of admissible free speech, the Speaker of the House will deal with it, as opposed to the court.

What is the current issue?

- **Sita Soren case-** Sita Soren, a member of the Jharkhand Mukti Morcha (JMM), revolves around bribery allegations related to the 2012 Rajya Sabha elections.
- The Central Bureau of Investigation (CBI) filed a chargesheet against Sita Soren in response to the bribery accusation.
- In 2014, Sita Soren filed a plea in the Jharkhand High Court seeking the quashing of criminal proceedings against her, it was dismissed by the Court leading her to appeal the case in the Supreme Court.
- The three judge bench noted that P.V.Narashimo Rao case is directly related to this case, due to narrow margin in the decision the case was referred to a larger bench underscoring that the issue was "substantial and of general public importance".
- Recently Supreme Court ruled that parliamentary privileges do not grant legislators higher immunity from general criminal law.

What are the key highlights of the verdict?

- **No violation of the doctrine of stare decisis-** The petitioners argued that overturning the established law in the P.V. Narasimha Rao case would violate this doctrine.

Doctrine of stare decisis is a legal principle that obligates judges to adhere to prior verdicts while ruling on a similar case.

- **Flexibility of doctrine-** The doctrine is not an "inflexible rule of law" and that a larger bench is well within its limits to reconsider a prior decision in appropriate cases.
- **Statutory origin-** Unlike the United Kingdom's House of Commons, India's parliamentary privileges do not stem from "ancient and undoubted" rights established through historical struggles between Parliament and the monarchy.
- **Legislative privileges have to conform to Constitution-** The Court emphasizes that claims to privilege must be subject to judicial review to ensure they align with constitutional norms.
- **Fails two fold test-** The Court held that the constitutional immunity from prosecution for bribery related to voting o speech fails to fulfil two fold test.

- o **Collective functioning**- The privilege claimed must be linked to the overall functioning of the House.
- o **Essential duties**- The necessity for the privilege should relate to the legislator's essential duties.

- **Influence legislators**- Articles 105 and 194 grant privileges to lawmakers to facilitate debate and deliberation within the legislature but, this purpose is undermined when bribery influences a member's voting or speech.
- **Bribery is not immune-** It is not immune because it is not essential to the casting of the vote or decision-making, the same principle applies to bribery related to speeches in the House or committees.
- **Completion of bribery offence**-The offense of bribery is considered complete when a legislator accepts an illegal gratification, regardless of whether it is followed by voting or making a speech as desired by the bribe giver.
- **Over turned P.V.Narasimha case**- The recent ruling ensures that legislators cannot escape accountability for bribery, regardless of their subsequent actions.

Previously the legislators were immune when accepting a bribe and voting as agreed. However, if they accepted a bribe but voted independently, they could be prosecuted.

- **Parallel jurisdiction of Courts and Houses**- The court's jurisdiction to prosecute criminal offenses and the House's authority to address breaches of discipline operate independently.
- **Accountability-**Bribery charges can be treated by the House as contempt or a breach of privilege, but this does not exclude judicial proceedings. Hence the legislator can be held accountable through both House proceedings and judicial processes.
- **Corruption erodes democracy-**Corruption and bribery by members of the legislature erode the very foundation of Indian parliamentary democracy.
- **Disrupt moral principles**-When a legislator is influenced to vote not based on their genuine beliefs or stance on an issue, but due to monetary inducements, it undermines probity in public life.
- **Verdict applies to Rajya Sabha elections-** The recent verdict confirms that voting in Rajya Sabha elections falls within the ambit of Article 194(2) as the parliamentary privileges extends beyond law making on the floor of the House, it encompasses other powers and responsibilities of elected members, even when the House is not in session.

Kuldip Nayar case (2006) held that elections to the Rajya Sabha are not proceedings of the legislature but a mere exercise of franchise and therefore fall outside the ambit of parliamentary privileges under Article 194.

What lies ahead?

- The ruling underscores the importance of constitutional scrutiny in determining the boundaries of legislative privileges.
- Supreme Court with its recent verdict made clear that Parliament is not the sole judge of its privileges, allowing for judicial review of the House and its members' actions
- Sita Soren vs Union of India is a significant step towards strengthening legislative accountability and upholding the rule of law.
- By outlining a clear stance in relation to parliamentary privilege concerning bribery cases the court reaffirms principles of moral uprightness and openness within public life.

9. Association for Democratic Reforms' (ADR) analysis on Criminalization of Politics

The **Association for Democratic Reforms (ADR)** and the **National Election Watch**, both NGOs, have recently analysed the affidavits of **Rajya Sabha candidates**.

Key highlights of the research:

- **36%** have declared criminal cases against themselves, while their average assets were **₹127.81 crore**.
- Most candidates possess at least a **graduate degree** and are aged between **51-70**, but only **19%** are women.

Criminalization of Politics (CoP):

- The **Criminalization of Politics (CoP)** means the entry of criminals and corrupt individuals into politics, exploiting their power to advance personal interests to the detriment of the nation and its citizens.

Judgments against CoP include:

- **Public Interest Foundation v. Union of India (2019)**, where the **Supreme Court (SC)** mandated political parties to disclose **candidates'** criminal records on various platforms and instructed the **Election Commission of India (ECI)** to ensure effective **dissemination** of this information.
- **Lily Thomas v. Union of India (2013)**: SC declared that MPs or MLAs convicted of a crime leading to a prison term of **2 years** or **more** would be

disqualified from office, barring them from elections or holding office during an appeal.

- **Association for Democratic Reforms v. Union of India (2002)** led to SC directives for the ECI to prevent candidates with criminal backgrounds from receiving **party tickets** and to mandate the **disclosure** of **criminal records** in **nomination papers**.
- In **State of Uttar Pradesh v. Raj Narain (1975),** SC had affirmed the **fundamental right** of citizens to know their representatives' antecedents, requiring election affidavits to detail candidates' assets, liabilities, educational qualifications, and criminal records.

10. Holistic Progress Card (HPC): Revolutionizing Student Assessment

- The traditional report cards of students are undergoing a transformation with the introduction of the Holistic Progress Card (HPC) by the National Council for Educational and Research Training (NCERT).
- This innovative approach aims to evaluate not just academic performance but also various aspects of a child's holistic development.

Holistic Progress Card (HPC)

- **360-Degree Evaluation**: Departing from the conventional marks or grades-based assessment, the HPC adopts a comprehensive evaluation approach.
- **Student-Centric Assessment**: Students are actively engaged in the assessment process through class activities, allowing them to demonstrate diverse skills and competencies.
- **Peer and Self-Assessment**: Students participate in evaluating their own and their classmates' performance, fostering self-awareness and peer collaboration.

Key Features of the HPC

- **Classes Involved**: The HPC was created for the foundational stage (Classes 1 and 2), preparatory stage (Classes 3 to 5), and middle stage (Classes 6 to 8). Efforts are currently underway to develop a similar framework for the secondary stage.
- **Parameters of Evaluation**: Besides academics, students are evaluated on self-awareness, relationships, problem-solving, emotional intelligence, and creativity. Students reflect on their progress after each activity by circling statements like "I learned something new," "I expressed creativity," or "I helped others."
- **Method of Evaluation**:

1. **Self-Assessment**: Included in the HPC for all students from Class 1 to Class 8. In middle school (Classes 6 to 8), students set academic and personal goals with specific timelines at the start of the year. The middle stage HPC also involves an "**ambition card**" where students list their goals for the year and areas for improvement, along with the skills and habits needed to achieve them.
2. **Parental Involvement**: Parents provide feedback on homework completion, classroom engagement, and the child's ability to balance screen time with extracurricular activities at home, thus connecting home and school.
3. **Peer Evaluation**: Students evaluate their **classmates' participation** in learning and engagement after each classroom activity.

Implementation and Adoption

- **Rollout across States**: The HPC has been sent to all states and Union Territories, with several already adopting it for Classes 1 to 8.
- **Regional Customization**: States have the flexibility to modify the HPC to suit their regional requirements while adhering to the overarching principles.

Rationale behind the Change

- **Focus on Higher-Order Skills**: The shift from rote memorization to higher-order skills evaluation aligns with the objectives of NEP 2020 and NCF SE.
- **Promotion of Holistic Development**: The HPC aims to communicate students' strengths and areas of improvement, fostering self-esteem and self-awareness.

Benefits and Implications

- **Comprehensive Evaluation**: The HPC promotes a holistic assessment approach, encompassing academic achievements and critical skill development.
- **Shift to Formative Assessment**: By emphasizing formative assessment, the HPC encourages competency-based evaluation and continuous improvement.
- **Insights for Teachers and Parents**: Teachers and parents gain valuable insights into each student's learning journey, enabling personalized support and guidance.

Conclusion

- The introduction of the Holistic Progress Card marks a significant step towards redefining student assessment in India.

- By prioritizing holistic development and competency-based evaluation, the HPC aims to nurture well-rounded individuals capable of thriving in a rapidly evolving world.

11. Election Commission partners with banks, post offices for voter awareness

The **Election Commission of India (ECI)** has recently partnered with the **Indian Banks' Association (IBA)** and the **Department of Posts (DoP)** through an MoU to boost voter awareness for the upcoming **Lok Sabha elections**.

About the MoU:

- This MoU aims to leverage the extensive networks of these organizations to promote **voter education** and conduct training on **SVEEP (Systematic Voters' Education and Electoral Participation)**, ECI's flagship programme since **2009**.
- **SVEEP** is a **flagship programme** of ECI, launched in 2009, that focuses on enhancing voter awareness, education, and participation.
- Moreover, **NCERT** has incorporated chapters on electoral literacy in school textbooks.

Voter education:

- The Voter education is crucial for **enabling voters** to make informed choices, providing information on the **voting process**, the **government**, key **national issues,** the value of **democracy**, and **gender equality.**
- The need for voter education in India is highlighted by the low voter turnout in the **2019 General Election**, where **30 crore** of **91 crore** electors did **not vote**, a lack of **awareness** among the masses, and the importance of **informed voting** for a **democratic election process**.

12. Expert committee on Arbitration reforms

An **expert committee** on reforms in the **Arbitration and Conciliation Act, 1996**, recently submitted its final report to the government.

Committee on Arbitration Reforms:

- The committee led by former law secretary **Dr T.K. Viswanathan** was constituted in 2023 by the **Ministry of Law and Justice.**
- This was to examine the **working of the arbitration law** and to recommend reforms to it.
- It was asked to suggest **changes to enhance the arbitration process** through by reduction in court intervention, cost-effectiveness, and ensure **timely resolution.**

- o **Arbitration** is a process under which the parties concerned, instead of approaching the courts, opt for private **dispute resolution** through arbitrators.
- o The **Arbitration and Conciliation Act, 1996** was enacted to consolidate domestic arbitration, international commercial arbitration, and enforcement of foreign arbitral awards.
- It **included** Additional Solicitor General, members from Department of Economic Affairs, Niti Aayog, public industries, and legal counsels.
- A **consultation paper** sought recommendations on a framework of an **efficient, effective, and economical model** arbitration system based on the requirements of users.

Key Recommendations of the Report:

Separate Division:

- Resolution of corporate disputes can be **fast-tracked** by creating a separate **Arbitration Division in every High Court** with regular proceedings and decisions taken expeditiously.

Model Procedure:

- The committee recommended a **model procedure** based on prevalent best practices, which can be used by the arbitral tribunals as a guide.
- A separate Model law for domestic disputes, based on **UNCITRAL (United Nations Commission on International Trade Law)** can be referred.
- The enforcing Court should **dispose of the petition in nine months** and adjournments in proceedings must be granted only for exceptional reasons or in case of stay on enforcement.
- While courts oversee the **legitimacy and integrity of the arbitral process**, its role must be **limited to overall supervision**, and reviewed in the post-award stage.

Cost and fee structure:

- It also proposed a framework for the **cost of arbitration and the fees charged** by arbitrators.
- The arbitrators' fees were fixed under the **Fourth Schedule in 2015** but should be revised.
- The Committee suggested the government provide **different fee structures** for **small and medium-value claims** and revise the rates periodically without amendments.
- The committee proposed the **deletion of the Fourth schedule** dealing with fee schedule.

Process of appointing arbitrators:

- **No upper age limit** had been prescribed for accepting an appointment as arbitrator.
- There is an urgent need to institutionalize the process of appointment of arbitrators and **minimize court intervention** at the first stage.
- Any decision to challenge an **arbitral award** must be based on an honest assessment of the prospects of success, as weighed against the **estimated cost of litigation.**
- A **bona-fide administrative suggestion** shall not challenge an arbitral award and must be given finality.
- The **legal personnel** involved in the arbitral process must identify the **grounds of challenge**, and assess the **prospect of success** under the supervision of **a senior law officer.**

Methods for Review:

- **Periodic reviews** must be conducted on the outcome of **challenges to arbitral awards.**
- A **standing committee of officers** may be appointed to immediately examine an award after it is delivered, to decide on acceptance, settlement, or against challenging it.
- **Fortnightly reviews** of all arbitral awards must be undertaken to ensure that the timeline for challenging an **award does not expire.**
- It **did not prescribe limits** on the number of arbitrations an arbitrator can take, leading to delays in award.

13. Self Help Groups

In India, women self-help groups have been a source of empowerment, fostering economic independence, social stature and community resilience.

How SHGs evolved in India?

- A Self-Help Group is an informal association of individuals who come together to improve their living conditions.
- It is a self-governed and peer-controlled group comprising people with similar socio-economic backgrounds and a shared desire to achieve a common purpose.

As per National Rural Livelihood Mission (NRLM) data, there are around 9 million SHGs with nearly 100 million women members, averaging 14 SHGs per village.

- **Primary purpose-** To pool financial resources for joint economic activities and provide reasonable-interest loans to members for starting small businesses.
- **Historical origin-** The concept of SHGs began in the 1970s, notably with the formation of the Self-Employed Women's Association (SEWA) in Gujarat.
- **Linkage to banks-** In 1992, SHGs were linked to banks for small loans, leading to the SHG Bank Linkage Project (SHG-BLP) for setting up livelihood opportunities.
- **Swarna Jayanti Gram Swarojgar Yojana-** It was launched in 1999 to recognize the potential of SHGs in promoting self-employment in rural areas.
- **NRLM-** In 2011,SHGs were integrated into the National Rural Livelihoods Mission (NRLM), becoming core implementers of the government's objective to ensure livelihood opportunities for the poor.
- **Community Investment Fund-** It was launched in 2014 that provided SHGs with up to Rs 50,000 per year for designing and implementing local livelihood programs.
- **Formal village groups-** The integration into NRLM and the creation of the Community Investment Fund marked a transformation of SHGs from informal alliances to formal village groups.

What is the significance of SHGs?

- **Functional capacity enhancement-** It improves the functional capacity of poor and marginalized individuals by providing them with skill development, employment generation and increased income opportunities.
- **Conflict resolution-** SHGs acts as forums for collective leadership and mutual dialogue fosters a sense of community cohesion and shared responsibility.
- **Credit access-** They play a pivotal role in providing collateral free loans to their members, the interest rates on these loans are market driven ensuring fairness and sustainability in financial transactions.
- **Microfinance prowess-** SHGs are recognized as the world's largest microfinance project, with millions of groups availing substantial loans.
- **Risk mitigation-** The SHGs serve as a collective guarantee system providing assurance for members seeking loans from organized sources.
- **Financial inclusion-** It facilitate the inclusion of marginalized individuals into the formal banking system that enables the poor to save money in banks promoting financial literacy and inclusion.
- **Economic empowerment-** The members can utilize the loans obtained through SHGs to start micro-enterprises.

- **Poverty alleviation**- SHGs contribute to the overall goal of poverty alleviation by focusing on employment generation, income enhancement and financial inclusion.
- **Women empowerment**- Women can utilize their skills and talents to start businesses and become financially self-reliant.

How the SHGs has shaped India over years?

- **Credit discipline-** It is highlighted by a repayment rate of more than 96% contrasting with challenges faced by India's commercial banks often dealing with massive non-performing loans.
- **Growth-** As per Economic Survey 2022-23, SHGs have shown impressive growth rates, with a compound annual growth rate (CAGR) of 10.8% in credit linkages and 5.7% in credit disbursement per SHG over the last ten years.
- **Government support-** The government's active pursuit of SHGs is evident in their inclusion in policies and programs, reflecting a recognition of their organizational effectiveness at the grassroots level.
- **Diversified roles**- The SHGs manage local community kitchens, running health services, overseeing slum redevelopment initiatives, and managing agri-nutri gardens.
- **Poltical will**- SHGs have become a significant influence in politics, with political parties incorporating them into women-focused manifestos.
- **National significance**- Prime Minister Narendra Modi has emphasized their role in transforming from "Self-Help Groups" to "Nation Help Groups," showcasing their national significance.
- **Financial commitment from States**- State governments, especially in Uttar Pradesh, Madhya Pradesh, Bihar, Rajasthan, Tamil Nadu, Kerala, and Odisha, have provided substantial budgetary support, totalling Rs 5 lakh crore, directly to SHGs.
- **Vote bank**- SHGs have become a vehicle for seeking votes from women, reflecting their increasing participation in elections.

14. Urban Frame Survey using Bhuvan

The Ministry of Statistics and Programme Implementation **(MoSPI)** has recently signed an MoU with the **ISRO** to support the **Urban Frame Survey (UFS)**.

About the MoU:

- The collaboration aims to modernize UFS by integrating **Geo ICT tools** on the Bhuvan platform, including the development of mobile apps for **Geo-tagging**.

- It also envisages development of a web portal for data visualization and editing, a **QGIS plug-**in for accessing regions, and the use of **High-Resolution Satellite Imagery** for demarcating boundaries.

Urban Frame Survey:

- It will be conducted in **5-year phases** to provide a sampling frame in the urban sector for **NSSO's Socio-Economic Surveys**.
- The **UFS**, overseen by the **Field Operations Division (FOD)** of **NSSO**, moved to a digital format in the **2017-22 phase** using the **Bhuvan platform**, covering over **5300 towns**.
- The current **2022-2027 phase** plans to survey approximately **8134 towns** utilizing Bhuvan's **Mobile, Desktop, and Web Based GIS solutions**.

15. Press and Registration of Periodicals Act (PRP Act) 2023

The Press and Registration of Periodicals Act (PRP Act), 2023, came into effect on replacing the old PRB Act, 1867.

Key Provision of the PRP Act 2023:

- The Act governs the registration of **newspapers** and **periodicals**.
- It introduces the **Press Sewa Portal**, an online system for registration.
- The portal **replaces manual processes**, simplifying the registration system.
- All applications related to the printing and publication of periodicals are to be processed online.
- The system offers features **like e-sign, digital payment, and QR code-based certificates**.

Changes Introduced:

- **Books and journals** are excluded from the registration requirement.
- The new Act mandates online registration for **periodicals before publication**.
- The process aims to reduce discrepancies and enhance transparency.

Implementation:

- The Press Registrar General of India (PRGI) office will oversee the Act's implementation.
- The Ministry of Information and Broadcasting launched the Press Sewa Portal for application processing.
- Online applications include registration, ownership transfer, and annual statements.

Benefits:

- Reduces manual processing challenges and hardships for publishers.
- Streamlines the application process, ensuring faster processing.
- Enhances transparency and reduces delays in communication.

16. President approves Uttarakhand's UCC Bill

Under Article 201 of the Indian Constitution, the President gave assent to the 'Uniform Civil Code Uttarakhand 2024' Bill passed by the Uttarakhand Legislative Assembly, on March 11 2024.

Uniform Civil Code

- The UCC is mentioned in **Article 44** of the Constitution as part of the **Directive Principles of State Polic**y, that the state should work to establish a uniform civil code for all citizens across India.
    - However, the Constitution's framers left it to the government's discretion to implement the UCC.

☐ **Goa** is the only state in India with a UCC, following the **Portuguese Civil Code of 1867.**

What are the SC Observations?

- The Supreme Court has emphasized the importance of **Governors promptly acting on Bills** sent to them for assent after passage by Legislative Assemblies. Bills should be returned **"as soon as possible"** to prevent undue delay, with significant constitutional intent behind this directive.

Governor's Discretion

The Governor holds several options upon receiving a Bill:

- Granting Assent.
- Requesting the Assembly to reconsider specific provisions or the entire Bill.

☐ Obligatory reservation for the President's consideration, especially in cases posing a threat to the state high court or contravening constitutional provisions, DPSP, national interest, or Article 31A regarding compulsory property acquisition. Although within the Governor's authority, withholding assent is seldom practiced due to its contentious nature.

17. India 'one of the Worst Autocratisers': V-Dem Democracy Report

- India, previously categorized as an "electoral autocracy" in 2018, has further declined to become one of the "worst autocratizers," according to the 'Democracy Report 2024' by the Gothenburg-based V-Dem (or Varieties of Democracy) Institute.

Key highlights on India

- **Deteriorating Status:** India, previously downgraded to an electoral autocracy in 2018, has further declined to become "one of the worst autocratizers."
- **Historical Comparison**: India's level of "liberal democracy" has regressed significantly, reaching levels last seen in 1975 during the state of emergency declared by Indira Gandhi.
- **Regime Classification**: India falls into the category of electoral autocracy, characterized by multiparty elections alongside insufficient levels of freedom of expression and fair elections.
- **Erosion of Democratic Freedoms**: The report highlights the gradual deterioration of freedom of expression, media independence, and attacks on civil society under the current government.

V-Dem Democracy Report

- **Publication**: The V-Dem Institute releases the Democracy Report annually, offering insights into the state of democracy worldwide, focusing on democratization and autocratization.
- **Regime Classification**: Countries are categorized into four regime types based on their scores in the Liberal Democratic Index (LDI), encompassing a spectrum from liberal democracy to closed autocracy.

Liberal Democratic Index (LDI)

- **Comprehensive Assessment**: The LDI evaluates both liberal (individual and minority rights) and electoral aspects (free and fair elections) of democracy.
- **Indicators**: It comprises 71 indicators, encompassing the Liberal Component Index (LCI) and the Electoral Democracy Index (EDI), capturing various dimensions of democratic governance.

  1. **LCI:** Measures aspects like protection of individual liberties and legislative constraints on the executive.
  2. **EDI:** Considers indicators ensuring free and fair elections such as freedom of expression and association.

- Components of the LDI include:

1. **Egalitarian Component Index**: Assesses the extent of equality among different social groups within a democracy.
2. **Participatory Component Index**: Evaluates the health of citizen groups and civil society organizations, indicating the degree of citizen engagement.
3. **Deliberative Component Index**: Gauges whether political decisions are driven by public reasoning focused on the common good or influenced by emotional appeals, solidarity attachments, or coercion.
4. **Publication Schedule**: The Democracy Report is typically published annually in March, presenting a comprehensive analysis of global democratic trends.

Key Findings from the Democracy Report 2024:

- **Collaborative Effort**: The report is a collaborative endeavour involving 4,200 scholars from 180 countries, leveraging 31 million datasets spanning from 1789 to 2023 to assess the democratic status of 202 countries.
- **Global Trends**:

1. **Autocratization:** In 2023, 42 countries, representing 35% of the world's population, were undergoing autocratization.
2. **Population in Autocracies:** Currently, 71% of the world's population, amounting to 5.7 billion people, resides in autocracies, marking a significant increase from 48% a decade ago.
3. **Decline in Democracy:** The level of democracy experienced by the average individual globally has regressed to 1985 levels, with Eastern Europe, South, and Central Asia experiencing the sharpest declines.

18. Concern over denial of bails in District Courts

Chief Justice of India expressed concern over the **'bail as a rule, jail an exception'** principle losing ground in trial courts.

Bail

- Bail is the provisional release of an accused person in a criminal case, **pending judgment**.
- The term originates from the old French verb **'bailer,'** meaning **'to give' or 'to deliver.'**
- **Aim:** To balance **personal freedom with public interest.**
- It is addressed under **Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023.**
- It involves the deposit of security to ensure the **accused's release**.

Types of Bail

- **Regular bail**: Granted to those arrested or in police custody, can be applied for under sections 437 and 439 of CrPC.
- **Interim bail**: Granted for a short period before the hearing of regular or anticipatory bail.
- **Anticipatory bail**: Granted under section 438 of CrPC by session court or High Court to those who anticipate arrest for a non-bailable offence.

Conditions For Grant of Bail In Bailable Offences

- Bail can be granted if there are sufficient reasons to believe the **accused has not committed the offence** or **further enquiry is needed**.
- The offence **should not** be punishable with **death, life imprisonment, or imprisonment up to 10 years.**

Conditions For Grant of Bail In Non-Bailable Offences

- Bail is not a right but at the discretion of the court for non-bailable offences.
- Conditions include if the accused is a woman or a child, lack of evidence, delay in lodging FIR, or if the accused is gravely sick.

Cancellation of Bail

- The court can cancel bail and order arrest if necessary, under **sections 437(5) and 439(2)** of the CrPC.

19. CAA Rules, 2024

The Ministry of Home Affairs has recently notified the rules for implementation of the Citizenship (Amendment) Act, which was enacted by Parliament in 2019.

Key provisions of Citizenship (Amendment) Act, 2019

- It is a legislative enactment that the Parliament has passed in 2019 to amend the Citizenship Act of 1955.
- **Aim-** To grant citizenship to persecuted minorities from neighbouring Muslim majority countries of Pakistan, Bangladesh, and Afghanistan.
- The specified class of illegal migrants from the three countries - Afghanistan, Bangladesh and Pakistan - will not be treated as illegal migrants, making them eligible for citizenship.

- **Eligibility-** It allows Indian citizenship for Hindu, Sikh, Buddhist, Jain, Parsi, and Christian religious minorities who fled from the neighbouring countries of Pakistan, Bangladesh and Afghanistan before 31st December 2014 due to "religious persecution or fear of religious persecution".
- **Residence requirement**- The amendment reduced the residence requirement for naturalisation from 11 years to 5.
- **Overseas Citizens of India (OCI)**- The Act allows cancellation of OCI registration if the person has violated any law notified by the central government.

A foreigner may register as an OCI under the 1955 Act if they are of Indian origin or the spouse of a person of Indian origin

- **Exemption from CAA –** Autonomous councils created under the 6th Schedule of the Constitution and Inner Line Permit region are exempted from the purview of CAA.
- **Autonomous councils**- The exception applies to

- **Inner Line Permit (ILP)-** It is regulated under **Bengal Eastern Frontier Regulations 1873**, the permit is required for a visit by people from other parts of the country in North-eastern states.

The ILP is in place in parts of Arunachal Pradesh, Nagaland, Mizoram and Manipur.

What are the CAA rules, 2024 notified by Ministry of Home Affairs?

- **Dedicated portal-**An online system for application, processing, and grant of citizenship for persecuted minorities from Pakistan, Bangladesh and Afghanistan under the Citizenship Amendment Act (CAA).
- **Eased citizenship-** The members of the specified communities by excluding the requirement of a "valid passport" of their origin countries or a valid visa from India.
- **Eligible applicants**- It include individuals of Indian origin, spouses of Indian citizens, minor children of Indian citizens, individuals with registered Indian citizen parents, and Overseas Citizens of India Cardholders among others.
- **Application process-** Requires submission of Form VIIIA, an affidavit, and a declaration of proficiency in an Eighth Schedule language.

Eighth Schedule lists 22 official languages of India

- **Eligibility certificate**- It should be issued by a "locally reputed community institution" confirming that he/she belongs to "Hindu/ Sikh/ Buddhist/

Jain/ Parsi/ Christian community and continues to be a member of the above mentioned community."

- **Visa replacement**- A certificate issued by an elected member of a local body can be a replacement for a visa.
- **Empowered Committee**-A committee led by the Director (Census Operations) and including various officials will review applications.
- **District-Level Committee-** It will be headed by Senior Superintendent or Superintendent of Post which will also involve in the scrutiny process.
- **Oath of Allegiance**-Applicants must renounce their previous citizenship and take an oath of allegiance.

What are the shortcomings of the CAA, 2019?

- **Religious centric approach**- The United Nations High Commissioner for Human Rights (OHCHR) has called the Act as "fundamentally discriminatory" as it discriminates against citizenship on the basis of religion.
- **Exclusion of Muslims**- The Muslim sects like Shias and Ahmedis has faced religious persecution in Muslim majority countries like Pakistan but they were not included in this new provision, they fear that the CAA, along with the proposed National Register of Citizens (NRC), could lead to their marginalization.
- **Limited scope**- The exclusion of other religious minorities belonging to other religions, namely Myanmar, Tibet, and Sri Lanka, was also believed to be discriminatory to a large extent.
- **Against Article 14**- The approach of granting citizenship based on religion is argued to be against the secular principles enshrined in the Indian Constitution, particularly Article 14 which ensures equality before the law.
- **Against secularism**- 42ⁿᵈ **Amendment Act 1976 added** the term 'secular' in the Constitution's preamble mandates that the state must treat all religions with equal respect and not favour any particular religion in its policies.
- **Impact freedom of religion**- CAA could impinge upon the freedom of religion under Article 24 and Article 25 by creating incentives for religious conversion in order to benefit from the citizenship provisions of the Act.
- **Technical challenges**- Joint Parliamentary Committee report 2019 said that the CAA did not use the term 'minority' but specified six non-Muslim religious groups, which goes against the secular categorization of minorities like SC and ST in the Indian Constitution.
- **Violation of Assam accord**- The CAA's modification of the cut-off date from 1974 to 2014 for citizenship eligibility is seen as conflicting with the Assam Accord, which set the date at 1971.

Section 6A was introduced as part of the Assam Accord, setting March 24, 1971, as the cut-off date for identifying foreigners in Assam.

What is the view of judiciary on CAA, 2019?

- The Act was challenged in the Supreme Court as the Act's special treatment of certain religious minorities from neighbouring Muslim-majority countries lacks a "reasonable classification" under Article 14, as it excludes persecuted groups like Tamil Hindus in Sri Lanka and Rohingyas in Myanmar.
- The CAA was challenged as it undermines the Assam Accord, which sets March 24, 1971, as the cut-off date for recognizing aliens, without religious differentiation.
- **Centre's stand**- The Parliament has the authority to enact legislation addressing issues such as persecution on the ground of religion, particularly in neighbouring countries with theocratic constitutional positions.
- The Court refused to stay the operation of the law, it suggested that the government clarify the intent of the Act to avoid public confusion.
- **Section 6A of Citizenship Act**- A five-judge bench reserved its verdict on the validity of Section 6A, recognizing its historical significance.If the cut-off date is upheld, the CAA's different timeline could be considered in violation of the Assam Accord.
- Recently the petitioners have moved the Supreme Court seeking a stay on the new rules, as it eliminate the independent scrutiny of citizenship applications by District Collectors and recommendations from State governments.
- The petitioners argue that the government should have waited for the Supreme Court's final decision before implementing the rules.

What lies ahead?

- The SC can strike down a classification under the CAA Act if it is found to be arbitrary.
- The court recently struck down the electoral bonds scheme on the ground that it was "manifestly arbitrary" setting a precedent that may impact the CAA's judicial review.

20. Law Commission report on 'Trade Secrets and Economic Espionage'

The **22nd Law Commission**, led by **Justice Ritu Raj Awasthi**, recently released its **289th report** on '**Trade Secrets and Economic Espionage**'.

About the Trade Secrets (TS):

- **Trade Secrets (TS)** are **intellectual property (IP)** rights on confidential information, which derive value from secrecy and can be **sold or licensed**.
- Unlike other IP forms, they can be protected **indefinitely**.

- Key characteristics include the information being **commercially valuable due to secrecy**, known only to a **limited group**, and protected through **reasonable efforts** like **confidentiality agreements**.
- Types of trade secrets encompass **processes** to enhance manufacturing efficiency, **formulas** such as recipes or chemical compositions, **databases** of customer information, **programs** for improved information management, and **business operations** data on logistics, marketing, and pricing.

About the Economic espionage (EE):

- **Economic espionage (EE)** involves the **illegal acquisition** of sensitive financial, trade, economic, or technological information through methods like **bribery, cyber-attacks**, and **wiretapping**.
- It includes both industrial and commercial espionage.

21. Kovind Committee report on Simultaneous Elections

The High level committee on One Nation, One Election recently submitted its report to the President.

One Nation, One Election

- It means that the voters will cast their vote for electing members of the Lok Sabha and the state assemblies on a single day, at the same time or in a phased manner as the case may be.
- **Simultaneous Elections**- It refers to structuring the Indian election cycle by synchronizing the elections to Lok Sabha and State Assemblies.
- **Historical context**- Simultaneous elections were previously implemented in 7 states in 1957 to streamline the electoral process and enhance administrative efficiency.
- **Decline of simultaneous election**-The simultaneous elections which was implemented in 1957 ceased after 1967 due to various factors such as constitutional provisions allowing dismissal of state governments and the collapse of coalition governments.
- **Current scenario-** The elections to the state assemblies and the Lok Sabha are held separately (whenever the incumbent government's 5-year term ends or whenever it is dissolved).

Why the government is in favour of conducting simultaneous elections?

- **Financial burden-** Frequent elections burden the government exchequer with additional expenditure. If the expenditure incurred by political parties is also added, these figures will be even higher.

- **Uncertainty-** Asynchronous elections cause uncertainty and instability, adversely affect supply chains, business investments and economic growth.
- **Disruption of government machinery-** The staggered nature of elections disrupts the functioning of government machinery, leading to administrative challenges and hardships for citizens.
- **Impact of Model Code of Conduct-** The frequent imposition of the Model Code of Conduct (MCC) can cause policy paralysis and slows down the pace of the developmental programmes.
- **Voter's fatigue-** Staggered elections induce 'voters' fatigue' and present a significant challenge in ensuring their participation.
- **Disrupt duties -** The frequent use of government officials and security forces adversely affect discharge of their duties.

Key highlights the committee's recommendations

- **Constitutional amendments-** The committee suggests amending the Constitution to enable simultaneous elections in two steps.
- **First step**- It involves simultaneous elections to Lok Sabha and State Assemblies without requiring state ratification.
- **Second step**- It involves synchronizing local body elections with national and state elections, requiring ratification by at least half of the states, which would be held within 100 days.
- **Article 82(1)-** It is introduced by the committee in the Constitution to establish the process for transitioning to simultaneous elections.
- **Amendment to tenure-** Articles 83 and 172 must be amended to redefine the terms "full term" and "unexpired term" for Lok Sabha and state Assemblies, respectively, in case of dissolution before completion.
- The new provisions ensure that the replacement Lok Sabha or state Assembly serves only the unexpired term before dissolution upon completion of simultaneous elections.
- **Election preparation**-To prepare single electoral roll and electoral photo identity cards for use in elections to all the three tiers of government, the Constitution should be amended which requires ratification by not less than one-half of the states.
- **Conduct fresh elections**- In the event of a hung House, a no-confidence motion, or any such event, fresh elections should be held to constitute the new Lok Sabha or State Assembly for the unexpired term of the House.
- **Logistics planning**- To meet logistical requirements, the Election Commission of India will plan and estimate logistical requirements (manpower, polling personnel, EVM/VVPAT etc.,) so that free and fair simultaneous elections are held in all the three tiers of the government.

22. How women in India have fared

Steps taken for women's development in India

- International Women's Day, celebrated on March 8, 2024, prompts a reflection on the status and progress of women globally, particularly in India.
- The United Nations Development Programme's 'Gender Social Norms Index' sheds light on prevailing biases against women, spanning political, educational, economic, and physical integrity dimensions.

Educational Empowerment in India

- India's strides in education reflect a departure from traditional gender norms, with inclusive policies ensuring free education for all children, irrespective of gender or socio-economic background.
- Notably, about 12 crores of girls have availed themselves of this opportunity, paving the way for increased female literacy and empowerment.
- Despite advancements, gender disparities persist in higher education, particularly in STEM fields, where women remain underrepresented both as students and faculty members.

Entrepreneurship and Professional Pursuits

- Women entrepreneurs in India are breaking barriers across various sectors, ranging from entertainment and advertising to biotechnology and medicine.
- While traditional sectors like entertainment witness significant female participation, women with science and technology backgrounds are venturing into innovative and profitable enterprises.
- In healthcare, women are excelling in specialized fields such as ophthalmology, neurology, and maternal health, contributing to societal well-being and economic growth.

Political Representation

- India's political landscape showcases significant strides towards gender equality, with notable examples like Pratibha Patil and Draupadi Murmu serving as Presidents.
- Compared to other countries, India has demonstrated substantial progress in women's political leadership, setting a positive example for gender inclusion in governance.

Global Perspective

- Despite global gender biases prevalent in both low and high Human Development Index (HDI) countries, India stands out as a beacon of progress.
- Examples from neighboring countries and beyond highlight the presence of women in key political positions, emphasizing India's comparative advancement in gender equality.

Issues

- STEM Gender Gap: Persistent underrepresentation of women in STEM fields poses a challenge to achieving gender parity in higher education and scientific research.
- Political Participation: While progress has been made, women's representation in political spheres still falls short of equitable levels, hindering inclusive governance.
- Societal Norms: Deep-rooted gender biases and stereotypes continue to impede women's advancement in various spheres, necessitating concerted efforts for societal transformation.

Significance

- India's journey towards gender equality holds significance on a global scale, inspiring other nations to prioritize women's empowerment and inclusive development.
- Achieving gender parity is not only a matter of social justice but also crucial for fostering sustainable economic growth and societal progress.

Solutions

- Education Reform: Implement targeted initiatives to bridge the gender gap in STEM education and promote female participation in scientific research and academia.
- Political Empowerment: Enhance efforts to increase women's representation in political institutions through affirmative action and gender-sensitive policies.
- Awareness and Advocacy: Foster public awareness campaigns to challenge gender stereotypes and promote a culture of gender equality and inclusivity from grassroots to policymaking levels.

23. NITI For States' Platform

The Minister of Communications, Railways, and Electronics and Information Technology launched NITI Aayog's **NITI for States platform** and the **Viksit Bharat Strategy Room**.

NITI for States' Platform:

- This platform serves as a **Digital Public Infrastructure (DPI)** for Policy and Good Governance, integrating a wide array of knowledge resources.
- It features over **7,500 Best Practices**, **5,000 Policy documents**, **900+ datasets**, **1,400 data profiles**, and **350 NITI publications**, covering sectors like Agriculture, Education, Energy, and more.
- The platform's design focuses on **user-friendliness and accessibility**, supporting governance digitalization and enhancing officials' **decision-making through actionable insights**.
- It provides vital support to governance officials at various levels, including **district collectors** and **block-level functionaries**, by offering access to state and **UT best practices**.

Viksit Bharat Strategy Room:

- It is designed as an **interactive space** and allows comprehensive visualizations of data, trends, and policies for a holistic understanding of governance challenges.
- It features **voice-enabled AI** and **video conferencing** facilities to foster multi-stakeholder collaboration.
- The Strategy Room operates on a **plug-and-play model**, enabling easy replication across different governance levels.
- It benefits from collaborations with key government initiatives like **Integrated Government Online Training (iGOT) Karmayogi**, **National Data and Analytics Platform (NDAP)**, **National E-Governance Division (NeGD)**, and **PM Gatishakti Bharat Informatics Solutions for Area Planning and Analysis (BISAG-N)**.

24. Defence Ministry denotifies civil areas of 10 cantonments

The **Ministry of Defence (MoD)** recently issued a notification to **denotify civil areas** of **10 cantonments** across India, merging them with the **state municipalities**.

- Previously, MoD had urged **state governments** to consider this **merger**.

About the Cantonments:

- A **cantonment** is an area primarily dedicated to housing military troops, evolving to include civilians to provide support and logistic services.

- Civilian rights within cantonments are severely restricted, and these areas, also known as **military quarters**, include offices, military housing, schools, and defence installations.
- Unlike **military stations**, which only accommodate **armed forces** and are established by executive order, cantonments were initially created for the stationing of military personnel.
- The term "**cantonment**" comes from the French word "**canton**," meaning "**corner**" or "**district**," and typically refers to a temporary military or winter encampment.
- The history of cantonments in India dates back to the **British East India Company (EIC)**, with the first cantonment established in **1765 at Barrackpore**, near Calcutta, following the Battle of Plassey in **1757**.
- The **Cantonments Act** was promulgated in **1924**.

25. Gender Pay Gap

World Bank Group report found that globally, women earn just 77 cents for every dollar paid to men highlighting the gender pay gap.

How the gender pay gap is measured?

- The International Labour Organisation terms the gender pay gap as a "measurable indicator" of inequality between women and men.
- As per ILO gender pay gap is defined as the gap between the average wage level of all women and all men working in the labour market for a monthly salary, hourly or daily wage.
- It is the average wage difference between all working women and men, not just for "equal work."
- **Differ from equal pay-** It differs from "equal pay for equal work," which mandates equal pay for men and women with the same qualifications doing the same job.
- **Calculation variance-** There is no single method for calculating the gap. Different organizations use different metrics, such as hourly or weekly wages, leading to varied findings.
- **Gender inequality-** Despite methodological differences, a gender pay gap is present in most countries and industries, indicating a persistent issue of inequality.

Why there is a gender pay gap?

- **Low labour force participation-** Women are often underrepresented in the workforce compared to men due to societal expectations and traditional gender roles.

- **Occupational segregation**-Women are more likely to be employed in lower-paying jobs or industries, while men dominate higher-paying sectors such as engineering and computer science, this leads to differences in average earnings.
- **Underrepresentation** - ILO's Women in Business and Management report found that women are less likely to hold management or leadership positions, especially at higher levels which can affect salary levels and contribute to the gender pay gap.
- **Part-time work**-Women are more likely than men to work part-time, often due to caregiving responsibilities. Part-time work typically offers lower wages and fewer benefits compared to full-time positions.
- **Motherhood penalty**- Women may experience a decline in earnings when they take breaks from their careers to have and care for children which leads to reduced opportunities for advancement or discrimination in the workplace.
- **Gender stereotype**-Historical gender roles have often assigned the role of primary breadwinner to men, while women have been expected to prioritize caregiving and domestic responsibilities which can influence workplace dynamics and lead to women being undervalued or overlooked for higher-paying positions.
- **Low investment in education**- Women may have limited access to quality education or may face barriers such as cultural norms or financial constraints that discourage them from pursuing higher education or specialized training.
- **Safety**- Safety concerns in the workplace and during commute can disproportionately affect women and influence their career choices.
- **Service sector**- The pay discrimination increased significantly with the growth of the services sector in the 20th century.
- **Age related patterns**- Analysis of employment data based on age reveals that women's earnings tend to dip in their mid-30s and 40s compared to men in similar positions and professions, it is often attributed to factors such as career breaks taken by women to care for children or elderly relatives, as well as barriers to career advancement and salary negotiation.
- **Work-family balance**- Claudia Goldin, a renowned economist argues that men have historically been able to prioritize their careers while women have been expected to prioritize family responsibilities.
- Slow pace of progress- Policies like parental leaves and work flexibility are slowly narrowing the earnings gap, but the progress towards closing the gap has been slow.

26. Rajya Sabha's Role as a part of Basic Structure

The **Supreme Court** recently said the elections to the **Rajya Sabha** performs **an integral function** as a part of the **Basic Structure** of the Constitution.

Basis of the Supreme Court Judgement:

- It stated that the **Council of States** required "**utmost protection**" and the right to vote should be carried out freely **without fear or persecution.**
- The Rajya Sabha performs an integral function in the **working of our democracy** and its role constitutes a part of the **basic structure of the Constitution**.
- Therefore, the role played by **elected members of the State legislative Assemblies** in electing members of the Rajya Sabha under **Article 80** is significant.
- **Article 80** lays down the **maximum strength** of Rajya Sabha as 250, out of which **12 members** are nominated by the President and **238 are representatives** of the States and UTs.
- The free and fearless exercise of franchise by elected members of the legislative Assembly while electing members of the Rajya Sabha was necessary.
  - o This protects the **dignity and efficient functioning** of the State legislative Assembly.
- The court said **parliamentary privilege** was **not to be restricted** to only law-making on the floor of the House.
- It is extended to **other powers and responsibilities** of elected members, which took place in the Legislature or Parliament even when the House was not sitting.

About the Basic Structure of the Constitution:

- The doctrine is a **legal principle developed by the Supreme Court** through various judgments, most notably in the case of **Kesavananda Bharati v. State of Kerala (1973).**
- It holds that certain **fundamental features or principles** of the Constitution are **inviolable** and **cannot be amended** by the Parliament, even through constitutional amendments.
- In the Kesavananda Bharati case, the SC held that while **the Parliament has the power to amend** the Constitution, it cannot alter its basic structure.
- The court ruled that if an amendment seeks to "**damage or destroy" the basic features** of the Constitution, it would be declared unconstitutional.

- The concept of the basic structure is **not explicitly mentioned in the text** of the Constitution but has been inferred by the judiciary as inherent to the constitutional scheme.
- **Some of the features identified** as part of the basic structure include judicial review, rule of law, federalism, secularism, democracy, and the separation of powers.
- The doctrine acts as a check on the Parliament's power to amend the Constitution and prevents it **from altering the foundational principles** that underpin the Indian democracy.
- It ensures that the **core values and principles** of the Constitution remain intact and are not subject to **arbitrary changes by the ruling majority.**
- Critics argue that it gives **unelected judges significant power** to strike down constitutional amendments, and contrary to the **principle of parliamentary sovereignty.**
- However, proponents argue that it is essential for maintaining the **integrity and stability** of the Indian Constitution, and protection from abuse by **transient political majorities.**

27. Combating Misinformation in India

- Weeks ahead of the election, the Ministry of Electronics and Information Technology on Wednesday notified the Press Information Bureau's Fact Check Unit (FCU) as the designated body to flag misinformation about Central government departments to social media platforms.

PIB

- Under the **GoI (Allocation of Business) Rules, 1961**, the Ministry of Information and Broadcasting (MIB) is entrusted with the responsibility of disseminating information about government policies, schemes, and programs through various mediums of communication.
- In fulfilling its role, the Ministry **publicizes the policies, initiatives, schemes, and programs** of the Government of India through press releases, press conferences, webinars, publication of books, etc.

- To carry out this crucial function, the Ministry has several attached and subordinate offices, including the Press Information Bureau (PIB).

Fact Check Unit (FCU)

- The Fact Check Unit's mandate arises from the IT Rules, 2021, which stipulate that social media platforms risk losing legal liability protections if they fail to address notified misinformation promptly.

- The unit verifies claims about government policies, regulations, announcements and measures.
- Through an established rigorous fact-checking procedure, the PIB Fact Check Unit helps in dispelling myths, rumours and false claims, and provides accurate and reliable information to the public.

Operational Framework

- The FCU, led by senior DG/ADG level officer of the **Indian Information Service (IIS)**, operates under the supervision of the **Principal Director General of PIB**.
- Its mandate includes **verifying claims** related to government policies, regulations, and announcements through a rigorous fact-checking process.
- The Unit reports to the Principal Director General, PIB who functions as the **Principal Spokesperson** of the Government of India.

Fact-Check Mechanism

- **Query Handling**: Users submit requests via WhatsApp, email, or a web portal, which are processed as 'Queries' by the Unit.
- **Verification Process**: Actionable Queries relevant to the Government of India undergo thorough verification using official sources and technological tools.
- **Publication of Fact Checks**: Verified information is categorized as Fake, Misleading, or True, and published on the Unit's social media platforms for public awareness.

Categories of Fact-Checked Content

1. **Fake**: Factually incorrect information intentionally or unintentionally disseminated to deceive or manipulate the audience.
2. **Misleading**: Information presented with partial truths, selective facts, or distortion to mislead recipients.
3. **True**: Information verified to be factually accurate after rigorous investigation.

28. Gaza and Haiti on the brink of famine

Gaza and Haiti are facing imminent famine due to severe hunger caused by conflict and crisis.

Status of food security in Gaza and Haiti

- **Gaza food crisis-** It is due to ongoing war between Israel and Hamas in Gaza, nearly every resident is struggling for food, with half the population facing severe hunger soon.

- As per report from the Integrated Food Security Phase Classification (IPC), famine could strike Gaza between mid-March and May if hostilities continue and essential supplies are not provided.
- **Haiti food insecurity-** It is due to the crisis caused by criminal gangs, approximately 1.4 million people are on the brink of famine, with over 4 million in need of food assistance.

- United Nations warns Haiti as catastrophic hunger has been recorded for first time.

Operation Indravati was launched by India to evacuate its citizens stranded in war-torn Haiti

What is famine?

- Famine occurs when a country has such a severe food shortage that its population faces acute malnutrition, starvation, or death.
- **Classification-** It is decided using a UN scale called the Integrated Food Security Phase Classification (IPC).
- **Five tier scale-** The IPC utilizes a five-tier scale to assess food access and hunger levels.

- **Famine-** It is the highest phase (Phase 5), is declared when an entire population or subgroup faces absolute food inaccessibility, leading to potential short-term death.
- **Criteria for famine-** To officially declare as famine 3 things need to happen in a specific geographic area
    - At least 20% of households face an extreme lack of food
    - At least 30% of children suffer acute malnutrition
    - Two adults or four children per 10,000 people die each day "due to outright starvation or to the interaction of malnutrition and disease".
- **Famine declaration-** A declaration of famine would be made by top United Nations officials based on the IPC criteria.
- **Risk of famine-** Afghanistan, the Democratic Republic of Congo, Ethiopia, Pakistan, Somalia, Syria and Yemen are at the risk of famine.

Famine was previously declared by IPC in Somalia (2011) and South Sudan (2017)

What are the common causes of famine?

- **Conflict**- It often leads to population displacements and disrupts people's traditional ways of dealing with food scarcity.
- **Natural hazards**- Events such as drought, flooding, and cyclones, as well as human and animal diseases and crop pests, affect food access and availability.
- **Decline in economy**- It greatly impacts access to food, through disruptions to food trade, food price inflation, and currency volatilities.
- **Human epidemics**- Diseases such as measles outbreaks present a major challenge to food security and nutrition.
- **Animal diseases**- It can also affect the food availability of households whose livelihoods depend on their livestock.
- **Pests**- Desert Locusts or Fall Army Worm, can devastate crops and cause higher levels of acute food insecurity.
- **Inadequate humanitarian response**-When a shock occurs, and the humanitarian response is not sufficient, well-coordinated, or fast enough, the affected populations can only cope for a short period

What lies ahead?

- Famine declaration by UN officials carries no binding obligations on UN members or states,
- The famine declaration serves to focus global attention on the problem.

29. Supreme Court's Stay on Govt's Fact Check Unit

Supreme Court had stayed the operation of the amended IT rules which introduced Fact Check Unit (FCU) to identify "fake news" on social media.

FCU under Public Information Bureau (PIB)

- **Launch year**- 2019
- **Ministry-** Ministry of Information and Broadcasting.
- **Location-** It is based in the National Media Centre (New Delhi).
- **Mandate-** To counter misinformation related to government policies, initiatives, and schemes.
- **Coverage-** Any matter that does not pertain to the Union Government is not taken up for evaluation or fact-checking by the PIB unit.

- **Function-**It addresses complaints either voluntarily or upon receiving references through various channels such as WhatsApp, email, postal mail, and the PIB's website.
- **Fact check mechanism**- It is based on the **"FACT model"** — Find, Assess, Create, and Target.

- **Evaluation of complaints-** It is done by a two-step process.
  - The received complaints are researched against authoritative government sources such as websites, press releases, and government social media accounts.
  - The unit then checks complaints with the concerned Ministry, and creates content for social media.
- **Tools-** Technological tools like reverse image search and video analysis are used to verify the authenticity of viral content.
- **Categories-** After rigorous fact checking procedure the unit classifies information into **Fake, Misleading, and True**.
- **Report-** The unit reports to the **Principal Director General, PIB** who functions as the Principal Spokesperson of the Government of India.

What is the recent notification by the Centre regarding FCU?

- **Notification-** The Centre recently notified fact check unit under the Press Information Bureau as the authorised unit for the Union government.

It has been notified under the recently amended Information and Technology Rules of 2021.

- **About-** To flag "fake, false or misleading online content related to the government".
- **Check accuracy-**The unit will take a call on whether online information related to the Central Government is accurate.
- **Label content-** The body will have the authority to label content related to the government on online platforms like Facebook and Twitter as "fake" or "misleading".
- **Safe-harbour provision-** The online intermediaries will have to take down the content labelled as fake by the FCU or lose their legal immunity against third-party content online.
- **Block content-** Social media sites will have to take down such posts, and internet service providers will have to block URLs of such content.
- The Bombay High Court recently refused to stay the setting up of a Fact Checking Unit (FCU) under the recently amended Information Technology Rules.
- Supreme Court overturned a previous decision by the Bombay High Court, granting a stay on the establishment of the Fact Check Unit.

Why Supreme Court stayed the operation of FCU?

- The petitioners argues that FCU could potentially be misused by the government to control information available to voters, impacting free speech.

- The court recognized the potential impact of the Fact Checking Unit on free speech guaranteed by the Constitution of India.
- Split verdict- It was delivered by the Bombay High Court about the validity of Rule 3(1)(b)(5) of IT rules 2021, with one judge striking down the rules and another upholding them, a third judge's decision is pending.

Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Amendment Rules 2023 amended IT rules, 2021

- The Supreme Court stayed the FCU operation until Bombay High Court arrives at a final decision on the challenge to the amended IT rules.
- **Centre's stand**- It would be limited to government business and would not include criticism of the prime minister.

What lies ahead?

- The FCU under PIB would function the same way except the powers ascertained to them by the Centre's recent notification as it is stayed by the government.
- The Supreme Court's decision to set aside the Bombay High Court's order and its recognition of the constitutional implications of the Fact Check Unit underscore the importance of protecting fundamental rights, including freedom of speech and expression.
- The outcome of the Bombay High Court case would affect the legality of similar FCUs in other states (Tamil Nadu, Karnataka, and Uttarakhand)
- This legal battle highlights the judiciary's role in safeguarding democratic principles and ensuring accountability in governance.

30. India-Brazil 2+2 Ministerial Dialogues

India and Brazil recently explored ways to **expand cooperation in various areas** at their first '**2+2' defense and foreign ministerial dialogue.**

Key Highlights of the Meet:

- The **first-ever 2+2 political and military dialogue** was held between India, and one of its key BRICS partners, Brazil, in New Delhi.
- The discussions **focused on** defense, space, energy, critical minerals, tech, counter-terrorism, and regional, multilateral, and other **issues of mutual interest.**

- The dialogue comes after private companies from the two countries signed an MoU to jointly fulfil the acquisition of the **C-390 Millennium multi-mission aircraft.**
- This would be done by the Indian Air Force in its upcoming **Medium Transport Aircraft (MTA)** procurement project.
- The **local aerospace industry** in India would be encouraged to initiate the development of an **industrialization plan** for the project.
- A key area of **India-Brazil bilateral relations** lies in the realm of submarine maintenance and technology.
- Brazil currently operates **Scorpene-class submarines**, while India possesses a well-established domestic submarine program.
- Negotiations are underway between the two navies to potentially sign a **Memorandum of Understanding (MoU).**
- It may address ways to **minimize the expenses** associated with repair and maintenance of Brazil's Scorpene submarines.
- This could involve knowledge **sharing, joint training programs**, or even exploring **co-maintenance facilities.**
- The agreement may also pave the way for **enhanced technical cooperation** and training between the two navies.
- This could involve **Indian expertise in submarine maintenance** and operations being shared with their Brazilian counterparts.
- Brazilian Army Commander visited India and expressed a keen interest in procuring state-of-the-art surface-to-air **Akash missile systems.**

Location of Brazil:

- Brazil is located in **South America** and occupies **half the continent**'s landmass.
- It is the **fifth-largest country** in the world, and contains most of the **Amazon River Basin**- the world's largest river system and the world's most-extensive virgin rainforest.
- Brazil faces the **Atlantic Ocean** along its Eastern Coastline and shares inland borders with every South American **country except Chile and Ecuador.**
- It borders **Uruguay** to the south; **Argentina, Paraguay, and Bolivia** to the southwest; **Peru** to the west; **Colombia** to the northwest; and **Venezuela, Guyana, Suriname, and French Guiana** to the north.

31. Ethanol 100

Union minister for **Petroleum & Natural Gas** recently flagged off the high-octane, eco-friendly fuel- Ethanol 100 with a target of **20% ethanol-petrol** blend by **2025-26**.

Ethanol 100 program:

- India commenced the sale of **ETHANOL 100 across 183 Indian Oil outlets** in Maharashtra, Karnataka, Uttar Pradesh, New Delhi, and Tamil Nadu.
- The **oil marketing companies (OMCs)** scaled up distribution of E20 to 12,000 outlets within a year following the government's push for a blend of 20% ethanol in petrol by 2025-26.
- Such initiatives saved Rs 85,000 crore in **Foreign Exchange** and **reduced CO2 emissions** significantly, equating to the effect of **planting 1.75 crore trees** over the **past decade.**

About Ethanol 100:

- Ethanol 100 stands as a **cleaner, greener alternative to gasoline**, with its **high-octane rating**, typically between 100-105.
- E100 fuel is **not 100 percent ethanol** but includes 93-93.5% ethanol blended with 5% **petrol** and 1.5% **co-solvent**, which is a binder.
- Previously, the specifications for E100 fuel in India mandated using 100% ethanol as fuel.
- However, due to **safety concerns**, the specifications were revised to mandate the blending of ethanol with some amount of petrol.
- When using 100% ethanol as **fuel, flames are not visible** until one enters the vehicle, the addition of petrol gives flames **a yellow colour.**

Significance of Ethanol:

- ETHANOL 100 is positioned as a cleaner alternative to gasoline, offering **lower emissions and high performance for engines.**
- ETHANOL 100 fuel has the potential to **transform our transportation sector** and reduce our dependence on fossil fuels.
- This reflects the government's strategy to bolster the **agriculture sector and cut import reliance.**
- It is significant for India to be among the few countries to offer ETHANOL 100, which is **compatible with a range of vehicles**, including **flex-fuel vehicles.**
- The consistent supply of ethanol, supported by robust industry, allays availability concerns and affirms commitment to decarbonization.

32. Kisan Credit Card (KCC) Fisheries scheme

Department of Fisheries has successfully inaugurated the integration of the Kisan Credit Card (KCC) Fisheries scheme onto the JanSamarth Portal.

Kisan Credit Card (KCC) Fisheries scheme:

- In 2018-19, the Government of India **extended the Kisan Credit Card (KCC) facility** to **fisheries** and animal husbandry farmers, aiding them in **meeting their working capital needs**.
- It is a **short-term credit** option for farmers to **meet their needs for fisheries**.
- Farmers individual or joint Liability Groups or Self Help Groups including tenant farmers engaged in Dairy, Poultry, Inland Fisheries and Aquaculture, Marine Fisheries are eligible for availing loan under this scheme.
- Under the KCC scheme, farmers receive loans at a **7% lending rate**, including a **2% interest subvention per annum** by the **Government of India**.
- Additionally, an **extra 3% per annum** is provided as an **additional incentive** for **prompt repayment**, according to existing guidelines.

About JanSamarth portal:

- JanSamarth is a **unique online platform** that **directly connects lenders with beneficiaries**.
- It connects certain central government schemes, allowing **citizens to apply for loans and subsidies online**.
- It also helps citizens check their **eligibility for schemes**, and provides guidance on subsidy eligibility through smart analytics.
- The portal offers **four loan categories:** education, agri infrastructure, business activity, and livelihood.

33. Uses of Cannabis

Bhang, obtained from the Cannabis sativa plant or true hemp, is popularly consumed on the occasion of Holi across India.

Cannabis

- It refers to a group of three plants with psychoactive properties.
- The Mexican term 'marijuana' is frequently used in referring to cannabis leaves or other crude plant material in many countries.
- **Plants –** Cannabis sativa, Cannabis indica, and Cannabis ruderalis.
- **Products derived**- From the cannabis plant, three main products are obtained namely fibre, oil, and narcotics.
- **Literary references-** There are evidences of medical use of marijuana which can be found in ancient Indian texts such as the Atharvaveda and the Sushruta Samhita, dating back to around 1500 BCE.
- **Atharvaveda**- It hails bhang an edible preparation of marijuana as one of the five sacred plants.

- **Sushruta Samhita**- Marijuana was recommended for health ailments including phlegm, catarrh and diarrhoea.
- **Cultural significance-** It has deep cultural roots in India, with historical ties to Hindu mythology and rituals.
- **Charas-** It is produced by rubbing the resin of the flower from the plant sustains the livelihood of the farmers in the hills.
- **Bhang-** It is derived from the Cannabis sativa plant, holds cultural significance in India, particularly during the festival of Holi where they are ground into a powder, filtered and then mixed with cold, flavoured milk or thandai.

Bhang is essentially a green-coloured paste made from seeds and leaves of the female cannabis plants — they have higher potency and Tetrahydrocannabinol (THC) content than their male counterparts.

What are the uses of cannabis?

- **Medicinal value**- Research indicates marijuana's potential in treating diseases like cancer, AIDS, and epilepsy, with Cannabidiol (CBD) showing promise as a therapeutic agent.

Marijuana was first used as an anesthetic by a Chinese surgeon.

- **Treat haematoma**- Cannabis ash is applied on animal's skin to treat conditions like haematoma a condition in which blood clots outside of the blood vessels.
- **Cure cattle shivering**- In Himachal Pradesh, boiled cannabis leaves is used to create a solution that cures shivering in cattle.
- **Insect bite relief**- Cannabis leaves are heated, crushed, and applied as a paste to alleviate irritation and pain caused by honey bee or wasp stings.
- **Agriculture**- Treating paddy seed with bhang is effective in paddy seed germination and this treatment is common in temperate areas of Jammu and Kashmir, where temperature during nursery raising is low.
- **Natural pesticide**- In Jammu and Kashmir, farmers use cannabis plants to control threadworms by placing the uprooted cannabis plant in standing water of paddy nursery or crushed cannabis leaves is used in case of severe infestations
- **Industrial uses-** Hemp seed oil derived from cannabis is derived in varnish industries as a substitute for linseed oil and manufacturing of soft soap.
- **Rope making**- Post-maturation, the crop is dried, after which the seeds are collected. The fibre, known for its strength, is then separated from the stems and branches, the extracted fibre is stronger than jute making it suitable for making durable ropes.

Why India should legalise cannabis?

- **Historical usage**-Marijuana has been used in traditional Indian and Chinese medicine for centuries, with ancient texts documenting its medicinal applications1.
- **Global regulation**-Over 18 countries have legalized medical marijuana, with varying degrees of regulation, and studies suggest that legalization does not lead to increased drug use or crime.
- **Dominance of black market**- Studies suggest that drug result in the circulation of poor quality or adulterated drugs, increasing the risks of overdose and poisoning.
- **Job creation**- If cannabis is legalized a new industry dealing with cultivation, processing, packing, and distribution of marijuana would emerge.
- **Reduce illegal trade**- There will be laws regarding the possession, cultivation, and supply of marijuana in the market by the government and not by drug dealer which would reduce the crimes related to illegal trade.
- **Increase government revenue**- Economists have advocated for legalizing and regulating it like other goods as taxing cannabis could generate significant revenue.
- **Supporting local farmers**-In states like Himachal Pradesh and Tamil Nadu, where cannabis plants grow, legalizing marijuana would benefit local farmers who currently face challenges due to its banned status.
- **Proper regulation-** Kofi Annan, former Secretary-General of the United Nations has stated that while cannabis consumption is not necessarily associated with significant problems for most users but regulation is necessary to mitigate potential risks and ensure responsible use.

34. Patents (Amendment) Rules, 2024

The Indian Patent Office has recently announced the implementation of the Patent (Amendment) Rules 2024, aimed at enhancing efficiency and streamlining procedures in the patent system.

Patent (Amendment) Rules, 2024:

- These rules introduce several provisions **aimed at simplifying the process of obtaining** and **managing patents**, thereby **facilitating a conducive environment** for **inventors** and **creators**.
- It is expected to **accelerate economic development** of the nation through science and technology to fulfil the **Viksit Bharat Sankalp.**

Key Changes:

Shortening Timelines:

- Timelines for filing requests for examination and opposition procedures have been reduced, promoting quicker resolution of patent matters.
- Time limit for **providing foreign application** filing details in Form 8 has been reduced from **six months** after filing the application to **three months** after receiving the first examination report.

Examination Requests Timeline:

- Time limit for **filing request for examination** has been **reduced from 48 months to 31 months** from the **date of priority of application** or from the **date of filing of application**, whichever is earlier.

Introduction of Grace Period:

- A new provision, Rule 29A, **introduces a grace period**, **allowing applicants** to avail of **specified time extensions** under Section 31.

Certificate of Inventorship:

- Unique provision for New **'Certificate of Inventorship'** has been introduced to acknowledge the contribution of inventors in the patented invention.
- Rule 70A **enables patent controllers** to **issue certificates of inventorship** upon request, **promoting transparency** and **acknowledgment of inventors' contributions**.

Renewal Fee Discounts:

- Patentees have the option to **make advance renewal fee payments**, which **come with a 10% reduction in fees.**
- This initiative aims to **incentivize proactive compliance** with **renewal obligations**.
- The reduced renewal fee is applicable for **payments made electronically** and **in advance for a minimum period of four years.**

Working Statement Submission:

- Frequency to **file the statements of working of patents** in Form 27 has been reduced from **once in a financial year** to **once in every three financial years**.

- Further, the **provision to condone delay** in filing of such statement for a **period up to three months** upon a request in prescribed manner has been incorporated.

Pre-Grant Opposition Procedures:

- The process for filing and resolving Pre-grant representations through opposition under section 25(1) has been refined and clarified, including clear methods for handling representations and setting fees for their submission.
- This aims to **deter fraudulent oppositions** while **promoting genuine oppositions**.

Benefit of new rules:

- The rules will complement existing efforts to promote patents, aligning with initiatives like the **National Intellectual Property Rights (IPR) Policy 2016**, which encompasses:
  - **The National Intellectual Property Awareness Mission (NIPAM).**
  - **The Patent Facilitation Programme.**
  - Expand Knowledge Capacity & Skill Building through initiatives like the Scheme for Pedagogy & Research in Intellectual Property Rights (IPRs) for Holistic Education and Academia **(SPRIHA).**
- Additionally, they will support the **establishment of the Centre of Excellence** in Intellectual Property and the Patent Analysis Management System (PAMS) by the Ministry of Electronics and Information Technology (MeitY).

About Patent:

- A patent is an **exclusive right granted to an inventor** that gives them control over **who can use their invention.**
- It **protects an invention** by preventing others from making, using, selling, or offering for sale the invention **without prior permission**.
- **Time period**: 20 years from the date of filing of application.
- India has ratified the **Patent Cooperation Treaty (PCT).**

Criteria to get a patent:

- **Novel:** The invention must be new.
- **Inventive step**: The invention must involve a technical advancement.
- **Industrial application**: The invention must be capable of industrial use.
- **Non-obvious**: The invention must be non-obvious.
- **Technical information**: The invention must disclose technical information to the public in a patent application.

35. All about MGNREGA

The Centre has recently notified new wage rates for MGNREGA, with Goa seeingthe highest hike.

MGNREGA

It is a bottom-up, people-centred, demand-driven, self-selecting and rights-based programme.

- **MGNREGA** - The Mahatma Gandhi National Rural Employment (MGNREG) is the largest public employment program in the world.
- **Implementation-** By Ministry of Rural Development in India.
- **Legal provision-** The scheme is based on **MGNREGA Act, 2005** which makes a legislative commitment to provide right to work.
- **Aim-** To enhance the livelihood security of people by guaranteeing 100 days of wage-employment in a financial year to a rural household whose adult members volunteer to do unskilled work.

- **Core objectives-**
  - o Providing not less than one hundred days of unskilled manual work as a guaranteed employment in a financial year to every household in rural areas as per demand, resulting in creation of productive assets of prescribed quality and durability
  - o Strengthening the livelihood resource base of the poor
  - o Proactively ensuring social inclusion
  - o Strengthening Panchayati Raj Institutions
- **Category-**The act also seeks to create durable assets and there are 4 types of categories of MGNREGA public works activities.

- **Fund allocation**- The central government provides 100% funding for wages for the unskilled manual work, and covers 75% of the material cost. 25% of the material cost is borne by state governments.
- **Wage-** The wage rates are fixed according to changes in the **CPI-AL (Consumer Price Index- Agriculture Labour),** which reflects the increase in the inflation in the rural areas. The wages under the scheme are usually done through **Direct Benefit Transfer**.

- **Household-** The Act defined household as members of a family related to each other by blood, marriage or adoption and normally residing together and sharing meals or holding a common ration card.
- **Geotag-**Assets developed under MGNREGA are geo-tagged and displayed on a public website, GeoMGNREGA, to enhance transparency.

- **Women empowerment**- Roughly one-third of the stipulated work force must be women.

- **Unemployment allowance**- It mandates that work should be provided within 15 days of demanding work failing which the workers are entitled to an unemployment allowance.
- **Gram Sabha**- It is the principal forum for wage seekers to raise their voices and make demands.
  - It determines the order of priority of works in the meetings of the Gram Sabha keeping in view potential of the local area, its needs, local resources
  - It monitors the execution of works within Gram Panchayat, it is the primary forum to conduct social audits.
- **Social Audit**- Auditing of MGNREGA works is mandatory, which lends to accountability and transparency.
- **Amarjeet Sinha committee**- It was constituted in 2023 to review the implementation of the MGNREGA scheme.

What are the issues with MGNREGA?

- **Low wage rates-** If MGNREGA wage rates are lower than state minimum wages, it disincentivizes workers from participating in the program.
- **Fund deficit**- Insufficient funds and irregular flow of funds hamper the effective implementation of MGNREGA, especially during peak seasons when demand for work is high.
- **Delayed payments**- Regular late payments create financial instability for workers and erode trust in the program.
- **Limited banking infrastructure**- Banking infrastructure is limited in rural areas exacerbates the problem of delayed payments and adds unnecessary burden on workers.
- **Faulty MIS data**- Over-reliance on technology without addressing its shortcomings contributes to corruption and reduces transparency and accountability.
- **Excessive centralisation**- It diminishes the role of local governance institutions, reducing their ability to address issues and serve their communities effectively.

What lies ahead?

- The government should address the challenges by increasing fund allocation, reducing delay in payments etc., which would foster and deepen the grassroots democracy.

- Despite several criticisms since its inception MGNREGA remains relevant as a safety net for the most vulnerable in India.
- The World Bank in its World Development Report, 2014 termed MGNREGA as a stellar example of rural development underscores India's commitment to alleviate rural poverty.

GS 3 : Economy, Science and Technology, Environment

1. Establishment of International Big Cat Alliance (IBCA)

- The Union Cabinet, chaired by Prime Minister, has approved the establishment of the International Big Cat Alliance (IBCA) with headquarters in India.

International Big Cat Alliance (IBCA)

- **Objective**: The IBCA aims to spearhead efforts towards the protection and conservation of the 7 major big cats: **tiger, lion, leopard, snow leopard, puma, jaguar, and cheetah**.
- **Funding**: The Government of India has pledged an initial support of Rs. 150 crore for the first five years. Additionally, the alliance will explore contributions from bilateral and multilateral agencies, financial institutions, and donor agencies to augment its corpus.
- **Membership**: Membership to the alliance will be **open to 96 "range" countries**, which are nations containing the natural habitat of the seven big cats.
- **Activities**: The alliance's activities will include advocacy, partnership building, knowledge dissemination through an e-portal, capacity building, eco-tourism promotion, and financial resource mobilization.

Governance Structure

- **Composition**: The governance structure of IBCA includes a **General Assembly** comprising all member countries, a Council of elected member countries, and a Secretariat.
- **Appointment**: The General Assembly appoints the **Secretary General of IBCA** upon the recommendation of the Council.
- **Framework**: The alliance's governance framework, drafted on the lines of the International Solar Alliance (ISA), will be finalised by the International Steering Committee (ISC).

India's Role in Big Cat Conservation

- **Big Cat Diversity**: India is home to five of the seven major big cats: tiger, lion, leopard, snow leopard, and cheetah.
- **Conservation Efforts**: India has undertaken significant conservation efforts, as reflected in the increase in tiger and lion populations. For instance, India now hosts about 70% of the world's tiger population, and the Asiatic lion population in Gir National Park has shown steady growth.
- **Cheetah Reintroduction**: Cheetahs, once extinct in India since 1952, have been reintroduced into the wild. Eight cheetahs were imported from Namibia and released into the Kuno National Park in Madhya Pradesh in November 2022.

2. RBI updates the Framework related to Regulatory Sandbox scheme

Recently, there have been significant updates made to the guidelines for the Regulatory Sandbox (RS) scheme by the RBI.

Regulatory Sandbox (RS) scheme

- Regulatory Sandbox (RS) scheme involves live **testing of new financial products or services** in a controlled regulatory environment with potential relaxations for testing purposes.
- It allows **regulators, innovators, financial service providers, and customers** to test new financial innovations, collecting evidence on benefits and risks.
- It facilitates the development of innovation-friendly regulations, enabling the delivery of **low-cost financial products**.
- It enables **Dynamic Regulatory Environments** that adapt to emerging technologies

What is the objective behind this decision of RBI?

- Through this decision, RBI aims to encourage **responsible innovation** in financial services and ensure **compliance with digital personal data protection norms**.
    - This new adopted framework will enable **on-tap proposals**, replacing the previous structure where RBI presented the challenges to a cohort of technology firms and required them to devise solutions within a specified time frame.
- Secondly, through this decision, the central bank (RBI) remains committed to supporting innovation and technology in the financial sector.

o For example, recenty, the **Paytm Payments Bank,** due to its failure to comply with RBI norms, stifled innovation.

Key Highlights of the RBI's Updated guidelines on Regulatory Sandbox scheme:

- **Framework Alignment with Digital Personal Data Protection Act:** The updated framework requires sandbox entities to ensure compliance with provisions of the **Digital Personal Data Protection Act, 2023.**
- **Diverse Range of Target Applicants**: The target applicants for entry to the RS are **fintech companies, including startups, banks, financial institutions,** any other company, Limited Liability Partnership (LLP) and partnership firms, partnering with or providing support to financial services businesses.
- **Digital Personal Data Protection Norms Compliance**: Under the updated guidelines, participating entities will have to comply with digital personal data protection norms.
- **Origins of Regulatory Sandbox Framework**: The RBI had issued the 'Enabling Framework for Regulatory Sandbox' in August 2019, after wide ranging consultations with stakeholders.

What is the Significance of Regulatory Sandbox?

- **Learning by doing:** RS provides empirical evidence on benefits and risks of emerging technologies, enabling regulators to make informed decisions.
- **Testing viability**: RS allows testing of product's viability without large-scale roll-out, enabling modifications before broader market launch.
- **Financial inclusion:** RS can improve pace of innovation and technology absorption, leading to financial inclusion and improved financial reach.
- **Evidence-based decision-making**: RS reduces dependence on industry consultations for regulatory decision-making.
- **Better outcomes for consumers**: RS leads to increased range of products, reduced costs, and improved access to financial services.

What are the challenges along with Regulatory Sandbox scheme?

- **Flexibility and time:** Innovators may face constraints in the sandbox process, but time-bound stages can mitigate this.
- **Bespoke authorizations**: Transparent handling of applications and clear decision-making principles can address risks associated with discretionary judgments.
- **Legal waivers**: The RBI or its RS does not provide legal waivers.
- **Regulatory approvals**: Successful experiments in the sandbox may still require regulatory approvals for wider application.

- **Legal issues**: Transparency and clear criteria in the RS framework can mitigate legal issues like consumer losses, ensuring clarity on liability for risks.

Conclusion: The RBI's updated Regulatory Sandbox guidelines promote responsible financial innovation. Addressing time constraints and ensuring transparent post-sandbox approvals are vital for fostering a conducive environment for ongoing advancements in the financial sector.

3. Despite policy backing and funding, care for rare diseases not optimal

In recent years, India has witnessed significant strides in addressing rare diseases, marked by the introduction of the inaugural National Policy on Rare Diseases in March 2021. This policy represents a pivotal moment for patients and families grappling with the challenges posed by rare diseases.

Policy Overview:

- The National Policy on Rare Diseases outlines a comprehensive framework aimed at reducing the exorbitant costs associated with treatment while fostering indigenous research initiatives.
- Central to the policy's objectives is the establishment of a national hospital-based registry dedicated to tracking rare diseases.
- This registry is envisioned to provide crucial epidemiological data, informing research funding priorities and enhancing treatment strategies.

Implications and Challenges:

- Despite the optimism surrounding the policy, the reality on the ground reveals persistent challenges.
- Rare diseases, estimated to affect nearly 1/5th of India's population, continue to lack adequate treatment options, with less than 5% having accessible therapies.
- Moreover, the absence of a standardized definition for rare diseases in India complicates policy formulation and resource allocation efforts.

Gaps in Fund Utilization:

- One glaring issue is the underutilization of funds allocated for rare disease treatment.

- Despite substantial financial allocations, a significant portion of funds remains unutilized, leaving many patients without access to life-saving treatments.
- The gap between fund allocation and utilization underscores the urgent need for enhanced accountability and transparency in healthcare resource management.

Way forward: Patient advocacy groups have emerged as powerful agents for change, advocating for expedited treatment and sustainable funding solutions. Efforts to bolster awareness, early detection mechanisms, and robust registry systems are crucial steps towards strengthening India's response to rare diseases.

4. Genome India project

The Department of Biotechnology announced the completion of the Genome India Project the largest initiative to conduct sequencing of 10,000 genomes of the Indian population.

Genome sequencing

- **Genome**- It is defined as an organism's complete set of Deoxyribose Nucleic Acid (DNA), including all of its genes.
- Each genome contains all of the information needed to build and maintain that organism.
- In humans, a copy of the entire genome — more than 3 billion DNA base pairs — is contained in all cells that have a nucleus.
- The discovery that DNA is structured as a "double helix" was the spark in the long, continuing quest for understanding how genes dictate life.
- **Genome sequencing**- It is the state-of-art, robust and high throughput technique to sequence the entire genome of an organism.

What are the advantages of the project?

- **Study genetic diversity**- The diverse genetic makeup of India, with over 4,635 anthropologically defined population groups, adds complexity and richness to the dataset.
- **Understand disease-** The data will help to compare and contrast the impact of genetic variations on physical health as India is the "largest genetic lab in the world."
- **Rich dataset-** The project has successfully created a reference genetic database and a biobank containing blood samples from across the country.
- **Reference genetic database**- The completion of sequencing 10,000 genomes culminates in the establishment of a 'reference' Indian human genome which

serves as a foundational template offering insights into the genetic makeup of the population

- **Database storage**- The project generated an extensive dataset of 8 petabytes, requiring 80 GB storage for each sequence making the dataset accessible to researchers.
- **Digital public good**- The data will be stored at the Indian Biological Data Centre in Faridabad, serving as a "digital public good.", it aims to foster advancements in diagnostics, therapies, and disease understanding.
- **Personalised health care**- A specific genetic mutations have been identified within the Indian population.

- **Precision medicine**- An Indian genome database will aid in understanding the genetic makeup to develop targeted treatments, especially for rare diseases resulting from genetic anomalies.
- **Drug discovery**- The database can contribute to the development of new diagnostics in potentially identify resistance-indicating variants.
  - o **mRNA vaccines**- It is based on genetic mutations and identifying populations with specific resistance or susceptibility to certain medicines.
- **Gene therapy advancements**- The database holds immense potential for understanding genetic predispositions to diseases like cancer and lung diseases, it is also considered vital in comprehending infectious diseases like COVID-19.
- **Indigenization**- The project address the unique genetic challenges by deploying Indian solutions using Indian data for Indian problems, showcasing the country's commitment to utilizing its diversity for scientific advancements.
- **Technological advancement**- The Genome India Project highlights the remarkable progress in genomic sequencing technology because the 1st whole genome project required 13 years and 3 billion dollars to complete the project whereas this project is completed in 3-4 months.

What are the challenges?

- **Expensive medicines**- The genome sequencing has opened up new complexities, despite advancements the accessibility and affordability of medicines for rare genetic conditions remain a challenge.
- **Monogenic disease**-The Human Genome Project, completed in 2003, promised to decode the secrets of the genome and pave the way for personalized medicine but subsequent decades have revealed that only a small fraction of diseases are monogenic (caused by a single gene).
- **Privacy issues-** The issue of disclosing and managing incidental and secondary findings.

- **Huge dataset management**- The massive dataset generated (8 petabyte), poses significant challenges in terms of storage, management, and data security.
- **Genetic discrimination**- Some regions or ethnic groups may be underrepresented, affecting the project's dataset.
- **Limited representation**- The 10,000 genomes is a significant achievement but it may not fully capture the immense genetic diversity present in India's population of 1.4 billion people.

There are over 4,600 distinct groups, and achieving comprehensive representation is challenging.

What lies ahead?

- As Genome India Project moves forward, its impact on healthcare, genetics, and scientific research is poised to be transformative, ushering in a new era of understanding and utilizing the genetic diversity within the country.
- The findings of the project should not remain confined to academia but involve collaborations with scientists, students, technology companies, ethicists, and social scientists.

5. GST collections up 12.54% in February 2024

- India's GST revenues saw a robust growth of 12.54% in February, exceeding ₹1.68 lakh crore.
- This marked the fourth-highest monthly collection since GST's inception.

- The Goods and Services Tax (GST) system in India has been a pivotal component of the country's tax structure since its implementation in July 2017.
- Analyzing the trends and performance of GST revenues offers insights into the economic health and growth trajectory of the nation.

Gross Revenues Overview

- **Yearly Comparison**: The fiscal year 2023-24 witnessed a noteworthy increase, reaching ₹18.4 lakh crore, indicating an 11.7% rise from the previous year.
- **Yearly Uptick**: This year's growth stands as the third highest since the implementation of GST.
- **Domestic Transactions**: Revenues from domestic transactions surged by 13.9%.
- **Imported Goods**: Revenue from goods imports also saw a notable increase, rising by 8.5%.

State-wise Breakdown

- **Overall Collection Analysis**: After accounting for refunds, February's GST collection amounted to ₹1.51 lakh crore, indicating a substantial 13.6% growth from the previous year.
- **State Variability**: States exhibited diverse performances, with some experiencing declines while others exceeded national growth averages.
- **Declining Revenues**: Five states witnessed contractions, with Mizoram and Manipur showing significant decreases.
- **Outperforming States**: Twelve states, including Jammu and Kashmir, Assam, and Maharashtra, surpassed the national average growth rate.

Compensation Cess Details

- **Components of GST Intake**: February's gross GST intake included CGST, SGST, and IGST, amounting to ₹84,098 crore.
- **Cess Collections**: Compensation cess collections amounted to ₹12,839 crore, with additional revenue from imported goods.
- **Revenue Distribution**: The Central government allocated substantial sums to CGST and SGST from IGST collections.
- **Revenue Allocation**: After regular distributions, CGST received ₹73,641 crore, while SGST received ₹75,569 crore.

Goods and Services Tax (GST)

- **Definition**: GST is an indirect tax that has replaced many indirect taxes in India such as excise duty, VAT, services tax, etc.
- **Legislation**: The GST Act was passed in Parliament on 29th March 2017 and came into effect on 1st July 2017. It is a single domestic indirect tax law for the entire country.
- **Tax Structure**: It is a comprehensive, multi-stage, destination-based tax that is levied on every value addition.
- **Taxation Points**: Under the GST regime, the tax is levied at every point of sale. In the case of intra-state sales, Central GST and State GST are charged. All the inter-state sales are chargeable to the Integrated GST.

Components of GST

- **CGST**: It is the tax collected by the Central Government on an intra-state sale (e.g., a transaction happening within Maharashtra).
- **SGST**: It is the tax collected by the state government on an intra-state sale (e.g., a transaction happening within Maharashtra).
- **IGST**: It is a tax collected by the Central Government for an inter-state sale (e.g., Maharashtra to Tamil Nadu).

Advantages of GST

- GST has mainly removed the cascading effect on the sale of goods and services.
- Removal of the cascading effect has impacted the cost of goods.
- Since the GST regime eliminates the tax on tax, the cost of goods decreases.
- Also, GST is mainly technologically driven.
- All the activities like registration, return filing, application for refund and response to notice needs to be done online on the GST portal, which accelerates the processes.

Issues with GST

- High operational cost.
- GST has given rise to complexity for many business owners across the nation.
- GST has received criticism for being called a 'Disability Tax' as it now taxes articles such as braille paper, wheelchairs, hearing aid etc.
- Fuels are not under GST, which goes against the ideals of the unification of commodities.

6. Significance of Hydrogen Powered Ferry

India recently launched its first indigenously developed hydrogen fuel cell ferry.

What are the special features of hydrogen fuel cell ferry?

- **'Harit Nauka' initiative**- The ferry is a part of this initiative which was launched in 2024 to reduce greenhouse gas emissions as per the **Maritime Amrit Kaal Vision 2047.**
- **Manufactured-** By Cochin Shipyard Limited.
- **Deployed in service**- At Varanasi in Uttar Pradesh.
- **Features**- The ferry can carry 50 people, in its air-conditioned passenger area, the boat has five hydrogen cylinders that can carry 40kg of hydrogen and support 8 hours of operations. The vessel is also fitted with a 3-kW solar panel.
- **Fuel cell**- It utilises utilizes a 50-kW Proton-Exchange Membrane (PEM) fuel cell which is a type of hydrogen fuel cell with Lithium-Ion Phosphate batteries.
- **Hydrogen fuel cell system**- It was developed by KPIT Technologies, Pune in collaboration with CSIR labs.

Significance of hydrogen fuel cell ferry

- **Environment friendly-**The hydrogen fuel cell-powered vessel has zero emission, zero noise and is energy-efficient.
- **Zero emission-** Fuel cell technology allows for efficient conversion of chemical energy in hydrogen into electricity, with water being the only byproduct.
- **Quick refuelling-** The hydrogen fuel cells do not require recharging, for the continuous operation it must be provided with uninterrupted supply of fuel and oxygen.
- **Zero noise-** The hydrogen fuel cell-powered vessel produces zero emissions and operates silently, making it environmentally friendly and suitable for urban areas.
- **Durability-** The passenger area is constructed with high-quality fiberglass reinforced plastic, similar to metro train coaches it enhances durability while keeping the vessel lightweight.
- **Sustainability-** The ferry features a 3-kW solar panel, contributing to the vessel's energy needs and enhancing its sustainability.
- **Flexibility-** The advantage of using a PEM fuel cell with a Lithium-Ion Phosphate battery is that the system can adjust the power output according to the power demand.
  - When the vessel needs to accelerate, the battery can provide extra power.
  - When the vessel needs to slow down, the battery can store the excess power generated by the fuel cell.
- **Benefits of PEM cell**- PEM fuel cells are popular in automotive applications because they operate at a lower temperature, and are lighter and more compact.
- **Cost effective**- There are no moving parts, hence the ferry requires less maintenance than combustion vessels.
- The ferry is a milestone for the field of nuclear fusion and green energy, as it represents the necessary heat and stability required for viable fusion reactors.
- **Emerging green fuel**- The ferry has given India an early mover advantage to tap the potential of hydrogen as an emerging green fuel in the marine sector.
- **Boost National Green Hydrogen Mission**- It aims to make India the global hub for production, usage, and export of green hydrogen and its derivatives, such as green ammonia and green methanol.

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Special features of hydrogen fuel cell ferry

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7. ==Harnessing AI to Address India's Water Crisis==

- Artificial Intelligence (AI) has emerged as a pivotal tool in addressing various challenges, including India's pressing water crisis.
- While the public's perception of AI remains mixed, its potential to revolutionize water management cannot be overstated.

River Inter-Linking

- **Background**: As India grapples with the challenges of climate change and unpredictable weather patterns, the need to mitigate water deficits has become a critical priority for policymakers. One proposed solution is the ambitious river-linking project, aimed at connecting flood-prone rivers with those facing water deficits.
- **Objective**: The goal of the river-linking initiative is to optimize water distribution across regions, ensuring maximum benefits for the most people while minimizing environmental impact and resource depletion.

Assessing River Inter-Linking using AI

- **Computational Modeling**: Researchers from institutions such as IIT-ISM, Dhanbad, and NITs in Tripura and Goa have leveraged AI tools to develop computational models for analyzing the proposed Pennar-Palar-Cauvery link canal.
- **Multi-Objective Optimization**: The AI models employ a multi-objective approach, aiming to achieve multiple objectives simultaneously. For example, optimizing crop yield while minimizing water usage and environmental impact.
- **Data Utilization**: These models utilize extensive datasets, including water level measurements, crop-sowing patterns, and economic factors such as minimum support price and cost-benefit analysis for farmers.

- **Predictive Analysis**: By analyzing historical data and making predictions based on AI algorithms, researchers can identify optimal strategies for crop selection and water management, ultimately maximizing agricultural productivity while conserving water resources.

Key Findings and Recommendations

- **Optimizing Farm Returns**: The AI-based models suggest that by making adjustments to crop selection and water management practices, it is possible to improve farm returns without depleting groundwater or wasting water resources.
- **Need for Detailed Data**: Collecting more detailed and accurate data will enhance the effectiveness of AI-based models, enabling more focused and accurate predictions for optimizing water usage and agricultural productivity.

Way Forward

- **Improved Data Collection**: Enhanced data collection efforts will further refine AI-based predictions, enabling more precise and focused solutions to water management challenges.
- **Collaborative Efforts**: Collaboration between academia, government agencies, and technology experts is crucial in harnessing AI's full potential for sustainable water management.
- **Public Awareness**: Educating the public about the benefits of AI-driven water management solutions can garner support and facilitate implementation at scale.

Conclusion

- The integration of AI into the river-linking initiative holds immense potential for addressing water scarcity challenges in India.
- By harnessing the power of AI-driven predictive modelling, policymakers can make informed decisions to optimize water distribution, enhance agricultural productivity, and mitigate the impacts of climate change on water resources.
- As India's development journey progresses, leveraging AI technologies will be instrumental in achieving sustainable water management practices and ensuring water security for future generations.

8. Stage II of India's 3-stage nuclear programme

Prime Minister Narendra Modi witnessed the core-loading of the indigenous prototype fast breeder reactor (PFBR) at Kalpakkam, Tamil Nadu marking a significant step in India's nuclear power program.

PFBR

- **Developed by**- Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVANI).
- **Design**- Indira Gandhi Centre for Atomic Research (IGCAR).
- **Location**- Kalpakkam, Tamil Nadu.
- **Nuclear Fuel Complex**- It is entrusted with the responsibility of fabrication of core subassemblies for Fast Breeder Test Reactor (FBTR) and 500 MWe PFBR.
- **BARC**- Bhabha Atomic Research Centre contributes to the research & development and manufacture of fuels for fast reactors, technology for reprocessing of fuels, waste management and health and safety of the work force.
- **Expansion**- The Department of Atomic Energy (DAE) proposed building 4 more FBRs with a capacity of 600 MWe each.
- **Fissile material-** Mixed oxide of Uranium and Plutonium-239 (By-product from stage-I).
- **Coolant- Liquid sodium**, a highly reactive substance used in 2 circuits to transfer heat and produce electricity.
- **Breeder reactor-** It generates more Pu-239 than it consumes.

Why PFBR delayed?

- **Impact of sanction-** Sanctions following India's 'Smiling Buddha' nuclear test led to the use of mixed carbide fuel instead of enriched uranium, affecting power output and operating conditions.
- **Loss of expertise**-Many experts involved with the Fast Breeder Test Reactor (FBTR) were retiring by the time PFBR was approved in 2003, leading to a loss of expertise.
- **Fund deficit**- The project faced cost overruns, and the need for additional funds and extensions contributed to delays.
- **Procurement Delays**- An audit revealed that BHAVINI's dependency on the Nuclear Power Corporation of India resulted in significant delays in component procurement.
- **Operational challenges**- The experts expected that the reactor vessel could be preheated to 150°C in about a month based on theoretical calculations and tests with a mock-up, but the process took more than a year in reality.
- **Technical difficulties**- The coolant liquid sodium is highly reactive, it requires careful handling due to leaks, blockages or temperature fluctuations.

- **Fukushima Daiichi disaster 2011**- It shifted global public opinion against nuclear power, affecting new facility construction.

Challenges with PFBR?

- **Safety concerns**- Fast Breeder Reactors (FBRs) are known to be more challenging to handle than other reactor types, raising safety concerns.
- **Regulatory dependency-** The Atomic Energy Regulatory Body (AERB) has faced criticism for lacking independence, there have been calls for an independent statutory atomic regulator to enhance safety oversight.
- **Public reaction-** The Department of Atomic Energy (DAE) has faced public skepticism and concerns about its handling of safety issues.
- **Radioactive by-products**- The thorium fuel cycle, while promising for its abundance, produces radioactive byproducts (caesium-137, actinium-227, radium-224, radium-228, and thorium-230) that require careful handling and storage.

What lies ahead?

- Nuclear power is seen as a strategic component in India's energy mix, providing a reliable and continuous source of electricity while supporting national goals related to energy security and sustainability.
- The proposed expansion of FBRs indicates a commitment to advancing nuclear technology in India despite challenges.
- Nuclear Power Corporation of India Limited announced plans to commission a nuclear power reactor every year suggest a proactive approach to meeting energy demands and contributing to the country's energy transition.

9. New Initiatives for Cooperative Sector

Prime Minister inaugurated and laid the foundation stone of several major initiatives for the cooperative sector at Bharat Mandapam in New Delhi.

Key Initiatives:

- **World's Largest Grain Storage Scheme in Cooperative Sector**: A pilot project in 11 Primary Agricultural Credit Societies (PACSs) across 11 states. It aims to significantly enhance grain storage capacity in the cooperative sector, addressing the long-standing issue of post-harvest grain losses.
- **Foundation Stone for Additional PACSs**: An additional 500 PACSs across the country. These additional PACSs are meant for the creation of godowns

and other agriculture-related infrastructure, which will further support the farmers and the agricultural sector.

- **Computerization of PACSs**: An initiative for the computerization of 18,000 PACSs to bring transparency, modernize operations, and create business opportunities.
- **New Bye-Laws for PACSs**: The Ministry of Cooperation has prepared new Bye-Laws for PACSs, enabling them to engage in 20 different activities including dairy, water management, and storage capacity increase.

Co-operative Society:

- It is a voluntary association of people who work together to promote their **economic interests**.
- These societies are based on the **principles of mutual and self-help,** and their primary goal is to support their members.
- Within the **top 300 cooperative societies** globally, three Indian societies are featured:
    - Amul,
    - Indian Farmers Fertiliser Cooperative Limited (IFFCO), and
    - Krishak Bharati Cooperative Limited (KRIBHCO).

Primary Agricultural Credit Societies (PACS):

- PACS are the Village-level arms of the **short-term cooperative credit structure**.
- They deal directly with **rural (agricultural) borrowers**, give short-term and medium-term agriculture loans, and also undertake distribution and marketing functions.

Organizational Structure of PACS:

- General Body of PACS: Exercise the control over board as well as management.
- Management Committee: Elected by the general body to perform the work as prescribed by the society's rules, acts, and by-laws.
- Chairman, Vice-Chairman, and Secretary: Work for the benefit of the members by performing their roles and duties as assigned to them.
- Office Staff: Responsible for performing day-to-day work.

Steps taken to promote Co-operatives Societies:

- **Sahkaar se Samriddhi scheme**: It is a transformative effort aimed at harnessing the potential of cooperatives in driving India's economic growth. It is led by Union Ministry of Cooperation.

- **97th (Amendment) Act, 2011**: It granted constitutional status to Cooperative Societies.
  - It inserted Part IX B 'The Cooperative Societies', Article 43B in Part IV as a Directive Principle of State Policy for the promotion of cooperative societies.
- **Separate Ministry of Cooperation:** It was established on July 2021 by the Union Government by transferring the existing entries related to cooperation and cooperation in the business of the erstwhile Ministry of Agriculture, Cooperation and Farmers Welfare.
- **Multi-State Co-operative Societies (Amendment) Act, 2023:** This act came into force on August 3, 2023. It includes provisions from the 97th Constitutional Amendment and aims to strengthen governance, increase accountability, and reform the electoral process.
- **Income tax surcharge reduction:** The surcharge on income tax for cooperative societies with income from Rs 1 crore to Rs 10 crore has been reduced from 12% to 7%.
- **Tax rate reduction:** The Union Budget 2023-24 announced a reduction in the tax rate for new cooperatives.
- **TDS limit increase:** The Union Budget 2023-24 increased the cash withdrawal limit for cooperatives from Rs 1 crore to Rs 3 crore per year without being subjected to TDS.
- **GeM portal registration:** Cooperatives are now allowed to register as "buyers" on the GeM portal for national public procurement.
- **Cooperative Sugar Mills:** Cooperative Sugar Mills will not have to pay additional income tax on payment of higher sugarcane prices to farmers up to the fair and remunerative price or the state-advised price.

10. ADITI Scheme to Fund India's Defence Start-ups

- The recently launched ADITI scheme by the Union Minister of Defence marks a new era in promoting innovations in critical and strategic defence technologies.

ADITI Scheme

- **Scheme Objective**: Acing Development of Innovative Technologies with iDEX (ADITI) is aimed at fostering innovations in critical and strategic defence technologies.
- **Development Goals**: The scheme targets the development of approximately 30 deep-tech critical and strategic technologies within the proposed timeframe.
- **Eligibility Criteria**: Start-ups can avail grant-in-aid of up to Rs 25 crore for their research, development, and innovation efforts in defence technology.

- **Budget Allocation**: ADITI is backed by a budget of Rs 750 crore spanning from 2023-24 to 2025-26.
- **Framework**: It operates within the iDEX (Innovations for Defence Excellence) framework under the Department of Defence Production, Ministry of Defence.

Features of the Scheme

- **Bridge-building Initiative**: ADITI aims to establish a 'Technology Watch Tool' to bridge the gap between the modern Armed Forces' expectations and requirements and the capabilities of the defence innovation ecosystem.
- **Incentives for Innovators**: iDEX has been expanded to iDEX Prime, offering increased assistance from Rs 1.5 crore to Rs 10 crore, motivating young innovators to participate.
- **National Transformation**: Initiatives like ADITI, iDEX, and iDEX Prime are instrumental in propelling India towards becoming a knowledge society.
- **Youth Empowerment**: The scheme aims to nurture youth innovation, propelling the country forward in the realm of technology.

11. INS Jatayu: India's new Naval Base in Lakshadweep

- The Naval Detachment Minicoy will transition into INS Jatayu, an upgraded naval base, symbolizing India's commitment to bolstering security infrastructure in the strategic Lakshadweep Islands.
- This development underscores the Indian Navy's strategic imperative to fortify its presence in the region.

INS Jatayu

- **Upgrade to Naval Base**: INS Jatayu will be elevated to a fully-fledged naval base, equipped with essential infrastructure such as an airfield and housing facilities.
- **Strategic Location**: Situated amidst vital Sea Lines of Communications (SLOCs), the Lakshadweep Islands hold immense strategic importance, serving as a gateway to the Indian Ocean.
- **Enhanced Operational Capability**: The transformation of Naval Detachment Minicoy into INS Jatayu signifies a significant augmentation of the Navy's operational capabilities in the region.
- **Geopolitical Dynamics**: Against the backdrop of evolving geopolitical dynamics, particularly China's increasing influence in the Indian Ocean Region, the establishment of INS Jatayu assumes greater significance.

A Strategic Asset: Lakshadweep Archipelago

- **Geographical Context**: Lakshadweep, comprising 36 islands, lies strategically between the Indian mainland and the Maldives, serving as a vital link in India's maritime security architecture.
- **Maritime Highways**: Minicoy, in particular, is strategically positioned along key maritime highways, including the Eight Degree Channel and the Nine Degree Channel.

Future Prospects and Challenges

- **Operational Implications**: The establishment of INS Jatayu will bolster the Navy's operational reach and responsiveness, enabling effective anti-piracy and anti-narcotics operations in the western Arabian Sea.
- **Ecological Considerations**: The fragile ecology of the island poses challenges for infrastructure development, necessitating meticulous planning and environmental clearances.
- **Operational Expansion**: The proposed airfield at INS Jatayu will facilitate operations for various aircraft, bolstering the Navy's surveillance capabilities and extending its operational reach.

12. Calculation of Green Credit

The government has issued guidelines outlining methodologies for calculating credits generated through 'Green Credit Programme' (GCP) from tree plantation on degraded land, including scrub land, wasteland, and river catchment areas in each state and Union Territory.

Methodology for Credit Calculation:

- The Forest Department of every State and Union territory will **identify degraded land** parcels, including open forest and scrub land, wasteland and catchment areas, under their administrative control and management.
    - These identified parcels will be made available for tree plantation by individuals or entities.
- **Identified land parcels** for **plantation** must be free from encumbrances and have a minimum size of **five hectares**.
- Any person or entity desirous of undertaking tree plantation for the purposes of generation of Green Credit may apply to the Administrator.
- After submitting the application, the **applicant will be allocated a land parcel**.
- Subsequently, the applicant is required to **formulate a detailed proposal outlining** the tree plantation plan for the generation of Green Credit.

- Additionally, the applicant must **cover charges for plantation and an administrative fee**.
- Upon completion of these formalities, the Administrator will **instruct the Forest Department to initiate tree plantation.**

Implementation Process:

- Afforestation will be **carried out by the forest department** on behalf of industries, companies or any private entity after getting the cost of tree plantation and administrative expenses.
- The plantation will adhere to **specified working** and **management plans** and must be **completed within two years from the date of payment**.

Completion and Evaluation:

- Upon **completion of tree plantation**, the forest department shall submit a report in this regard to the administrator and **issue a certificate of completion of tree plantation** to the **applicant**.
- The **administrator**, following an **assessment of the plantation activity**, may generate and issue green credits based on the **total number of trees planted** in the assigned land parcel.

Calculation:

- Green credits will be calculated at the rate of **one green credit per tree grown** through the tree plantation on such land, with a **minimum density requirement of 1100 trees per hectare,** based on **local silvi-climatic and soil conditions**.

Utilization of Green Credits:

- Generated credits can be utilized for reporting under **environmental, social, and governance (ESG) leadership indicators** or **corporate social responsibility (CSR).**
- **Green credits may also be exchanged** for meeting the compliance of the **compensatory afforestation** in case of diversion of forest land for non-forestry purposes.

About Green Credit Programme (GCP):

- The GCP is a part of the **government's Lifestyle for Environment (LIFE) movement.**
- The program aims to **create a market** for actions that go beyond carbon emission reductions.

- o GCP leverages a **competitive market-based approach** for Green Credit to **incentivise environmental actions of various stakeholders**.
- **Green Credit** refers to a unit of an incentive provided for a specified activity having a positive impact on the environment.
- The **green credits are tradable** and can be made available for trading on a domestic market platform.
- The programme is **independent of the carbon credit** provided under the **Carbon Credit Trading Scheme.**
- An environmental activity generating green credit may yield **climate co-benefits**, including the **reduction or removal of carbon emissions**.
- Furthermore, an activity generating green credit under the Green Credit Programme may also **qualify for carbon credit** through the same initiative.
- **Indian Council of Forestry Research and Education (ICFRE)**, headquartered in Dehradun, **administers the GCP**, overseeing **implementation, management, monitoring, and operation**.

13. India's Solar Slowdown: Trends and Projections

- Following two years of robust growth, India's solar capacity additions sharply declined by 44% in 2023, the lowest since 2016.
- What triggered this slowdown, and will this trend persist? Let's explore.

Solar Capacity Addition in 2023

- **Decline in Capacity**: India added 7.5 gigawatts (GW) of solar power capacity in 2023, a significant drop from the previous year's record of 13.4 GW. This marked the lowest levels since 2016, except for the pandemic-affected 2020.
- **Large-scale Projects Hit Hard**: Capacity additions in large solar power projects declined by over 50% to 5.8 GW from 11.7 GW in 2022. However, rooftop solar power capacity continued to grow by 1.7 GW, consistent with 2022 levels.
- **Cumulative Capacity**: India's cumulative solar power capacity reached 72 GW by the end of 2023, with large-scale projects contributing over 60 GW.

Reasons for the Decline

- **Regulatory Hurdles**: Solar power producers faced regulatory hurdles, including stricter grid connectivity rules and a Supreme Court directive in 2021 mandating the relocation of overhead power cables to protect the Great Indian Bustard habitats.
- **Challenges in Compliance**: Compliance with amended grid code provisions became more demanding, leading to delays in project execution. Land acquisition challenges also persisted, further delaying project timelines.

Outlook for 2024

- **Temporary Setback**: The decline in solar capacity addition in 2023 appears to be a temporary setback. The pipeline for 2024 is robust, with 105.3 GW of capacity planned, including an additional 70.6 GW awaiting auction.
- **Delayed Projects**: Large-scale projects that were delayed and granted extensions from December 2022 to June 2023 will contribute significantly to capacity additions in 2024.

Impact of 'Make in India'

- **Reduction in Imports**: India's solar capacity initially relied on imported cells from China. However, the imposition of customs duties on imported solar modules and cells led to a significant decline in imports.
- **Promoting Local Manufacturing**: The introduction of the Approved List of Models and Manufacturers (ALMM) enabled local manufacturers to participate in government bids. However, the ALMM mandate was suspended until April 2024 to maintain momentum in solar installations.

Alignment with India's Energy Targets

- **Renewable Energy Capacity**: In 2023, India's renewable energy capacity exceeded 180 GW, with solar contributing 40%. Despite missing the initial targets due to the pandemic, India achieved 60 GW of large-scale solar projects a year later.
- **Future Targets**: India aims to achieve a renewable energy target of nearly 600 GW by 2032, with solar accounting for 365 GW. To meet this target, 30 GW of fresh solar capacity must be added annually for the next 8 years.

Various Policy Initiatives

- **Solar Park Scheme (2014)**: Initiated in, the Solar Park Scheme aims to develop a series of solar parks, each with a capacity of around 500 MW, across various states.
- **Rooftop Solar Scheme (2016):** The Rooftop Solar Scheme endeavours to harness solar power by installing solar panels on residential rooftops.
- **National Solar Mission (2010):** The National Solar Mission stands as a crucial endeavor by both the Indian government and state authorities to foster sustainable development and tackle energy security challenges.
- **SRISTI Scheme (2018):** The SRISTI Scheme is formulated to encourage the implementation of rooftop solar power projects in India, promoting sustainability.

- **International Solar Alliance (2015):** Formed in 2015, the International Solar Alliance serves as a collaborative platform promoting the adoption of solar energy technologies through member-driven initiatives.
- **Kisan Urja Suraksha evam Utthaan Mahabhiyan (2019):** Launched by the Ministry of New and Renewable Energy (MNRE) in 2019, the PM-KUSUM scheme aims to facilitate the deployment of off-grid solar pumps in rural areas and reduce reliance on the grid in connected regions.

Conclusion

- Despite the temporary slowdown, India remains committed to expanding its solar capacity to meet its ambitious renewable energy targets and contribute to global sustainability efforts.

14. Bengaluru's Water Crisis

Bengaluru, India's 3rd most populous city is facing the worst potable water crisis in its nearly 500-year history.

What is the issue?

- Bengaluru was once known as the "the necklace of lakes".
  - **Important lakes of Bengaluru** - Dharmambudhi Lake, Shoolay Lake, Akkithimanhalli Lake, Sampangi Lake, Bellandur Lake, Hebbal Lake, Madiwala lake, Ulsoor lake, Lalbagh Lake, Agara Lake, etc.
  - **Important rivers of Bengaluru** - Vrishabhavathi, Arkavathi, Dakshina Pinakini, Chinnar, Suvarnamukhi, Cauvery and Netravathi rivers.
- At present, the city is facing a severe water shortage.

What led to severe shortage of water in Bengaluru?

- **Lack of rainfall -** There hasn't been enough rain thereby causing the water levels in the Cauvery River to drop.
- As per the Karnataka State Natural Disaster Management Centre, the water levels in Cauvery Basin reservoirs like Harangi, Hemavathi, KRS, and Kabini are at 39% of their total capacity.
- **Geography –** Bengaluru is part of the semi-arid zone and falls in the rain shadow of the Western Ghats, without a perennial source of water.
- Tributaries of the Cauvery, such as the **Arkavathy and Vrishabhavathi** that flowed through parts of the city were seasonal.
- **Changing climatic conditions** - The plunging groundwater levels, with more than 3,000 borewells drying up, have caused the current water crisis is also adding to the issue of water shortage.

- **Urbanisation and industrialization** - Population explosion, Encroachment, unplanned urbanisation, unfriendly industrial policies have also resulted in this problem.
  - Bengaluru, up until 1961, had 262 lakes which has now come down to 81.
- **Pollution -** In Bengaluru (once known as the city of 1,000 lakes), many lakes are polluted and marked as Category D or E lakes.
- **Other issues** - Poor Rainwater Harvesting (RWH) in the city has also added to the problem.
- The Bangalore Water Supply and Sewerage Board (BWSSB), which is primarily responsible for supplying the city with water has acknowledged the city's excessive reliance on the Cauvery and the lack of co-ordinated water management.
  - Bengaluru requires 2,100 million liters per day (MLD) of potable water, of which 1,450 MLD comes from the Cauvery River.

Day Zero refers to the "day when a city's taps run completely dry, forcing people to stand in queues to collect their daily quota of water."

What efforts have been taken in this regard?

- The Karnataka government has banned the use of drinking water for gardening and other purposes.
- It has ordered supply of water in huge tankers to Bengaluru from adjoining towns.
- A substantial budget of Rs 131 crore is allotted by civil bodies for drilling borewells in priority zones.
- To control water prices, all private water tankers and borewells are instructed to register with the BWSSB.
- In the 2024-2025 budget speech, CM Siddaramaiah announced that the BWSSB would start Phase-5 of the **Cauvery project**, aiming to provide 110 liters of drinking water daily to 12 lakh people.
- The project is expected to be completed by May 2024.
- **Karnataka Water Policy 2022** had suggested strategies like re-cycling, re-use of treated waste water and rain water harvesting, industrial water use planning and other such measures.

India was one of the first signatories to the First World Convention on Waterbodies and Conservation held in Ramsar, Iran in 1971.

What lies ahead?

- **RWH** - According to a vision document, '**Mattondu Cauvery'** prepared by the Centre for Public Problem Solving, harvesting just 10% of rainwater in the Bangalore Metropolitan Region will increase the water supply in the region by nearly 100%.
- Minor changes can be made to the building code to enable open spaces to be more permeable to water can help promote groundwater recharge.
- **Innovative measures-** The BWSSB in a document titled "Blueprint for the Future" had suggested some innovative measures for water management
  - Establishment of a forum called **Water Future Hub** would connect local companies with national and international experts to share knowledge and capabilities that can develop new ideas, innovative solutions to address future water challenges.
  - Establishing a **Water Centre** will promote concepts like water conservation, rainwater harvesting and water reuse among people.
- **People centered planning** - Approaches towards water governance should be more human-centric rather than tech-centric to help common people understand what is happening with respect to water planning.
- **Local water management** - There is a need to identify local watersheds, mark their boundaries, and create a water balance plan to use the local water more effectively.
- **Use of treated water** - Given Bengaluru's limited water resources, systematic use of treated water for most purposes is crucial in bringing down the demand for fresh water.
- Dual piping should be mandatory in all new constructions to ensure treated water is used for tertiary purposes.
- **Lake rejuvenation –** It is crucial in ensuring better water seepage to recharge the groundwater tables.

15. Mission Gaganyaan

Recently Prime Minister Narendra Modi publicised the final shortlist of candidates to be astronauts on board the maiden human spaceflight mission called Gaganyaan of the Indian Space Research Organisation (ISRO).

Gaganyaan

- **Aim**- To send a team of astronauts into space on a **Low Earth Orbit (LEO) of 400 km** for 3 days and safely return them by landing in the Indian Ocean.
- **Objective**- To demonstrate indigenous capability to undertake human space flight mission to LEO.
- **Origin**- In 2006, India started work on an orbital vehicle mission that was later named Gaganyaan.

- **Mission program**- As a part of this program two unmanned missions and one manned mission are approved by Government of India.
- **Unmanned mission**- It will demonstrate the levels of technology preparedness before manned mission.
- **Demonstrator missions**- It includes Integrated Air Drop Test (IADT), Pad Abort Test (PAT) and Test Vehicle (TV) flights.

- **Space Capsule Recovery Experiment**- It was conducted in 2007 where a satellite previously placed in orbit descended from an altitude of 635 km and safely splashed down into Bay of Bengal.
- **CARE-** The Crew Module Atmospheric Re-entry Experiment was successfully conducted in 2014 where ISRO launched a prototype of the crew module onboard on LVM-3 rocket.
- **Domestic development and testing**- ISRO worked deligently to human rate various components ensuring their reliability met stringent standards for crewed spaceflight.

- **Second phase of unmanned mission**- A second unmanned flight is planned with a pressurized crew module, which will carry the robot **Vyommitra** to record all parameters to study the impact of the flight on humans.

- **Manned mission-** Group Captain Prasanth Balakrishnan Nair, Group Captain Ajit Krishnan, Group Captain Angad Pratap, and Wing Commander Shubhanshu Shukla are India's astronauts-designate for Gaganyaan.
- **Launch vehicle**- LVM-3, it is a well proven and reliable heavy lift launcher of ISRO.

LVM-3 was earlier called as GSLV Mk-III

- **HLVM 3-** All systems in LVM3 launch vehicle are re-configured to meet human rating requirements and christened Human Rated LVM3.
  - It will be capable of launching the Orbital Module to an intended Low Earth Orbit of 400 km.
- **Crew Escape System**- HLVM3 consists of Crew Escape System (CES) powered by a set of quick acting, high burn rate solid motors which ensures that Crew Module along with crew is taken to a safe distance in case of any emergency either at launch pad or during ascent phase.

- **Orbital module**- It will orbit the Earth which consists of
  - Crew module
  - Service module

- **Human space flight centre**- It was launched in 2019 in Bangalore with a primary mandate to spearhead ISRO's Gaganyaan programme, the crew training is provided here.

ISRO signed a Memorandum of Understanding (MoU) with Glavkosmos, a subsidiary of the Russian space agency Roscosmos, for the training of the crew.

What are the benefits of undertaking Gaganyaan Mission?

- **Future explorations-** It will make a progress towards a sustained and affordable human and robotic programme to explore the solar system and beyond.
- **Technology advancement-** Advanced technology capability for undertaking human space exploration, sample return missions and scientific exploration.
- **International collaboration**- To actively collaborate in global space station development & to carry out scientific experiments of interest to the nation.
- **Job creation-** It provides for an ample scope for employment generation and human resource development in advanced science and R&D activities.
- **Foster scientific temper**- It will provide unique opportunity to inspire and excite Indian youth and steer many students towards career in science and technology.
- **Global leader** -The programme will strengthen international partnerships and global security through the sharing of challenging and peaceful goals.

What are the challenges in Gaganyaan mission?

- **Space debris management**- The increasing amount of space debris poses a significant threat to spacecraft in LEO, it requires advanced tracking systems and collision avoidance maneuvers to prevent potential collisions with debris.
- **Cabin depressurization risk**- Robust spacecraft design with protective shielding and ealy warning systems are essential as collision with small debris can pose a risk of depressurization in the crew module.
- **Complexity-** Replicating earth like conditions in a confined space like crew module is challenging.
- **Resource management**- Lightweight and compact systems for life support, food production and waste recycling are essential to optimize the use of available payload capacity.
- **Technological innovations**- It is necessary continuously to overcome the challenges and complexities associated with the mission, research and development effort must focus on creating reliable, compact and energy efficient systems to sustain human life in the harsh conditions of space.

What lies ahead?

- Gaganyaan is a significant step for India, aiming to achieve self-sufficiency in human spaceflight.
- It will boost India to achieve its vision of an indigenous space station by 2035 and to land an Indian on the moon by 2040.

16. India-EFTA Trade and Economic Partnership Agreement

India-European Free Trade Association has signed a Trade and Economic Partnership Agreement (TEPA).

What are trade agreements?

- Trade agreement is any contractual arrangement between states concerning their trade relationships.
- They may be bilateral or multilateral.
- It includes Free Trade Agreement (FTA), Preferential Trade Agreement (PTA), Regional Trade Agreement (RTA), etc.

What is an FTA?

- A free trade agreement is an arrangement between two or more countries where they agree either to **end or reduce customs duties** on maximum number of goods traded between them, besides cutting down non-trade barriers on a significant value of imports.
- **Goal-** To facilitate cross-border transactions, increase investment prospects, promote mutual trade, and improve the ease of business.
- The **World Trade Organisation (WTO)** is the global watchdog for exports and imports-related issues. India has been a member since 1995.
- **Benefits of FTAs**
  - Zero-duty entry into partner country markets helps in the diversification and expansion of export markets.
  - Level playing field vis-a-vis competitors who may have already entered FTAs with partner countries.
  - FTAs enable preferential treatment in the partner country market over non-FTA member country competitors.
  - Attracting foreign investment to stimulate domestic manufacturing.
  - Access to raw materials, intermediate products and capital goods for value-added manufacturing.
  - Long-term efficiency and consumer welfare goals.

Trade and Economic Partnership Agreement (TEPA)?

- TEPA is a modern and ambitious Trade Agreement.
- The agreement has **14 chapters**, including trade in goods, rules of origin, intellectual property rights (IPRs), trade in services, investment promotion and cooperation, government procurement, technical barriers to trade and trade facilitation.

India runs a trade deficit with most of its top trade partners, except for the US. India also runs a trade deficit with EFTA at USD 14.8 billion in the last fiscal.

Highlights of TEPA

- EFTA has committed to promote investments to
  - increase the stock of foreign direct investments **by USD 100 billion** in India in the next 15 years
  - facilitate the generation of **1 million direct employment** in India, through such investments (except foreign portfolio investment)
- EFTA covers **99.6%** of India's exports. The EFTA's market access offer covers **100%** of non-agri products and tariff concession on Processed Agricultural Products (PAP).
- India covers **95.3%** of EFTA exports of which more than 80% import is Gold.
- Sectors such as dairy, soya, coal and sensitive agricultural products are kept in exclusion list which means there won't be any tariff cuts by India on these sectors.
- TEPA has provisions for **Mutual Recognition Agreements in Professional Services** like nursing, chartered accountants, architects etc.
- Commitments related to Intellectual Property Rights in TEPA are at **TRIPS level.** India's interests in generic medicines and concerns related to evergreening of patents have been fully addressed.

For EFTA Countries

- **Market access** - EFTA countries gain market access to a major growth market (India).
- **Diversify the supply chain** - India will strive to diversify the EFTA's supply chains while rendering them more resilient.

For India

- **Attract FDI** - India will attract more foreign investment from EFTA, which will ultimately translate into an increase in good jobs.
- **Boost the service sector** - It is expected to stimulate India's services exports in sectors such as IT services, business services, sporting and recreational services, education services and audio-visual services.

- **Promote exports** - It will empower exporters access to specialized inputs and create conducive trade and investment environment thereby providing opportunities for services sector to access more markets.
- **Opportunity to integrate with EU** - TEPA paves way for Indian companies to look into Switzerland as a base for extending its market reach to EU.
- **Encourage domestic manufacturing** - TEPA will give impetus to "Make in India" and Atmanirbhar Bharat in sectors such as infrastructure, manufacturing, pharmaceuticals, chemicals, food processing, transport, financial services and insurance.
- **Creates employment** - TEPA would accelerate creation of direct jobs for India's young aspirational workforce, including better facilities for vocational and technical training.
- **Facilitates technology collaboration** - TEPA facilitates tech collaboration and access to world leading technologies in precision engineering, health sciences, renewable energy, Innovation and R&D.

What are the issues?

- **Abolition of tariffs by Switzerland -** Switzerland, which is India's biggest trade partner among EFTA countries, decided to eliminate import duties on all industrial goods for all countries from January 1, 2024.
- This is a concern for India as industrial goods accounts for 98% of India's merchandise exports to Switzerland in FY2023 and Indian goods will face stiffer competition.
- **Agriculture tariffs** - Exporting agricultural produce to Switzerland remains challenging due to the complex web of tariffs, quality standards, and approval requirements.
- EFTA has not shown any inclination to make agriculture tariffs zero on most basic agricultural produce.

17. First national report on AMR Surveillance in India's fisheries, livestock sectors

- The Food and Agriculture Organization of the United Nations (FAO) and the Indian Council of Agricultural Research (ICAR) jointly published the surveillance data of the Indian Network for Fishery and Animal Antimicrobial Resistance (INFAAR) for 2019-22.
- This report marks the first comprehensive analysis of antimicrobial resistance (AMR) trends in India's fisheries and livestock sectors.

INFAAR

- **Network Formation**: INFAAR, established under ICAR, comprises 20 laboratories, including 17 ICAR Research Institute Laboratories, one Central Agriculture University Laboratory, one State Agriculture University Laboratory, and one State Veterinary University.
- **Collaborative Support**: Technical assistance from FAO and the United States Agency for International Development (USAID) enhances INFAAR's capabilities for data collection and analysis.
- **Expansion Goals**: INFAAR aims for further expansion to encompass more laboratories and enhance surveillance coverage.

Antibiotic Use and AMR Trends

- **Impact of Antibiotics**: Antibiotic usage in food animal production contributes to AMR development, necessitating surveillance to inform policy decisions.
- **Production Systems**: Three key aquaculture systems—freshwater, brackish-water, and marine—were surveyed, covering diverse environments.
- **Panel of Antibiotics**: Antibiotics tested included amikacin, ampicillin, amoxicillin-clavulanic acid, aztreonam, cefotaxime, cefepime, cefoxitin, ceftazidime, chloramphenicol, co-trimoxazole, enrofloxacin, gentamicin, imipenem, meropenem, and tetracycline.

Surveillance Methodology

- **Sample Collection**: Samples collected from 3,087 farms spanning 42 districts in 12 states of India, including fish or shrimp tissues and pond or seawater samples.
- **Bacterial Isolates**: A total of 6,789 bacterial isolates were analyzed, including 4,523 freshwater, 1,809 shrimp, and 457 mariculture isolates.
- **Resistance Profiles**: Resistance profiles were analyzed for Staphylococcus aureus, coagulase-negative Staphylococcus species (CONS), Escherichia coli, Vibrio parahaemolyticus, Vibrio sp., and Aeromonas species.

Key Findings:

(1) Resistance Patterns in Fisheries Sector

- **Species Specific Resistance**: Isolates of Staphylococcus aureus and coagulase-negative Staphylococcus species exhibited high resistance against penicillin across all systems.
- **Variation across Environments**: Freshwater fish showed notable resistance to ciprofloxacin, while marine samples demonstrated higher resistance to cefotaxime.

- **Shrimp Aquaculture**: Notable resistance against ampicillin and cefotaxime was observed in shrimp samples, indicating a concerning trend.

(2) Resistance Patterns in Livestock Sector

- **Animal Origins**: E. coli and Staphylococcus isolates from cattle, buffalo, goat, sheep, pig, and poultry were characterized for AMR profiles.
- **Poultry Resistance**: Poultry-origin isolates exhibited higher resistance rates across various antibiotics compared to other food animals.

(3) Multidrug Resistance Analysis

- **Emergence of MDR**: Approximately 39% of aquaculture-origin E. coli isolates and 15.8% of poultry isolates exhibited multidrug resistance (MDR).
- **ESBL and AmpC Producers**: Detection of extended spectrum β-lactamase (ESBL) and AmpC type β-lactamase producers underscores the complexity of AMR challenges.

Key Recommendations by the Study

- **Baseline Data**: The report provides foundational data for understanding AMR trends and evaluating intervention effectiveness.
- **Judicious Use**: High resistance to critical antibiotics underscores the importance of prudent antibiotic use in food animal production.
- **Policy Implications**: The findings will inform policy and decision-making for AMR containment in India's fisheries and livestock sectors.

Conclusion

- The INFAAR surveillance report sheds light on the evolving landscape of antimicrobial resistance in India's fisheries and livestock sectors.
- By highlighting resistance patterns and advocating for responsible antibiotic usage, this initiative paves the way for effective AMR containment strategies and sustainable agricultural practices.

18. Resolution on sustainable lifestyles adopted by UNEA

The **UNEA** (United Nations Environment Assembly) at its **6th Session** in Nairobi, Kenya, recently adopted a resolution on **sustainable lifestyles**, put forward by India.

About the resolution:

- The resolution aims to encourage global efforts towards adopting environment-friendly lifestyles and practices.
- The resolution acknowledges the potential of behavioral changes towards sustainable lifestyles in achieving **sustainable development goals**.
- It emphasizes the role of initiatives like the **One Planet Network Programme** on Sustainable Lifestyles and Education.
- **Private sector, industry, local authorities, communities, and Indigenous Peoples** are recognized for their role in promoting sustainable lifestyles.
- The resolution emphasizes the importance of informed choices and education at all levels, as referenced in **SDG 4.7**.
- The resolution requests support from the **United Nations Environment Programme (UNEP)** in developing and implementing national or regional action plans for promoting sustainable lifestyles.
- It also calls for facilitating dialogues on sustainable lifestyles practices, including ecocentric approaches, and submitting progress reports to UNEA.

About Mission LiFE:

- It was initiated by India's Prime Minister at **COP26** in Glasgow in **2022**, to put individual conduct at the forefront of the story of global climate action.
- It focuses on 3 main strategies: nudging individuals towards eco-friendly actions, enabling industries to respond to sustainable demands, and influencing government policies to support sustainable consumption and production.

19. Global Resources Outlook 2024

United Nations Environment Programme (UNEP) released Global Resources Outlook 2024 report titled, **'Bend the trend: Pathways to a liveable planet as resource use spikes'.**

About the Report:

- The "Global Resources Outlook 2024" report by UNEP focuses on the importance of resource management in tackling the triple planetary crisis: **climate change, pollution, and biodiversity loss.**
- It highlights how the global production and consumption of resources have increased more than three times over the **last 50 years**.

- It underscores the significant **role of upper-income countries** in driving the demand for resources.
- It points out the **critical impacts of resource extraction** and **processing on GHG emissions**, particulate matter pollution, biodiversity loss, and water stress.
- Its forecasts suggest resource exploitation could surge by almost **60% from 2020 levels by 2060**.

Key Highlights of the Report:

- The report shows a vast global inequality, with low-income countries consuming six times less material than wealthy countries but causing ten times less climate impact.
- It notes a more than threefold increase in global resource production and consumption over the **last 50 years**, growing at an average of more than **2.3%** annually, significantly contributing to the **triple planetary crisis**.
- Mainly driven by upper-income countries, over **55%** of GHG emissions and **40%** of particulate matter pollution come from the extraction and processing of resources like fossil fuels, minerals, and biomass.
- Additionally, **90%** of land-related biodiversity loss and water stress, plus a third of GHG emissions, are linked to the agriculture and forestry sectors.
- Fossil fuels, metals, and non-metallic minerals **(e.g., sand, gravel, clay)** contribute to **35% of global emissions.**
- The report warns that resource exploitation could surge by **nearly 60% by 2060**, increasing from **100 to 160 billion tonnes**, underscoring the urgent need for sustainable resource management.

20. Pros and Cons of Tiger Safari in India

Recently Supreme Court bans tiger safari in core areas of Jim Corbett National Park in Uttarakhand.

Tiger safari

- A "tiger safari" typically refers to a designated area within or near a tiger reserve where visitors can observe tigers and other wildlife in their natural habitat.
- **NTCA,2012**- The concept of a tiger safari in the wild was first envisaged in the Guidelines for Tourism issued by the National Tiger Conservation Authority (NTCA) in 2012, which provided for such establishments in the buffer areas of tiger reserves.

- **Guidelines evolution**- In 2016, the NTCA issued guidelines for Tiger Safaris specifically for injured, conflicted, or orphaned tigers, emphasizing that tigers should not be sourced from zoos.

The guidelines said that a tiger safari can be proposed only by tiger reserves that have already utilised 100% of their tourist carrying capacity.

- **Central Zoo Authority (CZA)-** A significant change occurred in 2019 when NTCA permitted zoos to provide animals for tiger safaris, with the CZA being responsible for animal selection.
- **Wildlife (Protection) Act, 1972**- It does not explicitly define tiger safari, the act states that no construction of commercial tourist lodges, hotels, zoos, and safari parks shall be undertaken inside a sanctuary except with the prior approval of the National Board constituted under the Act.

What is the Supreme Court's view on tiger safari?

- **Illegal tree felling-**The Court criticized the Uttarakhand State government for the illegal felling of over 6,053 trees for the Pakhrau Tiger Safari, citing a Central Empowered Committee report.
- **Complete investigation**-The court also gave CBI three months to complete its investigation into alleged irregularities inside the Corbett tiger reserve, as directed by the Uttarakhand High Court.
- **Tiger safari rules**- The tiger safari would now be allowed only in the peripheral and buffer zones of the Jim Corbett National Park.
- The Court said it was inclined to approve the establishment of the Tiger Safari at Pakhrau" in the buffer area of Corbett tiger reserve.
- However, safari parks are meant only for "injured, conflicted, or orphaned" local tigers, and not those sourced from zoos.
- **Create a committee**- The Supreme Court has ordered the formation of a committee to suggest ways to repair ecological damage in Jim Corbett National Park caused by illegal construction and tree felling within 3 months.
- **Role of committee**-The committee will assess environmental damage, identify responsible officers, recommend restoration measures, and evaluate the feasibility of tiger safaris in buffer areas, keeping ecocentrism in mind.

What lies ahead?

- The Supreme Court's stance aligns with conservation goals, indicating that tiger safaris should not simply be zoos within tiger reserves which reflects a commitment to maintaining the integrity of wild habitats and prioritizing the well-being of wild tiger populations.

- It is essential for authorities to carefully consider site-specific factors and develop guidelines that balance conservation objectives with the needs of local communities and the welfare of wildlife.
- The establishment of tiger safari parks should not become a routine practice but rather be proposed based on careful evaluation of carrying capacity and other ecological factors within each tiger reserve.

21. Global Resources Outlook 2024

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- The report warns that resource exploitation could surge by **nearly 60% by 2060**, increasing from **100 to 160 billion tonnes**, underscoring the urgent need for sustainable resource management.

22. India's 1st Green Hydrogen Plant in Stainless Steel Sector

India's first Green Hydrogen Plant in the **Stainless-Steel Sector** was virtually inaugurated by the Union Minister for Steel and Civil Aviation in **Hisar, Haryana**.

About the plant:

- This plant aims to **reduce carbon emissions** by **approximately 2,700 Metric Tonnes annually** and **54,000 tons of CO2** over the next **20 years**.
- It is the **world's first off-grid Green Hydrogen plant** for the stainless-steel industry and the first to include both **rooftop and floating solar plants**.

Abou the steel industry:

- The **steel industry**, often seen as a barometer for **economic development**, is crucial as both a **raw material and intermediary product**, with the **Indian steel sector** divided into **major, main, and secondary producers**.
- This sector's growth is propelled by the **domestic availability of raw materials** like **iron ore** and **cost-effective labor**.

Government initiatives for steel industry:

- The **Steel Scrap Recycling Policy 2019** promotes a circular economy and environment-friendly recycling of steel.
- The **National Steel Policy 2017**, targeting a **300 Million TPA steel production capacity by 2030** with significant contributions from **EAF (Electric Arc Furnace) route.**
- The **Perform, Achieve and Trade (PAT) program**, a regulatory instrument to **reduce Specific Energy Consumption** in energy-intensive industries, complemented by a market-based mechanism for trading excess energy savings.
- **13 task forces** were established in **2023** to create a roadmap for **green steel in India**.

23. Living Animal Species (Reporting and Registration) Rules, 2024

The Ministry of Environment, Forest, and Climate Change notified the Living Animal Species (Reporting and Registration) Rules, 2024, under the Wild Life (Protection) Act, 1972.

Key Highlights of Living Animal Species (Reporting and Registration) Rules, 2024:

- **Rules were notified under Section 63** of the Wild Life (Protection) Act (WPA), 1972, specifically for the purpose of **Section 49M** of the WPA, 1972.
- **Section 49M mandates the registration** of possession, transfer, birth, and reporting of death of living scheduled animal species listed in Appendices of CITES or Schedule IV of WPA, 1972.
- This section was introduced through the **Wild Life (Protection) Amendment Act, 2022**.
- **Mandatory electronic registration** is required for anyone in possession of any animal species within 6 months.
- Owners must **report the birth** of an offspring of animal species and apply for its registration within 7 days.
- **Transfer of animals** must be reported and registered within 15 days.
- People involved in captive breeding must maintain stock through regular health check-ups of animals and report any escapes.

Wild Life (Protection) Amendment Act, 2022 and CITES:

- The 2022 Amendment aimed to implement CITES.
- **Schedule IV** of the WPA includes specimens of flora and fauna listed under CITES.
- It also designates a management authority to grant export or import permits for the trade of species.

About Wild Life (Protection) Act, 1972:

- It provides a legal framework for the **protection of wild animal species**, management of their habitats, and regulation of trade in animal products.
- **Last amended in 2022**, and these amendments came into effect on **1st April 2023**.

Recent Developments:

- **Gazette Notification** dated 28th February 2024 announced the Rules for the purposes of Section 49M.
- **PARIVESH 2.0 portal** is the designated platform for registration of possession, reporting of births, transfers, and deaths of protected animal species.

About Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):

- It is administered by the **United Nations Environment Programme (UNEP).**
- **Secretariat:** Geneva, Switzerland
- It is drafted following a resolution adopted in **1973** by the **International Union for Conservation of Nature (IUCN)** and entered into **force in 1975**.
- **Members**: As of now, CITES has **184 Parties**, including **India**.
- **Objective**:
  o To ensure that international trade in specimens of wild animals and plants does not threaten their survival.
  o To protect endangered species from over-exploitation through international trade.
- CITES is a **legally binding agreement** on its Parties, requiring them to adopt their own domestic legislation to ensure that CITES is implemented at the national level.

Appendices I, II, and III:

- **Appendix I**: Lists species that are the most endangered among CITES-listed animals and plants. These species are prohibited from international trade, except in extraordinary circumstances for non-commercial purposes.
- **Appendix II**: Includes species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilization incompatible with their survival.
- **Appendix III**: Contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.

24. Significance of Atmospheric Research Testbed (ART)

Recently the 1st phase of India's Atmospheric Research Testbed in Central India (ART-CI) was inaugurated at Bhopal in Madhya Pradesh.

Atmospheric Research Testbed

- **Fund-** Ministry of Earth Sciences (MoES).
- **Implementation by -** Indian Institute of Tropical Metrology, Pune.
- **ACROSS scheme-** ART-CI is the component under **Atmosphere & Climate Research-Modelling Observing Systems & Services** (ACROSS), central sector scheme, pertains to the atmospheric science programs of MoES.
- **About-**It is an open-field observational and analytical research program aimed at studying vital cloud processes associated with the Indian monsoon, particularly focusing on the **Monsoon Core Zone (MCZ)** in central India.

The core monsoon zone is a region in India that stretches from Gujarat in the west to West Bengal in the east

- **Need-** To conduct comprehensive observations of weather and cloud parameters, crucial for understanding monsoon patterns.
- **Location significance-** The selection of Silkheda in Madhya Pradesh as the site for ART is strategic as it is positioned directly in the path of major rain-bearing synoptic systems, it facilitates direct monitoring and tracking of these systems.
- **High quality data-** The pristine environment, devoid of anthropogenic pollutants, makes it an ideal location for deploying sensitive meteorological instruments, ensuring high-quality data collection.
- **First phase-** It will have remote sensing-based and in-situ measurements using 25 meteorological instruments have commenced.
- **Second phase-** ART will deploy instruments such as a radar wind profiler and balloon-bound radiosonde, and soil moisture and temperature measuring equipment.

At 72 metres, ART will house India's tallest meteorological tower.

What are the objectives of ART-CI?

- **Understand monsoon dynamics-**To better understand on processes governing monsoon convection and land atmospheric interactions over the monsoon core region.
- **Measure parameters-** To measure relevant meteorological parameters using the state-of-the-art observational systems.
- **Observational campaigns-** To organize intense observational campaigns along with weather prediction model runs for testing hypotheses and to improve physical parameterizations in the models related to convection and land surface processes.
- **Address research needs-** There is an urgent need to understand more on monsoon convection, its diurnal variation and land-atmospheric interactions.

- **Outreach and training**- The testbed will be made into an international facility for intense observational campaigns and testing physical parameterization schemes including sensitivity runs.
- **Improve weather predictions**- To use ART-CI data to test, validate, and constrain numerical models for improving predictions of intense convective storms and high-impact mesoscale weather events observed predominantly over the Central India region.
- **Data dissemination-** The data collected at this facility will be shared for research to national and international scientific community within the data policy of the Ministry of Earth Sciences.

How ART-CI is significant to India?

- **Agricultural dependence**- About 45% of India's labour force is employed in agriculture, which relies heavily on rain, especially in the Monsoon Core Zone (MCZ) spanning central India2.
- **Monsoon significance**- The southwest monsoon brings 70% of India's annual rainfall, critical for Kharif crops cultivated during July and August.
- **Study rainfall patterns**: ART helps study the synoptic systems like low pressures or depressions originating in the Bay of Bengal, which significantly influence the monsoon rainfall in the MCZ.
- **Weather forecasting**- The long term data from ART will improve weather models, leading to more accurate rainfall predictions, benefiting the agricultural sector.
- **Rainfall correlation**- The rainfall in central India is closely linked to the overall monsoon performance across the country, making it a key area for study.
- **Climate change**-With changing climate patterns, understanding monsoon behaviour in this region helps in adapting to erratic rainfall strengthened low pressure systems.
- **Research advancements**- The Atmospheric Research Testbed (ART) enables scientists to gather long-term data, improving weather models and rainfall predictions.

25. AH-64E Apache Attack Helicopters

- The Indian Army Aviation Corps inaugurated its first unit of AH-64E Apache Attack Helicopters into its fleet at Jodhpur Air Base.

AH-64E Apache Attack Helicopters

- The AH-64E Apache also known as 'Apache Guardian' is widely recognized as the world's most advanced multi-role combat helicopter.

- It originates from the United States and is manufactured by Boeing.
- In February 2020, India sealed a deal with Boeing for the acquisition of six AH-64E for the Army, with an additional six helicopters contracted subsequently.
- Several countries have acquired the AH-64E, including India, Egypt, Greece, Indonesia, Israel, Japan, South Korea, Kuwait, Netherlands, Qatar, Saudi Arabia, Singapore, UAE, and the UK.

Combat Features

- Engineered with an open systems architecture to integrate cutting-edge communications, navigation, sensor, and weapon systems.
- Boasts enhanced thrust and lift capabilities, joint digital interoperability, improved survivability, and cognitive decision aiding.
- Incorporates a new integrated infrared laser for simplified target designation and upgraded infrared imagery blending infrared with night vision capabilities.

Strategic Significance of the Induction

- **Enhancing Combat Capability:** The induction of Apache helicopters marks a significant advancement for the Army Aviation Corps, providing formidable firepower and maneuverability in combat scenarios.
- **Complementing Indigenous Capabilities:** The Apaches will complement the indigenous Light Combat helicopter (LCH), strengthening the Army's aerial combat capabilities.
- **Replacing the ageing arsenal:** The Apache fleet is set to will replace the Russian Mi-35 attack helicopters in service.

26. Equity Issues in IPCC Reports

Intergovernmental Panel on Climate Change recently released 6th Synthesis report which updated and compiled IPCC's sixth assessment cycle.

IPCC assessment reports

- **Working groups-**
  - Physical science
  - Climate adaptation
  - Mitigation action
- **Synthesis report-** It consolidates findings from three working groups.

- **6th synthesis report**- It integrates the main findings of the Sixth Assessment Report (AR6) based on contributions from the three Working Groups, and the three Special Reports.
- **Model pathways**- The IPCC uses this method to estimate what it will take to limit the warming of the earth's surface, they are drawn using Integrated Assessment Models (IAMs) that describe human and earth systems.
- **IAMs**- They are complex models that examine possible futures of the energy and climate system and economies aiming to guide policy on climate action.
- **Model components-** They include macroeconomic models for GDP growth, energy models for consumption projections, vegetation models for land-use changes, and earth-system models based on physics.

Key highlights of future emission scenarios presented by IPCC

- **Per-Capita GDP disparities**- The study predicts that by 2050, per-capita GDP in regions like Sub-Saharan Africa, South Asia, and West Asia (together constitutes 60% of the world population) will remain below the global average.
- **Inequities in consumption**- There is an expected continued disparity in the consumption of goods, services, and energy between the Global North and South.
- **Mitigation burden**- Developing countries are projected to have a greater burden of carbon sequestration and deployment of Carbon Capture and Storage technologies.
- **Unprecedented global warming**-Human activities have caused global warming, with a significant rise in mean surface temperature and CO2 levels. Fossil fuel use remains the primary driver, contributing significantly to GHG emissions.
- **Climate related disasters**- The report underscores the staggering disparity in vulnerability, with individuals in highly vulnerable regions facing a significantly higher risk of mortality from climate-related disasters.
- **Emission reductions**- There is a urgent, deep, and sustained cuts in greenhouse gas emissions are necessary to limit warming to 1.5°C.

Achieving collective net-zero CO2 emissions by 2050 demands drastic reductions: a 48% cut by 2030, 65% by 2035, and 99% by 2050

- **Utilize technology**- Carbon dioxide removal (CDR) technologies may complement emission reductions but must be deployed judiciously due to sustainability concerns.
- **Fossil fuel phase-out-**The report emphasizes the need for a substantial reduction in fossil fuel use and the elimination of fossil fuel subsidies.

- **Protect ecosystems**- The commitment to halt deforestation by 2030 and implementing biodiversity frameworks are urgent imperatives as safeguarding forest offers significant mitigation potential.
- **Shift demand -** Energy conservation and shifting dietary patterns can yield substantial emission reductions, particularly in high emission sectors like transportation and agriculture.
- **Adaptation efforts**- It must be intensified to address escalating climate risks, especially for vulnerable population, integrated climate resilient development pathways are vital for synergistic mitigation and adaptation action.
- **Role of finance**- Increased finance, technology transfer, and international cooperation are crucial for accelerating climate action.

What are the flaws in current modelling approach?

- **Shortcomings-** IAMs focus on least-cost assessments, it fail to adequately account for historical responsibilities and differential capabilities among nations.
- **Least-cost assessments-** IAMs often focus on finding the cheapest ways to reduce emissions, like setting up solar plants or afforestation projects whose costs are usually lower in countries like India compared to the U.S.
- **Inequitable distribution-** The developing countries are envisioned to bear a disproportionate burden of both mitigation efforts and carbon removal technologies which places additional strain on regions grappling with developmental challenges with existing socio-economic disparities.
- **Flawed approach-** The unjust distribution of climate burdens undermine the principles of equity and common but differentiated responsibilities enshrined in international agreements.

Article 3 of UNFCCC emphasizes that countries should protect the climate system for the benefit of present and future generations, based on equity and considering their respective capabilities.

- **Equity overlooked-** The report fail to account for the historical responsibility of the Global North and the developmental energy needs of the Global South.

What lies ahead?

- The report serves as a critical guide for the upcoming Global Stocktake at COP28 and highlights the urgency of action within this decade.
- IAMs should consider fairness which means wealthier countries should take on more immediate and significant climate action, reflecting their greater financial capacity and historical emissions.

- Developed regions should accelerate toward net negative emissions, allowing less developed regions to access the remaining carbon budget.
- There is a need for equitable and environmentally sound construction of IPCC scenarios, highlighting a significant gap in emissions modelling that needs to address equity and climate justice.

27. Significance of Atmospheric Research Testbed (ART)

Recently the 1st phase of India's Atmospheric Research Testbed in Central India (ART-CI) was inaugurated at Bhopal in Madhya Pradesh.

Atmospheric Research Testbed

- **Fund-** Ministry of Earth Sciences (MoES).
- **Implementation by -** Indian Institute of Tropical Metrology, Pune.
- **ACROSS scheme-** ART-CI is the component under **Atmosphere & Climate Research-Modelling Observing Systems & Services** (ACROSS), central sector scheme, pertains to the atmospheric science programs of MoES.
- **About-** It is an open-field observational and analytical research program aimed at studying vital cloud processes associated with the Indian monsoon, particularly focusing on the **Monsoon Core Zone (MCZ)** in central India.

The core monsoon zone is a region in India that stretches from Gujarat in the west to West Bengal in the east

- **Need-** To conduct comprehensive observations of weather and cloud parameters, crucial for understanding monsoon patterns.
- **Location significance-** The selection of Silkheda in Madhya Pradesh as the site for ART is strategic as it is positioned directly in the path of major rain-bearing synoptic systems, it facilitates direct monitoring and tracking of these systems.
- **High quality data-** The pristine environment, devoid of anthropogenic pollutants, makes it an ideal location for deploying sensitive meteorological instruments, ensuring high-quality data collection.
- **First phase-** It will have remote sensing-based and in-situ measurements using 25 meteorological instruments have commenced.
- **Second phase-** ART will deploy instruments such as a radar wind profiler and balloon-bound radiosonde, and soil moisture and temperature measuring equipment.

At 72 metres, ART will house India's tallest meteorological tower.

What are the objectives of ART-CI?

- **Understand monsoon dynamics**-To better understand on processes governing monsoon convection and land atmospheric interactions over the monsoon core region.
- **Measure parameters**- To measure relevant meteorological parameters using the state-of-the-art observational systems.
- **Observational campaigns**- To organize intense observational campaigns along with weather prediction model runs for testing hypotheses and to improve physical parameterizations in the models related to convection and land surface processes.
- **Address research needs**- There is an urgent need to understand more on monsoon convection, its diurnal variation and land-atmospheric interactions.
- **Outreach and training**- The testbed will be made into an international facility for intense observational campaigns and testing physical parameterization schemes including sensitivity runs.
- **Improve weather predictions**- To use ART-CI data to test, validate, and constrain numerical models for improving predictions of intense convective storms and high-impact mesoscale weather events observed predominantly over the Central India region.
- **Data dissemination-** The data collected at this facility will be shared for research to national and international scientific community within the data policy of the Ministry of Earth Sciences.

How ART-CI is significant to India?

- **Agricultural dependence**- About 45% of India's labour force is employed in agriculture, which relies heavily on rain, especially in the Monsoon Core Zone (MCZ) spanning central India2.
- **Monsoon significance**- The southwest monsoon brings 70% of India's annual rainfall, critical for Kharif crops cultivated during July and August.
- **Study rainfall patterns**: ART helps study the synoptic systems like low pressures or depressions originating in the Bay of Bengal, which significantly influence the monsoon rainfall in the MCZ.
- **Weather forecasting**- The long term data from ART will improve weather models, leading to more accurate rainfall predictions, benefiting the agricultural sector.
- **Rainfall correlation**- The rainfall in central India is closely linked to the overall monsoon performance across the country, making it a key area for study.
- **Climate change**-With changing climate patterns, understanding monsoon behaviour in this region helps in adapting to erratic rainfall strengthened low pressure systems.

- **Research advancements**- The Atmospheric Research Testbed (ART) enables scientists to gather long-term data, improving weather models and rainfall predictions.

28. Free trade has two faces and the one offering harmony must prevail

- Recently, the discussion acknowledged **free trade's nuanced and multifaceted nature**, highlighting its **potential benefits** for peace and economic development while recognizing historical and contemporary **challenges** in promoting equitable outcomes.

Evolution of Free Trade ideology:

- **19th Century Political Reformers and Free Trade:** Free trade was the rallying cry of 19th-century political reformers **(Particularly Adam Smith who was inspired by Thomas Hobbes)**, who saw it as a **vehicle** for defeating despotism, ending wars, and reducing crushing inequalities in wealth.
- The era's economic cosmopolitanism encapsulated progressive causes such as **anti-militarism, anti-slavery, and anti-imperialism**.
- **US Populists and Opposition to Tariffs:** US populists in the late 19th century staunchly opposed the gold standard but were also **against import tariffs,** which they thought benefited big business and harmed ordinary people.
- They pushed to replace tariffs with a more equitable **progressive income tax.**
- **Socialists' View on Free Trade in the Early 20th Century:** Then, during the early part of the **20th century,** many **socialists** viewed free trade, supported by supranational regulation, as the **antidote to militarism, wealth gaps and monopolies**.
- **Liberal Reformers' Perspective on Protectionism:** The 19th-century liberals and reformers were free traders because they thought **protectionism served retrograde interests**, including landed aristocrats, business monopolies and warmongers.
- They believed **economic nationalism** went **hand in hand** with **imperialism and aggression**.
- **Historian Marc-William Palen** cites a 1919 essay by the economist Joseph Schumpeter, who **depicted imperialism** as a "monopolistic symptom of atavistic militarism and protectionism—an ailment that only democratic free-trade forces could cure."

Perception and misconceptions of Free trade:

- **Controversial Term**-Free trade has been controversial in economics, with many people **arguing** that it contributes to **rising inequality**.
- However, there is a **grain of truth** in the anti-trade stance, as growing trade did contribute to rising inequality and the **erosion of the middle class** in the US and other advanced economies in **recent decades.**
- **Blind Spot of Globalization –** If free trade got a bad name, **globalisation's boosters ignored** its downsides or acted as if nothing could be done about them.
- This blind spot empowered political leaders like Donald Trump to **weaponize trade** and **demonize racial and ethnic minorities, immigrants, and economic rivals**.
- **Diverse Opposition:** Antipathy to trade is not limited to **right-wing populists** but also includes **radical leftists, climate activists, food safety advocates, human-rights campaigners, labor unions, consumer advocates,** and **anti-corporate groups.**
- **US President Joe Biden** has **distanced himself** from free trade, believing that building a secure, green, equitable, and resilient US economy must take precedence over hyper-globalization.
- **Obstacle to Social Justice:** All progressives believe that free trade stands in the **way of social justice**.

Instrumentalisation of Trade:

1) Instrumentalized for Authoritarian end:

- **Under American Revolution:** A particularly egregious example is **Antebellum America**, where free trade entrenched **slavery.**

- During the drafting of the US Constitution in **1787**, America's slave-owning southerners ensured that the text would prohibit the taxation of exports. They understood that free trade would ensure that plantation agriculture remained profitable and **safeguard the slavery system** on which it was based.
- When the North defeated the South in the US Civil War, slavery was abolished, and **free trade was replaced with protectionism**, which suited Northern business interests better.
- **Under British imperialism**: After the repeal of the **Corn Laws in 1846**, the British government nominally **abandoned protectionism** and led Europe to sign free-trade agreements.

2) Instrumentalized for militaristic ends:

- In **Africa, the Middle East, and Asia,** free trade was imposed through the barrel of a gun whenever the British encountered weak potentates ruling over valuable commodities and markets.
- The British fought the infamous **Opium Wars of the mid-19th century** to force Chinese rulers to open their markets to British and other Western goods so that Western countries, in turn, could buy China's tea, silk, and porcelain without draining their gold.
- The opium was grown in India; a British monopoly **forced farmers** to work under horrendous conditions that left long-term scars.
- **Free trade served repression and war, and vice versa**.

Post-World War II trade regime:

- The American architects of the **International Trade Organization** followed in the **footsteps of Cordell Hull**—President Franklin D. Roosevelt's secretary of state—believing they were pursuing **world peace through free trade**.
- Hull was an economic cosmopolitan and a supporter of the 19th-century radical **free-trade advocate Richard Cobden**.
- The post-war order was meant to be a **system of global rules** that **eliminated bilateralism** and **imperial privileges**.
- While the US Congress ultimately failed to ratify the ITO, some of its key principles—including **multilateralism** and **non-discrimination**—survived in the General Agreement on Tariffs and Trade **(GATT)**, the **precursor** to the World Trade Organization **(WTO)** of today.
- Under GATT, **commercial diplomacy replaced wars**, and many non-Western countries—like Japan, South Korea, Taiwan and China—expanded their economies rapidly by leveraging global markets.

What are the present challenges to the Trade regime?

- **Rise of Corporate Influence:** Big corporations and multinational companies gained substantial power during this period, influencing trade negotiations to serve their interests.
- **Neglect of Important Issues:** Environmental concerns, public health, human rights, economic security, and domestic equity were overlooked as trade negotiations prioritized corporate interests.
- **Departure from Original Vision:** Trade deviated from the original vision of figures like Cobden and Hull, who likely envisioned it as a force for peace and prosperity, instead becoming a source of conflict.
- **Shift in Trade Dynamics:** The dominance of corporate influence shifted the focus of international trade away from broader societal welfare towards maximizing profits and corporate interests

Conclusion:

The lesson of history is that turning trade into a positive force requires **democratizing** it. This means that trade should work for the benefit of the **broader public interest**, not just for a select few. This is an important lesson to remember as the **reconstruction of the world trade regime** would occur in the years ahead.

29. State of Global Climate Report

The World Meteorological Organisation (WMO) has officially confirmed 2023 to be the hottest year on record.

Key highlights of the report

- **Published by**- World Metrological Organization
- **Warmest year**-2023 was the warmest year on record with global average temperatures reaching 1.45°C above pre-industrial levels.

In 2023, ocean heat content reached its highest level in the 65-year observational record

- **Green House Gases**-Concentrations of the three main greenhouse gases – carbon dioxide, methane, and nitrous oxide – reached record high observed levels.
- **Short term climate drivers**- A prolonged period of La Niña from mid-2020 to early 2023 gave way to El Niño conditions which were well established by September 2023, contributing to the observed rise in global mean sea-surface temperatures during 2023.
- **El Nino impact**- An ongoing El Niño event contributed to below-normal monsoon rainfall in India and record-breaking heat in southern India during January and February.
- **Sea level rise-** The global mean sea level reached a record high, the rate of sea level rise in the past ten years (2014–2023) has more than doubled since the first decade of the satellite record (1993–2002).
- **Cryosphere-** The profound changes seen in the cryosphere clearly illustrate the global scale of climate change.

The cryosphere comprises the frozen parts of Earth – glaciers and ice sheets, sea-ice, snow, and permafrost.

- **Antarctic sea-ice extent-** It has reached an absolute record low in February, the annual maximum extent was around 1 million km² below the previous record low maximum.
- **Loss of ice-** Preliminary data from the global set of reference glaciers for the hydrological year 2022-2023 show they experienced the largest loss of ice on record (1950–2023), driven by extremely negative mass balance in both western North America and Europe.

Glaciers in Switzerland lost around 10% of their remaining volume in the past two years.

- **Snow cover-** Seasonal snow cover in the Northern Hemisphere has been experiencing a long-term decline in the late spring and summer.
- **Extreme weather-** It lead to severe socio-economic impacts with events such as extreme heat, wildfires, flood etc.,
- **Wildfires-** It affected parts of Hawaii, Canada and Europe which led to loss of life, the destruction of homes and large-scale air pollution.
- **Flood-** It is associated with extreme rainfall from Mediterranean cyclone Daniel affected Greece, Bulgaria, Turkey, and Libya with particularly heavy loss of life in Libya.

Tropical cyclone Freddy was one of the world's longest-lived tropical cyclones.

- **Drought-** The Greater Horn of Africa region, which had been experiencing long-term drought, suffered substantial flooding in 2023, particularly later in the year following heavy rains associated with El Niño and the positive Indian Ocean Dipole
- **Economic loss-** The largest reported economic loss from a single event in 2023 was from Hurricane Otis, which hit the Pacific coast of Mexico within 15 hours it had intensified to a category 5 system.
- **Marine heat waves (MHWs)-** It have become more frequent, intense, and longer lasting since the late 20th century, El Nino events tend to cause wide-spread MHWs in the eastern Tropical Pacific.
- **Vulnerable population-** Food security, population displacement and impacts on vulnerable populations continue to be of mounting concern in 2023, with weather and climate hazards exacerbating the situation in many parts of the world.
- **Climate finance-** The global adaptation financing gap is widening, falling well short of the estimated 212 billion dollars per year needed up to 2030 in developing countries alone.
- **Renewable energy growth-** There was a nearly 50% increase in renewable capacity additions in 2023, totaling 510 gigawatts – the highest in two decades

What lies ahead?

- Increasing support for National Meteorological and Hydrological Services (NMHS) is crucial for providing essential information services.
- Nationally Determined Contributions (NDCs) need to be based on science to effectively cut greenhouse gas emissions and transition to renewable energy sources.
- The need of the hour is to secure adequate financing at COP-29 which is scheduled to be held in Baku, Azerbaijan to support the implementation of national climate plans, including funding for mitigation and adaptation measures, technology transfer, capacity-building initiatives, and resilience-building efforts, particularly in developing countries.

30. Changing cancer nomenclature can improve treatment outcomes: doctors

- An updated classification system could aid patients in comprehending the reasoning behind their treatment.
- While two individuals may share the same type of cancer, their therapies could vary due to differences in the biological mechanisms driving their tumors.

What motivates the need for change?

- **Not limited to cancers of a single organ:** With technological improvements, doctors are also able to find which genetic mutations are responsible for a tumor in many cases and target them with drugs.
    - All cancers from the same organ don't always share the same mutations, and these mutations aren't limited to cancers of a single organ
- **Access life-saving drugs sooner:** This development in precision oncology requires cancers to be classified based on their molecular and genetic characteristics rather than the organ in which they originate, a team of researchers from France has written in a paper.
    - This way, according to them, cancer patients can also access life-saving drugs sooner. Oncologists spend a lot of time testing new drugs in clinical trials in a sequential manner, leading to "delay in treatment access".

Has sequential testing caused delays?

-
    - A 2012 clinical trial conducted in the U.S. explored the efficacy of the drug nivolumab across various cancer types, including melanoma and

kidney cancer. Nivolumab targets a specific protein receptor found in certain tumors, and it showed promising results by alleviating symptoms in individuals with tumors expressing this protein

- **Challenges Due to Traditional Organ-Based Classification-**

  -
    - o **Hindered by the traditional classification-**Despite promising outcomes, the next logical step of testing nivolumab in individuals with tumors expressing the protein, regardless of cancer origin, was hindered by the traditional classification of cancers based on their organ of origin (e.g., breast, kidney, lung).
    - o **Multiple trials needed:** As a consequence, researchers were compelled to conduct separate trials for each type of cancer, leading to significant delays in drug accessibility for patients with tumors expressing the targeted protein.
    - o **Time taking trails:** Each trial requires substantial time and resources, from recruitment to data analysis, prolonging the process of drug approval and availability for specific cancer subtypes.

Significance of categorizing cancers based on their genetic characteristics-

- **Faster drug development and availability:** By targeting specific genetic mutations rather than specific cancer types, clinical trials for drugs can encompass all cancer types with those mutations. This approach potentially expedites the trial process, leading to faster drug development and availability.
- **Reduces confusion among the patient:** The revamped classification system not only accelerates clinical trial timelines but also enhances patient understanding of treatment rationale. Patients often receive different therapies for the same cancer due to diverse underlying biological mechanisms. Aligning cancer names with biological mechanisms reduces confusion and helps patients comprehend the reasoning behind their treatment plans.
- **Personalized treatment:** Physicians, including Dr. Jobanputra, emphasize the importance of educating patients about the molecular characteristics of their cancers. As the approach to cancer treatment becomes more personalized, understanding these molecular aspects becomes crucial as they directly impact prognosis and treatment costs.
- **Reducing the timing in trial-naming** cancers based on their biological characteristics rather than their anatomical origin can significantly reduce the time required to conduct clinical trials. This shift eliminates the need for

separate trials for each cancer type defined by organ of origin, streamlining the research process

Challenges in Implementing the Proposed Cancer Classification Change:

- **Limited Access to Genetic Testing:** The accessibility and affordability of genetic testing are major hurdles, particularly in regions like India where many patients cannot afford these tests.
  - Without widespread access to such tests, implementing a classification system based on molecular alterations becomes impractical.
- **Financial Barriers to Genetic Testing:** The cost of genetic testing in Indian labs and abroad is prohibitively high for many patients, further exacerbating the issue of limited access.
  - Addressing these financial barriers is crucial for ensuring equitable access to precision oncology.
- **Lack of Patients in Clinical Trials:** Clinical trials based on molecular signatures require a significant number of patients with each type of cancer to produce meaningful results.
  - Without adequate representation across cancer types, there is a risk of generalizing results, limiting the effectiveness of precision oncology approaches.
- **Time-taking Process:** Transitioning to a new diagnostic nomenclature based on molecular alterations will likely occur gradually and require careful implementation.
  - While the proposed change has the potential to improve drug accessibility, its full realization will take time and concerted effort to overcome various challenges.

Conclusion: Categorizing cancers based on genetic characteristics can streamline treatment, improve drug accessibility, and enhance patient understanding. However, challenges like limited access to genetic testing and lack of patient representation in trials must be addressed.

31. WMO's State of the Climate Report, 2023

- The World Meteorological Organization's (WMO) recent State of the Climate report highlights unprecedented climatic shifts, with numerous indicators reaching record levels.

World Meteorological Organization

- It is an **intergovernmental organization** and a **specialized agency of the UN** for meteorology (weather and climate), operational hydrology and related geophysical sciences.
- It was **established in 1950** and is headquartered in **Geneva**, Switzerland.
- It origin traces to the **International Meteorological Organization (IMO),** which was founded in 1873.
- Currently it has a membership of 191 countries. **India is also a member**.

Key Highlights of the State of the Climate Report, 2023

[1] Greenhouse Gases (GHGs)

- **Record-High Concentrations**: GHGs like carbon dioxide, methane, and nitrous oxide reached record levels in 2022, contributing to global warming. The concentration of GHGs observed in 2022 is the latest year for which consolidated global values are available (1984–2022).
- **Long-term Trend**: The rise in GHG concentrations underscores the urgent need for concerted efforts to mitigate their impact.

[2] Surface Temperature

- **Historic Spike**: Global surface temperatures in 2023 surged to 1.45 degrees Celsius above pre-industrial levels, marking the highest recorded temperature. This temperature rise is attributed to the combined effects of rising GHG concentrations and the onset of El Nino in 2023.
- **El Nino Influence**: The onset of El Nino exacerbated temperature extremes globally, amplifying the impacts of climate change.

[3] Ocean Heat Content (OHC)

- **Unprecedented Heat**: Ocean heat content reached its highest level in the observational record of 2023. The ocean heat content (OHC) refers to the total amount of heat the oceans store.
- **Long-term Trend**: The continual increase in OHC underscores the ongoing challenge of ocean warming and its implications for marine ecosystems.

[4] Marine Heat Waves (MHWs)

- **Widespread Occurrence**: The global ocean experienced a significant increase in marine heatwave (MHW) coverage in 2023. The average daily marine heatwave coverage reached 32%, surpassing previous records set in 2016.
- **Duration and Intensity**: Prolonged MHWs pose threats to marine biodiversity, ecosystems, and fisheries, highlighting the urgency of climate action.

[5] Antarctic Sea-Ice Extent

- **Record Low**: Antarctic sea-ice extent plummeted to 1.79 million km2 in February 2023, the lowest since satellite observations began in 1979. The extent remained below average throughout the year, signalling ongoing trends of sea-ice loss in the Antarctic region.
- **Persistent Decline**: The continued decline in Antarctic sea-ice extent underscores the vulnerability of Polar Regions to climate change.

[6] Glacier Mass Balance

- **Unprecedented Loss**: Glaciers worldwide experienced the largest annual loss of ice on record in 2022-2023. The annual mass balance, which measures the amount of mass gained or lost by glaciers, dropped to a new low of '–1.2 metre water equivalent'.
- **Regional Disparities**: Glacial mass balance varied across regions, with North American and European glaciers particularly affected by ice loss.

Significance of the report

- The figures presented in the WMO report underscore the magnitude of climate change impacts on various Earth systems.
- Urgent action is needed to address rising GHG emissions, mitigate temperature extremes, protect marine environments, and preserve critical cryospheric regions.

32. Top 1% Indians' income share is higher now than under British-rule

- In 2022, 22.6% of the national income went to the top 1% of Indians. Cut to 1951, their share in the income was only 11.5% and even lower in the 1980s just before India opened-up its economy at 6%.

India's top 1% income and wealth shares (22.6% and 40.1%) are at their highest historical levels in 2022-'23 and the country's top 1% income share is among the very highest in the world as per World Inequality Lab.

Key findings from the 'Income and Wealth Inequality in India' report by the World Inequality Lab-

- **Increase in Share of Top 10%:** The share of the top 10% of Indians in national income rose from 36.7% in 1951 to 57.7% in 2022.

- **Decline in Share of Bottom 50%:** The bottom 50% of Indians earned only 15% of the national income in 2022, compared to 20.6% in 1951, indicating a decrease in their share.
- **Decrease in Share of Middle 40%:** The middle 40% of Indians experienced a significant decline in their share of income from 42.8% to 27.3% over the period.
- **Rapid Widening of Income Gap:** The gap between the rich and the poor has widened rapidly in the last two decades.

Historic Peak for Wealthiest 1%: In 2022, the share of national income that went to the wealthiest 1% of Indians reached a historic peak, surpassing levels observed in developed countries such as the United States and the United Kingdom.

Income group-wise share in national income, and the adult population in each bracket as of 2022-23-

- **Distribution Across Income Percentiles:** Approximately one crore adults were in the top 1%, ten crore in the top 10%, 36 crore in the middle 40%, and 46 crore were in the bottom 50% of the income pyramid.
- **Concentration of Wealth at the Top:** The top 0.001% of the income pyramid, comprising about 10,000 richest Indians, earned 2.1% of the national income, highlighting extreme wealth concentration.
- **High Shares of National Income:** The top 0.01% and top 0.1% of income earners earned disproportionately high shares of the national income, accounting for 4.3% and 9.6%, respectively. This reflects significant income inequality, with a small segment capturing a large portion of the country's wealth.

 Richest 1% of Indians' share in the national income

- **Pre-Independence (1930s):** The top 1% of earners had a significant share of national income, surpassing the 20% mark.
- **Post-Independence:** After independence and the merger of princely states with Independent India, the share of the top 1% steadily declined, reaching close to 6% in the 1980s.
- **Post-liberalization**: Following liberalization reforms, the income share of the top 1% surged again, presently hovering around the 22.5% mark**.**
- **Comparison with British Rule:** The current income share of the top 1% is much higher than their share under British rule, highlighting a return to historical levels of income concentration.

The income share of India's top 10% and top 1%, compared with select countries in 2022-23-

- **India's Income Growth:** India's income levels are not growing as rapidly as other comparable economies.
- **High Share of Top 1%:** Despite slower overall income growth, the top 1% of earners in India have a disproportionately high share of national income.
- **Comparison with Advanced Countries**: In 2022-23, the income shares of India's top 1% were higher than those recorded in advanced countries like the United States, China, France, the United Kingdom, and Brazil.

China and Vietnam's average incomes grew at a much faster pace than India's

- **Economic Policies:** China and Vietnam implemented economic policies that focused on export-oriented growth, attracting foreign investment, and promoting industrialization. These policies contributed to rapid economic expansion and increased average incomes in both countries.
- **Liberalization and Reforms:** Both China and Vietnam underwent significant economic liberalization and reforms, allowing for greater market integration, privatization of state-owned enterprises, and relaxation of trade barriers. These reforms stimulated economic growth and led to higher average incomes.
- **Investment in Infrastructure:** China and Vietnam invested heavily in infrastructure development, including transportation networks, energy systems, and telecommunications. This infrastructure investment facilitated economic development and improved productivity, leading to higher average incomes

Income inequality in India can be attributed to various factors:

- **Historical Factors:** Historical disparities in wealth distribution, exacerbated by colonial rule and feudal systems, have contributed to persistent income inequality.
- **Economic Growth Patterns:** India's economic growth needs to be more inclusive, with benefits disproportionately accruing to certain segments of society, particularly urban and educated populations. This uneven growth exacerbates income inequality.
- **Structural Issues:** Structural factors such as unequal access to education, healthcare, and employment opportunities perpetuate income disparities. Marginalized groups such as Dalits, Adivasis, and women often face barriers to accessing quality education and formal employment, limiting their income-earning potential.
- **Land Ownership and Agriculture:** Unequal distribution of land ownership and disparities in agricultural productivity contribute to income inequality, particularly in rural areas where agriculture remains a primary source of livelihood.

- **Labor Market Dynamics:** Informal employment, low wages, and lack of job security in the informal sector contribute to income inequality. Additionally, skill mismatches and technological advancements may widen the income gap by favoring skilled workers over unskilled laborers.
- **Lack of Financial Inclusion**: Limited access to formal financial services and lack of asset ownership, such as land or property, among marginalized communities further perpetuate income inequality.
- **Corruption and Cronyism**: Corruption, crony capitalism, and unequal access to resources and opportunities exacerbate income inequality by favoring vested interests and hindering equitable wealth distribution.

Conclusion: India witnesses unprecedented income inequality with the top 1% accruing a higher share of national income than under British rule. Structural factors, uneven economic growth, and limited access to resources perpetuate income disparities, requiring comprehensive policy interventions for equitable growth.

33. Solar Waste Management

As per the study by Ministry of New and Renewable Energy, the amount of solar waste produced by the country is expected to reach 600 kilo tonnes by 2030.

Solar waste

- It is the electronic waste generated by discarded solar panels which is sold as scrap in the country.
- Solar waste refers to the waste generated during the manufacturing of solar modules and waste from the field (project lifetime).
- **Manufacturing waste**- It includes scrap produced during production and waste from photovoltaic (PV) modules failing quality tests.
- **Field waste-** It consists of waste generated during transportation and handling, damage incurred by solar modules during their lifetime, and end-of-life waste when modules are no longer usable.
- According to the International Renewable Energy Agency, India is projected to become the 4th largest producer of solar panel waste by 2050, with cumulative volumes ranging from 4.5 to 7.5 million tonnes.
- Photo Voltaic (PV) waste poses environmental risks, particularly through the leaching of harmful metals such as lead, cadmium, and silver into soil and groundwater.

Photovoltaic cell is an electronic device that converts the energy of light directly into electricity by means of the photovoltaic effect.

Key highlight of the study

- **Title-** Enabling a Circular Economy in India's Solar Industry – Assessing the Solar Waste Quantum.
- **Current solar capacity-** As of March 2013, India's solar capacity stands at 66.7 GW, it has increased by 23 times in the past 10 years.
- It is slated to jump to 292 GW of installed solar capacity by 2030 which highlights the importance of solar waste.
- **Focus-** The study focussed on the waste from the field category and excluded waste generated during manufacturing.
- **Increase in solar waste-** By 2030, India's current installed solar capacity is estimated to generate around 340 kilo tonnes (kt) of waste, 3 times more than the present.
- By 2050, this figure is expected to increase dramatically to about 19,000 kt.
- **State wise distribution of waste-** Approximately 67% of the projected waste by 2030 is expected to be produced by five states namely Rajasthan, Gujarat, Karnataka, Tamil Nadu, and Andhra Pradesh.

- **Waste composition-** It is expected to contain critical minerals such as silicon, copper, tellurium, and cadmium, which are important for the country's economic development and national security.
- The 340 kt waste expected to be produced by 2030 would consist of 10 kt of silicon, 12-18 tonnes of silver, and 16 tonnes of cadmium and tellurium.

What are the recommendations suggested by the study to deal with solar waste management?

- **Comprehensive database-** Policymakers are urged to maintain a comprehensive database of installed solar capacity to estimate future waste generation accurately.
- **Incentivise recyclers-** The government should provide incentives for recyclers to encourage effective management of solar waste.
- **Market creation-** There is a need to create a market for solar recycling, focusing on both end-of-life modules and other sources of waste generated during the lifecycle.
- **Recycling methods-** The study describes two methods of study

Challenges with solar waste management

- **High cost-** Estimates indicate that there is a negative cost differential ranging from 5% to 15% between the value of materials recovered from recycled solar panels and the cost of transportation and recycling, hence it requires additional support in the form of incentives.

- **Reliance on producer plans**- Depending solely on plans from solar panel waste producers for waste management may pose uncertainties due to changes in ownership, financial stability, or adherence to the proposed recycling strategies.
- **Mixed materials**-PV panels contain mixed and difficult-to-separate materials, posing challenges for efficient recycling.
- **Infrastructure deficit**- The existing waste management facilities, such as Treatment Storage and Disposal Facilities (TSDFs), may not be equipped to handle the specific requirements of solar panel waste effectively.
- **Issues with conventional recycling**- They are effective in recovering materials like aluminium and glass, but they may not yield materials of high enough quality to be used in the production of new solar panels, particularly in applications requiring high-grade glass.

What lies ahead?

- Governments and industry stakeholders should invest in developing specialized recycling facilities capable of handling solar panel waste.
- Collaboration between government agencies, industry players, research institutions, and waste management experts can facilitate knowledge sharing and the development of best practices for solar panel waste management.
- Public-private partnerships may also be leveraged to improve infrastructure and resource allocation.
- Implementing Extended Producer Responsibility schemes can incentivize manufacturers and producers to take responsibility for the entire life cycle of their products, including end-of-life management.

34. Water for Peace

The theme of 2024 World Water day observed on March 22, 2024 is Water for Peace.

Why there is water crisis in India?

As per World Resources Institute, 17 countries face 'extremely high' levels of water stress which is threatening to result in conflict, unrest and peace among people, India is not an exception to these problems.

- Around 72% of all water withdrawals are for use in agriculture, 16% by municipalities for households and services, and 12% by industries.
- **Groundwater depletion**- Groundwater tables are declining in nearly every state and major city, with alarming overuse in States like Punjab, Rajasthan, Delhi, and Haryana.

How water insecurity affects women?

- **Gendered Burden**-Water collection is often seen as a woman's responsibility, leading to a disproportionate time burden on them.
- **Effects on education**- Girls' school attendance and academic performance suffer due to the time spent on water collection.
- **Health risks**- Lack of access to adequate water often leads to the practice of open defecation exposes individuals, particularly women, to various waterborne diseases such as diarrhoea, typhoid, and cholera.
- **Hygiene**- Women who engage in open defecation may also face challenges related to menstrual hygiene management.
- **Psychological stress**- The lack of privacy and dignity associated with openly defecating in public spaces can cause embarrassment, anxiety, and feelings of insecurity among women, impacting their overall well-being and mental health.
- **Safety concern**-Women who engage in open defecation are at a greater risk of experiencing non-partner sexual violence
- **Impact on health**- Women who engage in open defecation are at a greater risk of experiencing psychosocial stress and non-partner sexual violence.

What can be done to conserve water?

- **Sustainable agriculture**- It's crucial to promote sustainable agricultural production and maintain environmental integrity.
- **Rainwater harvesting**-Implementing both in-situ and ex-situ rainwater harvesting (RWH) can combat water scarcity and support irrigation.
- **Comprehensive waterbody assessment**- It's suggested to conduct a thorough assessment of every waterbody to understand its condition, including water availability, quality, and ecosystem services, this can guide targeted interventions for water management and conservation.
- **Waterbody revival**- There's a need for protocols to revive and create ponds and waterbodies, which are essential for ecosystem services and water quality.

35. Pakistan's Piracy of Indian Basmati Rice Varieties

Indian Agricultural Research Institute (IARI) scientists and exporters have red-flagged the "illegal" cultivation of its improved basmati rice varieties in Pakistan.

What is the issue?

- **Illegal cultivation-** Indian Agricultural Research Institute's (IARI) improved basmati rice varieties are being unlawfully grown in Pakistan.

- **Violates IPR-** IARI-bred basmati rice varieties in Pakistan constitutes an infringement of intellectual property rights as they are protected under India's Protection of Plant Varieties and Farmers' Rights Act, which restricts their cultivation and distribution to Indian farmers only.
- **Market competition**- India's basmati rice exports are likely to fall in 2024 as Pakistan is offering the grain at competitive prices amid a rebound in production which indicates a competitive challenge from neighbouring countries in the basmati rice market.
- **Loss of quality**- IARI basmati rice varieties are known for their superior quality and yield characteristics, unauthorized cultivation in Pakistan may result in quality dilution if not grown under controlled conditions, potentially affecting India's reputation as a supplier of premium basmati rice.
- **Undermine GI protection**- Basmati rice is a Geographical Indication (GI) product, and its cultivation is restricted to specific regions in India, any cultivation of basmati rice outside these designated areas, such as in Pakistan, undermines the GI protection and authenticity of Indian basmati rice.

What India can do to address the illegal cultivation?

- **Diplomatic engagement**- India should engage diplomatically with Pakistan, it can involve raising concerns through bilateral channels and urging Pakistan to enforce intellectual property laws to prevent such infringements.
- **International forums**- India can raise the issue of Intellectual Property Rights violation at World Trade Organization (WTO) so that it can garner support for addressing the violations.
- **Legal measures**- India should explore legal options to enforce its rights under domestic and international laws which may involve pursuing legal action against entities in Pakistan involved in the unauthorized cultivation and distribution of IARI basmati rice varieties.
- **Proper monitoring**- Strengthening monitoring mechanisms to detect and prevent the illegal trade of IARI basmati rice varieties is essential.