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Current Affairs (CONSOLIDATION)

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Drishti, 641, First Floor, Dr. Mukherjee Nagar, Delhi-110009
Inquiry (English): 8010440440, Inquiry (Hindi): 8750187501 Email:
help@groupdrishti.in

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Polity and Governance

Highlights

- Strengthening Indian Judiciary
- Productivity of Lok Sabha and Implications
- India's New Parliament House
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- National Population Register
- Khelo India University Games 2023
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- Enhanced Production Linked Incentive for IT Hardware
- Gaps in AePS Exploited by Cybercriminals
- 4th Positive Indigenisation List

Strengthening Indian Judiciary

Why in News?

The **Indian judiciary** play a crucial role in upholding the rule of law and ensuring justice for all citizens. Despite recent advancements in technology, the Indian judiciary continues to **grapple with various loopholes**.

What are the Major Loopholes in the Judiciary in India?

- **Huge Pendencies of Cases:**
 - The courts in India are burdened with a massive **backlog of cases**, leading to delays in delivering justice. This backlog is primarily due to a shortage of judges and inefficient case management systems.
 - **As of May 2022, over 4.7 crore cases are pending in courts across different levels of the judiciary.** The fact that this figure keeps rising demonstrates the inadequacies of the justice system.
- **Inadequate Physical and Digital Infrastructure:**
 - Many courts across the country face a shortage of **courtrooms, limited access to basic facilities such as restrooms, waiting areas, and parking**

spaces that creates inconvenience for litigants, lawyers, and court staff, leading to overcrowding and delays in proceedings.

- The **Covid-19 pandemic** has highlighted the **need for digital infrastructure** for conducting **virtual hearings** and ensuring **continuity of justice delivery**.
- **Only 9 out of the 25 High Courts** in India have **implemented live streaming of court proceedings**. In the Supreme Court itself, **live streaming is limited to only Constitutional cases**.

Note: The **Model Rules for Live Streaming and Recording of Court Proceedings** exclude certain cases from live streaming, such as **matrimonial matters, child adoption, sexual offences, child sexual abuse, and juveniles in conflict with the law**.

- **Limited Use of Alternative Dispute Resolution (ADR):** **ADR mechanisms**, such as **mediation and arbitration**, can help reduce the burden on the courts. However, **their utilisation is still limited in India**.
- **Recruitment Delays:** Judicial posts are not filled as quickly as necessary. **For a country of 135 million, there are only 21 judges per million population (as of February 2023)**.
 - There are almost 400 vacancies in the high courts. And around **35% of the posts are lying vacant in the lower judiciary**.

Note:



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- **Inequality of Representation:** Another area of concern is the composition of the higher judiciary, where women are underrepresented. Out of **1.7 million advocates registered, only 15% are women.**
- In high courts, the percentage of women judges is a mere **11.5%.**
- At present, the Supreme court has only three sitting women judges.
 - **Justice B V Nagarathna** will become **Chief Justice of India in 2027 for 36 days.**

What Measures can India

Adopt to Reinforce and Empower its Judiciary?

- **Strengthening E-Court System:** There is a need to implement a robust e-court system that can **streamline court processes, reduce paperwork, and improve efficiency.** This includes digitizing case records, enabling online filing of cases, e-summons, e-payment, and video conferencing for hearings.
 - The **Union Budget 2023-24** allocated **Rs 7,000 crore** for the launch of the third phase of the e-Courts project.
 - The **Centrally Sponsored Scheme (CSS)** by the **Department of Justice** also aims to develop **infrastructure facilities for the judiciary.**
 - The CSS enhances state government resources for constructing court buildings, digital computer rooms, lawyers' halls, toilet complexes, and residential accommodations for judicial officers.
 - The fund-sharing pattern is **60:40 (Centre: State), 90:10 for 8 North-Eastern and 2 Himalayan States, and 100% central funding for Union Territories.**
 - Former CJI, N.V. Ramana suggested to develop a **National Judicial Infrastructure Authority of India (NJIAI)** for arranging adequate infrastructure for courts.
- **Transforming the Appointment System:** Vacancies must be filled immediately, and it is **necessary to**

establish an appropriate timeline for the appointment of judges and to provide the suggestions in advance.

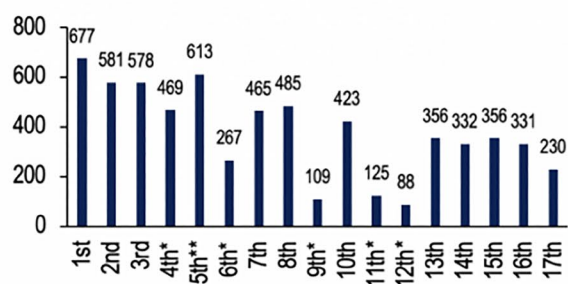
- Another significant element that can unquestionably aid India in developing a better judicial system is the **All India Judicial Services (AIJS).**
- **Case Management Software:** There is a need to develop and deploy **case management software** that can help track case progress, automate administrative tasks, and facilitate better coordination among judges, lawyers, and court staff. **It can improve the overall efficiency of the judicial process.**
- **Data Analytics and Case Prediction:** India can utilise **data analytics and artificial intelligence** to analyse past judgments and predict case outcomes to assist judges in making informed decisions, reducing inconsistencies and improving the quality of judgments.
 - However, it is vital to ensure that it **plays only a secondary role.**
- **Public Legal Education:** There is a need to promote public legal education and awareness programs that can empower citizens to understand their rights and obligations, **reducing unnecessary litigation and promoting out-of-court settlements.**
- **Citizen Feedback Mechanism:** There is a need to establish a **feedback mechanism where citizens can provide feedback** on the judicial process and court experiences can help identify shortcomings and areas for improvement.

Productivity of Lok Sabha and Implications

Why in News?

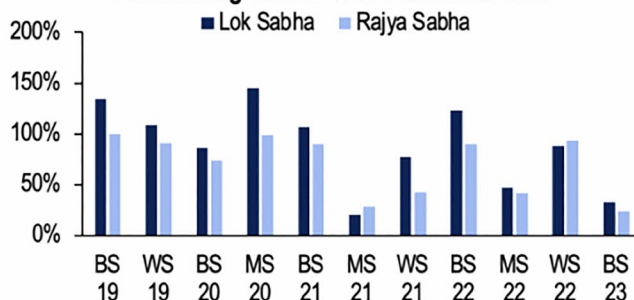
The 17th **Lok Sabha**, which is entering its final year, has functioned for **230 sitting days** so far.

Number of Sittings in each Lok Sabha



Note: *Term less than 5 years; **6 year term. Figures for the 17th Lok Sabha are till the Budget Session 2023.

Functioning time as % of Scheduled time



Note: BS – Budget Session; MS – Monsoon Session; WS – Winter Session.

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- Of all the Lok Sabhas that completed the full five-year term, the 16th Lok Sabha had the lowest number of sitting days (331). With one more year remaining, and 58 average sitting days a year, the **17th Lok Sabha is unlikely to sit for more than 331 days.**
- This could make it the shortest full-term Lok Sabha since 1952.

How has the Lok Sabha Functioned So far?

- **Productivity of Budget Session 2023:**
 - The latest session (Budget session) held from January 2023 to April 2023, saw **limited legislative activity and minimal discussion** on the **Budget** amidst continuous disruptions.
 - In this session, the Lok Sabha functioned for 33% of its scheduled time (46 hours) and the Rajya Sabha functioned for 24% (32 hours).
 - This has been the **sixth shortest budget session since 1952**. Lok Sabha spent 18 hours on financial business, of which 16 hours were spent on the general discussion of the budget.
- **Past Eleven Sessions:**
 - From the 2019 Budget Session to the 2023 Budget Session, 150 Bills have been introduced and 131 Bills have been passed.
 - In the first session, **38 Bills were introduced and 28 were passed**. Since then, the number of Bills introduced and passed has declined.
 - Fewer than 10 Bills have been **introduced or passed in each of the last four consecutive sessions**.
- **House Productivity:**
 - In 2022, the functioning of the Lok Sabha was **at 177 hours** and in the Rajya Sabha it was 127.6 hours.
 - In 2021, it was 131.8 hours in the Lok Sabha and 104 hours in the Rajya Sabha.
 - Similarly, in 2020, **productivity hours for the Lower House were 111.2** and 93.8 hours for the Upper House.
 - During the first half of this year's Budget Session, the Lok Sabha devoted a total of 14 hours and 45 minutes to discussing **it against the allotted time of 12 hours**.
- **Debates in Parliament Reducing:**
 - In the 17th Lok Sabha, only 11 short-duration discussions and **one half-an-hour discussion have been held so far**, and none were held during the latest session.

- Question Hour functioned for only **19% of the scheduled time** in the Lok Sabha and 9% of the scheduled time in the Rajya Sabha.
- No Private Member Bills were introduced or discussed. Each House discussed one Private Member Resolution.
- **Lower Examination under Parliamentary Committee:**
 - During the course of the 17th Lok Sabha, only 14 Bills have been referred for further examination under **Parliamentary Committee** so far.
 - As little as 25% of the Bills introduced **were referred to committees in the 16th Lok Sabha**, as compared to 71% and 60% in the 15th and 14th Lok Sabha respectively. This represents a declining trend of national legislation being subjected to expert scrutiny.
- **Delayed Election of Deputy Speaker:**
 - Article 93 of the Constitution states that **Lok Sabha will choose two Members of the House to be Speaker and Deputy Speaker**, as soon as possible. The 17th Lok Sabha has not elected a Deputy Speaker even as **it enters the final year of its five-year term**.

What are the Reasons for the Lower Productivity of Lok Sabha?

- **Frequent Disruptions:**
 - The 17th Lok Sabha experienced frequent **disruptions and protests by opposition parties**. These disruptions resulted in a **significant loss of time and decreased productivity**.
 - Several major issues led to these disruptions, including the **Citizenship Amendment Act (CAA)**, **National Register of Citizens (NRC)**, and farm laws.
- **Lack of Agreement:**
 - Despite the ruling party having a clear majority, there **was a lack of consensus on crucial matters**. This lack of agreement among the members of parliament caused delays in passing important bills and legislation.
- **Shorter Sessions:**
 - The 17th Lok Sabha had **shorter sessions compared to previous ones**. This limited time for thorough discussions and debates on essential bills and issues. Consequently, many important matters were left pending without sufficient attention.

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What are the Implications of Lower Productivity of Lok Sabha?

- **Delayed Legislation:**
 - The primary implication is the **delay in passing important bills and legislation.**
 - When the Lok Sabha is unable to function effectively, bills related to crucial issues such as taxation, infrastructure, and social welfare **may get postponed.**
 - This delay hampers the progress of the country as it impedes the implementation of necessary policies and reforms.
- **Lack of Accountability and Oversight:**
 - When the Lok Sabha is not productive, **it hinders the process of holding members of parliament accountable** for their actions. Inadequate debate and scrutiny **result in a lack of thorough examination of proposed laws** and decisions.
 - This undermines the **democratic principle of checks and balances**, allowing the executive to push through decisions without sufficient oversight.
- **Diminished Public Trust:**
 - It can damage the **trust of citizens in democratic institutions.** When elected representatives are unable to fulfill their responsibilities effectively, it creates a sense of disillusionment and disengagement among the public.
 - This can **lead to a decline in citizen participation**, eroding the foundations of a healthy democracy.
- **Wasted Resources:**
 - The lower productivity of the Lok Sabha **translates into wasted resources, specifically taxpayers' money.**
 - The salaries and allowances of Members of Parliament are funded by the public exchequer. If these resources are not utilized effectively due to disruptions or lack of productivity, it results in a waste of public funds that could have been utilized for other developmental purposes.
- **Economic Impact:**
 - A less productive Lok Sabha can have a negative impact on the economy. Delayed or inadequate legislation on crucial economic issues **can hamper growth, investment, and development.**
 - The lack of certainty and efficient decision-making can undermine investor confidence, leading to a slowdown in economic progress.

India's New Parliament House

Why in News?

Recently, the Indian Prime Minister has inaugurated India's new **Parliament building**, part of the revamped **Central Vista project.**

- The construction of the new building, designed by Architect Bimal Patel, began in 2019.



Commemorative Coin of Rs.75 Denomination

- During the inauguration, Prime Minister unveiled a **commemorative coin of Rs 75 denomination.** Commemorative coins have been issued by India since the 1960s for various purposes, such as **honoring notable personalities, creating awareness about government schemes, or commemorating significant historical events.**
- The newly released Rs 75 coin features a **circular shape with a diameter of 44mm.** It is composed of a **quaternary alloy, comprising 50% silver, 40% copper, 5% nickel, and 5% zinc.** The face of the coin displays the **Lion Capitol of Ashoka Pillar** at the center, with the inscription **Satyameva Jayate** below it. The word **Bharat** in Devnagri script is placed on the **left periphery**, while **"INDIA"** in English is positioned on the **right periphery.** On the other side, an image of the **new parliament building** is featured, with **"Sansad Sankul"** inscribed in Devanagari script on the upper periphery and **"Parliament Complex"** in English on the lower periphery.
- Commemorative coins can be obtained through the website of the **Securities of Printing and Minting Corporation of India Limited (SPMCIL).** While these coins hold collectible value, their **actual worth may not correspond to their face value**, as they often

Note:

contain precious metals such as silver or gold. The central government has the authority to design and mint coins as per the **Coinage Act of 2011**, with the **Reserve Bank of India (RBI)** playing a limited role in their distribution. All coins are minted in government-owned mints located in **Mumbai, Hyderabad, Kolkata, and Noida**. The first-ever commemorative coin in India was **released in 1964 as a tribute to Jawaharlal Nehru** following his demise.



What is the Need for New Parliament Building?

- **Narrow Seating Space for MPs:**
 - The old building was never **designed to accommodate a bicameral legislature** for a full-fledged democracy. The number of Lok Sabha seats is likely to increase significantly **from the current 545 after 2026**, when the freeze on the total number of seats lifts.
- **Distressed Infrastructure:**
 - The addition of services like water supply and sewer lines, air-conditioning, firefighting equipment, CCTV cameras, etc., **have led to seepage of water at several places** and impacted the aesthetics of the building.
 - Fire safety is a major concern at the building, the official site says.
- **Obsolete Communication Structures:**
 - Communications infrastructure and **technology was antiquated in the old Parliament**, and the acoustics of all the halls need improvement.
- **Safety Concerns:**
 - The old Parliament building was **built when Delhi was in Seismic Zone-II**; currently it is in Seismic Zone-V. This raises structural safety concerns.
- **Inadequate Workspace for Employees:**
 - Over the years, inner **service corridors were converted into offices** which resulted in poor-quality

workspaces. In many cases, these workspaces were made even smaller by creating sub-partitions to accommodate more workers.

What are the Key Points Related to the New Parliament?

- **Triangular Shape:**
 - The new building is triangular in shape, mostly **because the plot of land that it is built on is a triangle**.
 - The new building's design is **influenced by sacred geometry found in various religions**. Its design and materials are meant to complement the old Parliament, with the **two buildings expected to function as one complex**.
- **Environment Friendly:**
 - Built using **green construction techniques**, the new building is supposed to reduce **electricity consumption by 30%**, compared to the old one.
 - Rainwater-harvesting and **water-recycling systems have been included**. It has been designed to be more space efficient and meant to function for the next 150 years.
- **Earthquake-Safe:**
 - Since Delhi is in seismic zone-V, the **building is primed to be Earthquake-safe**.
- **Lok Sabha:**
 - The new **Lok Sabha** chamber **has a peacock theme**, with designs **drawn from the national bird's feathers** carved on the walls and ceiling, complemented by teal carpets.
 - The Lok Sabha chamber will have 888 seats, up from the existing 543, with the option of **expanded seating up to 1,272**. The Lok Sabha will be used for joint sittings of both Houses **in the absence of a Central Hall**, which was the fulcrum of the old building.
- **Rajya Sabha:**
 - The Rajya Sabha chamber has been **decorated with the lotus as its theme**, with red carpets.
 - In both the Lok Sabha and the Rajya Sabha, **two MPs will be able to sit on one bench** and each MP will have a **touch screen on the desk**.
 - The Rajya Sabha chamber can **accommodate 384 Members of Parliament (MPs)**, as opposed to the existing capacity of 250. The increased

Note:

capacity of both chambers is meant to cater to any future increase in the number of MPs following **Delimitation**.

➤ **Constitution Hall:**

- The new building has a Constitution Hall, where the **journey of Indian democracy has been documented**.

➤ **Material from across India:**

- For the interior and exterior of the building, construction **materials have been brought in from across** the country, including **sandstone from Sarmathura** in Dholpur and **granite from Lakha village in Jaisalmer**, Rajasthan.
- Similarly, the **wood used in the decor is from Nagpur** and **craftsmen from Mumbai** have led the wooden architecture design.
- **Bhadoli weavers from Uttar Pradesh** have made the **traditional hand-knotted carpets for the building**.

➤ **Gandhi Statue:**

- The 16-foot-tall bronze statue of **Mahatma Gandhi**, **originally placed at the main entrance of Parliament in 1993**, has been relocated between the old and new buildings.
- It now faces the old building, near the entrance used by the **Lok Sabha Speaker**. The statue has been a significant site for protests, gatherings, and photo-ops for students and Members of Parliament.
 - It was created by renowned sculptor Ram V Sutar, a recipient of the **Padma Bhushan award**.

➤ **National Symbols:**

- The building is replete with national symbols, including the **national emblem — the Lion Capital of Ashoka** — that weighs 9,500 kg and is 6.5 metres in height, and is visible from a distance.
- To support this massive bronze sculpture, a **structure of 6,500 kg was constructed on top of the central foyer**. At the entrance, the Ashoka chakra and the words 'Satyameva Jayate' have been carved in stone.

➤ **Golden Sceptre:**

- A **golden sceptre (Sengol)**, given to **Jawaharlal Nehru** on the eve of Independence to mark the transfer of power from the British, **will sit in the new Lok Sabha chamber**, near the Speaker's podium. This sceptre was given to **him by priests from Tamil Nadu**.

➤ **Going Digital:**

- In line with the environment-friendly focus of the new Parliament, **all records — House proceedings, questions and other business — are being digitised**. Besides, tablets and iPads will become a norm.

➤ **Galleries in the Building:**

- A gallery called 'Shilp' will exhibit textile installations from across India, along with pottery items made from the mitti of all Indian states. The **gallery 'Sthapatya' will exhibit the iconic monuments of India**, including those from the different states and UTs. Besides monuments, it also amalgamates yoga asanas.

➤ **Vaastu Shastra:**

- At all the entrances of the building, **auspicious animals as guardian statues will be exhibited**, based on their importance in Indian culture and vaastu shastra. These include the elephant, the horse, the eagle, the swan, and mythical creatures shardula and makara.

➤ **Foucault Pendulum:**

- A Foucault pendulum installed inside the new Parliament building. At the latitude of Parliament, it takes **49 hours, 59 minutes and 18 seconds** to complete one rotation.
- The Foucault pendulum, named after **French physicist Léon Foucault**, is used to demonstrate the earth's rotation.
- The pendulum consists of a **heavy bob suspended at the end of a long, strong wire** from a fixed point in the ceiling. As the pendulum swings, the **imaginary surface across which** the wire and the bob swipe is called the plane of the swing.

Central Vista

- The Central Vista of New Delhi houses **Rashtrapati Bhawan, Parliament House, North and South Block**, India Gate, National Archives among others.
- In December 1911, **King George V made an announcement in Delhi Durbar** (a grand assembly) to shift the capital of India from Calcutta to Delhi.
 - Delhi Durbar was hosted to mark the coronation of King George V.
- The task of constructing a new city was given to **Edwin Lutyens, known for his strong adherence to European Classicism** and Herbert Baker, a prominent architect in South Africa.
 - Herbert Baker is also the architect of the Union buildings at Pretoria, South Africa.

Note:

- The Parliament House building was **designed by both Lutyens and Baker**.
- Rashtrapati Bhavan was designed by Edwin Lutyens.
- The Secretariat, which includes both north and south blocks was designed by Herbert Baker.

National Rare Diseases Committee

Why in News?

Recently, the Delhi High Court has taken a proactive step to **address the challenges faced by patients with rare diseases** by establishing a **five-member panel to implement the Centre's rare diseases policy effectively**.

- The panel, known as the **National Rare Diseases Committee**, aims to ensure that patients enrolled with the All-India Institute of Medical Sciences (AIIMS), Delhi, receive timely treatment and benefit from the policy.
- The mandate of the Committee would broadly be to take all steps needed for implementation of the **National Rare Disease Policy, 2021**.

What are Rare Diseases?

- There are **6,000-8,000 classified rare diseases**, but less than 5% have therapies available to treat them.
- Example: **Lysosomal Storage Disorders (LSD)**, **Pompe disease**, **cystic fibrosis**, **muscular dystrophy**, **spina bifida**, **haemophilia** etc.
- About 95% rare diseases have no approved treatment and less than 1 in 10 patients receive disease-specific treatment.
- 80% of these diseases have **genetic origins**.
- These diseases have differing definitions in various countries and range from those that are **prevalent in 1 in 10,000 of the population to 6 per 10,000**.
- However broadly, a '**rare disease**' is defined as a **health condition of low prevalence that affects a small number of people** when compared with other prevalent diseases in the general population. Many cases of rare diseases may be **serious, chronic and life-threatening**.
- India has close to 50-100 million people affected by rare diseases or disorders, the policy report said almost **80% of these rare condition patients are children** and a leading cause for most of them not reaching adulthood is due to the high morbidity and mortality rates of these life-threatening diseases.

What is the National Rare Diseases Committee?

➤ About:

- The National Rare Diseases Committee is a **five-member panel** who will work together to address the challenges faced by patients with rare diseases established by the Delhi High Court to implement the rare diseases policy and ensure efficient treatment for patients.
- The committee consists of experts from relevant fields, including **medical professionals, policymakers, and representatives from healthcare institutions**.

➤ Responsibilities and Objectives:

- **Assessing Cases:**
 - Focus on **patients enrolled with AIIMS in Delhi**.
 - Evaluate individual cases to understand medical needs and determine treatment.
- **Implementation of the Policy:**
 - Devise **strategies and guidelines for translating policy provisions into action**.
- **Coordination and Collaboration:**
 - Facilitate close coordination between **medical community, therapy providers, and governmental agencies**.
 - Create a collaborative environment for addressing challenges related to rare diseases.
- **Treatment Accessibility:**
 - Ensure **timely treatment for patients with rare diseases**.
 - Explore **avenues for procuring necessary therapies and drugs**.
 - Establish a **logistical framework for seamless administration of treatment**.

What is the National Rare Disease Policy 2021?

➤ Aim:

- Increase **focus on indigenous research and local production of medicines**.
- **Lower the cost of treatment** of rare diseases.
- **Screen and detect rare diseases early** for prevention.

➤ Major Provisions of the Policy:

- Categorization:
 - Group 1: Disorders amenable to **one-time curative treatment**.
 - Group 2: Diseases requiring **long-term or lifelong treatment**.

Note:



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- Group 3: Diseases with **available treatment but challenges in patient selection, high cost, and lifelong therapy.**

➤ **Financial Support:**

- Provision for financial support of up to **Rs. 50 lakhs to the patients** suffering from any category of the Rare Diseases and for treatment in any of the Centre of Excellence (CoE) mentioned in NPRD-2021, outside the Umbrella Scheme of Rashtriya Arogya Nidhi.
- Financial support of **up to Rs. 20 lakhs under Rashtriya Arogya Nidhi** for rare diseases listed under Group 1.
- Rashtriya Arogya Nidhi provides assistance to patients with major life-threatening diseases, regardless of their poverty status.
- Voluntary crowdfunding for treatment through a **digital platform for individual and corporate contributions.**

➤ **Centres of Excellence:**

- Designation of **eight health facilities as 'Centres of Excellence'.**
- One-time financial support of up to Rs. 5 crore for upgrading diagnostic facilities.

➤ **National Registry:**

- Creation of a **national hospital-based registry of rare diseases.**
- Ensuring comprehensive data and definitions for research and development purposes.

➤ **Concerns Raised:**

- Lack of **sustainable funding for patients with Group 3 disorders.**
- **Prohibitive costs of drugs for rare diseases.**
- Limited global and domestic manufacturers of drugs for rare diseases.

8th Governing Council Meeting of NITI Aayog

Why in News?

Recently, the Prime Minister of India has chaired the **8th Governing Council Meeting of NITI Aayog.**

- It was attended by Chief Ministers/Lt.Governors representing 19 States and 6 UTs.

What are the Highlights of the Meeting?

➤ **Theme:**

- Viksit Bharat @ 2047: Role of Team India.

➤ **PM's Address:**

- The Centre and the States would have to work as "Team India" to realise the objective of a "Viksit Bharat (Developed India)" in 2047.
- NITI Aayog can play a critical role in **helping the States to develop their strategies for the next 25 years** and align the same with the national development agenda.
- The States and Union Territories were urged to **work with the Aayog so that the country could take a quantum leap** towards achieving its vision for the "Amrit Kaal".
- There is a need for the States and the Centre to promote "**Shree Anna**" in the International Year of Millets.
- He also deliberated on the need to work towards water conservation through the "**Amrit Sarovar**" programme.

What is NITI Aayog's Governing Council?

- It is the **premier body trusted with developing a shared vision of national priorities** and strategies with the active involvement of States and Union Territories.
- It is a platform to discuss **inter-sectoral, inter-departmental** and federal issues.
- **It comprises:**
- The Prime Minister of India.
 - Chief Ministers of all the states and union territories with the legislature.
 - Lt Governors of other UTs.
 - Ex-Officio Members.
 - Vice Chairman, NITI Aayog.
 - Full-Time Members, NITI Aayog.
 - Special Invitees.

National Population Register

Why in News?

For **Census 2021**, the Government has made the **National Population Register (NPR)** mandatory, allowing citizens to self-enumerate, for individuals who wish to

Note:



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fill out the census form themselves instead of relying on government enumerators.

- Self-enumeration refers to the **completion of census survey questionnaires** by the respondents themselves. Self-enumeration will **be provided to only those households that have updated NPR online**.
- During self-enumeration, **Aadhaar** or mobile number will be mandatorily collected.

What set of Questionnaires have been Finalized for the Next Census?

- The upcoming Census will be the **first digital one**, allowing respondents to complete the **questionnaire from their homes**.
- The set of questions for the **Houselisting and Housing Schedule phase** has been finalized, while the questions for the Population Enumeration phase are yet to be notified.
 - The comparison between the **2011 Census** and the next one reveals new inquiries on travel time and metro rail usage for commuting.
- The question on **disabilities includes additional categories** like acid attack, intellectual disability, chronic neurological disease, and blood disorder.
- The next Census will **also gather information on whether individuals living** in rented houses own residential property elsewhere or do not own any.
- Clarifications are provided on the **availability of drinking water within specific distances** from the premises.

What is the National Population Register?

- **About:**
 - NPR is a database **containing a list of all usual residents** of the country.
 - A usual resident for the purposes of NPR is a person who has resided in a place for six months or more and intends to reside there for another six months or more.
 - Its objective is to **have a comprehensive identity database** of people residing in the country.
 - It is generated through house-to-house enumeration during the "house-listing" phase of the **Census**.
 - NPR was first collected in 2010. It was updated in 2015 and already has details of 119 crore residents.

- In March 2020, the Ministry of Home Affairs (MHA) amended the Census Rules framed in 1990 to capture and store the Census data in an electronic form and enabled self-enumeration by respondents.

➤ **Legal Backing:**

- The NPR is prepared under the provisions of the **Citizenship Act 1955** and the Citizenship (Registration of Citizens and Issue of National Identity Cards) Rules, 2003.
- It is mandatory for every "usual resident of India" to register in the NPR.

➤ **Significance:**

- It will streamline **data of residents across various platforms**.
 - For instance, it is common to find a different date of birth of a person on different government documents. NPR will help eliminate that.
- It will help the government **formulate its policies better** and also aid national security.
- It will help to target government beneficiaries in a better way and also further cut down paperwork and red tape in a similar manner that Aadhaar has done.
- It will help in implementing the **idea of 'One Identity Card'** that has been recently floated by the government.
- 'One Identity Card' seeks to replace duplicate and siloed documentations of Aadhaar card, voter ID card, banking card, passport, and more.

➤ **NPR and NRC:**

- According to Citizenship Rules 2003, NPR is the first step towards compilation of a **National Register of Citizens (NRC)**. After a list of residents is created (i.e., NPR), a nationwide NRC could go about verifying the citizens from that list.
- However, unlike the NRC, the NPR is not a **citizenship** enumeration drive as **it records even a foreigner staying in a locality for more than six months**.
 - NRC is a register prepared **after the conduct of the Census of 1951** in respect of each village, showing the houses or holdings in a serial order and indicating against each house or holding the number and names of persons staying therein.

Note:

Khelo India University Games 2023

Why in News?

Recently, the **Prime Minister** virtually inaugurated the **3rd edition of Khelo India University Games (KIUG)** in Lucknow, Uttar Pradesh, marking the beginning of a new era for sports in India.

What are Key Points about KIUG 2023?

- The mascot of the 3rd edition of Khelo India University Games is named Jitu, which represents **Swamp Deer (Barasingha)** - the state animal of Uttar Pradesh.
 - The first edition was Khelo India University Games held in **Odisha in 2020**, the second edition was held in **Bangalore, Karnataka in 2022** (shifted from 2021 to 2022 due to Covid-19 pandemic).
- The games will witness the participation of over **4750 athletes** from more than **200 Universities** competing

in **21 sports categories**. Competitions will take place in **Varanasi, Lucknow, Gautam Buddha Nagar, and Gorakhpur**.

- The Prime Minister also emphasised that this interaction fosters a sense of unity, promoting the spirit of **'Ek Bharat Shreshtha Bharat.'**

What is the Khelo India Programme?

About:

- Khelo India, which translates to 'Let's play India', was proposed by the government of India in **2017** to **revive India's sporting culture by engaging with children at the grassroots level**.
- The initiative also focused on **building better sporting infrastructure** and academies across the country for various sports.
- It is implemented by the **Ministry of Youth Affairs and Sports**.

Competitions Under Khelo India:



Note:

- Under this movement, the **Khelo India Youth Games (KIYG)**, the **Khelo India University Games (KIUG)** and the **Khelo India Winter Games** were set up as annual national sports competitions where youngsters, **representing their states and universities, respectively, showcased their skills and competed for medals.**

➤ **Significance:**

○ **Reviving Traditional Sports:**

- Khelo India has played a crucial role in **restoring the prestige of India's traditional sports.**
- The government has provided scholarships to promote and encourage **indigenous sports such as Gatka, Mallakhamb, Thang-ta, Kalaripayattu, and Yogasan.** This initiative has helped preserve and popularise these traditional sports among the youth.

○ **Integration of Sports in Education:**

- Khelo India aligns with the proposal of the **National Educational Policy 2020** to incorporate sports as a subject within the curriculum and the construction of the country's first **National Sports University will further strengthen the cause.**

○ **Empowering Women Athletes:**

- Khelo India has taken significant steps towards promoting women's participation in sports through initiatives like the **Khelo India Women's League.**
- Organised in several cities, this league has witnessed the active participation of approximately **23,000 women athletes.**

○ **Centres of Excellence:**

- Khelo India also supports the establishment of state-of-the-art sports facilities across India, called **Khelo India State Centres of Excellence (KISCE).** These centres aim to provide basic facilities for sportspersons with potential and cater to three sporting disciplines each.
- Some of the **KISCES** are
- **Rajiv Gandhi Stadium, Aizawl**
- **Kalinga Stadium, Bhubaneswar**
- **Khuman Lampak Sports Complex, Imphal**

District Judiciary

Why in News?

The **Supreme Court of India** has emphasized the crucial role of the **district judiciary** in **upholding justice and declared its independence as an integral part of the Constitution's basic structure.**

- In a recent judgment, the court underscored the need for judicial **independence from the executive and legislature, including matters of finances.**
- The judgment, based on a petition filed by the **All-India Judges Association**, has led to significant directions and recommendations for the district judiciary's functioning and welfare.

What is the District Judiciary?

➤ **About:**

- The district judiciary refers to the **judicial system at the district level in India.** It is the **first level of the judiciary** and is responsible for hearing and deciding on cases at the local level.
- The district judiciary is composed of **district courts and other lower courts**, which are presided over by **district judges** and other judicial officers.

➤ **Constitutional Provisions**

- Articles 233-237 of the Indian Constitution deal with the provisions related to subordinate courts.

➤ **Article 233:**

- Deals with the **appointment of district judges.** Appointments of persons to be, and the posting and promotion of, district judges in any State shall be made by the **Governor of the State** in consultation with the High Court exercising jurisdiction in relation to such State.

➤ **Article 234:**

- Deals with the **recruitment of persons other than district judges** to the judicial service.

➤ **Article 235:**

- Deals with the **control over district courts and courts subordinate** thereto including the posting and promotion of, and the grant of leave to, persons belonging to the judicial service of a State and holding any post inferior to the post of district judge shall be vested in the High Court.

Note:

- **Article 236:**
 - Defines the term “judicial service”.
- **Article 237:**
 - Empowers the Governor to apply the provisions of this Chapter to any class or classes of magistrates in a State.
- **Importance of District Judiciary:**
 - The district judiciary performs an important role in upholding the **rule of law**. The district judiciary plays a vital role in achieving the preambular goal of justice by ensuring access to justice for **litigants**.
 - The district judiciary, **being the most accessible court for litigants**, serves as the **primary interface between the justice system and the people**.

What is the SC Judgement?

- **Independence of District Judiciary:**
 - The Supreme Court declares the independence of the district judiciary as a crucial part of the **Constitution’s basic structure**.
 - Access to justice, a **preambular goal**, would remain illusory without impartial and independent judges at the grassroots level.
- **No Longer “Subordinate”:**
 - The term “subordinate judiciary” **rejected as it misrepresents the constitutional position of a district judge**.
 - The constitution recognizes and protects district judges as vital components of the judicial system.
 - Greater respect should be accorded to the district judiciary and its contributions.
- **Recognition of District Judiciary’s Importance:**
 - District judiciary plays a vital role in upholding the rule of law and delivering justice.
 - Handles approximately 1.13 million cases daily, making it the most accessible court for litigants.
 - Showed efficiency in functioning even during the pandemic, ensuring timely delivery of justice.
- **Financial Security and Economic Independence for Judicial Officers:**
 - Independence of judicial officers serving in the district judiciary is vital to the judicial system.
 - Financial security and economic independence of judicial officers are essential to maintain their impartiality.

- Judicial officers have been working without a pay revision for nearly 15 years.
- **Recommendations and Directions:**
 - **Enhanced salary, pension, and other retiral benefits ordered for judicial officers.**
 - The pay of judicial officers should be **stand-alone and not compared to staff in the political executive or legislature**.
 - Incentives and promotion opportunities are needed to maintain the high level of functioning of the judiciary.

Narco Analysis Test

Why in News?

Protesting wrestlers at Jantar Mantar, Delhi have expressed their **willingness to undergo narco analysis tests**, with the **condition that it is monitored by the Supreme Court** and **broadcasted live for the entire country to witness**.

What is a Narco Test?

- **About:**
 - In a narco analysis test, a **drug called sodium pentothal** is injected into the body of the accused, which **transports them to a hypnotic or sedated state in which their imagination is neutralised**.
 - In this hypnotic state, the accused is understood as being **incapable of lying and is expected to divulge information that is true**.
 - In India, Narco analysis tests were notably used in the **2002 Gujarat riots case**, and the **26/11 Mumbai terror attack case**.
- **About Sodium Pentothal:**
 - **Sodium pentothal, or sodium thiopental**, is a **fast-acting, short-duration anaesthetic used in larger doses** to sedate patients during surgery.
 - It belongs to the **barbiturate class of drugs** that act on the central nervous system as **depressants**.
 - Because the drug is believed to weaken the **subject’s resolve to lie**, it is **sometimes referred to as a “truth serum”** and is said to have been **used by intelligence operatives during World War II**.
- **Narco vs Polygraph Tests:**

Note:

- Narco tests must not be confused with **polygraph tests**, which, although having the same truth-decoding motive, work differently.
- A polygraph test is carried out on the assumption that physiological responses triggered when one is lying are different from what they otherwise would be.
- Rather than injecting drugs into the body, **polygraph tests attach instruments like cardio-cuffs or sensitive electrodes to the suspect and measure variables such as blood pressure, pulse rate, respiration, change in sweat gland activity, blood flow, etc., while the suspect is being questioned.**

What are the Legal Implications of Narco Tests?

- **Selvi vs State of Karnataka & Anr Case 2010:**
 - The SC ruled on the legality and admissibility of narco tests establishing that the involuntary administration of narco or lie detector tests constitutes an intrusion into an individual's "mental privacy."
 - The apex court held that narco tests violate the fundamental right against self-incrimination under **Article 20(3) of the Constitution**, which states that **no person accused of any offence shall be compelled to be a witness against himself.**
- **D.K. Basu vs. State of West Bengal case, 1997:**
 - The SC ruled that involuntary administration of the polygraph and narco test will amount to cruel, inhuman, and degrading treatment in the context of **Article 21 or the Right to Life and Liberty.**
- **Other Observations of the SC:**
 - Narco tests are **not reliable or conclusive as evidence, as they are based on assumptions and probabilities.**
 - Any information or material that is subsequently discovered with the help of voluntarily administered test results can be admitted, in accordance with **Section 27 of the Evidence Act, 1872.**
 - For example: **if an accused reveals the location of a physical piece of evidence** (something like a murder weapon) in the course of the narco test and the police later find that specific piece of evidence at that location, **the statement of the accused will not be treated as evidence, but the physical evidence will be valid.**

- There is **no guarantee that the person who undergoes such tests will reveal only the truth.** There are chances of manipulation and fabrication of results by vested interests.
- Narco tests can be conducted **only with the consent of the accused, and that too after informing them about their rights and consequences.**
- The court also emphasised that the '**Guidelines for the Administration of Polygraph Test on an Accused**', published by the **National Human Rights Commission in 2000**, must be strictly followed.

Promulgation and Re-promulgation of Ordinances

Why in News?

Recently, an **Ordinance** was promulgated by the Indian President, giving the **Lieutenant Governor of Delhi** power over services in the **National Capital Territory (NCT).**

- The Ordinance established a "**National Capital Civil Service Authority**" consisting of the **Chief Minister and two senior IAS officers**, allowing them to decide matters through majority voting.
- Critics argue that this move effectively creates a situation where the elected Chief Minister's views can potentially be overruled.

What are Ordinances in Indian Polity?

- **About:**
 - **Article 123 of the Constitution** of India grants the President certain law-making powers to promulgate ordinances when either of the two Houses of **Parliament is not in session**, in urgent situations.
 - Hence, it is not possible for the ordinances to be issued by Parliament.
 - When an ordinance is promulgated but the legislative session is yet to commence, the ordinance remains in effect as law. It has the same force and effect as an Act of the legislature.
 - But it requires subsequent **ratification by Parliament within six weeks of its reassembly.**
 - An ordinance promulgated by the President has a maximum **validity of six months and six weeks from the date of its promulgation.**

Note:



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- The **Governor** of a state can also issue ordinances under **Article 213** of the Constitution of India, when the **state legislative assembly is not in session**.
- If the two **Houses start their sessions on different dates**, the **later date is considered (Articles 123 and 213)**.

➤ **Enactment:**

- In the process of enacting an ordinance, the **decision to bring forth the ordinance lies with the government**, as the **President acts on the advice of the Council of Ministers**.
- If the **President deems it necessary**, s/he may return the **Cabinet's recommendation for reconsideration**.
- However, if it is sent back (with or without reconsideration), the President must promulgate it.

➤ **Withdrawal:**

- The **President can withdraw an Ordinance**, and both Houses of Parliament can pass resolutions to disapprove it, potentially leading to its lapse. **Rejection of an ordinance would, however, imply the government has lost majority**.
 - However, If an Ordinance enacts a **law that falls outside the purview of Parliament's competence**, it is considered void.

➤ **Repromulgation of Ordinance:**

- When an Ordinance lapses, the government can choose to re-promulgate it if necessary.
- In a 2017 case, the Supreme Court ruled that repeated **re-promulgations without legislative consideration would be unconstitutional and a violation of the legislature's role**.
- The court **emphasised that the power to issue an Ordinance should be treated as an emergency measure** and not as a means to bypass the legislature.

Note: An ordinance like any other legislation can be **retrospective i.e., it may come into force from a back date**. It may also **modify or repeal any act of Parliament or another ordinance**.

Advantages	Disadvantages
They allow quick and effective action on urgent matters.	They bypass the democratic process of law-making and reduce parliamentary oversight .

They enable **policy implementation without legislative hurdles**.

They **undermine the principle of separation of powers** and encroach on the domain of the legislature.

They provide **legal certainty and clarity** in case of a judicial gap or ambiguity.

They create legal instability as they are temporary and subject to change or repeal.

They **reflect the responsiveness and accountability** of the executive branch.

They may be **misused for political or personal gains** or to avoid public scrutiny or debate.

What are the Other Past Judicial Pronouncements on Ordinances?

- **R.C. Cooper v. Union of India (1970):** This case challenged the **Banking Companies (Acquisition and Transfer of Undertakings) Ordinance, 1969**, which nationalised 14 major banks in India.
 - The **Supreme Court** held that the **President's satisfaction regarding the necessity of an ordinance is not immune from judicial review** and can be challenged.
 - The Court also held that an **ordinance is subject to the same constitutional limitations as an Act of Parliament** and cannot violate any fundamental rights or other provisions of the Constitution.
- **A.K. Roy v. Union of India (1982):** This case challenged the **National Security Ordinance, 1980**, which provided for **preventive detention** of persons for up to one year without trial.
 - The Supreme Court **upheld the validity of the ordinance but laid down some safeguards for its operation**, such as **periodic review by an advisory board**, communication of grounds of detention to the detenu, and **opportunity for representation against detention**.
 - The Court also **observed that an ordinance should not be used as a substitute for parliamentary legislation** and should be resorted to only in cases of extreme urgency or unforeseen emergency.
- **D.C. Wadhwa v. State of Bihar (1987):** This case challenged a series of ordinances issued by the **Governor of Bihar between 1967 and 1981** on various subjects, some of which were promulgated several times without being placed before the state legislature.

Note:



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- The **Supreme Court struck down all the ordinances as unconstitutional and held that re-promulgation of ordinances is a fraud on the Constitution** and a subversion of the democratic legislative process.
- The **Court also held that an ordinance lapses automatically if it is not approved by the legislature within six weeks** of its reassembly and cannot be continued by repromulgation.

Census

Why in News?

The 2021 **Census** in India had to be postponed for the first time in the past 150 years due to the **Covid-19 pandemic**. Despite the pandemic ending and the return to normalcy, the Census is still pending.

- It was initially proposed to be **an entirely digital exercise**, with all the information being fed into a mobile app by the enumerators. However, owing to 'practical difficulties', it was later decided to conduct it in 'mix mode', using either the mobile app or the traditional paper forms.

Note: According to the State of **World Population report 2023** released recently by the **UN Population Fund (UNFPA)**, India will overtake China to become the world's most populous country by the middle of 2023.

What is the Census?

- **Definition:**
 - **Population Census** is the total process of collecting, compiling, analyzing and disseminating demographic, economic and social data pertaining, **at a specific time, of all persons in a country or a well-defined part of a country.**
 - Census is the basis for **reviewing the country's progress in the past decade**, monitoring the ongoing schemes of the government and plan for the future.
 - It provides an instantaneous photographic picture of a community, which is valid at a particular moment of time.
- **Phases:** The Census Operations in India are carried out in two phases:
 - **Houselisting/Housing Census** under which details of all buildings, permanent or temporary, are noted with their type, amenities, and assets.

- **Population Enumeration** where more detailed information on each individual residing in the country, Indian national or otherwise is noted.
 - It is carried out after making a list of all households that are surveyed.
- **Frequency:**
 - The first synchronous census was taken in 1881, by W.C. Plowden, Census Commissioner of India. Since then, **censuses have been undertaken uninterruptedly once every ten years.**
 - The **Census of India Act of 1948** provides the legal framework for carrying out the Census however, it **does not mention its timing or periodicity.**
 - Hence, a Census is **Constitutionally mandated in India but there is no Constitutional or legal requirement** that it needs to be conducted decennially.
 - The 10-year frequency is followed in many countries (Ex. the US and the UK) but some countries like **Australia, Canada, Japan conduct it every five years.**
- **Nodal Ministry:**
 - The decennial Census is conducted by the **Office of the Registrar General and Census Commissioner**, Ministry of Home Affairs.
 - Until 1951, the Census Organisation was set up on an **ad-hoc basis for each Census.**

What is the Significance of Census?

- **Primary and Authentic Data:**
- It generates primary and authentic data that **forms the foundation of various statistical analyses.** This data is essential for planning, decision-making, and development initiatives in various sectors, such as administration, economy, and social welfare.
- It is **not the legal requirement but the utility of the Census** that has made it a permanent regular exercise. **Reliable and up-to-date data is vital** as it influences the accuracy of indicators used in different aspects of India's progress.
- **Demarcation:**
 - Census data is utilized for **demarcation of constituencies** and allocation of representation in government bodies.
 - It plays a crucial role in determining the number of **seats to be reserved for Scheduled Castes (SCs) and Scheduled Tribes (STs)** in Parliament, State legislatures, local bodies, and government services.

Note:



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- In the case of panchayats and municipal bodies, the reservation of seats for SCs and STs is based on their proportion in the population.
- This ensures proportional representation and promotes inclusivity in the political and administrative systems.

➤ Better Access for Businesses:

- The census data is also important for **business houses and industries** for strengthening and planning their business for penetration into areas, which had hitherto remained, uncovered.

➤ Giving Grants:

- The **Finance Commission** provide grants to the states on the basis of population figures available from the Census data.

What can be the Consequences of Delaying Census?

➤ Challenges in Framing Policy:

- A break in the Census periodicity can result in data that is not comparable to previous sets, creating **challenges in analyzing trends and making informed policy** decisions.
- Lack of reliable data – 12-year-old data on a constantly changing metric is not reliable – has the **potential to upset every indicator on India** and affect the efficacy and efficiency of all kinds of developmental initiatives.

➤ Political Misrepresentation:

- Delaying the Census has consequences for the reservation of seats for SCs and STs in various governing bodies.
- The data from the 2011 Census **would continue to be used**, which may result in inaccurate seat reservations.
- This is particularly problematic in **towns and panchayats where there have been significant changes** in population composition over the last decade.

➤ Unreliable Estimates on Welfare Measures:

- The delay will impact government schemes and programmes, and would result in **unreliable estimates from other surveys** on consumption, health and employment, which depend on census data to determine policy and welfare measures.

- As many as 100 million people are likely to be excluded from the government's food subsidy programme—the **Public Distribution System (PDS)**—as the population figures used to calculate the number of beneficiaries are from the 2011 census.

➤ Impact on Houselisting:

- Houselisting takes nearly a year to complete, **as it requires enumerators to locate addresses and gather relevant information**. In India, houselisting is particularly crucial because the country lacks a robust address system.
- Delaying the census means that the **list becomes outdated, as changes in households, addresses, and demographics occur** over time.
- This can result in **incomplete or incorrect information, leading to a less reliable foundation** for subsequent population enumeration and data collection

➤ Lack of Migration Data:

- The outdated 2011 Census data couldn't provide answers to important questions regarding the numbers, causes, and patterns of migration.
- During the Covid lockdown, the sight of migrant workers leaving cities and walking back to **their villages highlighted their challenges**.
- The government lacked information on **the stranded migrants and their requirements for food relief and transportation** support.
- The upcoming Census is expected to capture the scale of migration towards smaller towns in addition to major cities, shedding light on healthcare and social service needs specific to migrants.
- This data can help in identifying the necessary support and services required by migrants and their locations.

Forum Shopping

Why in News?

Recently, the **Chief Justice of India (CJI)** has condemned the practice of **Forum Shopping** after a **litigant** mentioned the hearing before CJI although he had mentioned the same case a day before another Judge.

Note:

What is the Practice of Forum Shopping?

➤ About:

- Forum shopping refers to the practice of **deliberately choosing a specific court for a legal case** in the hope of getting a favorable outcome.
- Litigants and lawyers often consider this strategy as part of their litigation plan.
 - For example, they might opt for a higher court like the **Supreme Court (SC)** to gain more attention for their case. However, if someone is clearly trying to manipulate the system or avoid a particular judge, **it is seen as unfair**.
- Similarly, **"Bench Hunting"** refers to **petitioners managing to get their cases heard by a particular judge or bench** to ensure a favourable order.

➤ Advantages:

- It can allow plaintiffs to **seek justice and compensation in a court** that is more sympathetic to their claims or interests.
- It can encourage **competition and innovation among courts** and judges to improve their efficiency and quality of service.

➤ Disadvantages:

- Forum shopping has been criticized by judges because it can lead to **injustice for the opposing party** and create an **imbalance in the workload** of different courts.
 - Judges have cited the **overburdening of some courts** over others and **interfering with judicial process**.
- It can **undermine the authority and legitimacy of courts** and judges by creating perceptions of bias or favoritism.
- It can increase the costs and complexity of **litigation by creating conflicts of laws and multiple proceedings**.

➤ Discouraging Forum Shopping:

- Even courts in the US and the UK discourage/prohibit forum shopping. In common law countries, the principle of **"forum non-conveniens"** is used to prevent the practice of Forum Shopping.
 - Common Law is a shared British heritage of the **U.S., Canada, and the Commonwealth**, and these countries have a legal system primarily based on **common law principles**.

- This principle allows a court to refuse its jurisdiction over a case if another court is more appropriate to hear it. This helps **ensure fairness and allocates cases to the right judicial authorities**.

How Does Forum Shopping

Affect Justice and the Judicial Process?

- It can compromise the **principle of natural justice**, which **requires that every person should have a fair hearing before an impartial tribunal**.
- It can violate the **principle of comity**, which requires that **courts should respect and defer to each other's decisions on matters of common interest**.
- It can hamper the **principle of finality**, which requires that **litigation should end at some point and not be prolonged indefinitely**.

What is the SC's View on Forum Shopping?

➤ *Dr. Khair-Un-Nisa and Ors vs. UT of Jammu and Kashmir and Ors 2023:*

- The Jammu, Kashmir, and Ladakh High Court imposed costs worth one lakh rupees on the **petitioners for indulging in forum shopping by filing multiple petitions** before different wings of the court, despite having the same cause of action.

➤ *Vijay Kumar Ghai vs. State of W.B. 2022:*

- The SC termed forum shopping as a **"disreputable practice by the courts"** that **"has no sanction and paramountcy in law"**.

➤ *Dhanwantri Institute of Medical Science vs. The State of Rajasthan 2022:*

- The Rajasthan High Court upheld an order imposing **costs worth 10 lakh rupees on a party for engaging in forum shopping**.

➤ *Union of India & Ors. vs. Cipla Ltd. 2017:*

- The SC laid down a **"functional test"** to be adopted for Forum Shopping.
 - The **"functional test"** laid down by the Supreme Court was to determine whether a litigant is **genuinely seeking justice or engaging in manipulative tactics** through forum shopping.

➤ *Rosmerta HSRP Ventures Pvt. Ltd. vs. Govt. of NCT of Delhi & Anr 2017:*

- The Delhi High Court imposed **costs on a private company that it found was indulging in forum hunting in an arbitration matter**.

Note:



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- **Kamini Jaiswal vs. Union of India 2017:**
 - The SC said that “unscrupulous elements” are always on the hunt to find a court or forum of **their choice but are not permitted to do so** by law.
- **Chetak Construction Ltd. vs. Om Prakash 1988:**
 - The Supreme Court of India’ emphasized that litigants should not have the **freedom to choose the court for their convenience**. The court stated that any attempt at forum shopping should be strongly discouraged.

Alderman

Why in News?

The Supreme Court, while considering the Delhi government’s plea against the **Lieutenant-Governor’s (LG)** appointment of Aldermen, observed that granting the LG the authority to nominate **MCD (Municipal Corporation of Delhi)** members could destabilize the Elected Civic Body.

What is Alderman?

- **About:**
 - Etymologically, the word comes from the combination of “old” and “man”, meaning older man or experienced person.
 - The word originally referred to **elders of a clan or tribe**, though soon it became a term for **king’s viceroys, regardless of age**. Soon, it denoted a more specific title – “**chief magistrate of a county**,” having both civil and military duties.
 - In the 12th century CE, as guilds became increasingly associated with municipal governments, the term **came to be used for officers of municipal bodies**. This is the sense in which it is used till date.
- **Case of Delhi:**
 - As per the **Delhi Municipal Corporation Act, 1957**, ten people, over the age of 25 can be nominated to the corporation by the administrator (the LG).
 - These people are **expected to have special knowledge or experience** in municipal administration.
 - They are meant to **assist the house in taking decisions** of public importance.

What are the Concerns

Related to the Appointment of Aldermen?

- first concern is related to the **suitability of the nominated individuals**. After the recommendations were submitted to LG, it was discovered that **two out of the 10 nominees were deemed technically unfit** for the position. This raises questions **about the thoroughness and transparency of the nomination process**, as individuals who are not qualified or suitable for the role should not be appointed.
- The second concern revolves around the perception that the appointment of aldermen by the LG is an attempt to maintain **control and influence within the Municipal Corporation of Delhi (MCD)** despite their electoral defeat. This raises concerns about the democratic principles of representation and the fairness of power dynamics within the MCD.

What is the SC’s Observation?

- The Additional Solicitor General, representing LG argued that there is a distinction between the powers of the **L-G under Article 239AA of the Constitution and their role as an Administrator** of the national capital. He claimed that the L-G has an active role in the **nomination of aldermen based on the law**.
- However, the SC stated that by giving this power to the L-G, it could potentially destabilize the democratically elected MCD, as they **would have voting power**.
- The SC has clarified that the **L-G does not have extensive executive powers** in the national capital, which operates under a unique “**Asymmetric Federal Model**” of governance.
- The term “Asymmetric Federal Model” refers to a system of governance in which different regions or components within a federation possess varying degrees of autonomy and powers.
- The court specified that the L-G can exercise **executive power at their discretion only in three specific areas**, under Article 239AA(3)(a).
 - Public order
 - Police
 - Land in Delhi.
- The court also stated that if the L-G disagrees with the Council of Ministers of the Government of the National Capital Territory of Delhi, they should follow the procedure outlined in the **Transaction of Business (ToB) Rules 1961**.

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- The ToB rules emerge from **Article 77(3) of the Constitution**, which provides a **framework for the allocation of work and responsibilities among various departments** and ministries of the government. They outline the procedures for the formulation, approval, and implementation of government policies, decisions, and actions.

What is the Tussle between Delhi Government and Centre?

➤ **Background:**

- Due to the co-existence of **Article 239 and 239AA**, there is a jurisdictional conflict between the **government of NCT and the Union Government** and its representative, the LG.
- According to the Union government, New Delhi being a Union Territory **Article 239 empowers the LG to act independently** of its Council of Ministers.
- However, the state government of Delhi held that **Article 239AA of the Constitution bestows special status** to Delhi of having its own legislatively elected government.
- This creates a **tussle around the administrative powers of the LG and state government** of NCT of Delhi.

➤ **Centre and State Governments Arguments:**

- The central government believes that as **Delhi is the national capital and represents the country**, it should have **authority over administrative services**, including appointments and transfers.
- However, the Delhi government argues that in the spirit of **Federalism**, **elected representatives should have the power to decide on transfers and postings**.

➤ **Legal Issues:**

- The first issue emerged from a **two-judge Bench in February 2019** when deciding on the allocation of powers between the Delhi government and the center.
- They left the **question of administrative service control to be decided by a larger Bench**.
 - In **May 2022**, a three-judge Bench had referred this case to a larger Bench on the Central government's plea.
 - The three-judge Bench had decided that the question of control over administrative services required "**further examination**".

- The second issue involves the **Government of National Capital Territory of Delhi (Amendment) Act 2021**, passed by Parliament.
 - The Act states that the term "**government**" mentioned in any law made by the Delhi Legislative Assembly will refer to the Lieutenant Governor (L-G).

Dotted Lands

Why in News?

Recently, the **Andhra Pradesh government** has initiated a significant step to **release "dotted lands"** from the prohibited list, allowing farmers to exercise their full rights over these disputed lands.

- This move aims to **resolve ownership disputes** and provide **clear land ownership** documents to eligible farmers.

What are Dotted Lands?

➤ **About:**

- Dotted lands are **disputed lands for which there are no clear ownership documents**.
 - Typically, one or more individuals as well as the government's Revenue Department lay claim over the land.
- These lands came to be known as "dotted lands" because when, during the **British era**, land ownership surveys and resettlement of land records were taken up, local revenue officials who were tasked with identifying government-owned and privately-owned lands **put dots in the ownership column if more than one person claimed ownership, or if ownership could not be clearly established**.

➤ **Causes of Ownership Disputes:**

- Ownership disputes often arise when **landowners fail to establish clear inheritance** through wills or when **multiple heirs claim the same land**.
- In some cases, the government identifies land as **state-owned** but finds it occupied by private parties.

➤ **Government's Initiative to Resolve Dotted Lands Issue:**

- The Andhra Pradesh government introduced a Bill to grant land titles to **farmers cultivating dotted lands for over 12 years**.

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- Removal of dots and entries from land registers will provide clear land ownership documents to approximately 97,000 farmers.
 - Landowners/farmers can utilize the lands as **collateral for obtaining loans**, in **urban areas**, **dotted lands have been illegally sold** and houses have been constructed, which cannot be taxed. **apply for financial assistance for crop support, sell the lands, or gift them to family members.**
 - Through “Jagananna Saswatha Bhu Hakku Bhu Raksha Scheme” of Andhra Pradesh Government, **digital records of this land will be prepared** so that **no one can tamper with the records in the future.**
 - Under this **Scheme**, **Andhra Pradesh government** has provided 7,92,238 permanent title deeds to farmers in 2,000 villages in the first phase.
- **Rationale behind the Government's Action:**
- The Chief Commissioner of Land Ceiling **received over 1 lakh applications to resolve dotted land disputes**, indicating the pressing need for a resolution.
 - Urban areas faced issues related to illegal sale and construction on dotted lands, **leading to tax evasion and revenue loss for the government.**
 - The registration value of the 2,06,171 acres exceeds Rs 8,000 crore, while the land value surpasses Rs 20,000 crore.

What are India's Initiatives for Digital Land Records to Reduce Land Disputes?

- **SVAMITVA:**
- **SVAMITVA** is a Central Sector Scheme of the **Ministry of Panchayati Raj** for **mapping the land parcels in rural inhabited areas** using **drone technology** and **Continuously Operating Reference Station (CORS).**
 - The mapping will be done across the country in a phase-wise manner over a period of four years - from 2020 to 2024.
- **PARIVESH Portal:**
- **PARIVESH** is a web-based application which has been developed for **online submission and monitoring** of the proposals submitted by the proponents for seeking **Environment, Forest, Wildlife and Coastal Regulation Zones (CRZ)** Clearances from Central, State and district level authorities.
- **Bhumi Samvaad:**

- **Bhumi Samvaad** is a **National Workshop on Digital India Land Record Modernisation Programme (DILRMP).**
 - It attempts to build upon the commonalities that exist in the arena of land records in various States to develop an appropriate **Integrated Land Information Management System (ILIMS)** across the country, on which different States can also add State-specific needs as they may deem relevant and appropriate.
- **National Generic Document Registration System:**
- It is a major shift from the **existing manual registration system to online registration** of all transactions in sale-purchase and transfer of land.
 - It is a big step towards National Integration and a leap towards ‘**One Nation One Software**’.
- **Unique Land Parcel Identification Number:**
- Being described as “the **Aadhaar** for land”, **Unique Land Parcel Identification Number** is a number that would uniquely identify every surveyed parcel of land and prevent land fraud, especially in the hinterlands of rural India, where land records are outdated and often disputed.

Appointment of Judges in Supreme Court

Why in News?

The **Supreme Court of India** recently witnessed the administration of oath to two new judges, **Justice Prashant Kumar Mishra**, and **Justice K.V. Viswanathan**, by **Chief Justice of India DY Chandrachud.**

- With their induction, the court has reached its **sanctioned strength of 34 judges.**

How are Supreme Court Judges Appointed?

- **Composition and Strength of the Supreme Court:**
- Originally, the **Supreme Court had eight judges** (one chief justice and seven others).
 - The Parliament has increased the number of judges over time.
 - The current strength of the **Supreme Court is 34 judges (one chief justice and 33 others).**
- **Qualifications for Appointment as a Judge:**

Note:

- According to **Article 124(3) of the Constitution**, a person can be appointed as a judge of the Supreme Court if he or she:
 - A person must be a **citizen of India**.
 - Must have served as a **judge of a High Court for at least five years or two such courts in succession**.
 - Alternatively, must have been an **advocate of a High Court for at least ten years** or two or more such courts in succession.
 - Must be a **distinguished jurist in the opinion of the president**.
- **Appointment:**
 - The Judges of the Supreme Court are appointed by the **President under clause (2) of Article 124 of the Constitution**.
 - The President consults with judges of the Supreme Court and High Courts to make informed appointments.
- **Oath of Office:**
 - Every appointed judge must make and subscribe to an oath before the President or an appointed person.
 - The oath includes commitments to uphold the Constitution, **sovereignty** and **integrity of India**, and **perform duties without fear or favor**.
- **Tenure and Resignation:**
 - There is no prescribed minimum age limit for a judge's appointment.
 - A judge of the Supreme Court serves until they reach the **age of 65 years**.
 - However, a judge may resign before reaching the age of 65 years by tendering their resignation to the President.
- **Salaries and Allowances:**
 - Salaries, allowances, privileges, leave, and pension of Supreme Court judges are determined by **Parliament**.
 - The Salaries, Pension, and Allowances of the Supreme Court Judges are charged upon the **Consolidated Fund of India**.
- **Post-retirement Restrictions:**
 - After retirement, a judge of the Supreme Court is **prohibited from practicing law in any court in India** or pleading before any government authority.

- As per **Article 128 of Indian Constitution**, any **retired judge** of the Supreme Court of India **can be called back to sit and act as a Supreme Court judge** by the Chief Justice of India with the prior permission of the President of India.
- **Removal:**
 - A judge of the Supreme Court can only be removed from office by an order of the **President**.
 - The removal process requires an address by each House of Parliament, supported by a special majority i.e., a majority of the total membership of that House and a majority of not less than **two-thirds of the members present and voting**.
 - The grounds for removal are **proven misbehaviour or incapacity**.
 - Parliament has the authority to regulate the procedure for presenting the address and investigating and proving the misbehaviour or incapacity of a judge.
 - Once appointed, judges can serve until the age of 65 and cannot be removed during their tenure except for proved misbehaviour or incapacity.
- **Collegium System for Judicial Appointments:**
 - Judges of the higher judiciary are appointed through the **collegium system**.
 - The collegium, consisting of the **Chief Justice of India** and the **four senior-most judges of the Supreme Court**, decides on appointments, elevations, and transfers of Judges.
 - The term "collegium" is not mentioned in the Indian Constitution but has been established through judicial pronouncements.

Custodial Torture

Why in News?

Recently, two police officers were suspended on the charges of **Custodial Torture(Violence)**, assaulting the accused in Police custody.

What is Custodial Torture?

- **About:**
 - Custodial torture is the **infliction of physical or mental pain or suffering on a person who is in the custody of the police or other authorities**.

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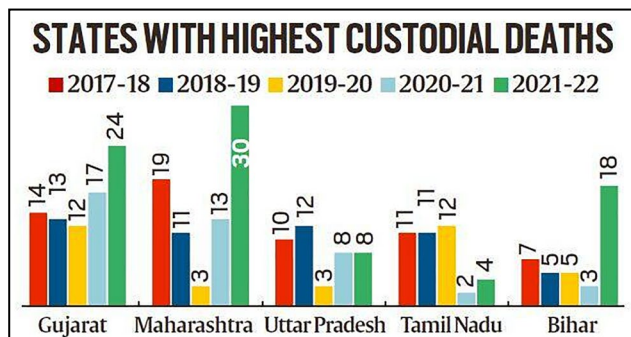
- It is a grave violation of **human rights** and dignity and often leads to **custodial deaths**, which are deaths that occur while a person is in custody.

➤ Types of Custodial Death:

- **Death in Police Custody:**
 - Death in police custody can result from excessive force, torture, denial of medical care, or other forms of abuse.
- **Death in Judicial Custody:**
 - Death in judicial custody may occur due to overcrowding, poor hygiene, lack of medical facilities, inmate violence, or suicide.
- **Death in the Custody of Army or Paramilitary Forces:**
 - Can happen through torture, extrajudicial killings, encounters, or crossfire incidents.

➤ Custodial Death in India:

- According to the Ministry of Home Affairs (MHA), a total of **146 cases of death in police custody were reported** during 2017-2018,
 - 136 in 2018-2019,
 - 112 in 2019-2020,
 - 100 in 2020-2021,
 - 175 in 2021-2022.
- In the last five years, the **highest number of custodial deaths (80)** has been reported in **Gujarat**, followed by **Maharashtra (76)**, Uttar Pradesh (41), Tamil Nadu (40) and Bihar (38).



➤ Challenges in Preventing Custodial Torture in India:

- Lack of ratification of the **UN Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment (UNCAT)**, which India signed in 1997 but has not yet ratified.
- This prevents India from being bound by international obligations and standards **to prevent and combat custodial torture**.

What are the Constitutional and Legal Framework Related Custodial Torture?

➤ Constitutional Provisions:

- **Article 21 of the Constitution of India** guarantees the **right to life and personal liberty**, which includes the right to be free from torture and other cruel, inhuman or degrading treatment or punishment.
- **Article 20(1)** states that no person shall be convicted of any offence, except those which are in contravention of the law in power at the commission of the Act. Thus, **this law prohibits punishment above what is mentioned in the law that deals with the offence**.
- Article 20(3) prohibits **a person to be compelled to be a witness against himself**. It is an extremely instrumental law as it protects the accused from giving confessions when the accused is coerced or tortured to do so.

➤ Legal Protections:

- **Section 24 Indian Evidence Act, 1872** declares that all the confessions made by the accused by succumbing to the threat, promise or inducement of investigating agencies would not be admissible in the court of law. This Section primarily works for preventing the accused to give confessions against his will.
- **Section 330 and 331 of the Indian Penal Code (IPC)** criminalize voluntarily causing hurt or grievous hurt to extort confession or information from any person.
- Section 41 of **Criminal Procedure Code (CrPC)** was amended in 2009 to include safeguards under 41A, 41B, 41C and 41D, so that arrests and detentions for interrogation have reasonable grounds and documented procedures, arrests are made **transparent to family, friends and public, and there is protection through legal representation**.

What are the International Conventions for Human Rights?

➤ International Human Rights Law, 1948:

- The International Human Rights Law contains a provision which **protects people from torture and other enforced disappearances**.

➤ United Nation Charter, 1945:

- The United Nations Charter calls for **treating prisoners with dignity**. The Charter clearly states

Note:

that despite being prisoners, their fundamental freedoms and human rights are set out in the **Universal Declaration of Human Rights**, the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights.

➤ **The Nelson Mandela Rules, 2015:**

- The Nelson Mandela Rules were **adopted by the United Nations General Assembly in 2015 to treat prisoners with inherent dignity** and to prohibit torture and other ill-treatment.

What Measures can be Taken to Combat Custodial Torture?

➤ **Strengthening Legal Systems:**

- Enacting comprehensive legislation explicitly **criminalizing custodial torture**.
- Ensuring **prompt and impartial investigations into allegations** of custodial torture.
- Holding perpetrators accountable through fair and expeditious trials.

➤ **Police Reforms and Sensitization:**

- Enhancing **police training programs to emphasize respect for human rights and dignity**.
- Promoting a culture of accountability, professionalism, and empathy within law enforcement agencies.
- Establishing **oversight mechanisms** to monitor and address cases of custodial torture effectively.

➤ **Empowering Civil Society and Human Rights Organizations:**

- Encouraging civil society organizations to actively advocate for victims of custodial torture.
- Providing support and legal assistance to victims and their families.
- Collaborating with international human rights bodies and organizations to seek redress and justice.

Supreme Court Upholds Laws Allowing Jallikattu

Why in News?

Recently, the **Supreme Court (SC)** has upheld amendments made by **Tamil Nadu, Karnataka and Maharashtra** to the **Prevention of Cruelty to Animals**

Act, 1960, to allow the traditional bull-taming sports of Jallikattu, **Kambala** (Karnataka) and bullock-cart racing.

- The case involves a challenge to the **Tamil Nadu amendment allowing jallikattu**, based on the argument that it goes against the central law prohibiting cruelty to animals.

What is the Court's Judgement?

- The SC held that the **state amendments (Prevention of Cruelty to Animals (Tamil Nadu Amendment) Act of 2017 and Prevention of Cruelty to Animals (Conduct of Jallikattu) Rules of 2017) did not violate the Constitution** and the Supreme Court's 2014 ruling banning Jallikattu.
 - The court said the Amendment Act "**substantially reduced pain and cruelty**" to the participating animals.
 - The judgment holds that the 2017 Amendment Act and Rules on Jallikattu are in time with Entry 17 (prevention of cruelty to animals) of the Concurrent List, Article 51A(g) (compassion to loving creatures) of the Constitution.
 - The Supreme Court banned Jallikattu through a judgment in May 2014 in the **Animal Welfare Board of India vs A. Nagaraja case** on the grounds of cruelty to animals.
 - The court said the **Act was also not "relatable" to Article 48 of the Constitution which deals with the duty of the State** to "organise agriculture and animal husbandry".
- It also stated that any **violation of the law in the name of cultural tradition would be punishable**.
- The court decided that determining Jallikattu's cultural heritage status is **best left to the State's legislative assembly** and not a court of law.

What is Jallikattu?

➤ **About:**

- Jallikattu is a traditional sport that is popular in Tamil Nadu.
- The sport involves **releasing a wild bull into a crowd of people**, and the participants attempt to grab the bull's hump and ride it for as long as possible or attempt to bring it under control
- It is celebrated in the month of January, during the **Tamil harvest festival, Pongal**.

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➤ **Arguments in Favour of Practice:**

- Jallikattu is considered **both a religious and cultural event** in Tamil Nadu, celebrated by people regardless of their caste or creed.
- The State government argues that **instead of completely banning this centuries-old practice, it can be regulated and reformed** as society progresses.
- They believe that prohibiting jallikattu would be **seen as an attack on the culture and sentiments** of the community.
- The government asserts that jallikattu plays a **role in conserving a valuable indigenous breed of livestock** and that the event itself does not go against principles of compassion and humanity.
- They emphasize that the significance of **jallikattu is being taught in high school curricula to ensure its preservation** for future generations.

➤ **Arguments in Opposition:**

- It is argued that all living beings, including animals, possess inherent liberty, as **recognized by the Constitution**.
- Jallikattu has resulted in deaths and injuries to **both humans and bulls in various districts** of the State.
- It has been observed that tamers **often act aggressively towards the bulls**, causing them extreme cruelty.
- Critics compared jallikattu to practices like **sati and dowry, which were once considered part of culture but were abolished** through legislation.

Note: Kambala is a traditional buffalo race in paddy fields filled with slush and mud which generally takes place in **coastal Karnataka** (Udupi and Dakshina Kannada) from **November to March**.

What is the**Prevention of Cruelty to Animals Act, 1960?**

- The legislative intent of the Act is to **"prevent the infliction of unnecessary pain or suffering on animals"**.
- The **Animal Welfare Board of India (AWBI)** was established in 1962 under Section 4 of the Act.
- This Act **provides for punishment for causing unnecessary cruelty and suffering to animals**. The Act defines animals and different forms of animals.
- **Discusses different forms of cruelty, exceptions, and killing of a suffering animal** in case any cruelty has

been committed against it, so as to relieve it from further suffering.

- Provides the **guidelines relating to experimentation on animals** for scientific purposes.
- The Act enshrines the provisions relating to the **exhibition of the performing animals**, and offences committed against the performing animals.
- This Act provides for the **limitation period of 3 months** beyond which no prosecution shall lie for any offences under this Act.

India's Pharmaceutical Industry

Why in News?

India's pharmaceutical industry, renowned as the largest manufacturer of **generic medicines globally**, has faced significant challenges related to **product quality and safety**.

- **Recent incidents of contaminated medicines and substandard drugs** have raised concerns about the regulatory framework and the industry's commitment to ensuring **high-quality pharmaceutical products**.

What are the Incidents**Highlighting Quality Control Failures?**

- In **January 2020**, **12 children in Jammu** died after consuming contaminated **medicine**, that was found to **contain diethylene glycol**, which led to **kidney poisoning**.
 - In **March 2021**, **Nycup syrup** was found to have lower levels of active ingredients.
- In **October 2022**, the **World Health Organization (WHO)** released a medical product alert, which are said to be linked to acute kidney injury in children and **66 deaths in the small West African nation of Gambia**.
 - Four products from India-based Maiden Pharmaceuticals had been found to be contaminated with **unacceptable amounts of diethylene glycol and ethylene glycol, both toxic to humans**.
- In **December 2022**, the **Central Drugs Standard Control Organisation (CDSCO)** initiated a probe in connection with the **death of 18 children in Uzbekistan** allegedly linked to a **cough syrup manufactured by Indian firm Marion Biotech**.

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- Recently, US Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (USFDA) **raised concerns** over a **drug-resistant bacteria** strain allegedly linked to **eye drops imported from India**.
- Recent regulatory inspections revealed that **48 drugs failed to meet quality standards**.
- **3% of drugs used for common conditions like hypertension, allergies, and bacterial infections were found to be substandard**.

What is the Status of India's Pharmaceutical Industry?

- **About:**
 - **India is the largest manufacturer of generic medicines globally**. Its pharmaceutical industry plays a crucial role in **global healthcare**, providing **affordable generic medicines** that impact the lives of the global poor.
 - It is currently valued at **USD 50 Bn** being a major exporter of Pharmaceuticals, with over **200+ countries served by Indian pharma exports**.
 - It is expected to reach **USD 65 Bn by 2024 and to USD 130 Bn by 2030**.
- **Major Challenges with India's Pharma Sector:**
 - **Violation of IPR Rules:**
 - Indian pharmaceutical companies have faced allegations of violating **Intellectual Property Rights (IPR) laws**, resulting in legal disputes with multinational pharmaceutical companies.
 - One such case involved **Swiss pharmaceutical company Roche and Indian drug manufacturer Cipla in 2014**.
- Roche accused Cipla of infringing on its patent for the cancer **drug Tarceva** by producing a generic version of the drug. The dispute escalated, leading to a court battle between the two companies.
- In 2016, the **Delhi HC ruled in favor of Roche**, affirming that Cipla had indeed violated Roche's patent rights. As a consequence, **Cipla was ordered to pay damages to Roche**.
 - **Pricing and Affordability:** India is known for its **generic drug manufacturing capabilities**, which have contributed to affordable healthcare globally.
 - However, the pricing of pharmaceuticals within India remains a significant concern. **Balancing the**

need for affordable medicines with the profitability of pharmaceutical companies is a delicate task.

- **Healthcare Infrastructure and Access:** Despite India's strong pharmaceutical industry, **access to healthcare remains a challenge for a significant portion of the population**.
- Issues such as **inadequate healthcare infrastructure, uneven distribution of healthcare facilities**, and low health insurance coverage pose barriers to accessing medicines.
- **Related Government Initiatives:**
 - **Production Linked Incentive (PLI) Scheme for Pharmaceuticals**
 - **Promotion of Bulk Drug Parks Scheme**
 - **Strengthening Pharmaceuticals Industry Scheme**

What Steps Can be Taken to Reform India's Pharma Sector?

- **Legislative Changes and Centralised Database:**
 - **Drugs and Cosmetics Act (1940)** needs to be amended and the establishment of a **centralised drugs database** can enhance surveillance and ensure effective regulation across all manufacturers.
 - India has **36 regional drug regulators; consolidating them into a single entity** can reduce the risk of regulatory capture and influence networks.
 - Also, **implementing common quality standards** across all states is necessary to ensure consistent product quality.
- **Encouraging Certification:**
 - Encouraging more pharmaceutical manufacturing units to **obtain WHO's Good Manufacturing Practice certification** can elevate industry-wide quality standards.
- **Transparency, Credibility, and Accountability:**
 - The regulator and the industry must collaborate to enhance India's drug regulatory regime, making it transparent, credible, and aligned with global standards.
 - **Public disclosure of drug application reviews and inspection records, violation history** can ensure accountability.
 - The cancellation of manufacturing licences for **18 pharma companies by the Drugs Controller General of India (DGCI)** is a positive step.

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- However, more comprehensive measures are required to address the root causes of quality issues.

➤ **Focus on Sustainable Manufacturing Practices:**

- Emphasising sustainable manufacturing practices, including **green chemistry**, **waste reduction**, and **energy efficiency**, can enhance the sector's environmental sustainability while reducing costs.
- Adopting **environmentally friendly practices** can also contribute to a **positive brand image** and attract environmentally conscious consumers.

Green Energy Open Access Rules 2022

Why in News?

Ministry of Power & NRE (New and Renewable Energy), Government of India has chaired a meeting on **Green Energy Open Access Rules 2022**.

What are Green

Energy Open Access Rules 2022?

➤ **About:**

- In 2022, the Government had notified **Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022** in order to further accelerate India's ambitious **Renewable Energy programmes**, with the objective of ensuring access to affordable, reliable, sustainable and **Green Energy** for all.
- It aims to cut emissions by 45% in line with **India's updated NDC (Nationally Determined Contributions)** target for 2030.
- These rules are notified for **promoting generation, purchase and consumption of green energy including** the energy from Waste-to-Energy plants.

➤ **Key Features:**

- There would be a uniform **Renewable Purchase Obligation (RPO)**. Green Hydrogen/Green Ammonia has also been included for fulfillment of its RPO.
- Green Open Access would be allowed to any **Open Access Consumer**.
- The Green Open Access is allowed to any consumer and the limit of Open Access Transaction has **been reduced from 1 MW to 100 kW for green energy**,

to enable small consumers also to purchase renewable power through open access.

- The transaction limit would be a minimum of 100 KW for non-captive consumers, but there is no limit for open-access transactions that has been kept for **captive consumers**.
- **Captive Consumers** are individuals who have limited or no choice but to purchase a **particular product or service due to various factors**, such as market conditions, lack of alternatives, or contractual obligations.
- Consumers are **entitled to demand supply of Green Power from Discoms**. Discoms would be obligated to procure and supply green power to eligible consumers.
- Approval for Green Open Access is to be granted in 15 days or else it will be deemed to have been granted.
- **Commercial and Industrial consumers are allowed to purchase green power** on a voluntary basis.
- Consumers will be given **Green Certificates if they consume green power and will also be facilitated**.

➤ **Significance:**

- The move is expected to prompt **smaller industries, commercial consumers, and large households to shift towards green energy**.
- India added 1.2 GW of **solar open access installations in 2021**, which grew by 22 % to 513 MW during January-March 2022.
- Hence, Green Open Access Rules 2022 are believed to be a huge steppingstone towards achieving **India's commitment to 500 GW of non-fossil fuel energy by 2030**.

What are the Other

Initiatives Related to Green Energy Transition?

- **Pradhan Mantri Sahaj Bijli Har Ghar Yojana (SAUBHAGYA)**
- **Green Energy Corridor (GEC)**
- **National Smart Grid Mission (NSGM) and Smart Meter National Programme**
- **Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME)**
- **International Solar Alliance (ISA)**
- **PM- KUSUM (Pradhan Mantri-Kisan Urja Suraksha evam Utthaan Mahabhiyan)**

Note:

World Telecom Day 2023

Why in News?

India on May 17, 2023, commemorated **World Telecom Day**, celebrating the advancements and achievements in the telecommunication sector.

- The **Sanchar Saathi portal** was launched on the day to enhance **transparency, security, and accountability** in the telecom industry.
- The year 2023 also marks the completion of **20 years** of **Universal Service Obligation Fund (USOF)**.

What is World Telecom Day?

➤ About:

- World Telecommunication Day is celebrated annually since 1969, to mark the founding of **International Telecommunication Union (ITU)** and the signing of the first **International Telegraph Convention** in 1865.
- It aims to raise **awareness of the importance of telecommunication** and its contribution to social and economic development.
- The **World Summit on the Information Society (WSIS)** called for the declaration of **May 17** as **World Information Society Day**.
- In 2006, the ITU combined both tents and celebrated them on **May 17** as **World Telecommunication and Information Society Day (WTISD)**.

➤ Theme:

- The theme of World Telecom Day 2023 is **"Empowering the least developed countries through information and communication technologies"**.
- The theme reflects the commitment of the ITU and its partners to support the **least developed countries (LDCs)** in harnessing the power of **Information and Communications Technologies (ICT)** for achieving their **sustainable development goals (SDGs)**.

➤ Highlights from the Event:

- Exhibition showcasing innovations in the telecom sector by start-ups.
- Recognition of top performing **Bharat Udyamis** ensuring last mile connectivity.
 - Udyami Bharat a programme launched by the government of India to empower the micro, small and medium enterprises (MSMEs) sector.

- Release of a report on the **First International Quantum Communication Conclave**.
 - Insights shared by national and international experts on the roadmap and developments in **quantum technologies** and their potential impact in various sectors.
- Emphasis on the important role played by **USOF** and **BharatNet** in bridging the digital divide and providing connectivity to underserved areas.

What is the Sanchar Saathi Portal?

➤ About:

- The **Sanchar Saathi portal**, developed by the **Centre for Development of Telematics (C-DOT)** under the **Department of Telecommunications (DoT)**, is revolutionizing the telecom sector in India.

➤ Objective:

- The primary objective of the Sanchar Saathi portal is to address various **fraudulent activities** prevalent in the telecom industry, such as **identity theft, forged KYC, and banking fraud**.
 - By leveraging advanced technologies and frameworks, the portal aims to provide users with a secure and trustworthy telecommunication experience.

➤ Reforms Introduced:

- **CEIR (Central Equipment Identity Register):**
 - Implemented to **block stolen or lost mobile phones**.
 - Users can submit **IMEI numbers** along with a copy of the police complaint to verify and block stolen devices.
 - Integrated with Telecom Service Providers and Law Enforcement Agencies.
 - **Prevents stolen devices from being used in Indian networks** and allows tracing by law enforcement when necessary.
- **Know Your Mobile Connections:**
 - Allows users to **check mobile connections registered in their name**.
 - Enables **identification of unauthorized or fraudulent connections**.
 - Users can report fraudulent or unrequired connections, triggering **re-verification and termination** of reported connections.

Note:



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- **ASTR (Artificial Intelligence and Facial Recognition powered Solution for Telecom SIM Subscriber Verification):**
 - Developed to identify subscribers who obtain connections using fraudulent or forged documents.
 - Utilizes facial recognition and data analytics techniques.
 - Analyzes connections obtained through paper-based KYC documents.

➤ **Impact:**

- Over 40 lakh fraudulent connections were identified and over 36 lakh were disconnected using the portal.
- Provides a secure and trustworthy telecommunication experience for users.
- Protects against identity theft, forged KYC, mobile device theft, and banking fraud.
- Enhances user safety and supports the draft Telecom bill.

What is Scenario of India's Telecom Sector?

➤ **About:**

- In 2020-2021 the telecom industry contributed **6% to India's Gross Domestic Product (GDP)** and is set to grow at a CAGR of 9.4% from 2020 to 2025. India is one of the largest consumers of data globally.
- The Union Cabinet approved a Rs. 12,195 crore **production-linked incentive (PLI) scheme** for telecom and networking products under the Department of Telecom.
- Growing demand for skilled workers in 5G-centric technologies: India will need around 22 million skilled workers in areas like **IoT**, and **AI** computing by 2025.

➤ **Recent Developments in the Telecom Sector:**

- **5G Rollout:**
 - Trials and testing conducted in various cities.
 - Expected global **5G** subscriptions reach 3.5 billion by 2026.
- **BharatNet:**
 - Project to provide broadband connectivity to **gram panchayats**.
 - Over 180,000 Gram panchayats connected with optical fiber.
 - Revised implementation strategy with \$7.8 billion outlay to cover all inhabited villages by August 2023.

- **Universal Service Obligation Fund (USOF):**

- USOF ensures that there is **universal non-discriminatory access to quality ICT** (Information and Communications Technology) **services** at economically efficient prices to **people in rural and remote areas**.
- Statutory fund to extend telecom services to rural areas.
- Supports schemes like BharatNet, mobile connectivity, public Wi-Fi hotspots, etc.

- **Draft Indian Telecommunication Bill 2022:**

- The **DoT** released the **draft Indian Telecommunications 2022 Bill** to regulate Internet-based **OTT (Over-The-Top)** telecom services.

- **Telecom Sector Reforms:**

- Rationalization of Adjusted Gross Revenue (AGR) definition.
- Moratorium on spectrum dues and increased tenure.
- Spectrum sharing, surrender, and trading allowed.
- Rationalization of bank guarantees and increased foreign investment limit.
- Measures to simplify licensing and regulatory compliance.

Enhanced Production Linked Incentive for IT Hardware

Why in News?

The Union Cabinet recently approved an updated **Production Linked Incentive (PLI) scheme** for **IT hardware manufacturing in India**.

- This move comes as India's electronics manufacturing industry has experienced significant growth, achieving a major milestone by crossing **USD 105 billion in production**.

What are the Major Highlights Related to Updated PLI Scheme for IT Hardware?

- **Enhancements to the PLI Scheme for IT Hardware:**
 - The **PLI scheme for IT hardware was first notified in March 2021**. The scheme provides upwards of **4% in incentives** for incremental investment in domestic manufacturing for eligible firms

Note:

- The **Ministry of Electronics and Information Technology (MeitY)**, stated that the incentive has been increased to **5% in the updated scheme**.
- Additionally, an “**additional optional incentive**” has been introduced for the **utilization of domestically produced components**.
- **Revised Budgetary Outlay and Duration:**
 - The updated PLI scheme for IT hardware has been allocated a budgetary outlay of **₹17,000 crore**. The scheme will have a **tenure of 6 years**, providing a **longer-term incentive for companies** to establish and expand their operations in India.
- **Growth of Electronics Manufacturing in India:**
 - Over the past eight years, the electronics manufacturing sector in India has experienced a **compound annual growth rate (CAGR) of 17%**.
 - In 2023, India surpassed **USD 11 billion** in **mobile phone exports**, solidifying its position as the **2nd-largest mobile handset manufacturer globally**, trailing only China.

What is the Production-Linked Incentives Scheme?

- **About:**
 - The **Production-Linked Incentives (PLI)** scheme is the latest addition to the list of reforms introduced under the aegis of the ‘**AatmaNirbhar Bharat Abhiyan**’ (Self-Reliant India) initiative.
 - The strategy behind the PLI scheme is to **offer companies incentives on incremental sales from products manufactured in India**, over the base year.
 - The scheme also **invites foreign companies to set up units in India**.
- **Objective:**
 - The scheme aims to **make domestic manufacturing globally competitive** and to create **global champions in manufacturing**
 - They have been specifically designed to **boost domestic manufacturing in sunrise and strategic sectors**, curb cheaper imports and reduce import bills, improve cost competitiveness of domestically manufactured goods, and **enhance domestic capacity and exports**.
- **Announced Sectors for PLI:**
 - The **Union Budget 2021-22** announced an outlay of **INR 1.97 lakh crores** for the PLI schemes for

14 key sectors which have been shortlisted on the basis of their potential for revenue and employment generation.

- The 14 sectors are **mobile manufacturing, manufacturing of medical devices, automobiles and auto components, pharmaceuticals, drugs, specialty steel, telecom & networking products, electronic products, white goods (ACs and LEDs), food products, textile products, solar PV modules, advanced chemistry cell (ACC) battery, and drones and drone components**.

Gaps in AePS Exploited by Cybercriminals

Why in News?

The **Aadhaar-enabled Payment System (AePS)** in India has recently faced exploitation by **cybercriminals**, leading to **unauthorized access to users’ bank accounts**.

- Scammers have been **using leaked biometric details to bypass the need for One Time Passwords (OTPs)** and drain funds from unsuspecting victims.
- A series of recent scams have exposed the **vulnerabilities of the AePS** and how cybercriminals are exploiting the loopholes in the system to defraud unsuspecting customers.

What is AePS?

- **About:**
 - Th AePS is a bank-led model that allows **online interoperable financial transactions at Point of Sale (PoS) or micro-ATMs** through the **Business Correspondent (BC)** of any bank using the **Aadhaar authentication**.
 - It was taken up by the **National Payments Corporation of India (NPCI)** - a joint initiative of **Reserve Bank of India (RBI)** and **Indian Banks’ Association (IBA)**.
 - The AePS is meant to provide **easy and secure access to banking services** for the poor and marginalized sections of society, especially in rural and remote areas.
 - It **eliminates the need for OTPs, bank account details, and other financial information**.
 - Transactions can be carried out with only the **bank name, Aadhaar number, and captured fingerprint during Aadhaar enrollment**.

Note:



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➤ **Benefits:**○ **Deepening Social Security:**

- The AePS helps in deepening social security by facilitating cash **transfers from various government schemes such as PM-KISAN, MGNREGA**, etc., directly into the beneficiaries' bank accounts.

○ **Enabling Interoperability:**

- The AePS enables interoperability among different banks and financial institutions, **allowing customers to access their bank accounts through any BC or micro-ATM** of any bank.

➤ **Drawbacks:**

- Neither Unique Identification Authority of India (UIDAI) nor NPCI mentions clearly whether AePS is enabled by default.

How is AePS Exploited?➤ **Leaked Biometric Details:**

- **Cybercriminals obtain leaked biometric information**, which includes fingerprints captured during Aadhaar enrollment.
 - They use this stolen data to **operate biometric POS devices and ATMs** without the need for **two-factor authentication or OTPs**. By bypassing these security measures, they can transfer money from users' bank accounts.

➤ **Silicone Thumbs:**

- Scammers have been known to use silicone thumbs to deceive biometric devices.
 - They **place the artificial thumb on the fingerprint sensor**, tricking the system into authenticating their fraudulent transactions.
 - This method allows them to perform unauthorized financial activities on behalf of the account holder.

➤ **Lack of Transaction Notifications:**

- In some cases, victims of AePS scams **do not receive any notification** from their banks **regarding unauthorized transactions**.
- They remain **unaware of the fraudulent activity until they notice discrepancies** in their bank account balance.
 - This lack of immediate alerts enables scammers to continue draining funds undetected.

➤ **Exploiting Weak Security Measures:**

- Gaps in the AePS system's security protocols, such as **inadequate identity verification or authentication processes**, provide opportunities for cybercriminals to carry out their fraudulent activities. They take advantage of these weaknesses to exploit the system and access users' bank accounts.

➤ **Systemic Issues:**

- The AePS also faces issues such as **biometric mismatches**, poor connectivity, weaker systems of certain banking partners, etc., that affect its performance and reliability.
 - Sometimes, the **transactions fail** due to these reasons but the money gets debited from the customers' accounts without their knowledge.

How to Prevent AePS Frauds?➤ **Amendments to Aadhaar Regulations 2016:**

- UIDAI proposes an amendment to the **Aadhaar (Sharing of Information) Regulations, 2016**.
 - The amendment requires entities in possession of an Aadhaar number to not share details unless Aadhaar numbers have been redacted or blacked out.

➤ **Aadhaar Lock:**

- Users are advised to **lock their Aadhaar information** using the **UIDAI website or mobile app**.
- Locking Aadhaar prevents the **unauthorized use of biometric information** for financial transactions.
- Aadhaar can be unlocked when **biometric authentication is required**, such as for property registration or passport renewals.
- After the necessary authentication, Aadhaar can be locked again for security purposes.

➤ **Other Preventive Measures:**

- It is advisable to **avoid scanning QR codes or clicking on links** sent by unknown or suspicious sources.
- Exercise caution and **refrain from trusting individuals who offer assistance in withdrawing money** from locations other than authorized bank branches or ATMs.
- Prior to providing a fingerprint on a PoS machine, it is recommended to **verify the displayed amount and request a receipt for every transaction**.
- Regularly **check the balance and transaction alerts of the bank account** linked to the mobile number.

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- In the event of any suspicious or fraudulent activity, promptly report it to both the bank and the police.
 - According to the **RBI**, customers are entitled to **zero liability for unauthorized transactions if promptly reported within three working days.**

What are the Challenges of AePS?

- **Lack of Awareness and Literacy:**
 - Many customers are not aware of the benefits and features of the AePS or how to use it safely and securely. They also lack financial literacy and digital skills, which makes them vulnerable to fraud and errors.
- **Inadequate Infrastructure and Connectivity:**
 - The AePS depends on the availability and quality of infrastructure and connectivity, such as biometric devices, PoS machines, internet, power supply, etc. However, these are often lacking or unreliable in rural and remote areas, where the AePS is most needed.
- **Regulatory and Policy Issues:**
 - The AePS also faces some regulatory and policy issues, such as **the legal validity of Aadhaar authentication, the privacy and security of biometric data**, the MDR charges for transactions, the grievance redressal mechanism for customers, etc.

4th Positive Indigenisation List

Why in News?

In a significant move towards promoting self-reliance in the defence sector and reducing imports, **India's Defence Public Sector Undertakings (DPSUs)** have received approval for the **fourth Positive Indigenisation List (PIL)**.

- The list comprises **928 strategically-important Line Replacement Units (LRUs)**, sub-systems, spares, and components, with an import substitution value of approximately **Rs 715 crore**.

What is a Positive Indigenisation List?

- **About:**
 - The concept of the **positive indigenization** list entails that the **Indian Armed Forces, comprising the Army, Navy, and Air Force**, will exclusively source the listed items from domestic manufacturers.

- These manufacturers may include entities from the **private sector or Defense Public Sector Undertakings (DPSUs)**.

- The fourth Positive Indigenisation List follows three previous PILs that were published in **December 2021, March 2022, and August 2022**, respectively.
 - So far, 310 items have been successfully indigenised, with the breakdown as follows: **262 items from the first PIL, 11 items from the second PIL, and 37 items from the third PIL.**
 - This initiative is in line with **India's vision of 'Atma Nirbharta' (self-reliance)** and aims to boost the **domestic defence industry, enhance investment, and reduce dependency on imports.**

➤ Indigenisation and In-house Development:

- To achieve indigenization, the DPSUs will utilize different routes under the **'Make' category**, focusing on in-house development through the capabilities of **Micro, Small, and Medium Enterprises (MSMEs)** and the private Indian industry.
- This approach will provide a boost to the economy, encourage investment in the defense sector. Additionally, this **initiative will foster the growth of design capabilities** within the domestic defense industry by actively involving academia and research institutions.

➤ Procurement and Industry Participation:

- The DPSUs are set to initiate procurement action for the items listed in the fourth PIL. To facilitate the process, **Srijaan Portal Dashboard** has been specifically designed for this purpose.

What is the Status of Indigenisation of the Defence Sector in India?

➤ Need for Indigenization:

- India's arms **imports fell 11% between 2013-17 and 2018-22**, the country is still the **world's top importer of military hardware in 2022** highlighted by **a report by the Stockholm International Peace Research Institute (SIPRI)**.

➤ Current Estimates and Targets:

- Current estimates place India's **defensive capital expenditure** at **USD 130 billion** over the next five years.
- The defense ministry has set a **USD 25 billion (Rs 1.75 lakh crore)** turnover goal in defense

Note:

manufacturing in the next **five years**, including an export target of USD 5 billion worth of military hardware.

➤ **Government Initiatives:**

- **Priority Procurement:** The **Defense Acquisition Procedure (DAP)-2020** gives priority to the procurement of capital items from domestic sources under the Buy Indian (IDDM) category.
- **Liberalised Foreign Direct Investment (FDI) Policy:** The FDI policy allows for **74% FDI under the automatic route in the defense industry**, and **up to 100% through Government route** wherever it is likely to result in access to modern technology.
- **Mission DefSpace:** The **Mission DefSpace** has been launched to promote defense-related innovations and developments in the space sector.
- **Innovations for Defense Excellence (iDEX) Scheme:** The **iDEX scheme** involves startups and MSMEs in defense innovation projects, fostering their participation and contribution.
- **Defense Industrial Corridors:** Two **Defense Industrial Corridors** have been established in **Uttar Pradesh and Tamil Nadu**, focusing on developing defense manufacturing ecosystems and attracting investments.

➤ **Examples of Indigenous Defense Arsenal in India:**

- **Tejas Aircraft:** The **Tejas** is a lightweight, multi-role supersonic aircraft designed and developed indigenously in India.
- **Arjun Tank:** Developed by the **Defense Research and Development Organization (DRDO)**, the Arjun Tank is a 3rd generation main battle tank that showcases India's expertise in armored vehicle technology.
- **NETRA:** The **NETRA** is an airborne early warning and control system developed domestically, providing crucial surveillance and reconnaissance capabilities.

- **ASTRA:** India has successfully developed the **ASTRA**, an **all-weather beyond-visual-range air-to-air missile**, enhancing the country's air defense capabilities.
- **LCH 'Prachand':** It is the first indigenous **Multi-Role Combat Helicopter** which has potent ground attack and aerial combat capability.
- **ICG ALH Squadrons:** In a major boost to further strengthen the capabilities of the **Indian Coast Guard**, **ALH Mk-III squadrons** were commissioned in Porbandar and Chennai in June and December 2022.

➤ **Challenges:**

- **Technological Gap:** Developing **cutting-edge defence technologies** and acquiring advanced capabilities is a significant challenge for India.
- The country has traditionally relied on foreign suppliers for critical defence technologies, and **bridging the technological gap requires substantial investments in research and development (R&D), as well as collaboration with industry and academia.**
- **Infrastructure and Manufacturing Base:** Building a **robust defence industrial base and infrastructure to support indigenous production is a major challenge.**
 - The defense manufacturing ecosystem in India needs to be modernized, with improvements in infrastructure, technology transfer, skilled workforce development, and streamlined procurement processes.
- **Testing and Certification:** Ensuring the quality, reliability, and safety of indigenously developed defense systems through rigorous testing and certification processes is crucial.
- Developing **robust testing facilities and establishing effective quality control mechanisms are essential for gaining** the confidence of users and export markets.



Note:

Economic Scenario

Highlights

- India's Coffee
- Falling Yield on Government Securities
- IRDAI Vision 2047
- Foreign Direct Investment Inflows
- US Debt Ceiling Crisis
- New Tax Rules for Online Gaming Platforms
- London Interbank Offered Rate (LIBOR)
- RBI Becomes Net Seller of USD in FY23
- Economics of Climate Change in India
- Edible Oil Prices and Significance for India
- Exemptions on Angel Tax
- RBI Surplus Transfer
- RBI to Withdraw Rs 2,000 Notes from Circulation
- ECL Based Loan Loss Provisioning Framework
- International Credit Card Spending Outside India under LRS
- Wholesale Price Index
- India's Fisheries Sector

India's Coffee

Why in News?

Recently, the Statista site stated that India is the **sixth largest producer of coffee in the world**, after **Brazil (largest producer of coffee)**, Vietnam, Colombia, Indonesia, Ethiopia and Honduras.

- In recent times, there has been increasing attention on the **health benefits of South Indian coffee blend**, particularly highlighting the **role of chicory and coffee with milk**.

What is South Indian Coffee Blend?

- **About:**
 - It Includes an **admixture of coffee and chicory powders**.
 - Gives the blend a **unique flavor and characteristics**.
- **Chicory:**
 - Herb native to **Europe and Asia**.
 - Contains **inulin**, a starchy substance beneficial for health which is found in a **wide variety of fruits, vegetables, and herbs, including wheat, onions, bananas, leeks, artichokes, and asparagus**.
 - Possesses **mild laxative properties** and it **decreases swelling** and is rich in **beta-carotene**, providing **superior protection against oxidative damage**.

- **Absence of caffeine in chicory** makes it a suitable complement to coffee, which contains caffeine.

What are the Health Benefits of Coffee?

- **Health Benefits of Coffee:**
 - Protection against **oxidative damage**.
 - Reduced risk of **type 2 diabetes**.
 - Reduced risk of **age-related diseases**.
- **Coffee with Milk and Potential Health Effects:**
 - While plain coffee is popular in many parts of the world, **South Indian filter coffee is typically served with hot milk**.
 - The addition of milk enhances the taste and flavor of coffee.
 - Research from the University of Copenhagen suggests that coffee with milk may have an **anti-inflammatory effect, aided by the combination of proteins and antioxidants present in milk**.
 - A large-scale human trial is underway to study the health effects of milk-added coffee, sparking interest among Indian coffee lovers.

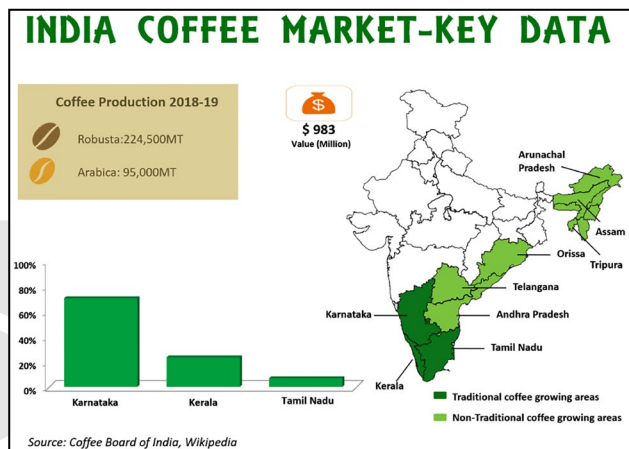
What are the Key Points about Coffee?

- **History and Commercialization:**
 - Coffee was introduced to India during the late seventeenth century.
 - The **smuggling of seven coffee beans from Yemen to India** by an Indian pilgrim in 1670 marked its initial arrival.

Note:

- The **Dutch**, who occupied parts of India during the 17th century, **played a role in spreading coffee cultivation**.
- However, it was during the British Raj in the mid-nineteenth century that commercial coffee farming fully flourished, particularly from the Mysore region.
- **Cultivation and Biodiversity:**
 - **Coffee Plantation Practices in India:**
 - Predominantly grown under **thick natural shade**.
 - Ecologically sensitive regions of the **Western and Eastern Ghats**.
 - **Biodiversity Hotspots:**
 - Coffee plantations located in these regions are recognized as **biodiversity hotspots**.
 - Contribute significantly to **India's unique biodiversity**.
 - **Export and Domestic Consumption:**
 - Approximately **65% to 70% of the coffee produced in India is exported** and remaining coffee is consumed domestically.
 - **Role in Sustainability and Socio-economic Development:**
 - Coffee cultivation plays a vital role in **sustaining biodiversity**.
 - **Fosters socio-economic development in remote hilly areas**.
- **Climatic Conditions and Soil Types:**
 - **Climate Conditions:**
 - Hot and humid climate, Temperature 15°C to 28°C, and Rainfall 150 to 250 cm.
 - **Harmful Conditions:**
 - Frost, Snowfall, High temperatures above 30°C, and Strong sunlight.
 - **Ideal Soil Conditions:**
 - Well-drained loamy soils, Presence of humus and minerals (iron, calcium), Fertile volcanic red earth, and Deep sandy loam soils.
 - **Less Suitable Soil Conditions:**
 - Heavy clay soils, Sandy soils.
- **Geographical Distribution and Varieties:**
 - **Coffee Plantation Locations in India:**
 - Karnataka, Kerala, Tamil Nadu, Andhra Pradesh (Araku Valley), Odisha, Manipur, Mizoram, and Other northeastern states.

- **Major Coffee Producer:**
 - Karnataka accounts for approximately 70% of India's total coffee production.
- **Coffee Varieties in India:**
 - **Arabica and Robusta**.
- **Characteristics of Arabica:**
 - Grown at higher altitudes and it has Higher market value due to its aroma.
- **Characteristics of Robusta:**
 - Known for its strength and used in various blends.



The Coffee Board of India

- It is a **statutory organization** that was constituted under **Section (4) of the Coffee Act, 1942**.
- It functions under the administrative control of the **Ministry of Commerce and Industry, Government of India**.
- The Board comprises 33 Members including the Chairperson, who is the Chief Executive and it **functions from Bangalore**.
- The Board mainly focuses its activities in the areas of research, extension, development, market intelligence, external & internal promotion for coffee.

Falling Yield on Government Securities

Why in News?

The yield on the benchmark 10-year **government security (G-sec)** in India has witnessed a **decline**, posing a question to **retail investors about their investment strategy**.

Note:



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- The **Reserve Bank of India (RBI)** have opened up the government securities market to **retail investors**, but their **participation has been relatively low**.

Why did the Yield of G-secs Decline?

- The yield on the benchmark 10-year government security (G-sec) has fallen to 6.9 % (May 2023) from 7.4 % in early March 2023 after changes in **debt mutual fund taxation**. It is **currently trading at around 6.96-6.99%**.
 - The benefit of indexation in the calculation of long-term capital gains on debt mutual funds was removed.
- Various factors such as changes in **debt mutual fund taxation**, the **RBI's decision on the repo rate**, and **declining inflation** have influenced the downward movement of government security yields.

What are the Reasons for Low Participation of Retail Investors in G-Secs?

- **Lack of Investor Guidance:**
 - Retail investors find it complicated to invest in **government bonds** and require guidance, possibly through intermediaries, to navigate the process.
- **Limited Liquidity:**
 - The G-Sec market lacks liquidity, making it challenging for **retail investors to find buyers in the secondary market** when they want to sell their securities.
 - This lack of liquidity can result in investors being stuck with their investments.
- **Complexity of Investment:**
 - Retail investors, **especially uninformed participants**, may find the investment process in G-Secs daunting and **prefer more simplified** investment options like **fixed deposits**.
 - The RBI Retail Direct platform is **beneficial for informed investors** but **may not cater to uninformed participants** who require a simpler investment process.
- **Low Trading Volumes:**
 - The traded volume in the **secondary market** for G-Secs **has been relatively low**, further reducing the attractiveness for retail investors.
- **Alternative Investment Options:**
 - Retail investors may consider other investment avenues such as **fixed deposits**, which have seen

increased interest rates, or exploring new bonds, **NCDs (Non-Convertible Debentures)**, and **post office deposit schemes**.

What are Government Securities?

- **About:**
 - A G-Sec is a tradable instrument **issued by the Central Government or the State Governments**.
 - A G-Sec is a **type of debt instrument issued by the government** to borrow money from the public to finance its **Fiscal Deficit**.
 - A debt instrument is a financial instrument that **represents a contractual obligation by the issuer to pay the holder** a fixed amount of money, known as the principal or face value, on a specified date.
 - It acknowledges the **Government's debt obligation**. Such securities are **short-term** (usually called **treasury bills**, with original maturities of less than one year- presently issued in three tenors, **namely, 91-day, 182 day and 364 day**) or long-term (usually called Government bonds or dated securities with an original maturity of one year or more).
 - In India, the Central **Government issues both, treasury bills and bonds or dated securities** while the State Government issue only bonds or dated securities, which are called the **State Development Loans (SDLs)**.
 - G-Secs carry **practically no risk of default and**, hence, are called risk-free gilt-edged instruments.
 - Gilt-edged securities are **high-grade investment bonds offered by governments and large corporations** as a means of borrowing funds.
 - The RBI conducts **(Open Market Operations) OMOs** for sale or purchase of G-secs to adjust money supply conditions.
 - The RBI sells g-secs to **remove liquidity from the system** and buys back g-secs to infuse liquidity into the system.
- **Bond Yield:**
 - Bond yield is the **return an investor realizes on a bond**. The **mathematical formula** for calculating yield is the **annual coupon rate divided by the current market price of the bond**. Price and yield are **inversely related: As the price of a bond goes up, its yield goes down**, and vice versa.

Note:



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- **Bond:**
 - It is an **instrument to borrow money**. A bond could be issued by a country's government or by a company to raise funds.
- **Coupon Rate:**
 - It is the **rate of interest paid by bond issuers on the bond's face value**.

What are the Types of G-Secs?

- **Treasury Bills (T-bills):**
 - Treasury bills are zero coupon securities and pay no interest. Instead, they are issued at a discount and redeemed at the face value at maturity.
- **Cash Management Bills (CMBs):**
 - In 2010, Government of India, in consultation with RBI introduced a new short-term instrument, known as CMBs, to meet the temporary mismatches in the cash flow of the Government of India. The CMBs have the generic character of T-bills but are issued for maturities less than 91 days.
- **Dated G-Secs:**
 - Dated G-Secs are securities which carry a fixed or floating coupon (interest rate) which is paid on the face value, on half-yearly basis. Generally, the tenor of dated securities ranges from 5 years to 40 years.
- **State Development Loans (SDLs):**
 - State Governments also raise loans from the market which are called SDLs. SDLs are dated securities issued through normal auction similar to the auctions conducted for dated securities issued by the Central Government.

IRDAI Vision 2047

Why in News?

The **Insurance Regulatory and Development Authority of India (IRDAI)**, as part of its Vision **Insurance for all' by 2047**, has allotted states and union territories to every insurer to increase **insurance penetration in India**.

- **IRDAI** is also planning to launch **Bima Trinity** - Bima Sugam, Bima Vistar, Bima Vaahaks – in collaboration with general and life insurance firms to make insurance activities hassle free.

What is IRDAI Vision 2047?

- **Objective:**
 - Insurance for All by 2047 aims that every citizen has an appropriate **life, health and property insurance cover** and every enterprise is **supported by appropriate insurance solutions**.
 - It also aims to make the **Indian insurance sector globally attractive**
- **Pillars:**
 - Insurance customers (Policyholders)
 - Insurance providers (insurers)
 - Insurance distributors (intermediaries)
- **Focus Areas:**
 - Making available right products to right customers
 - Creating robust grievance redressal mechanism
 - Facilitating ease of doing business in the insurance sector
 - Ensuring the regulatory architecture is aligned with the market dynamics
 - Boosting innovation
 - Competition and distribution efficiencies while mainstreaming technology and moving towards principle based regulatory regime.
- **Significance:**
 - It can help people in households all over the country to have **access to an affordable insurance policy** that covers health, life, property, and accidents.
 - These policies would offer faster claim settlements, sometimes within hours, and additional **benefits like gym or yoga memberships**.

Cover drive for the uninsured

The Insurance Regulatory and Development Authority is driving multi-pronged changes to expand citizens' safety nets

	■ A new bundled insurance product, Bima Vistar to provide life, health, accident and property cover through a single, simple policy		■ A Bima Sugam platform as a one-stop shop for customers, integrating insurers and distributors		■ Linking digital death registries to platform so claims can be settled within hours or a day
	■ Permitting insurers to sell value-added services with policies; for example, a yoga class bundled with a health scheme		■ Women to lead campaign to spur insurance penetration in each Gram Sabha		■ Roping in States to form insurance committees and expand coverage across districts

■ Move will also allow smaller, micro and regional insurers to reach different strata of society

What is Bima Trinity?

- **Bima Sugam:**
 - It is a unified platform that **combines insurers and distributors**. It simplifies policy purchases, service

Note:

requests, and claims settlement for customers in one convenient portal.

➤ **Bima Vistar:**

- It is a comprehensive bundled policy that covers life, health, property, and accidents. It provides **defined benefits for each risk category**, ensuring quick claim payouts without surveyors.

➤ **Bima Vaahaks:**

- It is a **women-centric workforce operating** at the Gram Sabha level. They will educate and convince women about the **benefits of comprehensive insurance, particularly Bima Vistar**. By addressing concerns and emphasizing advantages, Bima Vaahaks empower women and enhance their financial security.

What is the State of Insurance Sector in India?

- According to the Economic Survey 2022-23, life insurance density in the country increased from USD 11.1 in 2001 to USD 91 in 2021. Total global insurance premiums in 2021 **increased 3.4% in real terms, with the non-life insurance sector registering 2.6% growth**, driven by rate hardening in commercial lines in developed markets.
- According to the **Economic Survey 2022-23**, India's insurance market is poised to emerge as one of the fastest-growing markets globally in the coming decade.
- As per the IRDAI, insurance penetration in India **increased from 3.76% in 2019-20 to 4.20% in 2020-21, registering a growth of 11.70%**.
- Also, the insurance density increased from USD 78 in 2020-21 to USD 91 in 2021-22.
- **Life insurance penetration in 2021 was 3.2%**, almost twice as high as the emerging markets and slightly above the global average.
- India is at **present the 10th biggest market in the world** it is projected to be 6th biggest by 2032.

What are the Challenges Related to Insurance Sector

➤ **Lower Adoption Rate:**

- Insurance is **not widely adopted in India compared to other countries**. This is because many people are not aware of insurance or don't trust it.
- In rural areas, where a large portion of the population lives, only a small percentage **have life insurance coverage**.

- The insurance industry's contribution **to India's GDP (Gross Domestic Product) is less than 5%**, which is lower than the global average. In simple terms, insurance is not widely used in India, and efforts are needed to increase awareness and trust in insurance products.

➤ **Lack of Product Innovation:**

- The insurance sector in India has **been slow in product innovation**. Many insurance companies offer similar products, which leads to a lack of differentiation in the market.

➤ **Fraudulence:**

- Fraud includes things like **making false claims and lying about** information.
- The use of digital technology and customer-focused policies may have unintentionally given fraudsters **more chances to steal identities and make fake claims**.
 - Over 70% of Indian insurers have seen an increase in fraud cases in the past two years.

➤ **Talent Management:**

- The insurance sector in India faces a talent shortage. The industry needs skilled professionals in areas such as actuarial science, underwriting, claims, and risk management.
- Attracting and retaining talented professionals is a challenge for the industry.

➤ **Slow Rate of Digitalization:**

- The insurance sector in India **has been slow to adopt digitalization compared to other industries**, which has resulted in several challenges such as inefficient processes, lack of transparency, and poor customer experience.

➤ **Claims Management:**

- The claims process in India is often seen as **complicated, slow, and opaque**, which can lead to customer dissatisfaction and loss of trust in the insurance industry.
- This can be due to a lack of transparency, inefficient processes, and poor communication with customers.

What is IRDAI?

- IRDAI, founded in 1999, is a regulatory body created with the **aim of protecting the interests of insurance customers**.
 - It is a statutory body under the IRDA Act 1999 and **is under the jurisdiction of Ministry of Finance**.

Note:



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- It regulates and sees to the development of the insurance industry while monitoring insurance-related activities.
- The **powers and functions** of the Authority are laid down in the **IRDAI Act, 1999 and Insurance Act, 1938**.

Foreign Direct Investment Inflows

Why in News?

Foreign Direct Investment (FDI) inflows into India have experienced a notable downturn in the **fiscal year ending March 2023**.

- FDI inflows on a gross basis stood at **USD 71 billion in FY23**, reflecting a **decline of 16%** compared to the previous fiscal year, marking the **first decrease in FDI inflows in the country in the past decade**.

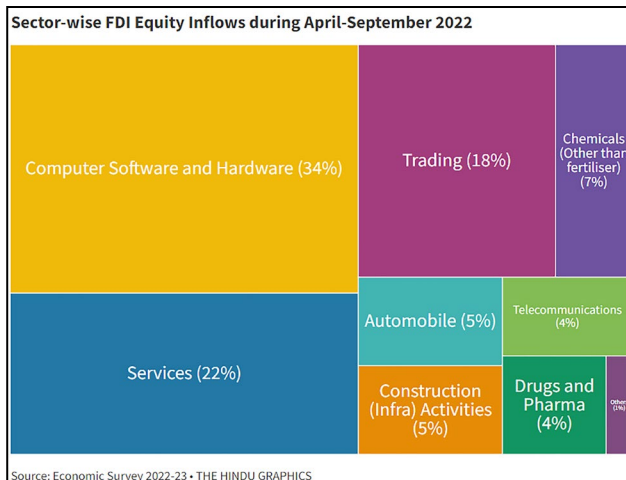
What is Foreign Direct Investment (FDI)?

- **Foreign direct investment (FDI)** is a type of **cross-border investment** in which an investor from one country establishes a lasting interest in an enterprise in another country.
- FDI can take various forms, such as **acquiring shares, establishing a subsidiary or a joint venture, or providing loans or technology transfers**.
 - FDI is considered to be a key driver of **economic growth**, as it can bring in **capital, technology, skills, market access and employment opportunities** to the host country.

What are the Trends and Patterns of FDI Inflows in India?

- **About:**
 - India has been one of the **most attractive destinations for FDI in recent years**, owing to its large and growing domestic market, favourable demographics, political stability, liberalised policy framework and improved ease of doing business.
 - According to the **Department for Promotion of Industry and Internal Trade (DPIIT)**, India's cumulative FDI inflow stood at **USD 871.01 billion between April 2000-June 2022**.
 - According to the **World Investment Report 2022**, India has ranked **7th among the top 20 host economies for 2021**.

- India received the highest-ever FDI inflows of **USD 84.8 billion** including **USD 7.1 billion FDI equity inflows in the services sector in FY22**.



Country-wise FDI Equity Inflow FY-2021-22:

- Singapore (27.01%), USA (17.94%), Mauritius (15.98%), Netherland (7.86%) and Switzerland (7.31%) emerge as top 5 countries for FDI equity inflows.

What are the Challenges Related to FDI inflows in India?

- **Taxation and Regulatory Compliance:** India's tax regime has undergone several reforms in recent years, but **complexities and uncertainties still exist**.
 - **Frequent changes in tax laws, multiple layers of taxation**, and disputes over tax assessments create challenges for foreign investors in terms of compliance and tax planning.
- **Competition from Other Emerging Markets:** India faces competition from other emerging markets, such as **China, Vietnam, and Indonesia**, in attracting FDI.
 - These countries offer **competitive advantages**, including lower costs of production, better infrastructure, and more investor-friendly policies.
- **Infrastructure Deficit:** Despite ongoing efforts to improve infrastructure, India still faces significant gaps in areas such as **transportation, logistics, power, and telecommunications**.
 - Insufficient infrastructure hampers the **ease of doing business** and raises operational costs for foreign investors.

Note:

What Measures can be Taken to Boost FDI Inflows in India?

- **Simplify and Streamline Regulatory Processes:** India can further **simplify and streamline its regulatory processes**, including licensing, permits, and approvals. Implementing a **single-window clearance system** or a digital platform for regulatory compliance can **reduce bureaucracy and enhance the ease of doing business**.
- **Improve Infrastructure Development:** Focus on improving infrastructure across sectors such as **transportation, logistics, power, and digital connectivity**.
- Developing **world-class infrastructure facilities and industrial clusters** will attract foreign investors looking for efficient and well-connected business environments.
- **Enhance Investor Protection Mechanisms:** Strengthening investor protection mechanisms, including **robust intellectual property rights (IPR) enforcement, contract enforcement**, and dispute resolution mechanisms, will instil confidence in foreign investors.
 - This can be achieved through **judicial reforms**, specialised commercial courts, and alternative dispute resolution methods.
- **Promote Sector-Specific Investment Policies:** Formulate sector-specific investment policies and incentives to attract FDI in key sectors such as **manufacturing, renewable energy, healthcare, technology, and e-commerce**.
 - **Tailoring policies to address the specific needs and requirements** of each sector can encourage foreign investors to invest in those areas.

US Debt Ceiling Crisis

Why in News?

The United States Treasury Secretary has warned of the US defaulting on debt by June 1 if the House of Representatives and President's White House fail to reach an agreement to raise or suspend the debt ceiling.

What is the US Debt Ceiling?

- **About:**
 - The debt ceiling is the **maximum amount of money that the U.S. government** is legally allowed to borrow to fund its expenses and obligations.

- It was established in 1917 during **World War I**.
- The purpose of the debt ceiling is to provide the government with flexibility in spending **without requiring frequent approval from Congress** for each expenditure.
- Under the U.S. Constitution, Congress has the **authority to control government spending**.
- As of now, the current debt limit is **set at USD 31.4 trillion**. This means that the government **cannot exceed borrowing beyond this amount without congressional approval**.
- **Current Stand-off:**
 - The current stand-off involves the **Republicans (Members of Opposition party)**, who have a majority in the House of Representative **and Democrat-run government**.
 - The Republicans are refusing to **raise the US debt ceiling unless the government** agrees to include **significant spending cuts and other priorities**, arguing that the nation's debt is **unsustainable**.
 - They want to attach conditions to programs like **cash aid, food stamps, and Medicaid to ensure that government spending** is limited.
 - On the other hand, the President insists on **approving the debt ceiling with no conditions**, stating that defaulting on debt is non-negotiable.
 - This has created a deadlock and a **potential risk of default if an agreement is not reached before the deadline**.

What happens if the Government Defaults?

- **Government Default:**
 - The US government may not be able to meet its financial obligations, resulting in a default on its debt payments. This would be unprecedented and could have a catastrophic impact on the nation's economy.
- **Economic Downturn:**
 - A default would lead to a loss of confidence in the US financial system, causing financial markets to become highly volatile. It could trigger a severe economic downturn, impacting businesses, investments, and employment.
 - Analysts say the dollar would weaken, the stock markets would collapse, and millions might lose their jobs.

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- **Downgraded Credit Rating:**
 - A default could result in a downgrade of the US government's credit rating, making it more expensive for the government to borrow money in the future. This would further strain the country's finances and increase borrowing costs.
- **Global Repercussions:**
 - The US economy is closely interconnected with the global economy. A default could have a ripple effect worldwide, causing disruptions in international financial markets and affecting economies around the globe.

Is there Any Back-up if Debt Ceiling Defaults?

- **Constitution's 14th Amendment:**
 - Under the **Constitution's 14th Amendment**, the President has the authority to raise the debt ceiling by their own without the support of Legislature.
 - The Constitution's 14th Amendment states that the **validity of the public debt "shall not be questioned."** This would involve asserting that **defaulting on the debt is unconstitutional** and taking action to prevent it.
- **Emergency Measures:**
 - The Treasury Department has certain emergency measures it can take to **continue paying the government's bills even after hitting** the debt ceiling.
 - These measures can provide temporary relief, but they are not a long-term solution.
 - They buy some time for the government to operate until a permanent solution is reached.
- **Bipartisan Agreement:**
 - It is possible that negotiations between the government and the opposition could continue until the last moment, and a **bipartisan agreement to raise the debt ceiling could be reached**. This would involve compromises and finding common ground on spending cuts or other fiscal measures.

Has anything Similar Happened Earlier?

- The similar situation occurred in 2011 when Barack Obama was President, but the House of Representatives was controlled by the members of opposition party.

- The crisis was resolved shortly before the deadline by reaching an agreement. In that case, the President agreed to implement **spending cuts totaling more than USD 900 billion** in order to resolve the crisis and raise the debt ceiling.

How Does India

Manage Borrowing and Debt Obligation?

- India has a formal debt ceiling mechanism as per FRBM Act but does not have debt ceiling in terms of absolute amount like the US has. Therefore, Debt Ceiling in the US can be compared with **Fiscal Deficit** target in India.
- In India this target is in term of % of **GDP (Gross Domestic Product)** not in absolute amount like in USA.
- Indian government manages **borrowing and debt obligations** through various mechanisms and institutions such as,
 - **Fund raising through Securities and Bonds:** It issues government securities, such as treasury bills and government bonds, in the domestic market.
 - **Fiscal Responsibility and Budget Management (FRBM) Act:** It provides a legislative framework for **fiscal discipline and debt management** in India. It sets targets for fiscal deficits and debt-to-GDP ratios, aiming to ensure long-term fiscal sustainability. The government's borrowing decisions are guided by the principles outlined in the FRBM Act.
 - **Reserve Bank of India (RBI):** The RBI plays a significant role in managing the country's borrowing and debt. It acts as the **banker to the central government and facilitates the issuance**, auction, and trading of government securities. The RBI also manages the government's **cash flows, ensuring smooth settlement of debt transactions**.

How can the US

debt ceiling Impact Global Economy?

- A failure to raise the debt ceiling and the subsequent risk of a US government default can lead to **increased volatility in global financial markets**.
- A debt ceiling crisis may undermine the creditworthiness of the US dollar and may erode confidence in it, leading to a depreciation in its value. This depreciation can **have ripple effects on other currencies and trade relationships**.

Note:



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- A debt ceiling crisis can undermine confidence in the stability and reliability of the global financial system. Uncertainty and fear in the markets can result in reduced **business and consumer spending**, hampering economic growth not only in the US but also worldwide.

What will be the Impact on the Indian Economy?

- **Rupee Depreciation:**
 - The Indian rupee may depreciate against the dollar, **making imports more expensive and potentially increasing inflationary pressures** in the Indian economy.
- **Trade Disruptions:**
 - The United States is one of India's major trading partners, and any economic downturn resulting from **a debt ceiling crisis can reduce demand for Indian exports**.
 - Reduced exports to the US can negatively impact Indian industries dependent on American consumers, such as information technology, textiles, and pharmaceuticals.
- **Impact on Forex:**
 - India holds a significant amount of **foreign exchange reserves**, including US Treasuries. A default or downgrade of **US debt can result in losses on these investments**, potentially impacting India's foreign exchange reserves and overall financial stability.

New Tax Rules for Online Gaming Platforms

Why in News?

The **Central Board of Direct Taxes (CBDT)** has recently introduced **new tax rules for online gaming platforms in India**. These rules aim to bring clarity and establish guidelines for **Tax Deducted at Source (TDS) on winnings from online gaming**.

What are the New Tax Rules for Online Gaming?

- **No TDS on Winnings up to Rs 100:**
 - Online gaming platforms **will not be required to deduct tax at the source for a player if the net winning does not exceed Rs 100**.

- This threshold provides relief for **players with smaller winnings**.

➤ **Taxable Deposits:**

- Bonus, referral bonus, and incentives provided by the online gaming company are **considered taxable deposits**.
- These deposits will be subject to tax under **Rule 133 of the Income-tax Act**.

➤ **Calculation of Net Winnings:**

- Calculation of net winnings in the online gaming industry will **consider each user account separately when a user has multiple accounts**.
- The deposit, withdrawal, or balance in the user account refers to the **total amount across all user accounts associated with the individual**.
- Transfers between user accounts under the same online intermediary, belonging to the same user, **will not be treated as withdrawals or deposits**.
- However, if a withdrawal or deposit occurs between **one user's account and another user's account**, such **transfers will be considered as withdrawals**.

➤ **Valuation of Winnings:**

- The valuation of winnings in kind will be based on the **fair market value**, except when the online gaming intermediary has purchased the winnings before providing them to the user.
- If the online gaming intermediary manufactures items as winnings, the fair market value will be considered.

➤ **TDS Provision for Online Gaming:**

- To regulate online gaming transactions, the **Finance Act 2023 introduced section 194BA in the Income-tax Act, 1961**, requiring online gaming platforms to deduct **income tax on net winnings in a user's account**.
- TDS at a **rate of 30% will be applicable** on the net winnings from any online gaming platform.
- Tax is required to be deducted at the time of withdrawal and at the end of the **financial year**.

➤ **Impact:**

- **Increased tax burden** on online gamers.
- Impact on professional gamers and streamers, potentially higher taxes and more complex financial management.

Note:

- Esports organizations may need to **adjust financial models and consider tax implications** for revenue streams.
- Financial implications and potential **reduction in gaming income**.
- Compliance challenges in understanding and adhering to new tax rules.
- Possibility of players **migrating to jurisdictions with more favorable tax regulations**.

Tax Deduction at Source:

- A person (deductor) who is liable to make payment of specified nature to any other person (deductee) shall deduct tax at source and remit the same into the account of the Central Government.

What is CBDT?

- It is a **statutory authority** that functions under the **Central Board of Revenue Act, 1963**.
- It is a part of the **Department of Revenue in the Ministry of Finance**.
- It provides **inputs for policy and planning of direct taxes in India** and is also responsible for the administration of direct tax laws through the **Income Tax Department**.
- Direct Taxes include **income tax, corporation tax etc.**

What are the Other Tax Regulations Related to Digital Assets?

- The Government of India has decided to regulate transactions of **Virtual Digital Assets** in the **Union Budget 2022**.
 - Provisions have been proposed in the **Income-tax Act, 1961** to regulate investments in **cryptocurrencies, NFTs, and other virtual digital assets**.
- Income from **digital assets will be taxed at a rate of 30%**.
- A **1% tax deductible at source** will be applicable on transactions involving virtual digital assets.
- **Gifts of virtual digital assets will also be subject to taxation**.
- No deductions and exemptions are allowed, and losses from the **transfer of such assets cannot be set off against any other income**.

London Interbank Offered Rate (LIBOR)

Why in News?

The **Reserve Bank of India (RBI)** has advised banks and other Regulated Entities to move away from the **London Interbank Offered Rate (LIBOR)** and transition to Alternative Reference Rates (ARR).

- The transition away from LIBOR is aimed at reducing reliance on a benchmark that is susceptible to manipulation and ensuring the financial system's stability and integrity.

What is LIBOR?

- **About:**
 - LIBOR is a **widely used global benchmark interest rate**. It represents the **average interest rate at which banks estimate they can borrow from each other** in the London interbank market for specific time periods.
 - LIBOR is important because it is used **as a reference rate for settling trades in various financial instruments** such as futures, options, swaps, and other **Derivatives**.
- **Calculation:**
 - To calculate LIBOR, a group of banks submits their **estimated borrowing rates** to Thomson Reuters, a news and financial data company, every business day.
 - The extreme rates are removed, and the **remaining rates are averaged to determine the LIBOR rate**, which aims to represent the median borrowing rate.
 - Previously, LIBOR was calculated for five major currencies and seven different time periods, resulting in 35 rates published each day.
 - However, the UK Financial Conduct Authority phased out most of these rates, and after 31st December, 2021, only **U.S. dollar LIBOR rates were allowed** to be published.
- **Significance:**
 - Many lenders, borrowers, investors, and financial institutions rely on **LIBOR to determine interest rates and pricing for these transactions**.
 - Not only is LIBOR used in financial markets, but **it also serves as a benchmark rate for consumer lending products** like mortgages, credit cards, and student loans.

Note:

- It helps determine the interest rates that individuals and businesses pay on these loans.

Why is RBI Moving Away from LIBOR?

- **Concerns Over Reliability and Integrity:**
 - The RBI is moving away from LIBOR due to concerns over its **reliability and integrity**.
- The central flaw in the LIBOR mechanism is its **heavy reliance on banks to provide honest and accurate reporting** of their borrowing rates, without considering their commercial interests. This creates an opportunity for manipulation and misconduct.
 - During the 2008 financial crisis, some banks **artificially lowered their LIBOR submissions** to project a more favorable image amid the crisis. Panelists were reporting significantly lower borrowing costs compared to other market measures.
- **Issue of Integrity and Fairness:**
 - There is a tendency for banks to alter their **LIBOR submissions based on their trading units' derivative positions**, aiming to generate higher profits.
 - This raises concerns about the **integrity and fairness** of the benchmark.

What is the Alternative to LIBOR?

- In 2017, the U.S. The Federal Reserve introduced the **Secured Overnight Financing Rate (SOFR)** as an alternative to LIBOR.
- In India, new transactions were recommended to use SOFR along with the **Modified Mumbai Interbank Forward Outright Rate (MMIFOR)**, replacing Mumbai Interbank Forward Outright Rate (MIFOR).
- SOFR, is based on observable repo rates. These rates **reflect the cost of borrowing cash overnight and are collateralized by U.S. Treasury securities**.
- Unlike LIBOR, which relied on expert judgment, **SOFR is derived from actual transactions**, making it **less susceptible to market manipulation**.
- MMIFOR, on the other hand, incorporates the **adjusted SOFR rates, which are compounded retrospectively** for different time periods. These rates are obtained from the Bloomberg Index Services, among other components.
- The introduction of SOFR and MMIFOR aims to provide a more reliable and transaction-based benchmark

for financial contracts, reducing the risks associated with LIBOR.

What are the Challenges in Shifting from LIBOR?

- There are many products linked to LIBOR which **had to be redesigned with an Alternate Reference Rate (ARR)** as the base.
 - Two working groups constituted by the association, receiving guidance from the RBI, helped develop the same.
- Transitioning from LIBOR to an ARR poses challenges in technology and legal aspects. These challenges involved **dealing with existing contracts, making necessary modifications with counterparties, interbank entities, and borrowers**.
- Banks need to undertake essential systemic and technical changes. These changes involve identifying products tied to **LIBOR and determining the overall exposure**. Banks also have to inform **customers about the transition, incorporate fallback clauses** in contracts to address scenarios where the reference rate is no longer available, assess the impact on their profit and loss statements, and make necessary adjustments to their technology platforms.

RBI Becomes Net Seller of USD in FY23

Why in News?

Recently, the **Reserve Bank of India (RBI)** witnessed a significant shift in its foreign exchange transactions during the fiscal year 2022-23. After being a **net buyer of the US dollar for three consecutive years, the RBI turned into a net seller**, selling 25.52 billion USD in the **spot market**.

- The **spot exchange** is where financial instruments, such as commodities, currencies, and securities, are traded for immediate delivery.

Why and How did the RBI Turn into a Net Seller in FY23?

- **Stabilisation of the Rupee:**
 - The RBI maintains that its intervention in the **foreign exchange market is aimed at stabilising the rupee's movement**.

Note:



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- The sale or purchase of dollars by the RBI impacts its profit and is reflected in dividend payouts to the government.
- Without the RBI's dollar sales, experts suggest the **rupee could have weakened further**, potentially reaching 84-85 levels against the dollar.
- **Depletion of Forex Reserves and Valuation Losses:**
 - The country's **foreign exchange reserves** decreased from \$606.475 billion to \$578.449 billion during FY23. This was primarily due to **valuation losses resulting from the appreciating US dollar** and higher US bond yields.
- **Selling of Dollar:**
 - The RBI sold significant amounts of dollars in FY23 to counter the **rupee's depreciation** resulting from the **Ukraine-Russia conflict** and the **US Federal Reserve's interest rate hikes**.
 - The **rupee depreciated** by approximately **8% during FY23**, with the **RBI's intervention preventing further weakening**.
 - The rupee declined from around 76 levels on April 1, 2022, to nearly 82 as of March 31, 2023.
- **Impact:**
 - The RBI's dollar sales in FY23 resulted in **significant profits**, leading to a **higher dividend payout to the government**.
 - The Central Board of the RBI approved a **188% increase in surplus transfer to the government** for the accounting year 2022-23.

What Other Measures Can Help Curb Depreciation of Rupee?

- **Increase capital flows into the country**, such as promoting **foreign investments** and encouraging **Non-resident Indian (NRI) deposits**.
- **Monitor and intervene in the foreign exchange markets** to reduce excessive volatility in the rupee's value.
- Consider utilizing foreign exchange reserves selectively to counter excessive depreciation and maintain stability.
- Foster a **favorable business environment and policies that support economic growth** and exports.
- **Strengthen monetary policy frameworks** to effectively manage **inflation** and maintain stability.
- Enhance coordination with other relevant government agencies to implement comprehensive strategies for managing currency depreciation.

- Encourage **trade in rupees** and promote **pricing of India's trade transactions in the domestic currency**.
- Continuously monitor and assess the impact of policy measures on the rupee's depreciation and make adjustments as necessary.

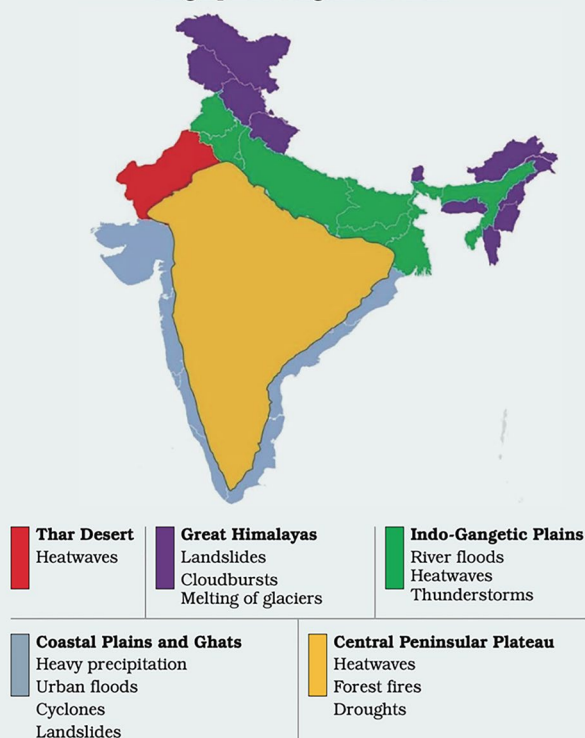
Economics of Climate Change in India

Why in News?

Over the past months there have been several stories about how **extreme weather events** have disrupted normal life in India. The **Global Climate Risk Index 2021** had ranked India 7th in the list of most affected countries in terms of exposure and vulnerability to **climate risk events**.

- Climate change being one of the most **pressing challenges of the 21st century** poses significant risks not only to the **environment, human health and food security**, but also economic development.

Chart II.1: Risks Emanating from Climate Change across Geographical Regions in India



Note: Map not to scale.

Sources: Mani et al., (2018); Krishnan, et al., (2020).

Note:

How does Climate Change Affect India's Macroeconomy?

➤ About:

- Climate change can adversely affect both the supply side (the productive potential) and the demand side (the consumption and investment) of the economy.
- It can also have spillover effects across regions and sectors, as well as cross-border impacts and contagion risks.

➤ Impacts:

- **Reduced Agricultural Output:** Climate change can severely disrupt crop cycles and cause low agricultural yield due to changes in temperature, precipitation patterns, pest infestation, soil erosion, water scarcity, and extreme weather events such as floods and droughts.
 - **Agriculture**, with its allied sectors, is the largest source of livelihood in India and contributes significantly to the economy. Low yields can hit the rural economy and push inflation in urban areas as well.
 - **Disruption of the Fisheries Sector:** Rising sea surface temperatures due to climate change can disrupt the distribution and behaviour of fish species.
 - Some species may move to cooler waters or shift their migratory patterns, affecting the availability of fish in certain regions. This can lead to changes in fish catch composition and abundance, impacting the livelihoods of fishermen.
- **Increased Health Costs:** Climate change can increase the incidence and severity of diseases such as malaria, dengue, cholera, heat stroke, respiratory infections, and mental stress.
- It can also affect the nutrition and well-being of vulnerable groups such as children, women, elderly, and poor. Health costs can reduce disposable income, lower labour productivity, and increase public expenditure.
- According to the WHO, between 2030 and 2050, climate change is expected to cause approximately 2,50,000 additional deaths per year, from malnutrition, malaria, diarrhoea and heat stress.

- **Damaged Infrastructure:** Climate change can damage physical infrastructure such as roads, bridges, railways, ports, airports, power plants, water supply systems, and buildings due to sea level rise, coastal erosion, landslides, storms, floods, and heat waves.
 - Damaged infrastructure can disrupt economic activity, trade, and connectivity and increase maintenance and replacement costs.
 - For instance, India spent USD 3 bn of economic damage caused by floods in the last decade which is 10% of the global economic loss.
- **Reduced Industrial Output:** Climate change can increase operational costs and reduce profits in the industrial sector due to factors such as new climate-friendly regulations, reduced utilisation of old stock, relocation of production processes and activities due to climate-related losses.
 - India could contribute to 34 million out of 80 million global job losses due to heat stress-associated productivity decline by 2030.
- **Energy Crisis:** According to the International Energy Agency (IEA), India's primary energy demand will double by 2030.
 - Energy and climate share a distinctive relationship such that rising temperatures demand a surge in energy usage to assist the process of mitigating the heat effects.
- **Impact on Financial Services:** Climate change can put pressure on financial services due to increased credit risk for banks and financial institutions. It can affect borrowers' ability to repay loans due to climate-related events such as floods, hurricanes, or droughts.
 - These events can damage properties, disrupt supply chains, and impact businesses' profitability, potentially leading to loan defaults and credit losses.
 - It can also increase insurance claims and disrupt travel and hospitality services due to reduced demand, cancellations, and safety concerns.

What are India's Initiatives to Tackle Climate Change?

- **Panchamrit:** India has presented the following five nectar elements (Panchamrit) of India's climate action:

Note:

- Reach 500 GW Non-fossil energy capacity by 2030.
 - 50% of its energy requirements from renewable energy by 2030.
 - Reduction of total projected carbon emissions by 1 billion tonnes from now to 2030.
 - Reduction of the carbon intensity of the economy by 45% by 2030, over 2005 levels.
 - Achieving the target of net zero emissions by 2070.

➤ **National Action Plan on Climate Change:**

- It aims at creating awareness among the representatives of the public, different agencies of the **government, scientists, industry and the communities** on the threat posed by climate change and the steps to counter it.

What More can India do to Combat the Impacts of Climate Change?

- **Enhancing Carbon Sequestration:** India can enhance its **carbon sequestration** potential by expanding its **forest and tree cover**, restoring degraded lands, promoting agroforestry, and adopting low-carbon farming practices.
 - Carbon sequestration can **not only offset emissions but also provide multiple co-benefits** such as **biodiversity** conservation, soil fertility improvement, water security, livelihood support, and disaster risk reduction.
- **Building Climate Resilience:** India can build its climate resilience by strengthening its disaster management systems, improving its early warning and forecasting capabilities, **investing in climate-proof infrastructure**, **developing climate-smart agriculture**, **enhancing health care services**, and **empowering local communities** and institutions.
- **Driving India's Green Transportation Revolution:** There is a need to **promote electric vehicles (EVs)** by establishing a robust charging infrastructure network and offering incentives for **EV adoption**.
 - Introducing **innovative public transportation solutions** such as **electric buses**, **shared mobility services**, and **smart traffic management systems** can reduce congestion and emissions.
- **Climate Smart Agriculture:** There is a need to **encourage sustainable farming practices** by promoting organic farming, agroforestry, and precision agriculture.

- Integrating technology-driven solutions such as remote sensing, **IoT devices**, and **AI-based analytics** can optimise resource utilisation, reduce water consumption, and enhance crop productivity.

Edible Oil Prices and Significance for India

Why in News?

Edible oils have experienced significant **Price volatility** over the past 2-3 years.

- The global vegetable oils price index of the **UN Food and Agriculture Organization** experienced a significant drop to **77.8 points** (2014-16 base period value = 100) in **May 2020 during the peak of global Covid lockdowns**. However, it reached an all-time high of **251.8 points** in **March 2022 following Russia's invasion of Ukraine**.

What are the Factors for Volatility in Edible Oil Price?

- The war between Ukraine and Russia disrupted the world's supply of this oilseed, as the **Black Sea** ports were shut off.
 - Ukraine and Russia accounted for nearly **58% of global production in 2021-22**, causing prices to skyrocket.
- The situation changed with the **Black Sea Grain Initiative** agreement between Russia and Ukraine, brokered by the UN and Turkey. The agreement facilitated the safe navigation of vessels carrying grain and foodstuffs from designated Ukrainian ports.
- This led to the shipping out of accumulated sunflower oil, meal, and seed from Ukraine, resulting in **international vegetable oil prices falling below pre-war levels**.

What does this Translate into for India?

- **Reduction in Cost:**
 - The import of sunflower oil in India has the potential to significantly reduce the price of edible oils in the country. By importing sunflower oil, which has a landed cost of approximately USD 950 per tonne, the **overall cost of edible oils in India can be reduced**.

Note:



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➤ Impact on Consumers:

- When prices soared, many households and institutional consumers such as restaurants and canteens switched from sunflower oil to **relatively cheaper alternatives like soybean oil or local oils**.
- However, as import flows and price parity have been restored, **consumers are returning to sunflower oil**.

➤ Market Expansion:

- Sunflowers are traditionally grown in **Karnataka, Telangana, and Maharashtra**.
- Roughly 70% of the country's sunflower oil consumption is in the South, with Maharashtra (10-15%) and other states making up the rest.
- This regional concentration presents a substantial market for sunflower oil products.

➤ Meeting the Demand:

- Over the past decade, domestic production of sunflower oil has declined to insignificant levels. This decline opens up **opportunities for imports to meet the growing demand** for sunflower oil in the country.
- The decline in domestic production and the preference for sunflower oil in certain regions **create potential for increased imports of sunflower oil**. Importers and sellers can play a significant role in meeting the market demand for branded sunflower oil.

What is the Scenario

of Consumption of Cooking Oil in India?

- India consumes **23.5-24 million tonnes (mt) of cooking oil annually**, out of which 13.5-14 mt is imported and the balance 9.5-10 mt produced from domestically cultivated seed.
- Sunflower is the **fourth largest consumed oil (2-2.5 mt)**, behind mustard (3-3.5 mt), soyabean (4.5-5 mt) and palm (8-8.5 mt).
- Both sunflower and palm oil are **almost wholly imported**, with their domestic production at hardly 50,000 tonnes and 0.3 mt respectively.
- This is unlike **mustard and soyabean**, where the share of domestic output is close to 100% and 30-32% respectively.

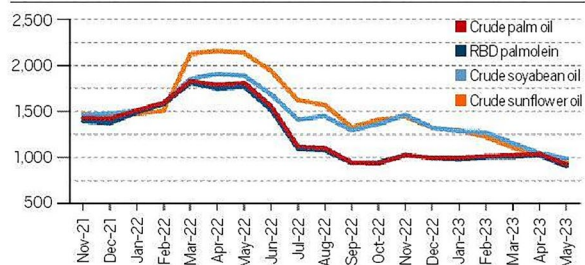
IMPORT OF EDIBLE OILS (lakh tonnes)

	Palm Oil	Soyabean	Sunflower	TOTAL
2017-18	87.01	30.47	25.25	145.17
2018-19	94.09	30.94	23.51	149.13
2019-20	72.17	33.84	25.19	131.75
2020-21	83.21	28.66	18.94	131.32
2021-22	79.15	41.72	19.44	140.30
2021-22*	32.26	22.07	11.10	65.43
2022-23*	49.09	17.26	13.67	80.02

Note: Figures are for Oil Year (Nov-Oct); *Nov-Apr

Source: The Solvent Extractors' Association of India.

AVERAGE GLOBAL VEGETABLE OIL PRICES (\$/tonne, CIF India)



Note: May 2023 prices are for May 19.

What are the

Initiatives Related to Cooking Oil in India?

- The government launched the National **Mission on Edible Oils-Oil Palm** as a centrally sponsored scheme, being implemented jointly by the central and state governments with a special focus in the northeast region and the Andaman and Nicobar Islands.
 - It is proposed to have an additional 6.5 lakh hectares for palm oil by 2025-26.
- In order to improve and systemize the data management system in the vegetable oil sector, the Directorate of Sugar & Vegetable Oils under Department of Food and Public Distribution has developed a web-based platform (evegoils.nic.in) for online submission of inputs by vegetable oil producers on a monthly basis.
 - The portal also provides a window for online registration and submission of monthly production returns.

Exemptions on Angel Tax

Why in News?

The **Central Board of Direct Taxes (CBDT)** has announced a proposal to **exempt certain categories of investors from the levy of angel tax**.

Note:

- The move aims to **encourage investments in start-ups and ease the burden of taxation**. Additionally, the **CBDT has introduced five new valuation methods for resident investors**, expanding the options beyond the **Discounted Cash Flow (DCF)** and **Net Asset Value (NAV)** methods.

What is Angel Tax?

- The provision known as the 'angel tax' was initially introduced in **2012** to **discourage the generation and utilisation of unaccounted money through investments in closely held companies**.
- It is the **tax that must be paid on the funds raised by unlisted companies through the issuance of shares in off-market transactions**, if they exceed the **fair market value of the company**.
 - **Fair market value (FMV)** is the price of an asset when **buyer and seller have reasonable knowledge of it** and are willing to trade without pressure.

What are the Changes

Brought by CBDT Related to Angel Tax?

- **Expansion to Include Foreign Investors:**
 - Under the **Finance Act, 2023**, a relevant section of the **Income-tax Act** was amended to include **foreign investors in the ambit of the angel tax** provision.
 - Currently, if a **start-up company receives equity investment** from a resident that **exceeds the face value of the shares**, it is considered as income for the start-up and subject to income tax under the category of '**Income from other Sources**' for that financial year.
 - The recent amendment extends this rule to include foreign investors as well. This meant that start-ups raising funds from foreign investors would also be **subject to taxation**.
 - However, start-ups recognized by the **Department for Promotion of Industry and Internal Trade (DPIIT)** are excluded from this provision.
- **Exemptions for Government and Recognized Investors:**
 - The CBDT has outlined several categories of investors that will be exempted from the angel tax. These include:

- **Government and government-related investors**, such as central banks, sovereign wealth funds, and international or multilateral organisations, or where ownership of the government is **75% or more**.
- Banks or entities involved in the **insurance business**.
- Entities registered with SEBI as **Category I Foreign Portfolio Investors (FPI)**, endowment funds, and pension funds.
- **Broad-based pooled investment vehicles** or funds where the **number of investors is more than 50** and such fund is not a hedge fund too are exempt.

- **Hedge funds pool money from investors** and invest in securities or other types of investments with the **goal of getting positive returns**.
- As the name suggests, the **fund tries to hedge risks to investor's capital against market volatility** by employing alternative investment approaches.
- **Proposed Changes in Valuation Rules:**
 - If a non-resident entity notified by the central government provides **consideration to a company for issuing shares**, the **fair market value (FMV) of the equity shares may be determined based on the price corresponding to that consideration**.
 - However, this consideration should not exceed the aggregate consideration received from the notified entity within **90 days of the share issuance**.

RBI Surplus Transfer

Why in News?

The **Reserve Bank of India (RBI)** has approved a significant **transfer of surplus funds** to the Union Government, providing a major boost to the fiscal position.

- The surplus transfer for the accounting year **2022-23** amounts to **Rs 87,416 crore**, a **188% increase** compared to the previous year.

What Factors Contributed and Implications to the Surge in Surplus Transfer?

- **Factors Contributed:**
 - **Higher dividends** from public sector banks and oil marketing companies.

Note:

REVENUE BOOST

Amt (₹ cr)
RBI's surplus transfer to govt in past years



Source: RBI

- Increased earnings on investments, **valuation changes on dollar holdings, revaluation of forex assets** and adjustments in reserves as per the **Bimal Jalan Committee** recommendations and currency printing fees.
- **Rupee depreciation** against the dollar impacting the surplus transfer.
- Higher rates on the surplus distribution framework contributing to increased payouts.
- Higher earnings on the sale of foreign exchange and investments in US treasuries.
- **Implications due to Surplus Transfer:**
 - **Fiscal relief for the government**, particularly in managing fiscal numbers amid uncertainties in the divestment program.
 - Helps **compensate for potential shortfalls in tax buoyancy** and other revenue sources.
 - When a tax is buoyant, its revenue increases without increasing the tax rate.
 - Provides a **fiscal buffer to support the budget targets**.
- **Surplus Transfer Impact on Disinvestment program:**
 - Assists in offsetting potential losses due to lower **disinvestment**, telecom pay-outs, or tax revenues.
 - Enhances the government's ability to manage **fiscal deficits** with relative ease.
- **Implications for Liquidity and Monetary Policy:**

- **Frictional liquidity is expected to ease** in the near term due to dividend inflows and seasonal moderation in currency demand.
- **Tight liquidity conditions may persist in the future**, requiring the RBI to conduct open market operations worth Rs 1.5 lakh crore in the second half of FY24.

How does RBI Generate Surplus?

➤ RBI's Income:

- Interest on holdings of domestic and foreign securities.
- Fees and commissions from its services.
- Profits from foreign exchange transactions.
- Returns from subsidiaries and associates.

➤ Expenditure of RBI:

- Printing of currency notes.
- Payment of interest on deposits and borrowings.
- Salaries and pensions of staff.
- Operational expenses of offices and branches.
- Provisions for contingencies and depreciation.

➤ Surplus:

- The difference between RBI's income and expenditure is Surplus.
- **RBI transfers the surplus to the government** after making provisions for reserves and retained earnings.
- RBI transfers the surplus, in accordance with **Section 47** (Allocation of Surplus Profits) of the **Reserve Bank of India Act, 1934**.
 - A technical Committee of the **RBI Board** headed by **Y H Malegam (2013)**, which reviewed the adequacy of reserves and surplus distribution policy, recommended a higher transfer to the government. By and large, with a few exceptions, the quantum of surplus transfer averages around **0.5% of the GDP**.

RBI to Withdraw Rs 2,000 Notes from Circulation

Why in News?

On May 19, 2023, the **Reserve Bank of India (RBI)** announced that it will withdraw the Rs 2000 denomination banknotes from circulation.

Note:



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- While the **existing notes will remain legal tender**. The RBI has provided a generous timeframe, **allowing individuals to deposit or exchange the notes until September 30, 2023**.
- This move is part of the **RBI's Clean Note Policy**, which aims to provide the **public with high-quality currency notes** and coins with improved security features.

Why did the RBI

Withdraw the 2000 Rupees Notes?

- **Withdrawal of 2000 Rupee Note:**
 - The RBI said that the withdrawal of the 2000 rupees notes is part of its **currency management operations**.
 - The Rs 2000 banknotes were introduced in **2016 to meet the immediate currency requirements** after the withdrawal of Rs 500 and Rs 1000 notes during the **demonetization exercise**.
 - With an adequate supply of other denominations available, the **printing of Rs 2000 notes was stopped in 2018-19**, as the initial objective of expediting the currency requirement was achieved.
 - As of **March 31, 2023**, the value of Rs 2000 banknotes in circulation **has decreased to Rs 3.62 lakh crore, constituting only 10.8% of the total notes in circulation**.
 - The last time India **demonetised currency** was in **November 2016** when the government **withdrew 500 and 1000 rupees notes in an effort to remove forgeries from circulation**.
 - The move took away **86% of the economy's currency in circulation by value overnight**.
- **Exchanging and Depositing Rs 2000 Notes:**
 - The exchange limit for Rs 2000 banknotes is set at **Rs 20,000 at a time**. **Non-account holders can also exchange these banknotes at any bank branch**.
 - Deposits into bank accounts can be made without limitations, **subject to compliance with Know Your Customer (KYC) norms** and other applicable regulations.
- **Impact:**
 - The RBI governor stated that the impact of withdrawal of 2000 rupees notes will be **"very very marginal" on the economy** because it accounts for only **10.8% of currency in circulation**.

- The withdrawal will not cause disruption **"either in normal life or in the economy"** as there is an **adequate stock of banknotes in other denominations**.

- Some economists said that the **withdrawal of the higher-value note is "a sensible form of demonetization"** and could **boost bank deposits at a time of high credit growth**.
- The withdrawal could **ease the pressure on deposit rate hikes** and could also result in **moderation in short-term interest rates and would help to curb black money and corruption**.

What is RBI's Clean Note Policy?

- The **Clean Note Policy** focuses on **providing the public with currency notes and coins that have enhanced security features while withdrawing soiled or old notes from circulation**.
 - A **'soiled note'** means a note which has **become dirty due to normal wear and tear and also includes a two piece note pasted together** wherein both the pieces presented belong to the same note and form the entire note with no essential feature missing.
- The **RBI had withdrawn all banknotes issued before 2005 due to their fewer security features** as compared to banknotes printed after 2005. However, these **older notes are still legal tender** and have been withdrawn to align with international practices.

What is Demonetization in India?

- **About:**
 - Demonetization is the act of **stripping a currency unit of its status as legal tender**. The current form or forms of money is **pulled from circulation and retired, often to be replaced with new notes or coins**.
- **Legality in India:**
 - The legal basis for demonetization in India is **Section 26(2) of the Reserve Bank of India Act, 1934**, which empowers the **central government to declare any series of banknotes** as ceasing to be legal tender by notification in the Official Gazette, **on the recommendation of RBI**.
 - The **legality of demonetization was challenged** in several petitions filed in various courts across India.

Note:

- However, the **Supreme Court** upheld the demonetisation as valid and stated that **demonetisation of currency notes of Rs 500 and Rs 1,000 satisfied the test of proportionality.**

- The **test of proportionality** refers to whether the **benefits of demonetisation outweigh the costs.**
- To satisfy the test of proportionality, the **benefits of demonetisation must be significant enough to justify the costs and disruptions that it may cause.**

➤ Advantages:

- **Stabilization of Currency:** Demonetization has been used as a **tool to stabilize the currency and fight inflation, facilitate trade, curb counterfeiting and access to markets, and push informal economic activity into more transparency and away from black and gray markets.**
- **Curbing Black Money:** The government argued that demonetization would flush out the black money or unaccounted income held in cash by **tax evaders, corrupt officials, criminals and terrorists.**
 - This would **increase the tax base** and revenue of the government and **reduce corruption and crime in the country.**
- **Promotes Digitization:** It also **encourages digitisation of commercial transactions, formalizes the economy and so, boosts government tax revenues.** It also improves **transparency, efficiency and convenience in the payment system** and reduces the cost of printing and managing currency.
 - The **formalization of the economy means bringing companies under the regulatory regime of government** and subject to laws related to manufacturing and income tax.

➤ Disadvantages:

- **Temporary Slowdown:** The conversion process during demonetization can lead to a **temporary slowdown in economic activity.**
 - The disruption caused by the sudden withdrawal of old currency and the **limited availability of new currency** can **hamper business transactions, consumer spending, and overall economic productivity.**
- **Administrative Cost:** Implementing demonetization involves **substantial administrative costs.** Printing new currency notes, recalibrating ATMs, and disseminating information about the changes can be expensive.

- These costs are typically **borne by the government**, which can strain public finances and **divert resources from other essential sectors or public welfare programs.**

- **Impact on Cash Driven Sectors:** Cash-driven sectors, such as **retail, hospitality, and small businesses, can suffer significantly during demonetization.**

- Small businesses, especially those operating on **thin profit margins**, may struggle to adapt to the new payment systems, **resulting in reduced sales, layoffs, and, in extreme cases, business closures.**

What is Legal Tender in India?

➤ About:

- A legal tender is a form of currency that is **recognised by law as an acceptable means for settling debts or obligations .**
 - **RBI is responsible for determining which forms of currency are considered valid for transactions.**
- It consists of **coins issued by the Government of India under Section 6 of The Coinage Act, 2011**, and banknotes issued by the Reserve Bank of India under **Section 26 of the RBI Act, 1934.**
 - Govt issues all coins upto ₹ 1,000, and 1 Rupee Note.
 - RBI issues **currency notes other than ₹ 1 Note.**

➤ Types:

- Legal tender can be **limited or unlimited in character.**
 - In India, coins function as **limited legal tender.** **Coins with denominations equal to or higher than one rupee can be used as legal tender for amounts up to one thousand rupees.**
 - Additionally, **fifty paise (half a rupee) coins** can be used as legal tender for **amounts up to ten rupees.**
 - Banknotes function as **unlimited legal tender** for any amount stated on them.
 - However, A **new Section 269ST** was added to the **Income Tax Act** as a result of the measures taken by the **Finance Act 2017 to curb black money.**
 - A cash transaction was restricted by **Section 269ST** and was **only allowed to be worth up to Rs. 2 Lakh per day.**

Note:



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ECL Based Loan Loss Provisioning Framework

Why in News?

Lenders in India have approached the **Reserve Bank of India (RBI)** seeking a **one-year extension** for the implementation of the **Expected Credit Loss (ECL)-based loan loss provisioning framework**.

- Earlier in January 2023, the **RBI came out with a draft guidelines proposing adoption of expected credit loss approach** for credit impairment.

What is ECL-based Loan Loss Provisioning Framework?

- **Background:**
 - The **RBI had previously proposed the adoption of the ECL approach for credit impairment**, and banks were given a **one-year period for implementation** once the final guidelines are released.
 - While the final guidelines are yet to be announced, it is expected that they may be notified by **FY2024 for implementation starting from April 1, 2025**.
 - The **Indian Banks Association (IBA)** has requested the **RBI to grant an additional year for lenders to prepare for the implementation of the ECL norms**.
- **About ECL Framework:**
 - In the expected credit loss framework, **banks are mandated to forecast anticipated credit losses through forward-looking estimations**, rather than waiting for credit losses to materialise before making corresponding provisions for those losses.
 - Banks will be required to classify financial assets (primarily loans, including irrevocable loan commitments, and investments classified as held-to-maturity or available-for-sale) into three categories: **Stage 1, Stage 2, and Stage 3**, based on the **assessed credit losses at the time of recognition and subsequent reporting dates**.
 - Provisioning will be made accordingly for each category.
- **ECL vs IL Model:**
 - This new approach replaces the **current "incurred loss (IL)" model**, which **delays loan loss provisioning**, potentially increasing credit risk for banks.

- A key drawback in the IL model was that **usually banks made provisions with a significant delay after the borrower may have started facing financial difficulties**, thereby increasing their credit risk. This led to systemic issues.

- Furthermore, the delayed recognition of loan losses resulted in an **overstatement of banks' income**, combined with **dividend payouts**, which further eroded their capital base.

➤ Transitional Arrangement:

- To prevent a capital shock, the **RBI has proposed a transitional arrangement for the introduction of ECL norms**.
- This phased implementation will **help banks absorb any additional provisions** without adversely impacting their profitability.

What is Loan Loss Provisioning?

- It is a regulatory requirement enforced by the **RBI**, to ensure the financial stability of banks and protect the interests of depositors.
- It refers to the **practice followed by banks and financial institutions to set aside a portion of their earnings as a provision to cover potential losses arising from non-performing assets (NPAs) or bad loans**.
- RBI defines **NPAs in India as any advance or loan that is overdue for more than 90 days**.
- It helps banks to **accurately reflect the true value of their loan portfolios and assess their overall risk exposure**.
- Adequate provisioning also enhances the **transparency of a bank's financial statements** and provides a **more accurate picture of its financial health to stakeholders**.

What is the Indian Bank Association?

- **Indian Bank Association (IBA)** is a voluntary association of banks in India. It was formed on **26th September 1946** with the objective of promoting and coordinating the interests of the Indian banking industry.
- The members comprise of:
 - **Public Sector Banks.**
 - **Private Sector Banks.**
 - **Foreign Banks having offices in India.**
 - **Co-operative Banks.**
 - **Regional Rural Banks.**
 - **All India Financial Institution.**

Note:

International Credit Card Spending Outside India under LRS

Why in News?

Recently, the Finance Ministry of India, in consultation with the **Reserve Bank of India (RBI)**, has made significant amendments to the **Foreign Exchange Management Act (FEMA)**, bringing **international credit card spending outside India under the Liberalised Remittance Scheme (LRS)**.

- This comes in the backdrop of a surge in spending in overseas travel. Indians spent **12.51 billion USD** on overseas travel between **April-February of fiscal 2022-23**, a **rise of 104%** compared to the same period of the last year.
- The inclusion enables the levy of the higher **rate of Tax Collected at Source (TCS)** as announced in the **Budget for 2022-23** effective from **1st July 2023**.

What are the Key Details and Implications?

- **Inclusion of International Credit Card Spend in LRS:**
 - The amendment is expected to facilitate the **monitoring of high-value overseas transactions** but does not apply to **payments for purchasing foreign goods/services from India**.
- **Omission of Rule 7 and Expansion of LRS:**
 - Previously, the usage of international credit cards for expenses during trips abroad was not covered under LRS.
 - Rule 7 of the **Foreign Exchange Management (Current Account Transaction) Rules, 2000**, which excluded such spendings from LRS, has been omitted.
 - This amendment allows international credit card transactions to be included in determining the overall **LRS limit of 250,000 USD per person per financial year**.
- **Tax Implications:**
 - A **TCS levy of 5%** will be applicable on such transactions until **1st July 2023** (except for medical and education-linked sectors).
 - After **1st July 2023**, the **TCS rate will increase to 20% for credit card spends** outside India.

- The new provisions will not apply on payments for **'education' and 'medical' purposes** and do not impact changes in the use of international credit cards by residents while in India.

- The mechanism for levying TCS on overseas credit card spends is yet to be made functional, which poses compliance challenges for banks and financial institutions.
- **Impact on Compliance and Refunds:**
 - Banks and financial institutions may experience **an increased compliance burden due to these changes**.
 - **Taxpayers can claim refunds on the TCS levy while filing tax returns**, which could result in locked funds until refunds are initiated by the tax department.

What is Tax Collected at Source?

- TCS is the tax payable by a seller, which he collects from the buyer at the time of sale of certain goods or services.
- TCS is governed by **Section 206C of the Income-tax Act**, which specifies the goods or services on which TCS is applicable and the rates of TCS.
 - Some of the goods or services on which TCS is applicable are liquor, timber, tendu leaves, scrap, minerals, motor vehicles, parking lot, toll plaza, mining and quarrying, **foreign remittance under LRS**, etc.
- The seller must have a **Tax Collection Account Number (TAN)** to collect and deposit TCS with the tax authorities.
 - The seller must issue a **TCS certificate to the buyer within a specified time limit**, showing the amount of tax collected and deposited.
 - The buyer can claim credit for the amount of TCS deducted from his income while filing his income tax return.

What is Foreign Exchange Management Act, 1999?

- The legal framework for the **administration of foreign exchange transactions** in India is provided by the **Foreign Exchange Management Act, 1999**.
- Under the FEMA, which came into force with effect from **1st June 2000**, **all transactions involving foreign exchange have been classified either as capital or current account transactions**.

Note:



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➤ **Current Account Transactions:**

- All transactions undertaken by a **resident** that do not alter his / her assets or liabilities, including contingent liabilities, outside India are current account transactions.
- Example: payment in connection with **foreign trade**, expenses in connection with foreign travel, **education** etc.

➤ **Capital Account Transactions:**

- It includes those transactions which are undertaken by a **resident** of India such that his/her assets or liabilities outside India are **altered** (either increased or decreased).
- Example: **investment in foreign securities**, acquisition of immovable property outside India etc.

Wholesale Price Index

Why in News?

The latest data released by the **Ministry of Commerce and Industry** reveals that the **Wholesale Price Index (WPI)** in India fell to a near three-year low with deflation rate of **(-) 0.92% in April**, marking its entry into **negative territory** after 33 months.

- The decline in the rate of inflation in April 2023 is **primarily contributed by fall in prices of basic metals, food products, mineral oils, textiles, non-food articles**, chemical & chemical products, rubber & plastic products, and paper & paper products.

What is the Wholesale Price Index?

➤ **About:**

- It measures the changes in the **prices of goods sold and traded in bulk by wholesale businesses to other businesses**.
- Published by the Office of **Economic Adviser, Ministry of Commerce and Industry**.
- It is the most widely used **inflation indicator** in India.
- Major criticism for this index is that the **general public does not buy products at wholesale price**.
- The **base year of All-India WPI** has been revised from **2004-05 to 2011-12 in 2017**.

➤ **Weightage of WPI:**

All Commodities/ Major Groups	Weightage (%)	Articles
All Commodities	100	
I. Primary Articles	22.6	Food Articles: Cereals, Paddey, wheat, Pulses, Vegetables, Potato Onion, Fruits, Milk, Eggs, Meat & Fish Non-Food Articles: Oil Seeds Minerals Crude Petroleum
II. Fuel & Power	13.2	LPG, Petrol, High Speed Diesel
III. Manufactured Products	64.2	Mf/o Food Products: Vegetable And Animal Oils and Fats. Mf/o of Beverages. Mf/o of Tobacco Products, Wearing Apparel, Pharmaceuticals, Medicinal Chemical and Botanical Products, and other Non-Metallic Mineral Products etc.
Food Index	24.4	The Food Index consists of ' Food Articles ' from Primary Articles group and ' Food Products ' from Manufactured Products group.

➤ **Factors Influencing WPI Inflation:**

○ **High Base Effect:**

- Experts suggest that WPI inflation is expected to remain moderate due to the high base effect.

Note:



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- **Easing Global Commodity Prices:**
 - The decline in global commodity prices is anticipated to help keep inflation of manufactured products at a lower level.
- **Food Inflation and Monsoon Prospects:**
 - The prices of **wheat**, affected by market conditions, need to be monitored.
 - Additionally, the monsoon's impact on the inflation of **Kharif crops** is a concern.

What is the Difference Between WPI and CPI?

- WPI tracks **inflation at the producer level** and **Consumer Price Index (CPI)** captures changes in **prices levels at the consumer level**.
- Both baskets **measure inflationary trends (the movement of price signals) within the broader economy**, the two indices differ in which weightages are assigned to food, fuel and manufactured items.
- WPI does not capture changes in the **prices of services**, which CPI does.
- **In WPI, more weightage is given to manufactured goods**, while in **CPI**, more weightage is given **to food items**.
- Base year of WPI is 2011-2012 while for CPI is 2012.

India's Fisheries Sector

Why in News?

Government's **Sagar Parikrama** is an **evolutionary journey** envisaged in the sea across the **coastal belt** aiming to resolve the issues of the fishermen and other stakeholders and facilitate their economic upliftment through various government schemes and programs, including **PMMSY (Pradhan Mantri Matsya Sampada Yojana)** and **KCC (Kisan Credit Card)**.

What is the Sagar Parikrama Initiative?

- **About:**
 - **Sagar Parikrama'** program envisages to cover the maritime States/UTs in a phased manner. **The journey began on March 5th, 2022, from Mandvi, Gujarat.**
 - The journey focuses on bridging the gaps in the expectations of fisher communities, developing **fishing villages**, and **upgrading infrastructure such as fishing harbors** and fish landing centers.

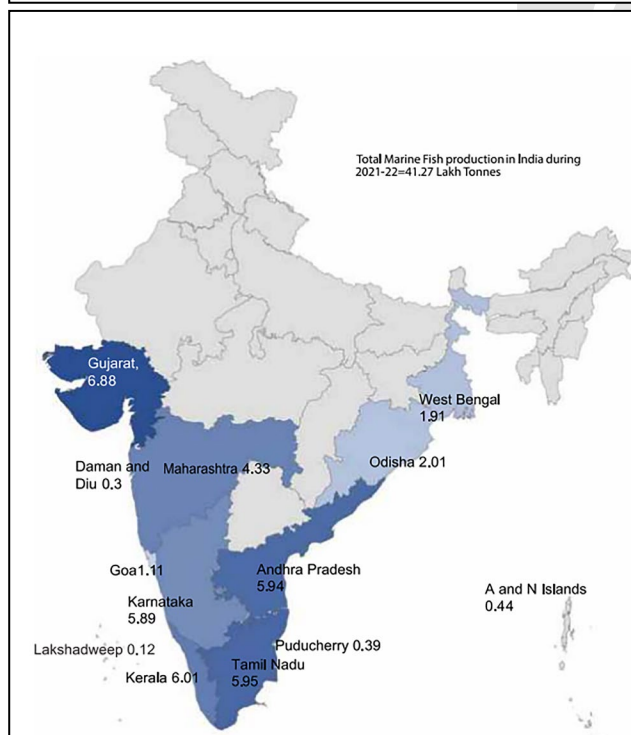
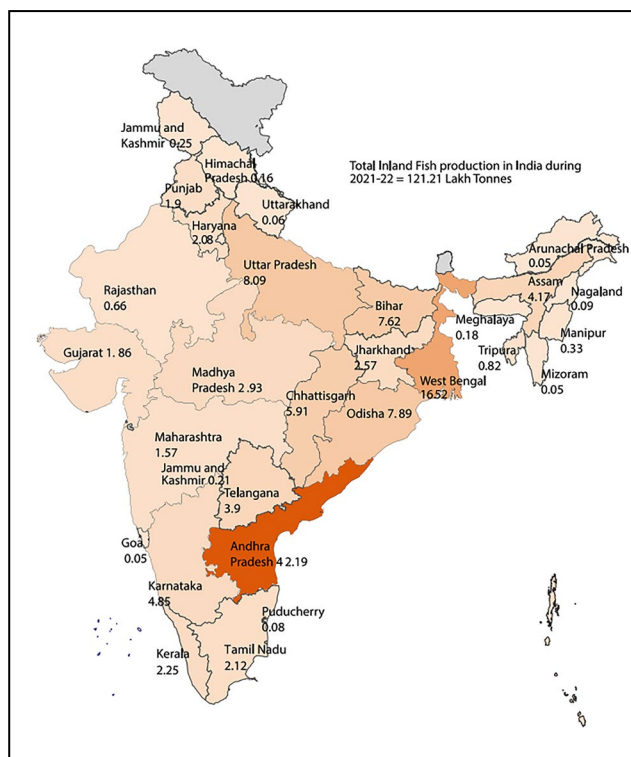
Phases of Sagar Parikrama:

- **Phase I:** The journey covered three locations in **Gujarat - Mandavi, Okha-Dwarka, and Porbandar.**
- **Phase II:** Seven locations were covered in **Mangrol, Veraval, Diu, Jafrabad, Surat, Daman, and Valsad.**
- **Phase III:** Coastal areas of northern **Maharashtra, including Satpati, Vasai, Versova, New Ferry Wharf (Bhaucha Dhakka), and Sasson Dock in Mumbai,** were part of this phase.
- **Phase IV:** **Udupi and Dakshina Kannada** districts in Karnataka were covered during this phase.
- **Upcoming Phase V:** Phase V of Sagar Parikrama will cover six locations: **Raigad, Ratnagiri, and Sindhudurg Districts in Maharashtra, and Vasco, Maorugoa, and Canacona in Goa.**
- Maharashtra, with its extensive coastline of **720 km**, has immense **untapped potential in the fisheries sector.**
- The state ranks **7th in fish production in the country**, with marine fisheries contributing **82% and inland fisheries 18%.**
- **Goa, with a coastline of 104 km**, also plays a vital role in the marine fishery sector, providing livelihoods to many.

What is the Status of the Fisheries Sector in India?

- **About:**
 - As the **third-largest fish producer** and the **second-largest aquaculture producer** globally, India recognizes the significance of the fisheries and aquaculture industry.
 - The **Indian Blue Revolution** has led to a major improvement in the fishing and aquaculture industries. The industries are regarded as **sunrise sectors** and are anticipated to have a big impact on the Indian economy.
 - In the recent past, Indian fisheries has witnessed a paradigm shift **from marine dominated fisheries to inland fisheries**, with the latter emerging as a major contributor of fish production from **36% in the mid-1980 to 70% in the recent past.**
 - The fish production reached an **all-time high of 16.25 MMT during FY 2021-22** with **marine exports touching Rs. 57,586 Crores.**
- **Top Producing States:**
 - **Andhra Pradesh is the largest producer of fish in India** followed by West Bengal.

Note:



➤ Current Challenges:

- **Illegal, Unreported, and Unregulated (IUU) fishing:** **IUU fishing** exacerbates overfishing and undermines the sustainability of the sector.

- IUU fishing involves activities such as **fishing without proper licenses, using banned gear, and disregarding catch limits**. Weak monitoring and surveillance systems make it difficult to combat this problem effectively.

- **Inadequate Infrastructure and Technology:** **Outdated fishing vessels, gear, and processing facilities hinder the efficiency and productivity of the sector**. Insufficient cold storage and transportation infrastructure result in post-harvest losses.

- Limited access to modern fishing technology, such as **fish finders and GPS navigation systems**, restricts the ability to locate fish stocks accurately.

- **Climate Change and Environmental Degradation:** **Rising sea temperatures, ocean acidification**, and changing currents have a profound impact on marine ecosystems and fish populations.

- Climate change leads to shifts in **fish distribution, reduced productivity, and increased vulnerability to diseases**. Pollution, habitat destruction, and coastal development further degrade marine ecosystems.

- **Socio-Economic Issues:** The fisheries sector in India is characterized by a large number of **small-scale and artisanal fishers** who face multiple socio-economic challenges.

- **Low incomes, lack of access to credit and insurance, and inadequate social security measures** contribute to the vulnerability of fishing communities.

- **Gender disparities** and the marginalization of women in fisheries also pose challenges.

- **Market Access and Value Chain Inefficiencies:** Despite India's significant fish production, there are challenges in accessing **domestic and international markets**.

- **Poor post-harvest handling, limited value addition, and inadequate market linkages** result in reduced profitability for fishers.

- **Initiatives related to Fisheries Sector:**

- **Pradhan Mantri Matsya Sampada Yojana**
- **Palk Bay Scheme**
- **Fisheries and Aquaculture Infrastructure Development Fund (FIDF)**



Note:

International Relations

Highlights

- India-Singapore Ties
- IPEF Ministerial Meeting
- G20 Countries and Disaster Risk Reduction
- Reforming UNSC and Bretton Woods
- Third FIPIC Summit
- G7 Summit: Climate Goals, Gandhi Statue & Quad Climate Initiatives
- India- EU Trade and Technology Council
- Rasht-Astara Railway and INSTC
- 6th Indian Ocean Conference
- SCO Adopts India's Proposal to Support DPI

India-Singapore Ties

Why in News?

The Union Education Minister of India recently embarked on a three-day visit to Singapore with the aim of strengthening existing ties and exploring opportunities for widening bilateral engagement in education and skill development.



What are the Key Highlights of the Meeting?

- The Union Education Minister met various key Ministers of the Singaporean Government and visited Spectra Secondary School.

- It includes a constructive meeting with DPM & Minister for Finance, Singapore, on strengthening cooperation and focusing on skill development.
- The meeting emphasized creating opportunities for lifelong learning, building a future-ready workforce, and making knowledge and skill development a key pillar of strategic partnership.
- The minister highlighted the **National Education Policy (NEP) 2020** and its focus on vocational education, market relevance of training, and integration of skills qualifications framework with higher education qualification framework.
- The Minister stressed on learning from the best practices of Singapore, collaborate and customize it to meet Indian needs.

How are India's Relations with Singapore?

➤ Background:

- The close ties between **India and Singapore** have a history rooted in strong commercial, cultural and people-to-people links across a millennium.
- The more modern relationship is attributed to Sir Stamford Raffles who, in 1819, established a trading station in Singapore on the route of the **Straits of Malacca** which later became a crown colony and governed from Kolkata till 1867.
 - After independence, India was one of the first countries to recognize Singapore in 1965.

➤ Trade and Economic Cooperation:

- Singapore is among India's largest trade and investment partners in ASEAN and accounted for 27.3 % of our overall trade with ASEAN in 2021-22.

Note:



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- Singapore is also the leading source of **Foreign Direct Investment** into India.
- Over the last 20 years the total investment into India from Singapore is almost 136.653 billion and accounts for nearly **23% of the total FDI inflows**.
- The **Comprehensive Economic Cooperation Agreement (CECA)** between India and Singapore was signed in 2005.
 - India and Singapore have also collaborated on several initiatives to promote trade and investment, such as the **India-Singapore Business Forum** and the **India-Singapore CEOs Forum**.
- Recently, India's **Unified Payments Interface (UPI)** and Singapore's PayNow have been integrated in February 2023 to enable faster **Remittances** between the two countries.
- **Defence and Security Cooperation:**
 - Both countries share common concerns about regional stability and maritime security in the **Indo-Pacific region**.
 - In 2015, they elevated their relationship to a **Strategic Partnership** on the occasion of the 50th anniversary of the establishment of diplomatic relations.
 - They have also signed several agreements to enhance their defence ties, such as the **Defence Cooperation Agreement (2003)** and the **Naval Cooperation Agreement (2017)**.
 - **Military Exercises:**
 - Navy: **SIMBEX**
 - Air Force: **SINDEX**
 - Army: **Bold Kurukshetra**
- **Education, Science and Technology Cooperation:**
 - The **28th edition of the DST-CII India-Singapore Technology Summit** was held in February 2022.
 - It highlighted collaboration of India and Singapore in **AI, IoT, fintech, healthcare, biotech, smart manufacturing, green mobility, logistic and supply chain solutions, smart manufacturing, and sustainable urban development**.
 - **ISRO** also launched Singapore's first indigenously built micro-satellite in 2011.
 - Singapore is looking at collaborating with India in the area of digital public infrastructure on the lines of a **national identity system** like **Aadhaar**.

- Another potential opportunity could be the **integration of Singapore's 'Proxtera' (global digital hub of MSME ecosystems) with India's Open Network for Digital Commerce (ONDC)**
- **Cultural and People-to-People Ties:** Both countries share a rich heritage of cultural diversity, linguistic affinity and religious harmony.
 - Ethnic Indians constitute about 9.1% or around 3.5 lakhs of the resident population of 3.9 million in Singapore. They have contributed significantly to Singapore's economic development, social fabric and cultural diversity.
 - **ASEAN-India Pravasi Bharatiya Divas (PBD)** was held in Singapore on 6-7 January 2018 as part of commemoration of 25 years of ASEAN-India Partnership, with the theme, **"Ancient Route, New Journey"**.
- **Cooperation in Infrastructure Development:**
 - Singapore's expertise in infrastructure development, smart cities, and urban planning aligns with **India's goals of sustainable development and building smart cities**.
 - Singaporean companies have been actively involved in infrastructure projects in India, including the development of **industrial parks, airports, and urban infrastructure**.

IPEF Ministerial Meeting

Why in News?

Recently, the second **Indo-Pacific Economic Framework for Prosperity (IPEF)** Ministerial Meeting took place, showcasing the significant strides made in fostering economic engagement among partner countries in the **Indo-Pacific region**.

- Hosted by the **United States**, this virtual gathering convened high-level officials to delve into discussions regarding the **four pillars of the framework** and the ongoing negotiations associated with each pillar.

What are the Key Highlights of the Meeting?

- The meeting announced the substantial conclusion of the negotiations of a first-of-its-kind international IPEF Supply Chain Agreement under Pillar II of the framework, which aims to increase the **resilience, efficiency, productivity, sustainability, transparency,**

Note:

diversification, security, fairness, and inclusivity of their supply chains.

- The meeting also reported good progress under the other IPEF Pillars, namely **Fair and Resilient Trade (Pillar I)**, **Infrastructure, Clean Energy, and Decarbonization (Pillar III)**, and **Tax and Anti-Corruption (Pillar IV)**.
- The meeting witnessed the introduction of a **regional hydrogen** initiative by some IPEF partners to encourage widespread **deployment of renewable and low-carbon hydrogen** and its derivatives in the region under Pillar III.

What is IPEF?

- **About:**
 - It is a **US-led initiative** that aims to **strengthen economic partnership among participating countries** to enhance resilience, sustainability, inclusiveness, economic growth, fairness, and competitiveness in the **Indo-Pacific region**.
 - IPEF was launched jointly by the **USA and other partner countries of the Indo-Pacific region** on **23rd May 2022**, at Tokyo.
- **Members:**
 - Australia, Brunei, Fiji, India, Indonesia, Japan, South Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, United States, and Vietnam.
- **Pillar:**
 - **Trade (Pillar I):**
 - Focuses on **enhancing trade engagement among IPEF partner countries**.
 - Aims to promote **economic growth, peace, and prosperity in the region**.
 - India had joined **Pillars II to IV of IPEF** while it has an **observer status in Pillar-I**.
 - **Supply-chain resilience (Pillar II):**
 - Seeks to make supply chains more **resilient, robust, and well-integrated**.
 - Emphasizes crisis response **measures and cooperation to mitigate disruptions**.
 - Focuses on **improving logistics, connectivity, and investments** in critical sectors.
 - Aims to enhance worker roles through upskilling and reskilling initiatives.
 - **Clean Economy (Pillar III):**
 - Aims to **advance cooperation on clean energy and climate-friendly technologies**.

- Focuses on **research, development, commercialization, and deployment of clean energy**.
- Encourages investment in **climate-related projects** in the Indo-Pacific region.
- **Fair Economy (Pillar IV):**
 - Focuses on implementing effective **anti-corruption and tax measures**.
 - Highlights India's strong steps in improving legislative and administrative frameworks to combat corruption.
 - Reaffirms commitment to implementing **UNCAC (United Nations Convention against Corruption)** and **FATF (Financial Action Task Force) standards**.

G20 Countries and Disaster Risk Reduction

Why in News?

Recently, the First **G20** Disaster Risk Reduction Working Group (DRR WG) meeting under India's G20 Presidency took place, where India highlighted the importance of **Disaster Risk Reduction (DRR)**.

What are the Highlights of the Meeting?

- The G20 Disaster Risk Resilience Working Group has called upon governments to build a **social protection system** with an effective and preferred instrument for disaster risk financing.
- It emphasised the **need for new-age Social Protection Systems** that **invest in local risk resilience** to mitigate, prepare and recover from disasters.
- The five **priorities outlined:**
 - Global coverage of **Early Warning Systems**
 - Increased commitment towards making infrastructure systems disaster resilient
 - Stronger **national financial frameworks** for DRR
 - Strengthened national and global disaster response system
 - Increased application of ecosystems-based approaches to DRR
- The G20 DRR WG intended to include considerations for the **Sendai Framework's mid-term review**, renew multilateral cooperation at all levels, and inform future global policies and initiatives related to DRR.

Note:



What is the Need for Creating a Collective G20 Framework for Disaster Risk Reduction?

- The G20 nations, with a population of 4.7 billion, have large exposure, **risk from asset concentration, and vulnerability to natural disasters**.
- In the current World Risk Index 2022, four out of the top 10 vulnerable countries are G20 nations.
- The combined estimated annual average loss in the G20 countries alone is USD 218 billion, equivalent to **9% of the average annual investment in infrastructure** made by them.
- Disaster risk reduction measures can play an important role in preventing such losses.

What can be the key Strategies for Reducing Disaster Risk?

- **Better Economic and Urban Development:**
 - Reducing risk can be achieved mainly by reducing vulnerability and exposure to risk through measures such as **better economic and urban development choices** and practices, protection of the environment, reduction of poverty and inequality, etc.
 - For example, in India, effective implementation of flood risk management strategies can **help in reducing and managing Extreme Weather Conditions**.
- **Financing:**
 - There is a need to re-imagine **financing disaster risk reduction**. The financing requirements flowing through government budgets are not independent of a country's fiscal position and hence may be limited.
 - Innovative financing tools including creating **reserve funds, dedicated lines of credit and tapping resources globally** should be explored.
- **Infrastructure:**
 - Infrastructure, such as roads, rails, airports, and electricity lines created through public revenues **need to be resilient to disasters and may require more funds incrementally**.
 - There is a need to finance this additionality using **options that are reflective of the social benefits** of such disaster-resilient infrastructure.
- **Dealing with Extensive and Intensive Risk:**

- Differential strategies to deal with extensive risk (risk of losses from frequent but moderate impacts) and intensive risk (from low frequency and high impact events), should be worked out.
- A large portion of the losses accumulate from extensive events.
- Cumulatively, dispersed events such as **Heatwaves**, lightning, local floods, and landslides cause enormous losses. Implementing targeted approaches to reducing losses from extensive risk events can have an impact in the short to medium-term horizon.
- **Multi-tiered, Multi-sectoral Effort:**
 - There is a need to view disaster risk reduction as a multi-tiered, multi-sectoral effort.
 - If efforts are integrated vertically from **local to sub-national to national to global**, and horizontally across sectors, the level of readiness to manage unknown risks will be enhanced.
 - The world is interlinked and interdependent, and the **G20 can help develop such strategies**.

What are the Initiatives for Disaster Risk Reduction?

- **Global:**
 - **Sendai Framework for Disaster Risk Reduction 2015-2030**
 - **The Climate Risk and Early Warning Systems (CREWS)**
 - **International Day for Disaster Risk Reduction - 13th October**
 - Green Climate Fund's Sectoral Guide on Climate Information & Early Warning Systems
- **India's Initiatives:**
 - **Coalition for Disaster Resilient Infrastructure Society (CDRIS)**
 - **National Disaster Management Plan (NDMP)**

Reforming UNSC and Bretton Woods

Why in News?

Recently, at a press conference in Hiroshima, Japan, the **UN Secretary-General** has called for reforms in **UNSC (United Nations Security Council)** and **Bretton Woods Institutions**, citing that the current order is outdated, dysfunctional and unfair.

Note:

- In the face of the economic shocks from the Covid-19 pandemic and the **Russia-Ukraine Conflict**, the said institutions have **failed to fulfil their core function as global safety nets**.

What is the Bretton Woods System?

- **About:**
 - The Bretton Woods system was a monetary framework created in **1944 by representatives of 44 nations** at the Bretton Woods Conference in

New Hampshire, USA. It aimed to establish **stability and cooperation in international Monetary** after **World War II**.

- The Bretton Woods Agreement created two important organizations—the **International Monetary Fund (IMF)** and the **World Bank**.
 - While the Bretton Woods System was dissolved in the 1970s, both the IMF and World Bank (**Bretton Woods institutions**) have remained strong pillars for the exchange of **International Currencies**.

INTERNATIONAL MONETARY FUND

- **Estd. - 1944** (UN Bretton Woods Conference following Great Depression 1930s)
- **Headquarters - Washington, DC, USA**
- **Functions -**
 - » Global financial assistance
 - » Facilitate international trade
 - » Financing for developing countries
 - » Promotion of exchange rate stability
- **Member States - 190** (India a founding member)

India's FM is the ex-officio Governor on the Board of Governors of IMF

Special Drawing Rights (SDR) -

- » IMF's intl. reserve asset to supplement the official reserves of its member countries (**not a currency**)

Currencies in SDR Basket - \$, €, £, ¥ (Yen) and CN¥ (Renminbi)

IMF Quotas -

- » Reflects a member country's relative position in world economy (**India - 2.75%**)
- » Denominated in SDRs

Flagship Publications -

- » World Economic Outlook
- » Global Financial Stability Report
- » Fiscal Monitor
- » External Sector Report

World Bank Group (WBG)

- **Estd. - Same as IMF** ■ **Headquarters - Washington, DC, USA**

5 Institutions of WBG (estd.)

- International Bank for Reconstruction and Development (IBRD) aka **World Bank (1944)**
- International Finance Corporation (IFC) (**1956**)
- International Development Association (IDA) (**1960**)
- International Centre for the Settlement of Investment Disputes (ICSID) (**1966**)
- Multilateral Guarantee Agency (MIGA) (**1988**)

Membership of IMF is a prerequisite for membership of IBRD

Twin Goals of WBG -

- » Ending extreme poverty by 2030
- » Boosting shared prosperity of the poorest 40% of the population in all countries

Functions

- Provide **loans, credits, and grants**
- **Investment, advice**, asset management to companies/govts.
- Low/No-interest loans to **Low-income countries**
- Settle investment-**disputes**
- **Insure lenders/investors** against political risks

Member States - 189

 (India a founding member of IBRD, IFC & IDA)

- » Ending extreme poverty by 2030

India is not a member of ICSID; claims it biased towards developed countries

Major Publications -

- » Human Capital Index
- » World Development Report



Note:

➤ **Need for Reforming Bretton Woods Institutions:**

- While these institutions performed well over their first 50 years – they have been struggling in **more recent times as problems of rising inequality, financial instability** and **Protectionism** have re-emerged.
- The threat of **Climate Change** and ecological stress, rising disasters and a more interconnected world with new threats like cyber-security and pandemics require **a new International Financial Architecture**.
- There has been biases in fund allocation and unregulated **Special Drawing Rights (SDRs)**, the IMF allocated USD 650 billion in **SDRs** during the pandemic.
 - The G7 countries, with a population of 772 million people, received USD 280 billion. The African continent, with 1.3 billion people, received only USD 34 billion.

What can be done to Address these Issues?➤ **Bretton Woods:**

- There is a need to reshape and revitalize three global institutions -the IMF, WBG and the **WTO (World Trade Organization)** where:
 - The IMF will focus on macroeconomic policy and financial stability, with **stricter surveillance of advanced economies** and their impact on global crises.
 - The restructured WBG will prioritize **sustainability, shared prosperity, and leveraging private capital** effectively. It should work with others to address global challenges and act as a wholesaler of finance.
 - A stronger WTO is needed for **fair trade, faster dispute resolution**, and the ability to respond swiftly to emergencies.
- The system needs **more automatic and rule-based financing mechanisms** to avoid delays and political influences.
- There needs to be **regular calibrated SDR issues, global pollution taxes, and financial transaction taxes**.
 - A well-structured G-20 could provide overarching guidance to the Bretton Woods system and its interactions with other institutions.

➤ **UNSC:**

- There is a need to ensure equal representation for all regions, including Africa, along with decentralization of power and authority, which will allow nations from all regions to **voice concerns related to peace and democracy** in their countries, making **decision-making more representative and democratic**.
- The focus should be on addressing global issues rather than **preserving the privileges of the P5 nations**.
- Urgent correction is needed to balance power between the P5 and the rest of the world, **ensuring a more democratic and legitimate governance of the UNSC** for international peace and security.
- The **IGN (Intergovernmental Negotiation) process**, which discusses UNSC reform, should be revised and re-energized, avoiding procedural tactics that hinder progress.

Third FIPIC Summit

Why in News?

The 3rd **Forum for India–Pacific Islands Cooperation (FIPIC) Summit** was held in **Port Moresby, Papua New Guinea** on May 22, 2023. It was **co-chaired by Indian and Papua New Guinea's Prime Minister** and attended by **14 Pacific Island Countries (PICs)**.

- The Indian Prime Minister was honored with the **Grand Companion of the Order of Logohu (GCL)** - the highest civilian award of Papua New Guinea.

What are the Major**Highlights of the Third FIPIC Summit?**➤ **India Stands with PICs:**

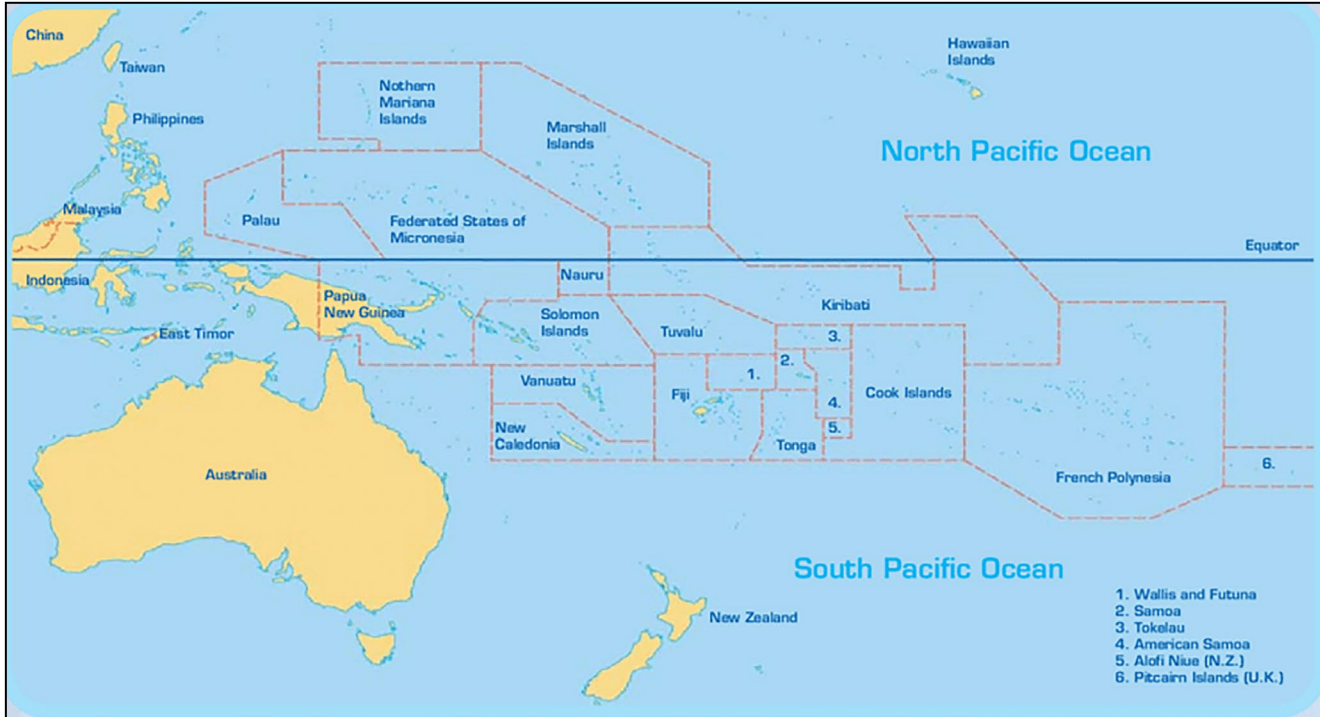
- India supports the **sovereignty and integrity of all countries** and emphasised the **shared priority of reforming international institutions to amplify the voice of the Global South**.
 - The Prime Minister mentioned discussions with **Australia, the US, and Japan as part of the Quad during the G7 summit**, focusing on the Indo-Pacific region.
- In line, leaders from the Quad nations have announced plans to implement **Open Radio Access Networks (RAN)** beginning with Palau in the Pacific Region.

Note:



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- The Prime Minister of Papua New Guinea also urged India to be an advocate for the PICs in the **G-7 and the G-20 summits**.
- **12-Point Formula:**
 - India also unveiled a **12-point development programme** in areas of **healthcare, cyberspace, clean energy, water and small and medium enterprises in PIC**, according to which:
 - India will establish a **super-specialty cardiology hospital in Fiji, introduce dialysis units and sea ambulances in all 14 PICs**, and establish **Jan Aushadhi Centres** to provide affordable medicines.
- India will support the development of the **small-and medium-scale enterprise sector in each Pacific Island nation**.
 - India also pledged to **provide desalination units to address water scarcity issues**.
- **'Thirukkural Book:**
 - Also, the Indian Prime Minister along with his Papua New Guinea counterpart also released the Tamil classic 'Thirukkural' in Tok Pisin (official language of Papua New Guinea) to **bring the Indian thought and culture closer to the people of this southwestern Pacific nation**.



What is FIPIC?

➤ About:

- India's engagement with the PICs is part of **India's Act East Policy**.
 - A major initiative launched under the rubric of the Act East Policy for the PICs is the **Forum for India-Pacific Islands Cooperation (FIPIC)**.
- FIPIC is a **multinational grouping developed** for cooperation between **India and 14 PICs**, namely **Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu**.
- It was launched in November 2014 and the **first FIPIC summit was held in Suva, Fiji in 2014** and the **second one was held in Jaipur, India in 2015**.

➤ Objective:

- To **enhance India's relations with the PICs** in various fields such as trade, investment, tourism, education, health, agriculture, renewable energy, disaster management and climate change.
- FIPIC also provides a **platform for dialogue and consultation on regional and global issues of mutual interest**.

Note:



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What is the Significance of Pacific Island Countries?

- **Geopolitical Importance:** The Pacific Island nations are **strategically located in the vast expanse of the Pacific Ocean**, which has drawn the attention of major powers like the US, Russia and China due to their **potential for trade, military presence, and alliances**.
- **Economic Potential:** These nations possess **valuable natural resources, including fisheries, minerals, timber, and tourism assets**.
 - Additionally, their **exclusive economic zones (EEZs)** are rich in marine resources. They also serve as transit points for international trade, connecting various regions across the Pacific.
 - 9 of the world's 10 busiest seaports are in this region.
- **Cultural and Biological Diversity:** The Pacific Island nations are home to diverse **indigenous cultures, languages, and traditions, which are of immense value to humanity**.
 - The preservation and promotion of their unique cultural heritage contribute to global diversity.
- **Potential Vote Bank:** The 14 PICs, bound together by shared economic and security concerns, account for as many votes in the **United Nations**, and act as a potential vote bank for major powers to mobilise international opinion.

How is India's Relations with Pacific Island Countries?

- **About:**
 - India and the PICs share historical and cultural ties and **have been engaging with the PICs through various bilateral and multilateral platforms**, such as the **Non-Aligned Movement**, the United Nations and the FIPIC.
 - India's engagement with the PICs is driven by its **vision of a free, open and inclusive Indo-Pacific region**, as well as its commitment to support the development aspirations and **climate resilience of the PICs**.
 - The references to "vision for a free, open and inclusive Indo-Pacific" are believed to be related to **China's increasing assertion in the region**.
- **Assistance:**
 - India has been a reliable partner for the PICs especially during the **Covid-19 pandemic**.

- India has provided **vital medicines, vaccines and food to the PICs as part of its humanitarian assistance and disaster relief efforts**. Some of the examples of India's support to the PICs during the Covid-19 pandemic are:
 - India donated **1.2 million doses of Covishield vaccine to Fiji** under its **Vaccine Maitri initiative**.
 - Supplied essential medicines and medical equipment worth **USD 2 million to Papua New Guinea**, **100 metric tonnes of rice to Nauru** under its **Mission Sagar initiative**, line of credit worth **USD 75 million to Fiji** for a co-generation power plant project.
- India extended a line of credit worth **USD 100 million to Samoa** for a solar power project.
- **Economic Relations:** Based on 2021-22 data, the total annual trade between India and Pacific Island countries is valued at **USD 570 million**, in commodities such as plastics, **pharmaceuticals, sugar, mineral fuel and ores**.
- Among them, **Papua New Guinea is the biggest trade partner in terms of value**.
- **Future Prospects:** India and the PICs have immense potential to enhance their cooperation in various sectors such as **blue economy, maritime security, digital connectivity, health care, education and skill development**.
 - India can leverage its strengths in **information technology, renewable energy, space technology and pharmaceuticals** to offer innovative solutions to the challenges faced by the PICs.
 - India can also share its best practices and experiences in **disaster management and climate change adaptation with the PICs**.

G7 Summit: Climate Goals, Gandhi Statue & Quad Climate Initiatives

Why in News?

During the recent **49th G7 summit**, **member countries** had outlined key milestones in their **climate Wishlist** in response to ongoing studies and reports that continue to raise alarms about the **worsening state of climate change, urging immediate action**.

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- Furthermore, at the same summit, the **Prime Minister of India** unveiled a bust of **Mahatma Gandhi in Hiroshima, Japan**.
- Additionally, the **Quad Leaders' Summit** also took place on the sidelines of the G7 summit, emphasizing shared democratic values, strategic interests, and initiatives for the **Indo-Pacific region**.

What are the Main Climate Wishlist of the G7?

- **Global Peak in Emissions by 2025:**
 - The G7 emphasized the need for a **global peak in emissions by 2025**.
 - While this is not mandated under the **Paris Agreement**, achieving it is not implausible.
 - Developed countries are witnessing a **decline in emissions**, although not at the required pace while developing countries' emissions are still increasing.
 - If all countries only fulfill their existing commitments, emissions in 2030 would be about **11% higher than 2010 levels**.
- **Ending Fossil Fuel Use:**
 - The G7 does not set a specific deadline for **ending fossil fuel** use but commits to accelerating the **phase-out of "unabated fossil fuels"** in line with **1.5 degree Celsius** trajectories.
 - They aim to eliminate **"inefficient fossil fuel subsidies"** by 2025 or earlier without specifying the definition of **"inefficient subsidies."**
 - The G7 countries claim to have stopped financing new fossil fuel-based energy projects, except in limited circumstances.
- **Net-Zero Targets:**
 - The G7 reiterates its commitment to achieve **net-zero status by 2050** and urges other major economies to do the same.
 - The world as a whole must become **net-zero by mid-century to meet the 1.5-degree Celsius target**.
 - China aims for **net-zero by 2060, while India has set 2070 as its target**.
 - Post-2050 targets of major developing countries may change with evolving technologies and cleaner energy adoption.

What are the Challenges in Implementing the G7 Climate Wishlist?

- **Insufficient Action and Inconsistencies:**

- G7 countries account for **20% of global emissions** but have not effectively fulfilled their pledges.
- Lack of sufficient and consistent actions to align with the **1.5-degree Celsius** and **2-degree Celsius temperature goals**.
- G7 member countries Failure to update **nationally determined contributions (NDCs)** . **Paris Agreement targets**.
- **Inadequate Climate Finance Support:**
 - G7 countries have been **slow and insufficient in providing climate finance** to developing nations agreed under the **Paris Agreement targets**.
 - Developing countries, disproportionately affected by climate impacts, require support for adaptation and resilience.
 - Oxfam reports that only **20% of climate finance from rich countries in 2019** was allocated for adaptation, with minimal reaching least developed countries.
- **Continued Reliance on Fossil Fuels:**
 - Criticism directed at the G7 countries for their ongoing dependence on fossil fuels, particularly coal.
 - Fossil fuels, especially coal, are highly carbon-intensive energy sources exacerbating climate change.
 - Oil Change International highlights that G7 countries provided significant **public finance for fossil fuels, surpassing investments in clean energy**.

Why did the PM

of India Unveil Gandhi's Bust in Hiroshima?

- Mahatma Gandhi was one of the most influential leaders of the twentieth century, who championed the principles of **non-violence, peace, justice and human dignity**. His statue was unveiled at Hiroshima Peace Memorial Park , as a tribute to his legacy and a reminder of his relevance in today's world.
- The symbolic gesture was meant to highlight the shared commitment of the **G7 and its partners to prevent another nuclear catastrophe** and to pursue **nuclear disarmament and non-proliferation**.
- It was also meant to **acknowledge the suffering and resilience of the Hibakusha, the survivors of the atomic bombings of Hiroshima and Nagasaki in 1945**.
- The statue was also seen as a recognition of **India's role and contribution to global peace and security, as**

Note:



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well as its **partnership with Japan on various issues, including climate change.**

- The unveiling ceremony was attended by the **G7 leaders**, as well as **the Prime Minister of India**, who was invited as a guest to the summit along with other leaders from Australia, South Korea, and South Africa.

What Were the Outcomes of the Quad Leaders' Summit?

- The Quad Leaders' Summit was held on May 23, 2023, on the sidelines of the G7 summit. It was attended by the **Prime Minister of India, President Joe Biden of the US, Prime Minister Scott Morrison of Australia and Prime Minister Yoshihide Suga of Japan.**
- The Quad is an informal strategic dialogue among four democracies that share common interests and values in the **Indo-Pacific region.**
- One of the key areas of cooperation among the Quad members is **climate change.** The leaders issued a joint statement that reaffirmed their **commitment to the Paris Agreement and its full implementation.**
- They also announced several initiatives to enhance collaboration on clean energy transition, innovation, adaptation, and resilience. Some of these initiatives are:
 - Launching a **new Quad Climate Working Group** to coordinate their efforts on domestic and international climate policies.
 - Establishing a **Quad Clean Energy Partnership** to support the deployment of clean energy technologies in Indo-Pacific countries through technical assistance, capacity building, and financing mechanisms.
 - Supporting a **Quad Green Shipping Network** to promote **decarbonization** of maritime transport through information sharing, best practices, and standards development.
 - Expanding cooperation on **disaster risk reduction** and management through **joint exercises**, training, and information sharing.
 - Supporting nature-based solutions for **climate mitigation** and adaptation through the conservation and restoration of **ecosystems** such as forests, **wetlands**, and **mangroves.**

What is the Group of Seven (G7)?

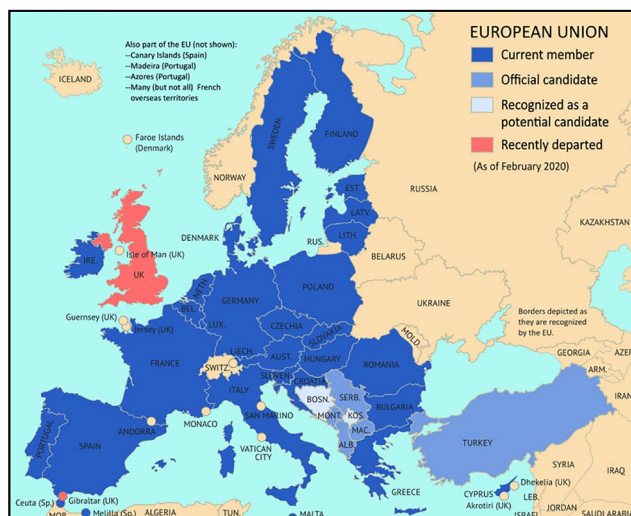
- It is an **intergovernmental organization** that was **formed in 1975.**
- The bloc meets annually to discuss issues of common interest like **global economic governance, international security and energy policy.**
- The G7 countries are the **UK, Canada, France, Germany, Italy, Japan and the US.**
- **All the G7 countries and India are a part of G20.**
- **The G7 does not have a formal charter or a secretariat.** The presidency, which rotates among member countries each year, is in charge of setting the agenda. **Sherpas, ministers and envoys hammer out policy initiatives before the summit.**
- The **49th G7 summit** was held in **Hiroshima, Japan.**

India- EU Trade and Technology Council

Why in News?

Recently, the 1st Ministerial meeting of the **India-European Union Trade and Technology Council (TTC)** took place, in Brussels, Belgium.

- The EU-India Trade and Technology Council is the **second bilateral forum for the EU and the first one established** with any partner for India. The EU and the US launched a TTC in June 2021.



What are the Key Highlights of the Meeting?

- The Meeting involved **discussions on roadmaps for future cooperation** under the three working groups:

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- Strategic Technologies, **Digital Governance**, and Digital Connectivity
- **Green and Clean Energy** Technologies
- Trade, Investment, and Resilient Value Chains
- The meeting aimed to **provide direction and lay the roadmap for cooperation between the two sides regarding:**
 - Addressing mutual market access
 - **WTO (World Trade Organization)** reforms
 - The ongoing negotiations for a **Free Trade Agreement (FTA)**
 - Cooperation in various areas of mutual interest
- India and the EU were also working to resolve a **looming issue in their trade relationship** — the **E.U.'s Carbon Border Adjustment Mechanism (CBAM)**.
 - The E.U. describes the CBAM as a “landmark tool” which places a “fair price” on carbon emitted during the production of goods that are entering the EU and a mechanism to “encourage cleaner industrial “production outside the EU.

What is India-EU

Trade and Technology Council (TTC)?

- **About:**
 - The formation of the TTC was announced by the Indian Prime Minister and **President of the European Commission** in 2022 with the objective of creating a High-level coordination platform to tackle strategic challenges at the nexus of trade, trusted technology and security.
- **Meetings:**
 - **Ministerial meetings of the TTC will be held annually**, ensuring regular high-level engagement between India and the EU.
 - These meetings will alternate in terms of **location, taking place in either India or the EU, to foster balanced participation** and strengthen bilateral cooperation.
- **Working Groups:** The TTC consists of three Working Groups (WGs) that report on roadmaps for future cooperation:
 - **WG on Strategic Technologies, Digital Governance, and Digital Connectivity:**
 - It will **work jointly on areas of mutual interest** such as digital connectivity, **Artificial Intelligence, 5G/6G**, high performance and **Quantum**

Computing, Semiconductors, cloud systems, **Cybersecurity**, digital skills and digital platforms.

- **WG on Green and Clean Energy Technologies:**
 - It will focus on **green technologies, including investment and standards**, with emphasis on research and innovation.
 - Areas to be explored could be clean energy, **Circular Economy**, waste management, plastic and **litter in the ocean**, waste to hydrogen and recycling of batteries for e-vehicles.
 - It will also foster cooperation between EU and Indian incubators, SMEs and **start-ups**.
- **WG on Trade, Investment, and Resilient Value Chains:**
 - It will work on the resilience of supply **chains and access to critical components, energy, and raw materials**.
 - It will also work to resolve **identified trade barriers and global trade challenges** by promoting cooperation in multilateral fora. It will work towards promotion of international standards and cooperation on addressing global geopolitical challenges.
- **Significance:**
 - Recognising the evolving geopolitical landscape, both India and the EU acknowledge the importance of **establishing a strong collaborative framework**.
 - The TTC will not only **offer political guidance** but also **provide the necessary structure** to effectively implement political decisions, **coordinate technical endeavors**, and **ensure accountability** at the political level.
 - The TTC will help increase EU-India bilateral trade, which is **at historical highs, with Euro 120 billion worth of goods traded in 2022**. In 2022, EURO 17 billion of digital products and services were traded.

What is the Significance of the EU for India?

- **Employment:** The EU works closely with **India to promote peace, create jobs, boost economic growth** and enhance sustainable development across the country.
- **Financial Assistance:** As India graduated from a low to medium income country (**OECD 2014**), the EU-India cooperation also evolved from a traditional financial assistance type towards a **partnership with a focus on common priorities**.

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- **Trade:** The EU is India's 2nd-largest trading partner (after the US) and India's 2nd-largest export market. India is the EU's 10th largest trading partner, accounting for 2% of EU total trade in goods.
 - Trade in services between the EU and India reached 40 billion Euro in 2021.
- **Exports:** India's merchandise exports to EU member countries stood at about USD 65 billion in 2021-22, while imports aggregated at USD 51.4 billion.
 - In 2022-23, the exports aggregated at USD 67 billion, while imports stood at USD 54.4 billion in 2021-22.
- **Other Bilateral Mechanism:**
 - At the 2017 EU-India Summit, leaders reiterated their intention to strengthen cooperation on the implementation of the 2030 Agenda for Sustainable Development and agreed to explore the continuation of the EU-India Development Dialogue

What is the European Union?

- The European Union is a group of 27 countries that operate as a cohesive economic and political block.
- 19 of these countries use Euro (€) as their official currency.
 - 8 EU members (Bulgaria, Croatia, Czech Republic, Denmark, Hungary, Poland, Romania and Sweden) do not use the euro.
- The EU grew out of a desire to form a single European political entity to end centuries of warfare among European countries that culminated with World War II and decimated much of the continent.
- The EU has developed an internal single market through a standardised system of laws that apply in all member states in matters where members have agreed to act as one.

Rasht-Astara Railway and INSTC

Why in News?

Recently, Russia and Iran have signed a deal to build an Iranian railway line, the Rasht-Astara railway as part of an International North-South Transport Corridor (INSTC).

- The Rasht-Astara railway is seen as an important link in the corridor, intended to connect India, Iran, Russia, Azerbaijan and other countries via railways and sea – a route that Russia says can rival the Suez Canal as a major global trade route.



What is Rash Astra Railway?

- It is a 162-kilometer railway that will connect the city of Rasht (Iran) near the Caspian Sea, to Astara (Azerbaijan) on the border with Azerbaijan. The new connection will shave four days off that traveling time frame.
- The unique North-South transport artery, of which the Rasht-Astara railway will become a part, will help to significantly diversify global traffic flows. Transportation along the new corridor will have significant competitive advantages and will substantially cut travel times and costs and help develop new logistics chains.
- The railway along the Caspian Sea coast would help to connect Russian ports on the Baltic Sea with Iranian ports in the Indian Ocean and the Gulf.

What is the International North-South Transport Corridor?

- **About:**
 - It is a 7,200-kilometer Multi-Mode Transit System that connects ship, rail, and road routes for moving cargo between India, Iran, Azerbaijan, Russia, Central Asia, and Europe.
 - It was launched on 12th September 2000 in St. Petersburg, by Iran, Russia and India for the purpose of promoting transportation cooperation among the Member States.

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- Since then, INSTC membership has expanded to include 10 more countries – Azerbaijan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkey, Ukraine, Syria, Belarus, and Oman.
 - Bulgaria has been included as an observer state. The Baltic countries like **Latvia and Estonia have also expressed willingness** to join.

➤ **Routes and Modes:**

- **Central Corridor:** It begins from the Jawaharlal Nehru Port in Mumbai and connects to the **Bandar Abbas port (Iran) on the Strait of Hormuz**. It then passes through the Iranian territory via Nowshahr, Amirabad, and Bandar-e-Anzali, runs along the Caspian Sea to reach the Olya and Astrakhan Ports in Russia.
- **Western Corridor:** It connects the **railway network of Azerbaijan to that of Iran via the cross-border nodal points** of Astara (Azerbaijan) and Astara (Iran) and further to Jawaharlal Nehru port in India via sea route.
- **Eastern Corridor:** It connects **Russia to India through the Central Asian countries of Kazakhstan, Uzbekistan, and Turkmenistan.**

What is the Significance of INSTC for India?

➤ **Alternate Route:**

- India sees INSTC as an alternative means of connecting with **Central Asia, which is rich in hydrocarbons and has strategic importance.**
- Given the obstacles in the straight route through Pakistan, it creates a permanent **alternate route for trade between Afghanistan and Central Asia.**
 - China and Pakistan are working to strengthen their economic and trade ties through the **China Pakistan Economic Corridor (CPEC)** and the Gwadar port, both of which are part of China's **Belt and Road Initiative (BRI).**

➤ **Reducing Time and Freight Cost:**

- INSTC consists of sea routes, rail links, and road connections that connect Mumbai in India to Saint Petersburg in Russia, passing through Chabahar.
- The INSTC is projected to reduce **transit time by 40%**, shortening it from 45-60 days to 25-30 days. Additionally, it is expected to **decrease freight costs by 30%** in comparison to the Suez Canal route.

➤ **Chabahar Port:**

- India has invested in the Chabahar Port located in the Iranian province of Sistan-Balochistan and also signed an intergovernmental agreement for the INSTC.
- The Chabahar port is **regarded as a doorway to golden chances for India, Iran, and Afghanistan** to trade with **Central Asian countries.**

- Chabahar is a port in **southwestern Iran on the Gulf of Oman**. It is Iran's sole port with **direct access to the sea**. It is situated on the southern coast of Iran's energy-rich Sistan-Balochistan region.

➤ **Alternative to Suez Canal:**

- Suez Canal's blockage in 2021, which roughly cost 12% of global trade and reportedly held up **trade valued at USD 9 billion per day**, has amplified the optimistic outlook towards the INSTC as a **cheaper and faster alternative multimodal transit corridor.**

➤ **Potential to Connect Baltic:**

- The INSTC connects India with Central Asia, Russia, and has the potential to expand up to the **Baltic, Nordic, and Arctic regions.**
- This connectivity initiative, when viewed with its underlying commercial advantages, **can bring about a transformative development** in the region, facilitating not just transit but humanitarian assistance as well as overall economic development.

➤ **Regional Supply Chains Across Eurasia:**

- The creation of diverse supply chains across Eurasia might surely alter the stereotype of **East as the producer and West** as the consumer.

What are the Challenges?

- The main challenges faced by INSTC are that the majority of projects associated with the INSTC, have not received financial support from major international financial institutions such as the **World Bank, ADB (Asian Development Bank), European Investment Bank** and Islamic Development Bank.
- This is mainly due to the **unilateral sanctions imposed by the United States on Iran**, which has led to **concerns about possible "secondary sanctions."**
- The harsher sanctions imposed on Iran after the US's withdrawal from the **JCOA (Joint Comprehensive Plan of Action)** in 2018 resulted in many global companies withdrawing from infrastructure projects in Iran.

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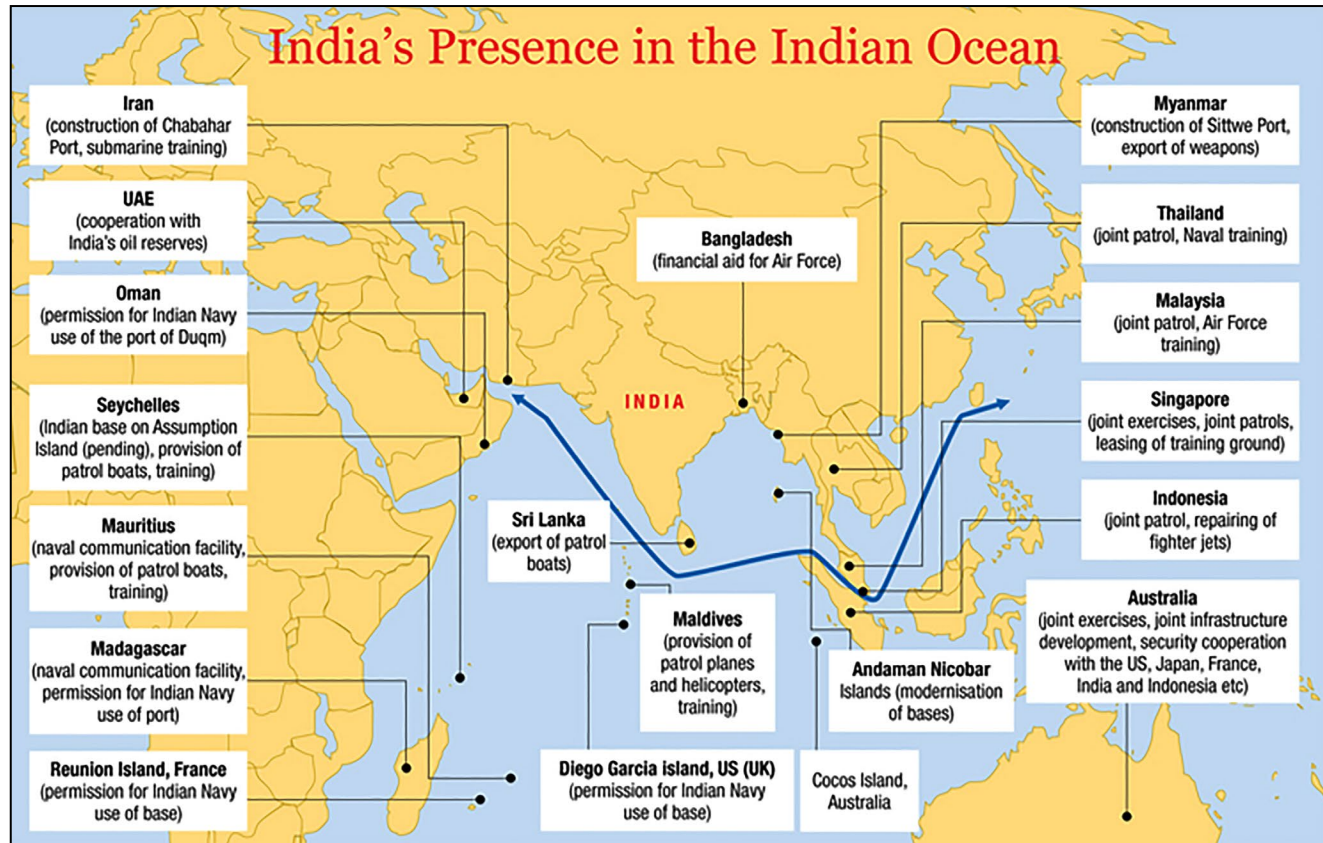
6th Indian Ocean Conference

Why in News?

Improving and enhancing connectivity in the **Indian Ocean region** emerged as a top priority during the 6th

Indian Ocean Conference held in Dhaka, Bangladesh.

- The conference, with the theme “**Peace Prosperity and Partnership for a Resilient Future**,” brought together delegates from over 25 countries to discuss ways to promote **economic development while maintaining peace and stability in the region**.



What are the Major

Highlights of the Conference?

- **Connectivity:** India, being a significant player in the **Indian Ocean region**, faces distinct challenges in achieving enhanced connectivity.
 - **Establishing a land connection with Southeast Asia** poses unique difficulties for India. Despite the challenges, there is a call for collective efforts to overcome obstacles and improve connectivity.
 - The Indian Foreign Minister emphasized the potential game-changing impact of establishing an effective and efficient connectivity with the **Association of Southeast Asian Nations (ASEAN)**.
 - India also aspires to develop **multi-model connectivity to the Gulf and Central Asia**.

- To tackle the connectivity challenges and promote regional development, countries in the Indian Ocean region need to embrace cooperation and adopt a **long-term perspective**:
- Examples like the **Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)** demonstrate the significance of deeper cooperation and shared efforts.
- **Upholding Legal Obligations and Agreements:** Disregarding legal obligations or violating long-standing agreements can **undermine trust and confidence among member nations**. Taking a long-term view of cooperation is essential to ensure sustained progress.
 - Adherence to international law, norms, and rules is vital for building a stable international order.

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- **Sustainable Projects and Debt:** Unsustainable debt generated by unviable projects is a concern for countries in the region. (Example-Sri Lanka).
 - Encouraging transparent lending practices and considering market realities are necessary to avoid future complications.
- **Shared Responsibility and Focus:** The Indian Ocean region requires shared responsibility and focused efforts to ensure its stability and prosperity:
- **Ensuring maritime security is a collective responsibility** that should not be compromised for individual dominance. Practical action is needed, complementing diplomatic positions.
- The conference also highlighted the **importance of climate action and counter-terrorism initiatives**. Nations must also address the threats posed by **extremism and fundamentalism, safeguarding their social fabrics**.

What is Indian Ocean Conference?

- Indian Ocean Conference is a flagship consultative forum of the Indian Ocean countries to deliberate upon the prospects of regional cooperation for **Security and Growth for All in Region (SAGAR)**.
- The first edition of the Indian Ocean conference was held in Singapore in 2016 and fifth in 2021 in Abu Dhabi, United Arab Emirates.

What are the Major Challenges Related to the Indian Ocean Region?

- **Geopolitical Competition:** The Indian Ocean region is a hotspot for geopolitical competition among **major powers and regional actors**. The competition involves **strategic interests, influence, and access to resources, leading to tensions and potential conflicts**.
 - The **Indian Ocean** occupies a central position between the major global powers, including **India, China, the United States**, and countries of the Middle East and Africa.
- Its location allows for power projection and influence over regional affairs. The presence of key chokepoints such as the **Strait of Hormuz, the Bab el-Mandeb Strait, and the Malacca Strait** further enhances its strategic significance.
- **China's Militarization Move:** China has been a **challenge to India's interests and stability in the Indian Ocean**.

- India's neighbors are receiving **military and infrastructural assistance from China**, including **submarines for Myanmar, frigates for Sri Lanka, and its overseas military base in Djibouti (Horn of Africa)**.
- Also, **China has a hold over Hambantota port (Sri Lanka)**, which is just a few hundred miles off the shores of India.
- **Maritime Security Threats:** The IOR is vulnerable to various maritime security threats, including **piracy, smuggling, illegal fishing, and terrorism**.
 - Also, the vastness of the Indian Ocean makes it challenging to **monitor and secure its maritime domain effectively**.
- **Environmental Challenges:** **Climate change, rising sea levels, coral reef degradation, and marine pollution** are significant environmental challenges in the IOR.
 - These issues affect **coastal communities, marine ecosystems, and the livelihoods of millions of people**.

SCO Adopts India's Proposal to Support DPI

Why in News?

The **Shanghai Cooperation Organisation (SCO)** has recently adopted India's proposal to support the development and adoption of the **country's digital public infrastructure (DPI)**.

- This move highlights India's leadership in the digital realm and its commitment to bridging the digital divide in the region.

What does India's DPI Proposal Entail?

- India's DPI proposal entails supporting the development and adoption of India's DPI by the member states of the SCO.
 - The proposal includes platforms such as **Aadhaar, United Payments Interface (UPI), and DigiLocker** which are based on open and interoperable **application programming interfaces (APIs)** and enable digital inclusion, innovation, and social empowerment.
 - These platforms aim to provide a robust and secure digital infrastructure for various services.

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- India's DPI proposal also entails collaborating with the SCO members on various aspects of digital public infrastructure such as **design, development, implementation, evaluation, and governance**.

How does India's DPI proposal benefit the SCO members?

- By offering them a **model of developing their own DPI** based on open and interoperable APIs.
- The proposal can help the SCO members to **achieve their common goals of enhancing connectivity, trade, tourism, education, health care, and security** in the region.
- It can also help the SCO members to address their common challenges of the **digital divide, cyber threats, data protection, and privacy** in the digital era.

What is DPI?

- DPI refers to blocks or **platforms such as digital identification, payment infrastructure and data exchange solutions** that help countries deliver essential services to their people, empowering citizens and improving lives by enabling digital inclusion.
- India, through **India Stack**, became the first country to develop **all three foundational DPIs, Digital identity (Aadhar), Real-time fast payment (UPI) and Account Aggregator** built on the **Data Empowerment Protection Architecture (DEPA)**.



What is SCO?

- **About:**
 - The **SCO** is a regional **intergovernmental organisation** that promotes cooperation between its member states in the areas of security, economy, and culture.
- **Genesis:**
 - Prior to the creation of SCO in 2001, **Kazakhstan, China, Kyrgyzstan, Russia and Tajikistan** were members of the **Shanghai Five**.
 - Following the **accession of Uzbekistan to the organisation in 2001**, the Shanghai Five was renamed the **SCO**.
- **India and Pakistan became members in 2017.**
 - **Observer States:** Iran and Belarus
 - Iran will be the **newest member of the largest regional organisation**- the **SCO**, when it joins the forum in **2023** under the chairmanship of India.
- **Structure:**
 - **Heads of State Council:** The Supreme SCO body which decides its internal functioning and its interaction with other States & international organisations, and considers international issues.
 - **Heads of Government Council:** Approves the budget, considers and decides upon issues related to **economic spheres of interaction** within SCO.
 - **Council of Ministers of Foreign Affairs:** Considers issues related to day-to-day activities.
 - **Regional Anti-Terrorist Structure (RATS):** Established to **combat terrorism, separatism and extremism**.
- **Official language:**
 - The official working language of the SCO Secretariat is **Russian and Chinese**.



Note:

Social Issues

Highlights

- World Menstrual Hygiene Day
- NITI Aayog's Annual Health Index 2020-21
- Child Wasting in India
- GANHRI Defers Accreditation of NHRC
- Health for All: WHO
- Tribal Health in India
- World Food India 2023
- Self Help Group Kudumbashree
- Hysterectomy
- National Workshop on Empowering PwD in Education
- Global Report on Internal Displacement 2023
- Model Prisons Act 2023
- Protection of Women from Sexual Harassment Act, 2013

World Menstrual Hygiene Day

Why in News?

Recently, on the occasion of **World Menstrual Hygiene Day**, **Child Rights and You (CRY)** an NGO released the findings of a study conducted to assess the **awareness and knowledge of menstrual hygiene and health among adolescent girls in India**.

- The study conducted for two months with the participation of nearly 4,000 girls aged 10-17 years from 38 districts across the country, sheds light on the **perceptions, practices, and challenges faced by young girls regarding menstruation**.

What is World Menstrual Hygiene Day?

- **About:**
 - World Menstrual Hygiene Day, also known as **Menstrual Hygiene Day**, is an annual global advocacy day **celebrated on May 28th**.
 - The day aims to **raise awareness and promote good menstrual hygiene management (MHM) practices worldwide**.
- **Reason for May 28th:**
 - Menstrual Hygiene Day is observed on the 28th day of the fifth month.
 - Represents the **average length of the menstrual cycle**, which is often around 28 days.
 - Symbolizes the **average duration of menstruation**, which lasts **around five days each month**.

History:

- Started in 2013 by **Germany-based NGO WASH United**.
- Initially launched as a 28-day social media campaign to raise awareness about menstruation.
- Positive response led to the establishment of Menstrual Hygiene Day on May 28, 2014.

Theme:

- Theme for 2023: **"Making menstruation a normal fact of life by 2030."**

Significance:

- Highlights the importance of menstrual hygiene for the well-being and dignity of individuals who menstruate.
- Promotes proper menstrual hygiene practices:
 - Using clean and safe menstrual products.
 - Maintaining personal hygiene during menstruation.
 - Managing menstrual discomfort effectively.
- Advocates for improved access to menstrual products, particularly in low-income communities.
- Encourages knowledge acquisition about bodies, menstrual cycles, and reproductive health.

What are the Key Findings from the Study?

- Close to 12% of young girls believed **menstruation is a curse from God** or caused by disease.
- 4.6% of the **girls had no knowledge about the cause of menstruation**.

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- 84% of the girls correctly identified menstruation as a **biological process**.
- 61.4% of the girls acknowledged the existence of societal embarrassment related to periods.
- 44.5% of the girls used **homemade absorbents or cloth instead of sanitary pads**.
 - Hesitation or shyness, difficulty in disposing of pads, poor availability, and lack of knowledge were reasons for not using sanitary pads.
- The girls received information about menstruation from their mothers, female friends and elder sisters.

What are the Challenges Faced by Young Girls Regarding Menstruation?

- Lack of knowledge and awareness about menstruation.
- **Social stigma and taboos surrounding menstruation.**
- Limited access to **sanitary products and proper menstrual hygiene resources.**
- Financial constraints to **afford sanitary pads or other menstrual products.**
- Inadequate **sanitation facilities, especially in schools and public places.**
- **Lack of privacy and suitable disposal methods** for used sanitary products.
- Unequal access to **menstrual health education and support.**
- Peer pressure and embarrassment related to discussing menstruation.
- **Absence of open dialogue and support** from family members and community.
- **Disruption of daily activities and restrictions on participation** due to menstrual discomfort or pain.

What are India's Initiatives for Menstrual Hygiene?

- The **Menstrual Hygiene Scheme**, launched in 2011 by the **Ministry of Health and Family Welfare**, aims to **promote menstrual hygiene among adolescent girls in rural areas.**
- **Swachh Bharat guidelines** in 2015 included menstrual hygiene management (MHM) in schools, providing sanitary pads, vending, and disposal mechanisms, and exclusive washrooms for girl students.
 - MHM was released by the Ministry of Drinking Water and Sanitation.

- Department of Pharmaceuticals under Ministry of Chemicals and Fertilizers implements the **Pradhan Mantri Bharatiya Janausadhi Pariyojna (PMBJP)**, an important step in ensuring the **health security for women.**
 - Under the project, over 8700 **Janaushidhi Kendras** have been set up across the country that provides **Oxo-biodegradable sanitary napkins named Suvidha at Rs. 1/- per pad only.**
- Supreme Court of India called for a **uniform national policy in 2022 to ensure menstrual hygiene** in schools, aiming to provide sanitary pads, vending and disposal mechanisms, and exclusive washrooms for girl students.
- Various states have their own schemes to distribute subsidised or free sanitary napkins to adolescent girls, such as **Asmita Yojana (Maharashtra)**, **Udaan (Rajasthan)**, **Swechha (Andhra Pradesh)**, **She Pad (Kerala)**, and **Khusi (Odisha).**
- Kerala and Karnataka governments have been distributing **menstrual cups as a sustainable alternative to sanitary napkins**

NITI Aayog's Annual Health Index 2020-21

Why in News?

Kerala, Tamil Nadu and Telangana emerged as the **top performers among the 'larger states' in the NITI Aayog's annual 'health index'** for the **Covid year of 2020-21.**

What are the Major Highlights of the Index?

- **Based on Overall Performance:**
 - **Larger States:**
 - Among the **19 'larger states'**, **Kerala, Tamil Nadu and Telangana** have occupied first, second and third place respectively, in terms of overall performance.
 - **Bihar (19th), Uttar Pradesh (18th) and Madhya Pradesh (17th)** are at the bottom of the list.
 - **Smaller States:**
 - Among the eight smaller states, **Tripura has recorded the best overall performance**, followed by Sikkim and Goa; Arunachal Pradesh (6th), Nagaland (7th) and Manipur (8th) are at the bottom.

Note:

- **Union Territories(UT):**
 - And among the eight UTs, **Lakshadweep has been ranked as the top performer** in terms of overall performance, while **Delhi ranked at the bottom.**

➤ **Based on Incremental Performance:**

- **Rajasthan, Uttarakhand and Odisha emerged as the top three performers in 2020-21**, as compared to their performance in 2019-20.

What is NITI Aayog's Annual Health Index?

➤ **About:**

- In 2017, the **National Institution for Transforming India (NITI Aayog)** in collaboration with the **Ministry of Health and Family Welfare (MoHFW)** and the **World Bank** initiated an **annual Health Index** for tracking **Overall Performance and Incremental Performance** across all states and Union Territories (UTs).

➤ **Objective:**

- The objective of the Annual Health Index is to **track and rank progress on health outcomes and health systems performance, develop healthy competition** and encourage cross learning among states and UTs.

➤ **Parameters:**

- The health index assesses states and UTs on two parameters – **incremental performance (year-on-year progress)** and **overall performance.**

➤ **Categories:**

- The ranking is done under three categories: **larger states, smaller states and Union territories (UTs)** to ensure comparison among similar entities.

➤ **Composition:**

- The **Health Index** is a composite score that reflects the **achievements and incremental improvements of the states and UTs on 24 indicators across three domains:** health outcomes, governance and information, and key inputs and processes.
 - Each domain has been assigned **weight based on its importance with a higher score for outcome indicators.**
- The 'health outcomes' include indicators like **neonatal mortality rate, total fertility rate, sex ratio at birth, immunization coverage**, proportion of institutional deliveries, total case notification

rate of tuberculosis, and proportion of people living with **HIV on antiretroviral therapy.**

- The 'governance and information' domain includes indicators like **proportion of institutional deliveries, average occupancy (in months) of three key posts at state level, average occupancy (in months) of the chief medical officer**, and days taken for fund transfer.
- The 'key inputs/ processes' is a **measure of health infrastructure available, including the proportion of functional 24X7 primary healthcare centers, districts with functional cardiac care units, and vacancies in healthcare provider positions.**

Child Wasting in India

Why in News?

Recently, **UNICEF (United Nations Children's Fund), WHO (World Health Organization), World Bank Group** have released a report titled- "**Levels and trends in child malnutrition: Joint Child Malnutrition Estimates (JME)**", stating that in 2020, 18.7 % of Indian children were affected by **Wasting caused by poor nutrient intake.**

What are Joint Malnutrition Estimates (JME)?

- The JME group was created in **2011 to address the call for harmonized child Malnutrition estimates.**
- The inter-agency team releases **annual estimates for child stunting, overweight, underweight, wasting and severe wasting.**
- Child malnutrition estimates for the indicators stunting, wasting, overweight and underweight describe the magnitude and patterns of under- and overnutrition.
 - The UNICEF-WHO-WB Joint Child Malnutrition Estimates inter-agency group updates regularly the global and regional estimates in prevalence and numbers for each indicator.
- The key findings in the 2023 Edition include **global and regional trends for all mentioned indicators** as well as country-level modelled estimates for stunting and overweight.

What are the Findings of the Report?

➤ **Wasting:**

- Half of all children with wasting in the world live in India.

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- In 2022, an estimated 45 million children under five (6.8 %) were affected by wasting globally, of which 13.6 million were suffering from severe wasting.
 - More than three quarters of all children with severe wasting live in Asia and another 22 % live in Africa.
- **Stunting:**
 - India had a stunting rate of 31.7 % in 2022, down from 41.6 % in 2012, a decade ago.
 - Some 148.1 million of children under age five worldwide, were affected by stunting in 2022.
 - Nearly all children affected lived in Asia (52 % of the global share) and Africa.
- **Overweight:**
 - There are 37 million children under five who are **overweight globally**, an increase of nearly four million since 2000.
 - India had an overweight percentage of 2.8 % in 2022, compared to 2.2 % in 2012.
- **Progress:**
 - There is insufficient progress to reach the **2025 World Health Assembly (WHA) global nutrition targets** and UN-mandated **Sustainable Development Goal target 2.2**.
 - **WHA global Nutrition Targets are:**
 - Reduce stunting by 40% in children under 5
 - Reduce the prevalence of anaemia by 50% among women in the age group of 19-49 years
 - Ensure 30% reduction in low-birthweight
 - Ensure no increase in childhood overweight;
 - Increase the rate of exclusive breastfeeding in the first six months up to at least 50%
 - Reduce and maintain childhood wasting to less than 5%.
 - Only about a third of all countries are 'on track' to halve the number of children affected by stunting by 2030 and assessment of progress to date not being **possible for about one quarter of countries**.
 - Even fewer countries are expected to achieve the 2030 target of 3% prevalence for overweight, with just **one in six countries currently 'on track'**.
 - An assessment of progress towards the wasting target is not possible for nearly half of countries.

What are the Recommendations?

- Children suffering from severe wasting require **early detection and timely treatment** and care to survive.

- More intensive efforts are **required if the world is to achieve the global target** of reducing the number of children with stunting to 89 million by 2030.
- Gaps in the available data in some regions make it challenging to accurately assess progress towards global targets. Regular data collection is therefore critical to monitor and analyze country, regional and global progress on child malnutrition moving forward.

What is Malnutrition?

- **About:**
 - Malnutrition refers to **deficiencies, excesses or imbalances in a person's intake** of energy and/or nutrients.
 - The term malnutrition covers two broad groups of conditions.
 - One is 'Undernutrition'—which includes stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals).
 - The other is **Overweight**, obesity and diet-related **noncommunicable diseases (such as heart disease, stroke, diabetes and cancer)**.
 - Childhood overweight occurs when children's calorie intake from food and beverages exceeds their energy requirements.
- **Severe Acute Malnutrition:**
 - The **World Health Organisation (WHO)** defines 'severe acute malnutrition' (SAM) by **very low weight-for-height** or a mid-upper arm circumference less than 115 mm, or by the presence of nutritional oedema (**abnormal fluid retention in the tissues** resulting especially from lack of protein in states of starvation or malnutrition).
 - Children suffering from SAM are **nine times more likely to die in case of diseases** due to their weakened immune system.
 - The SAM children are those in the red zone with a **higher risk of contracting secondary infection**. This category may suffer from severe illnesses.
- **Moderate Acute Malnutrition:**
 - MAM, also known as wasting, is defined by a weight-for-height indicator between -3 and -2

Note:

z-scores (standard deviations) of the international standard or by a mid-upper arm circumference (MUAC) between 11 cm and 12.5 cm.

- MAM children show signs of malnourishment but are in the yellow zone which means their lives are not under threat.

➤ **Indian Initiatives Related to Malnutrition:**

- **Mid-day Meal (MDM) scheme**
- **POSHAN Abhiyaan**
- **The National Food Security Act (NFSA), 2013,**
- **Pradhan Mantri Matru Vandana Yojana (PMMVY)**
- **Integrated Child Development Services (ICDS) Scheme**
- **Aspirational District Programme**

GANHRI Defers Accreditation of NHRC

Why in News?

For the second time in a decade, **Global Alliance of National Human Rights Institutions (GANHRI)** deferred the accreditation of **National Human Rights Commission (NHRC)**, citing objections like **political interference in appointments** among others.

- The GANHRI had granted '**A**' status of accreditation to NHRC in 2017, after deferring it the year before — the first such instance since NHRC was established (1993).
- Without the accreditation, NHRC will be unable to represent India at the UN Human Rights Council.

What is GANHRI?

- GANHRI is **recognised and a trusted partner, of the United Nations.**
- It was established in 1993 as the **International Coordinating Committee of National Institutions** for the promotion and protection of human rights (ICC).
- It has been known as the **Global Alliance of National Human Rights Institutions (GANHRI)** since 2016 and is a member-based network organization that gathers NHRIs from all around the world.
- It is composed of 120 members, **India also is a member of GANHRI**
- Its secretariat is situated in **Geneva, Switzerland.**

Why are the Reasons for Deferment?

- The GANHRI cited reasons such as:
 - **Lack of diversity** in staff and leadership
 - **Insufficient action** to protect marginalized groups
 - **Involving the police in probes** into human rights violations
 - **Poor cooperation** with civil society
- The GANHRI said the NHRC has repeatedly **failed to deliver its mandate**, in particular to protect the rights of people from marginalized communities, religious minorities, and human rights defenders.
- NHRC's lack of independence, pluralism, diversity and accountability are **contrary to the U.N.'s principles on the status of national institutions** (the 'Paris Principles').

What are the Paris Principles and 'A' Status?

- The **United Nations' Paris Principles**, adopted in 1993 by the UN The General Assembly provides the international benchmarks against which **National Human Rights Institutions (NHRI)** can be accredited.
- The Paris Principles set out six main criteria that NHRIs are required to meet. These are:
 - Mandate and competence
 - Autonomy from government
 - Independence guaranteed by a statute or Constitution
 - Pluralism
 - Adequate resources
 - Adequate powers of investigation.
- The GANHRI is a group of 16 human rights agencies – 4 from each region; the Americas, Europe, Africa, and the Asia-Pacific – that have the **Highest Rating ('A') for following the Paris Principles.**
- The 'A' rating also lets them join the **work of the GANHRI and the UN on human rights issues.**
 - The NHRC got its 'A' rating in 1999 and kept it in 2006, 2011, and 2017 after a delay. The GANHRI had delayed it because of some problems with the NHRC's staff and appointments. The NHRC is led by Justice Arun Mishra, who used to be a Supreme Court judge.

What is NHRC?

- **About:**
 - NHRC of India is an **independent statutory body established on 12th October, 1993** as per provisions

Note:

of **Protection of Human Rights Act, 1993**, later amended in 2006.

- It is the watchdog of human rights in India, i.e. the **rights related to life, liberty, equality and dignity of the individual guaranteed** by Indian Constitution or embodied in the international covenants and enforceable by courts in India.
- It was established in conformity with the **Paris Principles, adopted for the promotion and protection of human rights in Paris (October, 1991)** and endorsed by the on 20 December, 1993.
- **Composition:**
 - **Key Members:** It is a multi-member body consisting of a chairperson, five full-time Members and seven deemed Members.
 - A person who has been the **Chief Justice of India** or a **judge of the Supreme Court** can become a chairman.
 - **Appointment:** The chairperson and members are appointed by the **President** on the recommendations of a six-member committee consisting of the Prime Minister as its head, the **Speaker of the Lok Sabha**, the Deputy Chairman of the Rajya Sabha, leaders of the Opposition in both the Houses of **Parliament** and the Union Home Minister.
 - **Tenure:** The chairperson and members hold office for a **term of three years or until they attain the age of 70 years**, whichever is earlier.
 - The President can remove the chairman or any member from the office under some circumstances.
 - **Removal:** They can be removed only on the charges of proved misbehavior or incapacity, if proved by an inquiry conducted by a Supreme Court Judge.
 - **Divisions:** Commission also has five Specialized Divisions i.e. Law Division, Investigation Division, Policy Research & Programmes Division, Training Division and Administration Division.

What are the Challenges Related to NHRC?

- **Mechanism of Investigation:**
 - NHRC lacks a **dedicated mechanism for conducting investigations**. Instead, it relies on the **concerned Central and State Governments** to investigate cases of human rights violations.
- **Time Limit for Complaints:**

- Complaints registered with NHRC after one year of the incident **are not entertained**, resulting in many grievances going unaddressed.

➤ **Decision Enforcing Power:**

- NHRC can only make recommendations and **does not have the authority to enforce its decisions** or ensure compliance.

➤ **Underestimation of Funds:**

- NHRC is sometimes perceived as a **post-retirement destination for judges** and bureaucrats with political affiliations. Additionally, inadequate funding hampers its effective functioning.

➤ **Limitations of Powers:**

- State human rights commissions do not have **the authority to request information from the national government**.
- Consequently, they face challenges in investigating **human rights violations by armed forces under national control**.
 - NHRC's powers are related to **violations of human rights by the armed forces** that have been largely restricted.

Health for All: WHO

Why in News?

Recently, the **World Health Organization (WHO)** in its 76th World Health Assembly (WHA) has released a report titled- "**Health for All: Transforming economies to deliver what matters**", recommending a roadmap to link health with sustainable growth.

- The **76th WHA** was held in Geneva, Switzerland and the theme was - "**WHO at 75: Saving Lives, Driving Health for All**".
- The report was launched by the **WHO Council on the Economics of Health (WCEH) for All**, which was formed in November 2020 in response to the **Covid-19 Pandemic**.

Note: WCEH for All was established to provide new economic thinking — reassessing how health and well-being are valued, produced and distributed across the economy.

What are the Highlights of the Report?

- **Covid-19 a Global Failure:**

Note:

- The Covid-19 pandemic was a preventable disaster resulting from a global failure to prioritize the well-being of humanity. Despite clear warnings, the importance of proactive measures to safeguard against pandemics was neglected **causing significant crises worldwide**.
 - In 2020 alone almost 100 million were pushed into poverty.
 - Even the scientifically remarkable achievement of rapidly developing an effective vaccine against Covid-19 failed to prioritize the common good.
- Covid-19 exposed deep-seated inequities, emphasizing the need to **reshape the economy for Health for All**.
- **Shortage of Health Workers:**
 - There remains a huge shortage of health workers globally and especially in **low-income countries**.
 - Health workers, 70% of whom are women, unduly suffered on the frontline in the treatment of Covid-19 for **lack of decent protective equipment and support**.
 - While Africa and the Eastern Mediterranean are the regions most in need, many countries **struggle with constraints on their ability to invest in staff**.
- **Climate Change:**
 - Given the disastrous consequences **Climate Change** is already having on health.
 - The **Paris Agreement**, aimed at combating climate change, is considered a crucial public health agreement. However, the **goal of limiting temperature rise to 1.5°C by 2050** may be surpassed within this decade.
 - Worldwide, air pollution from burning fossil fuels is responsible for a global total of 10.2million premature deaths, roughly the population of Bangkok or Hyderabad.
 - Climate change may cause **83 million excess deaths by the end of the century** due to rising temperatures caused by **Greenhouse Gas Emissions**.
- **Health Expenditure:**
 - Short-term austerity measures threaten health expenditure, undermining long-term benefits and **stability in healthcare provision**.
 - Insufficient long-term investments lead to **increased reliance on aid and Out-of-Pocket Payments**, hindering **Universal Health Coverage**.

➤ **Health as a Human Right:**

- At least **140 countries recognize health as a human right** somewhere in their constitution but only four countries mention how to finance it.
 - 52 of these countries do **little in practicing health as a human right**.

What are the Recommendations?

➤ **Valuing Health for All:**

- **Valuing the Essential:** Treat health and wellbeing, health workers and health systems as a **long-term investment**, not a short-term cost.
- **Human Rights:** Use legal and financial commitments to **enforce health as a human right**.
- **Planetary Health:** Restore and protect the environment by upholding international commitments to a regenerative economy which links the planet and people.
- **Dashboard for Healthy Economy:** Use a range of metrics that track progress across core societal values, above and beyond the narrow, static measure of GDP.

➤ **Financing Health for All:**

- **Long term Finance:** Adopt a comprehensive, stable approach to funding Health for All.
- **Quality of Finance:** Redraw the international architecture of finance to fund health equitably and proactively, including an effective and inclusive crisis response.
- **Funding and Governance:** Ensure WHO is properly funded and governed to play its key global coordinating role in Health for All.

➤ **Innovating for Health for All:**

- **Collective Intelligence:** Build symbiotic public-private alliances to maximize public value, sharing both risk and rewards.
- **Common Good:** Design knowledge governance, including intellectual property regimes, for the common good to ensure global equitable access to vital health innovations.
- **Outcomes Orientation:** Align innovation and industrial strategies with bold cross-sectoral missions to deliver Health for All

➤ **Strengthening Public Capacity for Health for All:**

- **Whole-Of-Government:** Recognize that Health for All is not just for health ministries but for all government agencies.

Note:

- **State Capacity:** Invest in the dynamic capabilities of the public sector, institutionalizing experimentation and learning, to lead effectively in delivering Health for All.
- **Build Trust:** Demonstrate transparency and meaningful public engagement to hold governments accountable for the common good.

What is the World Health Assembly (WHA)?

➤ About:

- The **World Health Assembly (WHA)** is WHO's decision-making body attended by delegations from all of **WHO's member states**.
- It is held yearly at the HQ of WHO, i.e., **Geneva, Switzerland**.
- A specific health agenda prepared by the Executive Board remains the focus of this assembly.
- Since the start of the Covid-19 pandemic, 2022's assembly is the first in-person assembly.

➤ Functions of WHA:

- Deciding on Organization's policies.
- Appointment of the Director-General of WHO.
- Administration of financial policies.
- Review and approval of the proposed programme budget.

Tribal Health in India

Why in News?

Recently, the healthcare challenges faced by **tribal communities in India** have come into focus. Despite India's remarkable achievements, such as emerging as the **world's 5th-largest economy** and its contribution to the **global vaccination drive**, tribal communities continue to experience significant healthcare disparities.

- As India celebrates its accomplishments at **India@75**, it is crucial to address the urgent need for equitable **healthcare access for tribal communities**.

What is the Status of Tribal Communities in India?

➤ Demographic Status:

- Tribal communities in India constitute a significant portion of the country's population, accounting for **approximately 8.9%**.

- Out of the total Schedule Tribe population, approximately 2.6 million (2.5%) belong to **"Particularly Vulnerable Tribal Groups" (PVTGs)** known as the **"Primitive Tribes"** - the most disadvantaged of all the Schedule Tribe communities.

- They are spread across various states, with higher concentrations in states like **Madhya Pradesh, Maharashtra, Odisha, Chhattisgarh, Rajasthan**, the **NER states** and the **Andaman & Nicobar Islands**.

➤ Cultural Status:

- Tribal communities in India have their own rich and diverse culture, language, and traditions.
- They have a **sympiotic relationship with nature** and depend on forests and hills for their livelihood.
 - They have their own beliefs, practices, and preferences regarding health, education, religion, and governance.

➤ Related Constitutional and Statutory Provisions:

- Certain tribal communities in India are recognized as **Scheduled Tribes (STs)** under **Article 342 of the Constitution of India**.
 - They are entitled to special provisions and safeguards for their social, economic, educational, and political development.
- Their interests are safeguarded by various laws and policies such as the **5th and 6th Scheduled areas**, **Forest Rights Act 2006**, and the **PESA Act 1996**.
- They also have representation in the **Parliament and State Legislatures through reserved seats**.
 - **Draupadi Murmu** is India's first tribal **President**.

➤ Developmental Status:

- Tribal communities in India face multiple challenges and disadvantages in terms of **poverty, illiteracy, malnutrition, health, employment, infrastructure, and human rights**.
 - They lag behind the **national average on various indicators** of human development such as income, education, health, sanitation, and gender equality.
 - They also face **discrimination, exploitation, displacement, and violence from non-tribal people and institutions**. They have limited access to resources and opportunities for their empowerment and participation.

Note:



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What are the Main Tribal Health Issues?

- **Malnutrition:**
 - Tribal people don't get enough food or the right kind of food to stay healthy. They suffer from **hunger, stunting, wasting, anemia, and lack of vitamins** and minerals.
- **Communicable Diseases:**
 - Tribal people are more likely to catch infectious diseases such as **malaria, tuberculosis, leprosy, HIV/AIDS, diarrhoea, respiratory infections, and diseases spread by insects or animals due to several factors like** poor sanitation and hygiene, and limited access to healthcare.
- **Non-Communicable Diseases:**
 - Tribal people are also at risk of getting chronic diseases such as **diabetes, hypertension, cardiovascular diseases, cancer, and mental disorders**.
 - According to a study, about 13% of tribal adults have diabetes and 25% have high blood pressure.
- **Addictions:**
 - The above-mentioned diseases can be caused by factors such as tobacco use, alcohol consumption, and substance abuse.
 - More than 72% tribal men 15–54 years of age use tobacco and more than 50% consume alcohol against 56% and 30% non-tribal men, respectively.

What are the Challenges in Tribal Health?

- **Lack of Infrastructure:**
 - Inadequate **healthcare facilities and infrastructure** in tribal areas.
 - Insufficient access to **clean water and sanitation facilities**.
- **Shortage of Medical Professionals:**
 - **Limited presence of doctors, nurses, and healthcare professionals** in tribal regions.
 - Difficulty in **attracting and retaining skilled healthcare personnel** in remote areas.
 - Imbalance in the distribution of healthcare professionals, with a **concentration in urban areas**.
- **Connectivity and Geographic Barriers:**
 - **Remote locations** and difficult terrain hinder access to healthcare services.
 - Lack of proper roads, **transportation facilities, and communication networks**.

- Challenges in reaching tribal communities during emergencies and providing timely medical assistance.
- **Affordability and Financial Constraints:**
 - Limited financial resources and **low-income levels among tribal communities**.
 - Inability to afford healthcare expenses, including medical treatments, medicines, and diagnostics.
- **Lack of awareness** about available **healthcare schemes and insurance options**.
- **Cultural Sensitivities and Language Barriers:**
 - Unique **cultural practices and beliefs that impact healthcare-seeking behavior**.
 - **Language barriers** between healthcare providers and tribal communities, leading to miscommunication and inadequate care.
 - Lack of culturally sensitive healthcare services that respect tribal customs and traditions.
- **Limited Access to Essential Services:**
 - Insufficient availability of essential healthcare services, such as **maternal and child health, immunization, and preventive care**.
 - Inadequate access to specialized care, diagnostic facilities, and emergency medical services.
 - Limited awareness about health issues, preventive measures, and healthcare rights among tribal communities.
- **Inadequate Funding and Resource Allocation:**
 - **Limited allocation of funds for healthcare in tribal areas**.
 - Insufficient investment in healthcare infrastructure, equipment, and technology.
 - Lack of dedicated funding for addressing tribal health challenges and implementing targeted interventions.

What is the GoI's Report on Tribal Health in India?

- In 2018, an expert committee, constituted jointly by the Ministry of Health and Family Welfare and Ministry of Tribal Affairs released the **first comprehensive report on Tribal Health in India**.
- **Recommendations of the Report:**
 - Implement **Universal Health Assurance under the National Health Policy (2017)** in tribal areas.

Note:

- Utilize **Aarogya Mitra**, trained **local tribal youth**, and **ASHA workers** for primary care in tribal communities with support from the gramsabha.
- Provide financial protection through **government medical insurance schemes** for secondary and tertiary care.
- Introduce **ST Health Cards** for **tribal people** living outside scheduled areas to facilitate access to benefits at any healthcare institution.
- Implement a **Tribal Malaria Action Plan in tribal-dominated districts** under the National Health Mission.
- Strengthen **Home-Based Newborn and Child Care (HBNCC) programs** to reduce infant and child mortality.
- Enhance food security and strengthen **Integrated Child Development Services (ICDS)** to address malnutrition.
- Publish a state of tribal health report every three years and establish a Tribal Health Index (THI) to monitor tribal health.
- Establish a **National Tribal Health Council as an apex body**, along with Tribal Health Directorate and Tribal Health Research Cell, at both central and state levels.

World Food India 2023

Why in News?

In celebration of the **International Year of Millets in 2023**, India's Ministry of Food Processing Industries will be organizing the second edition of 'World Food India 2023', which aims to **showcase India's rich food culture and attract global investments in the diverse food processing sector**.

- The event will take place from **3rd-5th November 2023** in New Delhi.

What is World Food India 2023?

➤ About:

- **World Food India 2023** is a **gateway to the Indian food economy**, facilitating partnerships between Indian and foreign investors.
- It will be a **one-of-a-kind gathering of manufacturers, producers, food processors, investors, policymakers,**

and organisations from across the global food ecosystem.

- It is a promising platform to **showcase, connect and collaborate in retail, processing, technology transfer, manufacturing, and cold chain logistics, along the global food value chain**.
 - It will showcase investment opportunities in **backward linkages, processing equipment, research and development, cold chain storage, start-ups, logistics, and retail chains**.

➤ Focus Pillars:

- **Shree Anna (Millets): Leveraging India's Super Food for the World**
 - Millets are ancient grains that have been part of **India's rich heritage for millennia**.
 - They are **super foods that provide high nutrition, gluten-free options, climate resilience, and eco-friendliness**.
 - Millets can enhance **food security, nutrition security, and sustainability in the face of global challenges** such as climate change, population growth, and malnutrition.
 - The **United Nations** has declared **2023 as the International Year of Millets (IYM 2023)** with the aim of increasing the production and consumption of millets worldwide.
- **Exponential Food Processing: Positioning India as the Global Hub**
 - **India has a vision to become a global hub for food processing** and create a competitive advantage for itself in the world food market.
 - To achieve this vision, India intends to boost its enablers that can **support and accelerate its food processing industry**.
 - One of the key enablers is **Financing Agri Food Value Chains**. Providing adequate and affordable credit to the food processing sector, **especially to the micro, small and medium enterprises (MSMEs)** that constitute a major part of the industry is one of the key focus areas of India.
- **Strategic Segments: Unlocking Potentials for Growth**
 - India has a dynamic and diverse food processing industry that encompasses several sub-sectors such as **marine products, fruits and vegetables products, meat and poultry products, RTE/RTC (packaged foods), and dairy products**.

Note:



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- These sub-sectors have **immense potential for growth in terms of production, consumption, exports, and value addition.**
- India is one of the **world's largest producers and consumers of food products.**
- India leads the world in the **production of milk, bananas, mangoes, papayas, guavas, ginger, okra and buffalo meat**, ranks **second in the production of rice, wheat, potatoes, garlic, cashew nuts.**
- **Efficient Ecosystem - Harnessing Opportunities with Inclusion**
 - An **efficient and all-encompassing ecosystem necessitates dismantling barriers and establishing a coordinated and integrated framework.** The creation of value chains and the promotion of knowledge sharing are crucial to generate inclusive opportunities.
 - In order to entice foreign investment, the **government has opened the doors to 100% foreign direct investment and is making efforts to enhance its standing in the Ease of Doing Business index.**
- **Sustainable Development: Processing for Prosperity**
 - **Sustainable Development** constitutes a fundamental component in the attainment of **Processing for Prosperity.**
 - These technologies, encompassing renewable energy sources and **sustainable agricultural and food processing practices**, have become prominent and promising trends, signifying a transformation in the global approach towards a **more sustainable future.**

World Food India 2017:

- The Ministry of Food Processing Industries launched the **first edition of World Food India in 2017 with the theme of Transforming the Food Economy.**
 - The event aimed to **introduce the world to India's diverse and rich food culture.**

Self Help Group Kudumbashree

Why in News?

Recently, the President of India has inaugurated the **25th anniversary** celebrations of **Kudumbashree**, the largest **Self-Help Group (SHG)** network in the country.

- The president also released a handbook called "chuvadu" (meaning footsteps) that outlined ideas for the **future of the movement and highlighted its achievements** so far.

What is Kudumbashree?

➤ About:

- Kudumbashree was established in 1997 in Kerala, aiming at eradicating poverty and empowering women following the **recommendations of a government-appointed task force.**
 - The mission was launched with the support of the Government of India and **NABARD (National Bank for Agriculture and Rural Development).**
- Kudumbashree meaning 'prosperity of the family' in the Malayalam language and therefore focuses on **poverty alleviation and women empowerment**, promoting democratic leadership and provides support structures within the "Kudumbashree family."

➤ Operation: The mission operates through a **Three-Tier structure** consisting of,

- **Neighbourhood Groups (NHGs)** at the primary level
- **Area Development Societies (ADS)** at the ward level
- **Community Development Societies (CDS)** at the local government level.
 - This structure forms a **large network of Self-Help Groups.**

➤ Goal:

- The goal of Kudumbashree is to eliminate absolute poverty within a specific timeframe of 10 years, with the active involvement of local self-governments.
- Through its mission and self-help group approach, Kudumbashree aims to uplift families and empower women to improve their socio-economic status and overall well-being.

➤ Significance:

- It has empowered women, generated employment, alleviated poverty, and initiated various social initiatives.
- It has become **Kerala's biggest social capital, and its members have become elected representatives in local government bodies.**
- During a severe flood that occurred in **Kerala five years ago**, Kudumbashree, the self-help group network, **donated Rs 7 crore to the Chief Minister's distress relief fund.**

Note:



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- They contributed more money than tech giants like Google and Apple and even surpassed the contribution of the Bill and Melinda Gates Foundation.
- Many of the Kudumbashree workers themselves were **victims of the flood, but they still wanted to help others** by contributing to the relief fund.

What is the Role of SHGs in Women Empowerment and Fighting Poverty?

- **Economic Empowerment:**
 - SHGs provide women in rural areas with an opportunity to create independent sources of income. Women can utilize their skills and talents to start their own businesses and become financially self-reliant.
 - Access to capital through SHGs enables **women to invest in their ventures and expand their economic activities.**
- **Overcoming Social Barriers:**
 - SHGs play a crucial role in **challenging regressive social norms** and **empowering women** to take on decision-making roles.
 - Through participation in SHGs, women gain confidence, assertiveness, and leadership skills, which help **them challenge gender stereotypes.**
 - Empowered women actively participate in local governance (e.g., gram sabha) and even contest elections.
- **Improved Socio-economic Status:**
 - Formation of SHGs leads to a **multiplier effect in improving women's status** in society and within their families.
 - Women experience enhanced socio-economic conditions, including better access to education, healthcare, and resources.
 - SHGs contribute to women's self-esteem and confidence by providing them with a platform to voice their opinions and contribute to decision-making processes.
- **Access to Financial Services:**
 - SHG-Bank linkage programs, pioneered by organizations like **NABARD**, **facilitate easier access to credit for SHGs.**
 - Priority Sector Lending norms and assured **returns incentivize banks to lend to SHGs.**

- This reduces women's **dependence on traditional moneylenders** and non-institutional sources, leading to fairer and more affordable financial services.

➤ **Alternative Employment Opportunities:**

- SHGs provide **support for setting up micro-enterprises**, offering women alternatives to agriculture-based livelihoods.
- Women can establish personalized businesses such as tailoring, grocery shops, and repair services, diversifying their income sources.

What are the Initiatives Related to Women Empowerment and Poverty Alleviation?

- **Ujjawala Yojna**
- **Swadhar Greh**
- **Pradhan Mantri Matru Vandana Yojana**
- **Pradhan Mantri Mahila Shakti Kendra Scheme**
- **Mahila e-haat**
- **Mahila Bank**
- **Mahila Coir Yojana**
- **Women Entrepreneurship Platform (WEP)**
- **Support to Training and Employment Programme for Women (STEP) Scheme**

Hysterectomy

Why in News?

Concerned about the **high risk faced by poor and less-educated women**, especially in rural areas, who undergo **unjustified hysterectomies**, the Ministry of Health and Family Welfare, Government of India has **initiated measures to address this issue.**

What is Hysterectomy?

- **About:**
 - A hysterectomy is a **surgical procedure** that involves the **removal of the uterus (womb)**, the organ in a woman's body where a baby develops during pregnancy.
- **Types:**
 - When only the uterus is removed, it is called a **partial hysterectomy.**
 - When the uterus and cervix are removed, it is called a **total hysterectomy.**

Note:

- When the uterus, cervix, part of the vagina, and a wide area of ligaments and tissues around these organs are removed, it is called a **radical hysterectomy**.

➤ **Indications for Hysterectomy in India:**

- Hysterectomy is performed in India for gynecological conditions like **fibroids** (non-cancerous growths that develop in or around the womb), **endometriosis** (disease in which tissue similar to the lining of the uterus grows outside the uterus), **abnormal bleeding**, and **pelvic inflammatory disease**, when other treatments fail.
- It is also utilized as **part of cancer treatment to remove cancerous tissues** and in cases of severe, unresponsive pelvic pain.

What are the Issues

Associated with Hysterectomy in India?

➤ **Increase Hysterectomies in Younger Women:**

- The recent **Supreme Court** judgment in *Dr. Narendra Gupta vs Union Of India, 2023* highlighted that in **developed countries, hysterectomies are typically performed on premenopausal women aged 45 and above**.
- However, **community-based studies in India** have shown an increasing number of hysterectomies among younger women, ranging from **28 to 36 years old**.

➤ **NFHS Data:**

- According to the most recent **National Family Health Survey (NFHS) -5** empirical data, **3% of women aged 15-49 have had a hysterectomy**.
- The prevalence of hysterectomy is the highest in **Andhra Pradesh (9%)**, followed by **Telangana (8%)**, and lowest in **Sikkim (0.8%)** and **Meghalaya (0.7%)** among women aged 15–49.
- The prevalence of hysterectomy was highest in Southern region, i.e., **4.2%**, which was also greater than the national prevalence, followed by Eastern part of India (**3.8%**).
- On the other hand, the **lowest prevalence was observed in the Northeast region, i.e., only 1.2%**

➤ **Unnecessary Hysterectomies:**

- A **public interest litigation (PIL)** filed in 2013 highlighted the issue of “unnecessary hysterectomies”.

- The PIL revealed that in the states of **Bihar, Chhattisgarh, and Rajasthan**, women were subjected to hysterectomies that were deemed **unnecessary, endangering their health**.

- Private hospitals were found to be involved in performing these unnecessary hysterectomies. **More than two-thirds (70%) of women who have undergone a hysterectomy had the operation in a private health facility.**

- Misuse of the procedure was also observed, with healthcare institutions exploiting it to **claim higher insurance fees under various government healthcare schemes**.

What are the Efforts to Address the Issue?

➤ **Supreme Court Direction:**

- In response to the PIL, the **Supreme Court** directed **states and union territories to adopt the health guidelines formulated by the Centre to monitor and prevent unnecessary hysterectomies**. The implementation of these guidelines was mandated within a **three-month timeframe**.
- There has been a **serious violation of the fundamental rights** of the women who underwent unnecessary hysterectomies.
- The SC in *Dr. Narendra Gupta vs Union Of India 2023* acknowledged that the **right to health is an intrinsic part of the right to life under Article 21 of the Constitution**. Life, to be enjoyed in all its diverse elements, must be based on robust conditions of health.
- SC also urged an action plan to tackle the problem including suggestions to **create national, state and district-level hysterectomy monitoring committees** and the **inauguration of a grievance portal**.

➤ **Health Ministry Guidelines:**

- In 2022, the **Health Ministry** issued **guidelines** aimed at preventing unnecessary hysterectomies. States were **instructed to comply with these guidelines to ensure appropriate use of the procedure**.
 - Recently, the ministry has directed the states to share data on the **hysterectomies performed by medical institutions**.
 - **Compulsory audits for all hysterectomies** were also advised, similar to the **existing audits conducted for maternal mortality**.

Note:



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National Workshop on Empowering PwD in Education

Why in News?

The National Workshop on “Capacity building of training institutes and HRD in the **disability** field in the context of **National Education Policy (NEP): 2020**” was recently inaugurated in **Jabalpur, Madhya Pradesh**.

- Organized by the **Rehabilitation Council of India (RCI)**, the workshop aimed to empower individuals with disabilities and implement the goals of the **NEP 2020**.
- Also, the Department of Empowerment of Persons with Disabilities, the Ministry of Social Justice and Empowerment, is observing **Global Accessibility Awareness Day (GAAD)** on May 18th, 2023.

What is Global Accessibility Awareness Day?

- **GAAD is an annual event celebrated on the third Thursday of May**, dedicated to promoting awareness and understanding of digital accessibility for individuals with disabilities.
- It emphasizes the **importance of designing and developing digital technologies with accessibility in mind**, ensuring that everyone can access information, engage in online activities, and participate in the digital world without barriers.

What is the Constitutional and Legislative Framework for Persons with Disability (PwD) in India?

- The **Constitution of India** ensures **equality, freedom, justice and dignity** of all individuals and implicitly mandates an **inclusive society for all including the persons with disabilities**.
- **Article 41 of the Directive Principles of State Policy (DPSP)** states that the State shall make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and **disablement**, within the limits of its economic capacity and development.
- The main legislation on disability rights is the **Rights of Persons with Disabilities Act, 2016**.
 - The Act covers a **wide range of specified disabilities** and provides additional benefits for persons with

benchmark disabilities and those with high support needs.

- The Act also provides for **grant of guardianship by District Court** or any authority designated by the **State Government** under which there will be joint decision-making between the guardian and the persons with disabilities.

What are the Issues Associated with Person with Disability in India?

- **Accessibility Concern:** One of the primary challenges is the lack of accessibility in public spaces, transportation, buildings, and infrastructure. Many places do not have **ramps, elevators, or accessible toilets**, making it difficult for people with disabilities to move around independently.
- **Lack of Access to Education:** Access to quality education is limited for people with disabilities.
 - Special education facilities and trained teachers are **scarce**, and inclusive education practices are not widely implemented. This lack of educational opportunities **hinders their personal and professional development**.
- **Lack of Proper Healthcare:** A large number of disabilities are **preventable, including those arising from medical issues during birth**, maternal conditions, malnutrition, as well as accidents and injuries.
 - However, there is a **lack of awareness, lack of care, and lack of good and accessible medical facilities**.
- **Social Stigma and Discrimination:** Negative attitudes and social stigma surrounding disabilities are prevalent in Indian society.
- People with disabilities often face **discrimination, exclusion, and marginalization**, which affects their self-esteem and social interactions.

What are the Recent Initiatives to Empowerment of PwD?

- **India:**
 - **Accessible India Campaign**
 - **DeenDayal Disabled Rehabilitation Scheme**
 - **National Fellowship for Students with Disabilities**
- **Global Conventions to Which India is Signatory:**
 - **Declaration on the Full Participation and Equality of People with Disabilities in the Asia-Pacific Region**.
 - **Biwako Millennium Framework**

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- **UN Convention on Protection and Promotion of the Rights and Dignity of Persons with Disabilities.**

Note: Rehabilitation Council of India, established as a Statutory Body by an Act of Parliament, has the mandate to **standardize, regulate, and monitor training programs**, maintain the **central rehabilitation register (CRR)**, and promote research in the field of special education and disability.

Global Report on Internal Displacement 2023

Why in News?

Recently, the Internal Displacement Monitoring Centre has released a report titled- **The Global Report on Internal Displacement 2023 (GRID-2023)**, which cites that the number of people displaced by disasters rose by 40% in 2022 rather than 2021.

- The IDMC is the world's leading source of data and analysis on internal displacement. It provides **high-quality data, analysis and expertise on Internal Displacement** with the aim of **informing policy and operational decisions** that can reduce the risk of future displacement.

What are the Key Findings of the GRID-2023?

- **Total Number Of Displacements:**
 - The number of people living in internal displacement reached **a record high of 71.1 million** people across 110 countries and territories.
 - 62.5 million as a result of conflict and violence, and 8.7 million as a result of disasters.
 - Disasters displaced 8.7 million people internally in **88 countries and territories as of December 2022**.
 - This led to record levels of flood displacement in countries including Pakistan, Nigeria and Brazil.
 - By 2021, 30.7 million new displacements were due to disasters. In 2022 some 150 countries/territories reported such displacement.
- **Country wise Picture:**
 - Pakistan had the **highest number of disaster displacements in the world** in 2022, at 8.16 million.
 - In Pakistan, floods displaced millions, accounting for a quarter of the global disaster displacements.

- The **Philippines** was at **second rank** and reported 5.44 million displacements and China at third rank with 3.63 million.
- **India recorded the fourth largest disaster displacement**, with 2.5 million displacements and Nigeria at fifth rank with 2.4 million.

➤ Factors for Displacement:

- **Disaster:** The increase in disasters, particularly weather-related, is largely the **result of the effects of La Niña** which continued for a third consecutive year.
 - The "triple-dip" La Niña caused **widespread disasters across the world**.
- **Russia-Ukraine Induced Displacement:** In 2022, the number of people displaced by the **Russia-Ukraine war increased**.
 - The conflict caused a displacement of 16.9 million — "the highest figure ever recorded for any country."
 - The number of displacements associated with conflict and violence nearly doubled to 28.3 million.

➤ Implications:

- Entrenched conflict, disasters and displacement aggravated **Global Food Security in 2022**, which was already a concern as a result of the slow and uneven recovery from the **Covid-19 pandemic**.
- Low-income countries, many of which are dealing with internal displacement, were **most affected, in part given their reliance on food and fertilizer imports** and international humanitarian aid.
 - 75% of the countries assessed as facing crisis levels of food security have IDPs.

What is the Scenario of India?

- India recorded **thousand numbers of internal displacement and 631,000 internally displaced people due to conflict and violence** and 2.5 million due to disaster in 2022.
- India and Bangladesh started to experience flooding even before the official start of the monsoon season, which normally runs between mid-July and September.
 - India's north-eastern state of **Assam was affected by early floods in May 2022** and the same areas were once again flooded in June. Nearly five million people were affected across the state.

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- Some parts of India reported their **lowest July 2022 rainfall in 122 years**.
- By the end of the monsoon, 2.1 million displacements had been recorded across India, a significant decrease from the five million that occurred during the 2021 season.

What is Internal Displacement?

- **About:** Internal displacement describes **the situation of people who have been forced to leave their homes** but have not left their country.
- **Factors of Displacement:** Millions of people are uprooted from their homes or places of habitual residence each year in the context of conflict, violence, development projects, disasters and climate change and remain displaced within their countries' borders.
- **Components:** Internal displacement is **based on two components:**
 - The person's movement is coerced or involuntary (to distinguish them from economic and other voluntary migrants);
 - The person stays within internationally recognised state borders (to distinguish them from refugees).
- **Difference from Refugee:** According to the **1951 Refugee Convention**, a "refugee" is a person who has been persecuted and forced to leave his native country.
 - A precondition of being considered a refugee is that a person crosses an international border.
 - Unlike refugees, **internally displaced people are not the subject of any international convention**.
 - At the international level, no single agency or organisation has been designated as the global lead on protection and assistance of internally displaced persons.
 - However, there are United Nations Guiding Principles on Internal Displacement.

What are the Recommendations?

- Conflict resolution, peacebuilding, disaster risk reduction, climate resilience, food security and **poverty reduction must all be strengthened**.
- There is an increasing need **for durable solutions to meet the scale of the challenges facing displaced people**. This spans the **expansion of cash assistance** and livelihood programmes that improve **IDPs'**

(**Internally Displaced People**) economic security, through investments in risk reduction measures that strengthen their communities' resilience.

- Beyond immediate humanitarian assistance, **investments are needed in anticipatory action and risk reduction measures** that strengthen displaced communities' resilience.
- Developing IDP's livelihoods and **skills would help to facilitate durable solutions by increasing their food security** and their communities' and countries' self-reliance at the same time.

Model Prisons Act 2023

Why in News?

The Ministry of Home Affairs (MHA) has prepared the '**Model Prisons Act 2023**' that will **replace a British-era law, (the Prisons Act of 1894)**, to overhaul the prison administration that **will focus on the reformation and rehabilitation of inmates**.

What is the Model Prisons Act 2023?

- **Need:**
 - There are "several lacunae" in the old pre-Independence act, **Prisons Act of 1894** and there was "**conspicuous omission**" of the **correctional focus** in the existing Act.
 - The Prison Act 1894 mainly focuses on **keeping the criminals in custody and enforcement of discipline** and order in **Prisons**. There is **no provision for reform and rehabilitation** of prisoners in this Act.
- **Salient Features of the New Act:**
 - Provisions of punishment for **prisoners and jail staff for use of prohibited items** such as mobile phones in jails.
 - Establishment and management of **high security jails**, open jail (open and semi-open).
 - Provisions for **protecting society from the criminal activities** of hardened criminals and habitual offenders.
 - Providing legal aid to prisoners, parole, furlough and premature release to incentivize good conduct.
 - Security **assessment and segregation of prisoners**, individual sentence planning; grievance redressal, prison development board, attitudinal change towards prisoners and provision of separate accommodation for women prisoners, transgender, etc.

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- There are provisions for use of technology in prison **administration with a view to bring transparency in prison administration**, provision for videoconferencing with courts, scientific and technological interventions in prisons, etc.

➤ **Significance:**

- In India, prisons and the 'persons detained therein' are a **State subject**. The Model Prisons Act, 2023 may serve as a **guiding document for states for adoption in their jurisdiction**.
- The Prisoners Act of 1900 and the Transfer of Prisoners Act, 1950 are also decades-old and relevant provisions of these Acts have been assimilated in the Model Prisons Act, 2023, expecting to bring **much-needed reforms to the Indian prison system and align it with international standards**.

What are the Problems of Prisons in India?

➤ **Overcrowding of the Prisons:**

- Overcrowding has been one of the grave issues of the prison system in India. As to a report by the **National Crimes Record Bureau** that the **occupancy rate** of jails is 118.5% of the prison capacity.
 - It was observed that there were about 4,78,600 prisoners in different prisons, but the capacity of the prisons was just 4,03,700.
- Overcrowding leads to poor living conditions. It also leads to the **transmission of many communicable diseases**.

➤ **Health and Hygiene:**

- A lot of jails do not have proper medical facilities. This creates **neglect towards the prisoners and most of them remain untreated**. Hygiene is also not proper among the prisoners.

➤ **Delay in Trials:**

- A lot of cases are pending for many years. This leads to a **disruption in the prison administration system**. However, the Supreme Court, in **Hussainara Khatoon v. Home Secretary 1979** recognized the right to speedy trial of the prisoners.

➤ **Custodial Torture:**

- Custodial tortures among prisoners are quite prevalent. Though third-degree torture by police is **not allowed after the landmark judgment in D.K Basu's case 1986**, there is still a prevalence of brutal violence inside the prisons.

- According to the Ministry of Home Affairs, a **total of 146 cases** of death in police custody were reported during 2017-2018, in the last five years, the highest number of **custodial deaths (80) has been reported in Gujarat, followed by Maharashtra (76), Uttar Pradesh (41)**.

➤ **Women and Children:**

- Women criminals are relatively low in number. They face both **physical and mental problems including lack of sanitation** facilities, lack of care during pregnancy, lack of educational training.
- Children are mostly kept in **correctional homes rather than jails so that they can reform themselves** and go back to their normal life. However, they also face a lot of abuse and undergo psychological traumas.

How to Overcome these Problems?

- The Supreme Court has set up a committee in 2018 headed by its retired judge **Justice Amitava Roy** on Prison Reforms.
- Some recommendations were made to **overcome the problem of overcrowding i.e. speedy trials**, increasing lawyer to prisoners ratio, the introduction of special courts, avoiding adjournment.
- They also recommended a free phone call for every new prisoner in his/her first week of jail. The committee also recommended modern kitchen facilities.
- **Section 304** of the Indian Penal Code states the punishment for custodial deaths. **Section 30** of the Protection of Human Rights Act states about the issuance of CCTV's inside the jails.

What are the Initiatives Related to Prison Reforms in India?

- **Modernization of Prisons Scheme:** The scheme for modernisation of prisons was launched in 2002-03 with the objective of improving the condition of prisons, prisoners and prison personnel.
- **Modernisation of Prisons Project (2021-26):** Government has decided to provide financial assistance to **States and UTs, through the Project for using modern-day security equipment in Prisons for:**
 - Enhancing the security of jails.
 - To facilitate the task of reformation and rehabilitation of prisoners through correctional administration programmes.

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- **E-Prisons Project:** The **E-Prisons project** aims to introduce efficiency in prison management through digitization.
 - **Model Prison Manual 2016:** The **manual** provides detailed information about the legal services (including free services) available to prison inmates.
 - **National Legal Services Authority (NALSA):** It was constituted under the Legal Services Authorities Act, 1987 which came into force on 9th November, 1995 to establish a nationwide uniform network for providing free and competent legal services to the weaker sections of the society.

Protection of Women from Sexual Harassment Act, 2013

Why in News?

In a recent judgment, the **Supreme Court** expressed concerns about the implementation of the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) (PoSH) Act, 2013**.

- The court emphasized the **serious lapses and uncertainties surrounding the Act**, leading to many working women feeling compelled to leave their jobs.

What is the Key Concern Raised by the Supreme Court?

- **Concern:**
 - There were serious lapses and uncertainties in the implementation of the PoSH Act, for example **only 16 out of 30 national sports federations** had constituted **Internal Complaints Committees (ICCs)** as mandated.
 - This reflects poorly on state functionaries, public authorities, private undertakings, organizations, and institutions responsible for implementing the PoSH Act.
 - These lapses also have a negative impact on **women's self-esteem, emotional well-being, and physical health**. Also, it makes women reluctant to report instances of **sexual harassment due to uncertainty** and lack of confidence in the process.
- **Recommendation:**

- If the working environment remains hostile, insensitive, and unresponsive, the Act will remain a mere formality. The Act must be **enforced diligently to ensure the dignity and respect that women deserve at the workplace**.
- There is a need to undertake a **time-bound exercise** to verify whether relevant bodies have constituted **ICCs, Local Committees (LCs), and Internal Committees (ICs)** under the Act.
 - Instructed bodies to publish details of their **respective committees on their websites**.
- SC has given **eight weeks for government Ministries**, bodies to comply with mandates of the **2013 Act**.

What is the PoSH Act, 2013?

- **About:**
 - The **POSH Act** is a legislation enacted by the **Government of India in 2013** to address the issue of **sexual harassment** faced by women in the workplace.
 - The Act aims to create a **safe and conducive work environment** for women and provide protection against sexual harassment.
 - The PoSH Act defines sexual harassment to **include unwelcome acts such as physical contact and sexual advances, a demand or request for sexual favours, making sexually coloured remarks, showing pornography, and any other unwelcome physical, verbal, or non-verbal conduct of a sexual nature**.
- **Background:** The Supreme Court in a landmark judgment in the **Vishakha and others v State of Rajasthan 1997** case gave '**Vishakha guidelines**'.
- These guidelines formed the basis for the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013**.
 - The **SC also drew its strength** from several provisions of the Constitution including **Article 15 (against discrimination on grounds only of religion, race, caste, sex, and place of birth)**, also drawing from relevant International Conventions and norms such as the **General Recommendations of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)**, which India ratified in 1993.

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➤ **Key Provisions:**

- **Prevention and Prohibition:** The Act places a legal obligation on **employers to prevent and prohibit sexual harassment in the workplace.**
- **Internal Complaints Committee (ICC):** Employers are required to constitute an **ICC at each workplace with 10 or more employees** to receive and address complaints of sexual harassment.
 - The Complaints Committees have the **powers of civil courts** for gathering evidence.
- **Duties of Employers:** Employers must undertake awareness programs, provide a safe working environment, and **display information about the POSH Act at the workplace.**
- **Complaint Mechanism:** The Act lays down a procedure for filing complaints, conducting inquiries, and providing a fair opportunity to the parties involved.
- **Penalties:** Non-compliance with the Act's provisions can result in penalties, including **finest and cancellation of business licenses.**

What are the Recommendations of the Justice Verma Committee on Sexual Harassment at Workplace?

- **Domestic workers** should be included within the purview of the PoSH Act.
- It proposes a conciliation process where the complainant and the respondent are initially encouraged to resolve the issue through negotiation and agreement.
- The employer should pay **compensation to the woman who has suffered sexual harassment.**
- Setting up of an **Employment tribunal** instead of an **internal complaints committee (ICC)** in the PoSH Act.

What are the Other Initiatives Related to Women's Safety?

- **One Stop Centre Scheme**
- **UJJAWALA: A Comprehensive Scheme for Prevention of trafficking and Rescue, Rehabilitation and Re-integration of Victims of Trafficking and Commercial Sexual Exploitation**
- **SWADHAR Greh** (A Scheme for Women in Difficult Circumstances)
- **Nari Shakti Puruskar**

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Science & Technology

Highlights

- ISRO's new NavIC Satellite NVS-01
- Fortification of Rice
- XPoSat
- petaFLOP Supercomputers
- AI-Generated Works and Copyright Ownership
- Advancements in Sodium-ion Batteries
- Mysterious Nervous System of Comb Jellies
- Human Pangenome Map
- The Genetic Legacy of Neanderthals in the Human Nose
- Calcium-41 for Radiometric Dating
- 25th Anniversary of Pokhran-II
- Artificial Sweeteners
- Transformers in Machine Learning
- Carbon Dating

ISRO's new NavIC Satellite NVS-01

Why in News?

The NVS-01 satellite was successfully launched by the **Indian Space Research Organisation (ISRO)** using the GSLV-F12, and after a 19-minute flight, it was accurately placed into a Geosynchronous Transfer Orbit.

- GSLV-F12 is the 15th flight of India's **GSLV (Geosynchronous Satellite Launch Vehicle)** and the 9th flight with indigenous cyro stage. This is the 6th operational flight of GSLV with indigenous cryogenic stage.

What is NVS-01?

➤ About:

- This satellite is the **first of the second-generation satellites of ISRO's NVS (Navigational Satellite) series of payloads.**
- It weighs 2,232 kg, making it the heaviest in the constellation.
- The NVS-01 carried **navigation payloads L1, L5 and S bands.**
- Its purpose is to provide continuity for the **NavIC (Navigation in Indian Constellation)** services, which is an Indian Regional Navigation Satellite System (similar to GPS) that offers accurate and real-time navigation within India and **up to a 1,500 km region around the country.**

- In the First generation, there are seven satellites in the **Indian Regional Navigation Satellite System (IRNSS) constellation**, operationally named NavIC, weighing much less — around 1,425 kg — at liftoff.

➤ Atomic Clock:

- The satellite will have a **Rubidium atomic clock onboard**, a significant technology developed by India.
- Some of the existing satellites in the navigation constellation **lost their ability to provide accurate location data** due to failed atomic clocks. Satellite-based positioning systems rely on precise time measurements from atomic clocks to determine object locations. When the clocks fail, the satellites cannot provide accurate location information anymore.

➤ L1 signals for better use in wearable devices:

- It will send signals in a **third frequency, L1**, besides the L5 and S frequency signals that the existing satellites provide, **increasing interoperability with other satellite-based navigation systems.**
- The L1 frequency is **among the most commonly used in the Global Positioning System (GPS)**, and will increase the use of the regional navigation system in wearable devices and personal trackers that use low-power, single-frequency chips.

➤ Longer Mission Life:

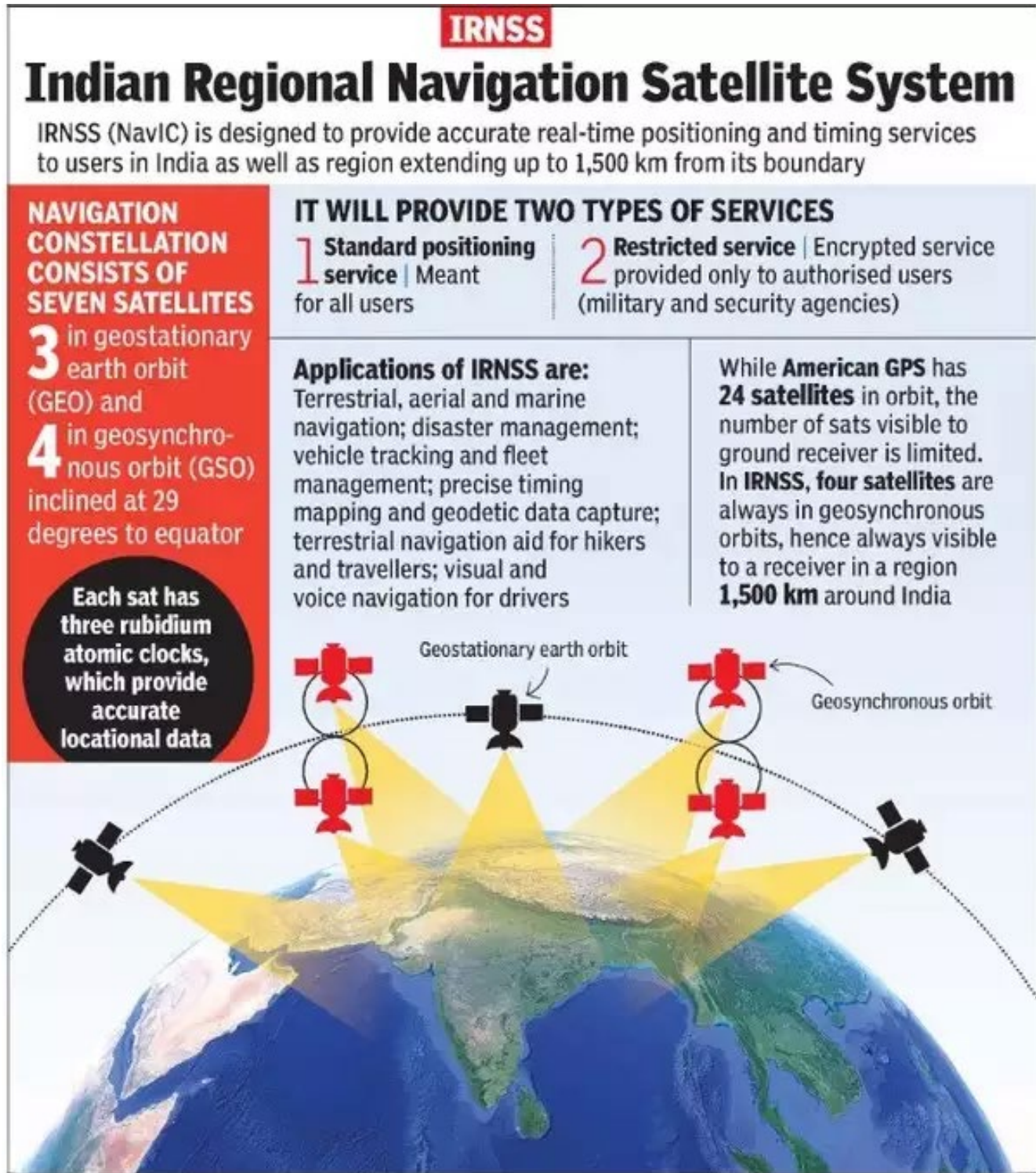
- It will have a **longer mission life of more than 12 years.** The existing satellites have a **mission life of 10 years.**

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What is NavIC?**➤ About:**

- NavIC or the IRNSS is designed with a constellation of 7 satellites and a network of ground stations operating 24x7.

- There are a **total of eight satellites** however **only seven remain active**.
- Three satellites in geostationary orbit and four satellites in geosynchronous orbit.



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- The constellations' first satellite (IRNSS-1A) was launched on 1st July 2013 and the eighth satellite IRNSS-1I was launched in April 2018.
 - With the seventh launch of the constellation's satellite (IRNSS-1G), IRNSS was renamed NavIC by India's Prime Minister in 2016.
- It was recognised by the **International Maritime Organization (IMO)** as a part of the World-Wide Radio Navigation System (WWRNS) for operation in the Indian Ocean Region in 2020.

➤ **Potential Uses:**

- Terrestrial, aerial and marine navigation;
- Disaster management;
- Vehicle tracking and fleet management (especially for mining and transportation sector);
- Integration with mobile phones;
- Precise timing (as for ATMs and power grids);
- Mapping and geodetic data capture.

What is the Advantage of Having a Regional Navigation System?

➤ **Regional Navigation System:**

- NavIC is India's own regional navigation system developed by ISRO. It covers the **Indian landmass and extends up to 1,500 km around it.** The primary purpose of NavIC is to cater to the positioning and navigation needs of users in this specific region.

➤ **Ground Stations:**

- ISRO is working on setting up ground stations in countries like **Japan, France, and Russia.** These additional ground stations will enhance the accuracy and coverage of NavIC signals through better triangulation.

➤ **Signal Reception:**

- NavIC signals reach India at a **90-degree angle, making it easier for the signals to penetrate** congested areas, dense forests, and mountainous terrain. In contrast, GPS signals arrive at an angle, which can sometimes pose challenges for reception in certain locations.

➤ **Availability:**

- NavIC signals are primarily designed to serve the Indian region. Therefore, users within the coverage area can expect reliable access to NavIC signals, even in remote or hard-to-reach areas.

Which are the other Navigation Systems operational in the world?

➤ **Four Global Systems:**

- GPS from the U.S.
- GLONASS from Russia.
- Galileo from European Union
- BeiDou from China.

➤ **Two Regional Systems:**

- NavIC from India
- QZSS from Japan.

Fortification of Rice

Why in News?

In a response to the **recent wave of criticism surrounding the distribution of iron fortified rice**, the **Union Food Ministry** has released an official statement dismissing the allegations levelled against the iron fortified rice.

What is Fortification of Rice?

➤ **About:**

- **Fortification** is the process of adding nutrients to food products that are not naturally present or are present in insufficient amounts.
- Fortification of rice can be **done by coating the rice grains with a premix of micronutrients**, or by **producing extruded rice kernels that are enriched with micronutrients and then blended with regular rice.**
- According to **Food Safety and Standards Authority of India (FSSAI)** norms, 1 kg fortified rice shall contain **iron (28 mg-42.5 mg), folic acid (75-125 microgram) and Vitamin B-12 (0.75-1.25 microgram).**

➤ **Purpose:**

- India has **very high levels of malnutrition among women and children.** According to the Food Ministry, every second woman in the country is anemic and every third child is stunted.
- Rice is a **source of protein and contains various vitamins.** Some nutrients, including **vitamin E, magnesium, potassium, and manganese, are lost during milling and polishing** (the process by which brown rice becomes white or polished rice).

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- **Rice** is one of the most **widely consumed staple foods in the world**, especially in Asia and Africa.
- Per capita rice consumption in India is 6.8 kg per month. Therefore, **fortifying rice with micronutrients is an option to supplement the diet** of the poor.
- **Iron deficiency** also is a major public health problem that **affects more than two billion people globally**, causing anaemia, weakness, fatigue, impaired learning and increased risk of infections and maternal mortality.
- To address this problem, **some countries have adopted the strategy of fortifying rice with iron and other micronutrients**, such as folic acid and vitamin B12.
- Most of the iron we need comes from meat, which gets absorbed 50% by our body. Through vegetables, there is limited intake and only 3% absorption. **This is the reason why iron deficiency is a major problem in India.**

Vitamin B12

- **Vitamin B12**, also known as **cyanocobalamin**, is **synthesized by most bacteria and algae with the help of enzymes**.
 - It is synthesized in microorganisms that enter the human food chain through incorporation into food of animal origin.
 - It is also crucial to the **normal function of the brain and the nervous system**.
- **Deficiency of Vitamin B12 causes pernicious anaemia**. It is rarely caused due to lack of Vitamin B12 in the diet but because of the **absence of the intrinsic factor in the stomach leading to failure of absorption of Vitamin B12**.

Folic Acid

- **Folate is the natural form of vitamin B9**, water-soluble and naturally found in many foods. It is also added to foods and **sold as a supplement in the form of folic acid**.
- Folic acid needs to be taken by pregnant women before conception.
 - Deficiency of folic acid in pregnant women leads to **Neural Tube Defects in the baby such as Spina Bifida**.
 - Spina bifida is a condition that **affects the spine and is usually apparent at birth**.

- **India & Southeast Asia & some parts of Africa** have the highest cases of neural Tube defects (4.7-9 per 1000 in Punjab & Haryana).
- In the developed world, **it is less than 1 per 1000**.

What are the Benefits of Iron Fortification of Rice?

- According to the **World Health Organization (WHO)**, fortification of rice with micronutrients can be an **effective, simple and inexpensive strategy to improve the nutritional status and health outcomes** of populations that consume rice regularly. Some of the benefits of iron fortification of rice are:
 - **Improved Cognitive Development:** Iron plays a crucial role in **brain development and function**.
 - Adequate iron intake during early childhood is essential for optimal cognitive development and learning abilities.
 - By **fortifying rice with iron, particularly in regions where rice is a primary dietary staple, the potential for cognitive impairment due to iron deficiency can be reduced**, leading to improved cognitive performance and better educational outcomes.
 - **Enhanced Maternal and Infant Health:** Anemia is prevalent among pregnant women and can increase the risk of complications during **pregnancy and childbirth**.
 - Iron fortification of rice can help **improve the iron status of pregnant women**, reducing the occurrence of maternal anemia and the associated risks. Additionally, adequate iron intake during pregnancy is essential for fetal development and can contribute to healthy birth outcomes.

What are the Risks Associated with Iron Fortification of Rice?

- **Chances of Ineffectiveness:**
 - It **may not be sufficient to meet the iron requirements of all individuals**, especially those with high needs or **low bioavailability of iron**.
 - Bioavailability of iron refers to the **proportion of iron that is absorbed and utilised by the body**, which depends on several factors such as the **type and amount of iron compound used for fortification**,

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the **presence of enhancers or inhibitors of iron absorption in the diet**, and the physiological status and genetic variation of the individual.

➤ **Adverse Effects on Sensitive Individuals:**

- It may cause **adverse effects in some individuals who have excess iron intake or accumulation**. Excess iron can be toxic to the body and cause **oxidative stress, inflammation, organ damage** and increased risk of infections and chronic diseases.
- Some groups that may be at risk of excess iron intake or accumulation are those with **genetic disorders such as hemochromatosis or thalassemia**, those with liver diseases or infections such as hepatitis or **malaria**, and those who consume other sources of fortified foods or supplements.

➤ **Barriers Abound:**

- It may face **technical, regulatory or social barriers to implementation**.
- Technical barriers include ensuring the **quality, stability and safety of the fortified rice products**;
- Regulatory barriers include **establishing and enforcing standards, guidelines and monitoring systems for fortification**;
- Social barriers include ensuring the **acceptability, affordability and accessibility of the fortified rice products** among consumers and stakeholders.

XPoSat

Why in News?

Recently, the chairman of the **Indian Space Research Organisation (ISRO)**, **S Somanath**, addressed students and scientists during the **'User Meet of XPoSat'** at the **ISRO headquarters in Bengaluru**.

- He emphasised the importance of effectively utilizing data from **science-based space missions** and encouraged Indian scientific institutions to identify talented students and motivate them to work with emerging data technologies like **XPoSat**.

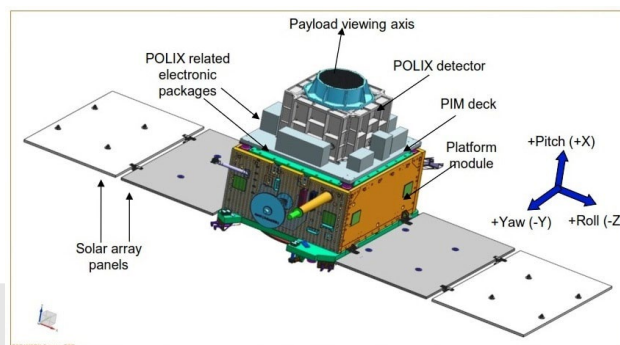
What is XPoSat?

➤ **About:**

- XPoSat stands for **X-ray Polarimeter Satellite**.
- It is India's **pioneering polarimetry mission** aimed

at studying **various dynamics of astronomical sources in extreme conditions**.

- It is only the **world's second polarimetry mission** using X-Ray after **NASA's Imaging X-ray Polarimetry Explorer (IXPE)** that was launched in 2021.
- XPoSat is a collaboration between the **ISRO** and the **Raman Research Institute (RRI), Bengaluru, Karnataka**.



➤ **Scientific Payloads of XPoSat:**

- XPoSat will carry two scientific payloads: **Polarimeter Instrument in X-rays (POLIX)** and **X-ray Spectroscopy and Timing (SPECT)** in a low Earth orbit.
- POLIX payload will enable the measurement of polarimetry parameters such as the **degree and angle of polarization** in the medium X-ray energy range of 8-30 keV photons originating from astronomical sources.
- SPECT payload will **provide valuable timing and spectroscopic information** within the energy range of 0.8-15 keV of X-ray photons.

➤ **Importance in Understanding Astronomical Sources:**

- Polarimetry measurements offer an excellent diagnostic tool for comprehending the emission processes from various astronomical sources.
- Astronomical sources, including **black holes, neutron stars, active galactic nuclei**, and **pulsar wind nebulae**, present complex emission mechanisms that challenge the current understanding.
- By **combining polarimetric observations with spectroscopic and timing measurements**, researchers **anticipate overcoming the limitations of the present understanding of astronomical emission processes**.

➤ **Status of XPoSat:**

Note:

- Testing for XPoSat is nearing completion, and the mission is in its advanced stages and is scheduled to be launched sometime in the year 2023.

Other Upcoming Missions of ISRO:

- **Aditya-L1:**
 - India's first dedicated **solar observatory mission**, scheduled for June-July 2023.
- **Chandrayaan-3:**
 - A follow-up mission to **Chandrayaan-2**, scheduled for June 2023.
- **Shukrayaan-1:**
 - India's first orbiter mission to Venus.
- **Gaganyaan-3:**
 - A manned space mission that will put astronauts 400km in orbit.
- **NISAR:**
 - A joint Earth-observing mission between **ISRO** and **NASA** that will provide information on global environmental changes.

petaFLOP Supercomputers

Why in News?

India is set to introduce **18 new petaFLOP supercomputers** dedicated to **weather forecasting**, aiming to **enhance the accuracy and resolution** of weather predictions.

- These state-of-the-art machines will significantly **improve forecasting capabilities** at the block level, **predict cyclones with greater accuracy** and **lead time**, and provide detailed **ocean state forecasts**.

What are FLOPs in computing?

- **About:**
 - **FLOPs, or Floating-Point Operations per Second**, is a **metric** used to measure **computational performance and efficiency** in **high-performance computing (HPC)** and **artificial intelligence (AI)**.
 - Floating-point operations involve mathematical calculations with real numbers that have fractional parts.

- Using floating-point encoding, extremely long numbers can be handled relatively easily.

➤ Significance:

- FLOPs are not the sole metric to evaluate a computer's performance. Factors like **memory bandwidth, latency, and architectural features** also contribute.
- However, FLOPs provide a baseline for comparing computational capabilities, particularly in **tasks dominated by floating-point calculations**.

➤ Unit of Computing Speed:

○ Teraflops:

- It is a unit of computing speed equal to **one million million (1 trillion) (10^{12}) FLOPs**.

○ Petaflops:

- It is a unit of computing speed equal to **1000 TFLOPs (10^{15})**.

● Exaflops:

- It is a unit of computing speed equal to **one billion billion (10^{18}) FLOPs**.

➤ India's Current Usage of petaFLOPs:

- The **National Centre for Medium-Range Weather Forecasting (NCMRWF)** houses '**Mihir**,' a **2.8 petaFLOP supercomputer**, while the **Indian Institute of Tropical Meteorology (IITM)** houses '**Pratyush**,' a **4.0 petaFLOP supercomputer**.
- These existing supercomputers, launched in 2018, will be decommissioned once the new petaFLOP supercomputers are introduced.
- As per the agreement, NCMRWF will receive eight PFLOPs of computing power, while the remaining ten PFLOPs will be allocated to IITM, catering to their specific weather forecasting requirements.
- India's first supercomputer called **PARAM 8000** was launched in 1991.

Note:

- The world's fastest computer in terms of PFLOPs is the **Hewlett Packard Enterprise Frontier**, or **OLCF-5** with the capability to touch a **peak performance of 1,685.65**.
- **Airawat PSAI** stands as **India's largest and fastest AI supercomputing system**, with a remarkable speed of 13,170 teraflops.

Note:



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AI-Generated Works and Copyright Ownership

Why in News?

Recently, the issue of copyright infringement in the context of **artificial intelligence (AI)** has gained considerable attention and sparked essential discussions.

- A prominent case that exemplifies this intersection involves the Andy Warhol Foundation and Lynn Goldsmith's photograph of musician Prince.
 - The dispute revolves around the question of whether Warhol's use of the photograph in creating multiple adaptations constitutes fair use or **copyright infringement**.

What is the Relationship Between Copyright Infringement and AI?

- **Use of Copyrighted Material as Training Data:**
 - AI systems like **ChatGPT**, often **require large amounts of data to train their algorithms** effectively.
 - This includes **copyrighted material** such as images, texts, and music, which may raise copyright infringement concerns.
 - AI technologies can be used to replicate or mimic existing copyrighted works. The algorithms can analyse and generate content that closely resembles protected works, raising questions about the legality and ethical implications of such replication.
- **Fair Use and Transformative Use:**
 - **Fair use is a legal doctrine of the US (as US Supreme Court observed recently) that allows for limited use of copyrighted material without permission**, under certain circumstances.
 - Determining whether an AI-generated work qualifies as fair use requires considering factors such as the **purpose, nature, amount, and effect of the use**.
 - **Transformative use**, which involves adding new meaning or expression to a copyrighted work, is often a crucial factor in fair use analysis.
- **Liability and Responsibility:**
 - Determining liability for copyright infringement in AI-generated works can be **complex, involving questions about the role of AI developers, users, and the AI itself**.

- The responsibility for ensuring compliance with copyright law rests with both the **creators and users of AI-generated works**.
 - If an AI system creates a work without human intervention, determining the rightful copyright owner becomes challenging.

What is the Current Legal Position of AI-generated Content in India?

- **Indian Copyright Act, 1957 and The Patents Act, 1970** provides specific provisions for **fair dealing and enumerated exceptions to copyright infringement**.
- The use of copyrighted materials for training AI models is considered to be in a **legal grey area**.
 - As it stands now, **copyright laws do not safeguard any creation that is wholly generated by AI**, regardless of whether it stemmed from a human-crafted text prompt.
- The observations and rulings of international and other courts, such as the recent US Supreme Court decision on copyright and AI, **may influence interpretations of fairness in Indian copyright law**.
- Indian copyright law and fair use provisions **will need to adapt to address the challenges posed by AI-generated content**.

Advancements in Sodium-ion Batteries

Why in News?

Recently, Indian scientists have made a significant breakthrough in the development of **Sodium-ion (Na-ion) batteries** by creating **new cathode materials that offer high performance, cost-effectiveness, and environmental stability**.

- This advancement addresses the **challenges of air/water-instability and structural-cum-electrochemical instability in Sodium-transition-metal-oxide (Na-TM-Oxide) based cathode materials**, leading to the production of stable and efficient energy storage systems.

What are the Newly Developed Cathode Materials?

- **About:**

Note:

- Cathode material is the **electrode where sodium ions are stored** during the **battery's discharge process**.
 - It is responsible for the **electrochemical reactions that allow the flow of electrical current**.
- The newly developed cathode materials are known for **being air/water-stable and high-performance**.
 - They exhibit high **electrochemical cyclic stability and stability upon exposure to air/water**.

➤ **Significance:**

- The newly developed cathode materials for Sodium-ion batteries offer **high performance, cost-effectiveness, and environmental friendliness**.
 - These materials are paving the way for the **development of efficient and sustainable energy storage systems** for various applications such as **consumer electronics, grid energy storage, renewable energy storage, and electric vehicles**.

What is Sodium-ion (Na-ion) Battery?

➤ **About:**

- A sodium-ion battery is a type of **rechargeable battery** comparable to the ubiquitous **lithium-ion battery**, but it uses **sodium ions (Na⁺) as the charge carriers rather than lithium ions (Li⁺)**.
 - The working principles behind and cell construction of a sodium-ion battery is virtually identical to those of lithium-ion batteries, but sodium compounds are used instead of lithium compounds.
- Sodium-ion batteries are currently **emerging as a potential alternative to current lithium-ion battery technology** due to their **lower cost, higher availability, and reduced impact on the environment**.

➤ **Importance:**

- The growing significance of **battery-driven electric vehicles** in addressing **climate and environmental concerns** necessitates the development of cost-effective, resource-friendly, safe, and sustainable alkali metal-ion battery systems beyond **conventional Lithium-ion (Li-ion) batteries**.
- India's abundance of sodium sources makes the **Na-ion battery system particularly crucial in the local context**, offering a readily available and abundant resource for Na-ion battery production.

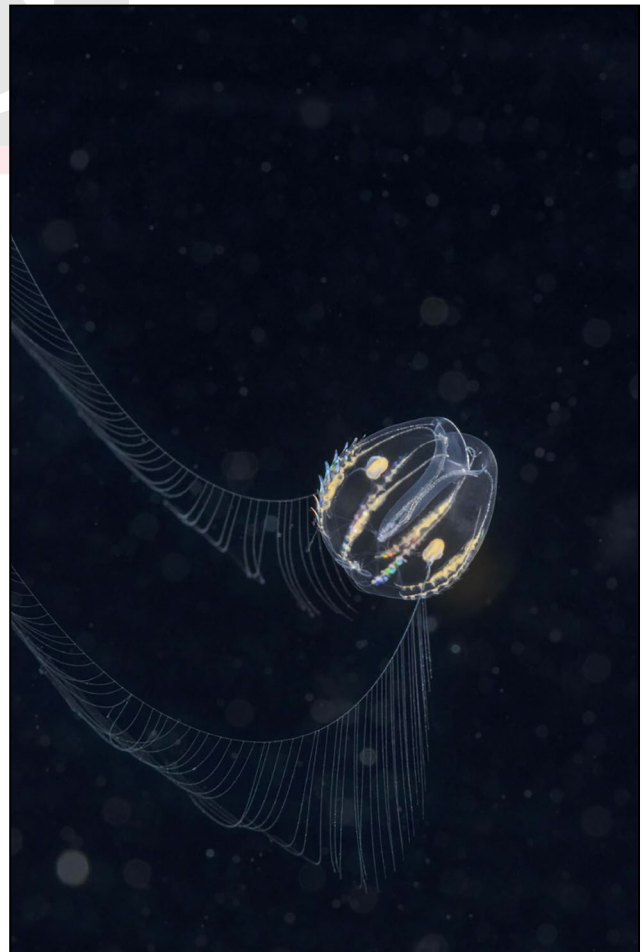
➤ **Challenges:**

- The performance of Na-ion batteries depends on the structural and **electrochemical stability of the electrodes**, sodium-ion transport kinetics, and various dynamic resistances.
- However, the electrochemical behavior and **stability of sodium based cathode materials** needs significant improvements for widespread usage of Na-ion battery systems.

Mysterious Nervous System of Comb Jellies

Why in News?

Comb jellies, or ctenophores, are ancient **marine animals** with unique features that have **sparked scientific curiosity**. Recent research has discovered a **surprising aspect of the comb jelly's nervous system**.



Note:

What are Comb Jellies?

- **Comb jellies** are marine animals that have fascinated scientists for decades due to their unique features and evolutionary history.
 - They are among the **earliest branching extant lineages of the animal kingdom** and have a **complex nervous system that differs from other animals**.
 - They are **transparent, gelatinous animals** that use **long ciliary comb plates** to propel their body through the water column.
 - They range in size from a few millimetres to over a metre in length and have diverse shapes and colours. **Some of them can produce bioluminescence**, a phenomenon where living organisms emit light.
- They belong to the **phylum Ctenophora**, which contains about **200 species**. They are found in **all oceans and habitats, from polar to tropical regions**, from shallow coastal waters to deep-sea trenches.
 - They **feed on plankton, small fish and other invertebrates**, using sticky tentacles or oral lobes to capture their prey.
- **Invertebrates are animals that do not possess a backbone** or vertebral column.

How does the Comb Jelly Nervous System Work?

- Unlike most animals, comb jellies **do not have a brain**. Instead, they have a **nerve net that consists of interconnected neurons distributed throughout their body**.
 - The nerve net controls various functions such as **locomotion, feeding, sensory perception and bioluminescence**.
- The neurons in the nerve net are **not connected by synaptic junctions**, as would be expected in the nervous system of any other animal.
 - Instead, **they are fused and share a continuous membrane, forming what scientists call a syncytium**. This means that **there are no gaps between nerve cells** and that **electrical signals can flow freely along the network**.
- However, **not all neurons in the comb jelly nervous system are fused**. Some of them still connect with other nerve cells through **synapses**.
 - This suggests that **comb jellies use two different modes of communication between their nerve cells: a synaptic mode and a syncytial mode (i.e., without any synapses)**.

Note: Synapses are the **places where neurons connect and communicate with each other**. Each neuron has anywhere between a **few to hundreds of thousands of synaptic connections**, and these connections can be with itself, neighbouring neurons, or neurons in other regions of the brain.

- The **discovery of syncytia** in comb jellies has **profound implications for understanding the evolution of nervous systems and neurons**.
- It challenges the **traditional view that synapses are essential for neural communication** and that they evolved only once in the common ancestor of all animals.

Human Pangenome Map

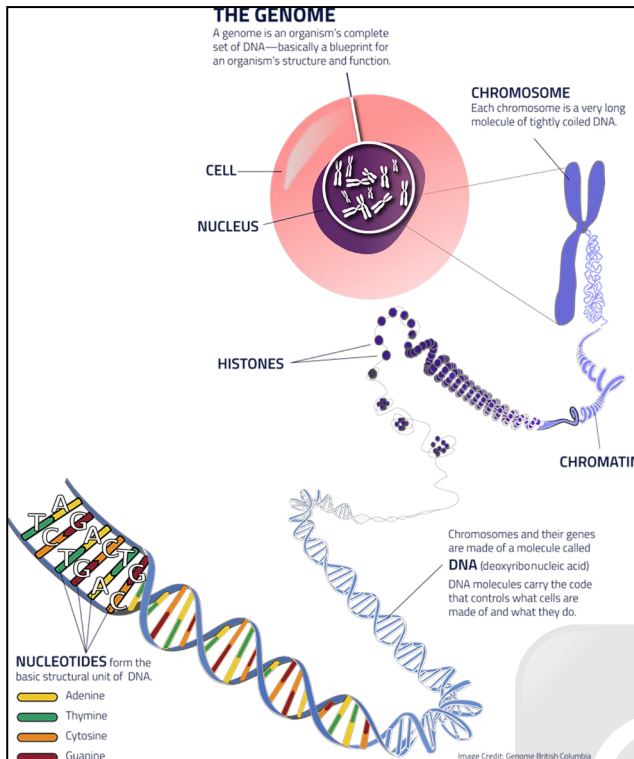
Why in News?

Recently, a new study has been published in the Nature journal describing a **Pangenome Reference Map**, built using genomes from 47 anonymous individuals (19 men and 28 women), mainly from Africa but also from the Caribbean, Americas, East Asia, and Europe.

What is Genome?

- **Genome:**
 - The **Genome** is like a blueprint or instruction manual for life. It contains all the **genes and the spaces between the genes that make up our chromosomes**.
 - Our chromosomes are made up of **DNA (Deoxyribonucleic Acid)**, which is a long string composed of four **building blocks called nucleotides or bases (A, T, G, and C)**. These building blocks are arranged in different combinations and repeated millions of times to create **23 pairs of chromosomes**.
 - The genome provides **valuable information about our genetic makeup** and helps researchers explore various aspects of human biology and health.
- **Genome sequencing:**
 - Genome sequencing is the method used to **determine the precise order of the four bases (A, T, G and C)** and how they are arranged in chromosomes.
 - By sequencing individual genomes, scientists can **learn about human genetic diversity and understand how certain diseases may affect us**.

Note:



What is a Reference Genome?

➤ About:

- A reference genome or reference map is like a standard map that scientists use when they sequence and study new genomes. It serves as a guide to **compare and understand the differences between the newly sequenced genome and the reference genome.**

➤ Significance:

- The first reference genome created in **2001 was a significant scientific achievement.** It helped scientists discover disease-related genes, understand genetic aspects of diseases like cancer, and develop new diagnostic tests. However, it had limitations and wasn't perfect.

➤ Drawback:

- It was mostly based on the genome of one individual with **mixed African and European ancestry**, and it had some gaps and errors.
- While the new **reference genome or Pangenome** is comprehensive and error-free, it still doesn't represent the full diversity of human genetics.

What is a Pangenome Map?

➤ Pangenome Map:

- The pangenome, unlike the previous linear reference genome, is represented as **a graph**. Each chromosome in the pangenome **can be imagined as a bamboo stem with nodes.**
- These nodes represent stretches of sequences that are **similar among all 47 individuals.** The internodes between the nodes vary in length and represent genetic variations among individuals from different ancestries.
- To create complete and continuous maps of the chromosomes in the pangenome project, researchers used a technology called **long-read DNA sequencing, creating complete and continuous chromosome maps by producing accurate, long DNA strands.**

➤ Significance of Pangenome Map:

- Although any two humans share more than 99% of their DNA, there is **still about a 0.4% difference between any two individuals.** This may seem small but considering the vast size of the human genome (3.2 billion nucleotides), the difference **amounts to around 12.8 million nucleotides.**
- A complete and accurate pangenome map of the human genome can help better understand these **differences and explain the diversity** among individuals.
- It will also assist in studying genetic **variations that contribute to underlying health conditions.**
- Although the current map doesn't include genomes from Indians, it will still be beneficial in **comparing and mapping Indian genomes against the existing accurate reference genomes.**
- Future pangenome maps that include high-quality Indian genomes, including those from diverse and isolated populations within the country, **will provide valuable insights into disease prevalence,** the discovery of new genes related to rare diseases, improved diagnostic methods, and the development of novel drugs for these diseases.

➤ Drawbacks:

- However, the current pangenome map lacks representation from diverse populations like **Africa, the Indian subcontinent, indigenous groups in Asia and Oceania, and West Asian regions.**

Note:



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Is there any Genome Mapping Initiative in India?

- In April 2023, the government announced that it aims to sequence 10,000 genomes by the end of the year 2023 under the **Genome India Project (GIP)**.
- The GIP aims to create a database of Indian genomes, researchers can learn about these unique **genetic variants and use the information to create personalized drugs** and therapies.
 - The United Kingdom, China, and the United States are among the countries that have programmes to sequence at least 1,00,000 of their genomes.

The Genetic Legacy of Neanderthals in the Human Nose

Why in News?

Recent research conducted by a team of scientists from the University College London and Fudan University, in collaboration with researchers worldwide, has shed light on the **genetic factors influencing the human nose**.

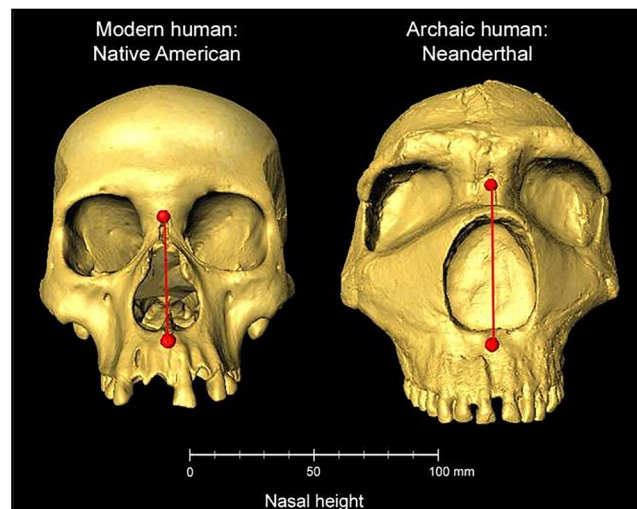
- The study identified **genetic loci associated with the nose**, including one locus influenced by **Neanderthal ancestry**.

What are the Key Highlights of the Research?

- **The Genetic Study:**
 - The study analyzed **2D images** and measured **distances between facial landmarks** in over 6,000 Latin American individuals.
 - The research identified **42 new genetic loci associated with the nose**, with **26 of them being replicated in diverse populations including Asians, Europeans, and Africans**.
 - A 'locus', plural 'loci', is the position of a particular gene on the human chromosome.
 - One specific locus, **1q32.3**, previously linked to **Neanderthal** genetic contributions, was found to influence **midface height**.
 - The **1q32.3 locus contains the gene ATF3 (activating transcription factor 3)**, which is regulated by the **forkhead box L2 (FOXL2) gene** involved in skull and facial development.

➤ The Legacy of Neanderthals:

- Genetic evidence suggests that **Neanderthals and early humans interbred**, leading to the **introgression of Neanderthal genomic sequences** into the **human population**.
- The influential work of evolutionary geneticist **Svante Pääbo, who won the Nobel Prize for Physiology and Medicine in 2022**, has provided key insights into the interbreeding events between **archaic hominids, such as Neanderthals and Denisovans, and modern humans**.
 - This interbreeding has left lasting genetic imprints on our species, affecting various traits and disease susceptibilities.
 - **Non-African populations today carry about 1-2% of Neanderthal DNA**, highlighting the genetic legacy of this interbreeding event.
- Apart from nose shape, Neanderthal genetic contributions have been implicated in the **way humans respond to pathogens** and their susceptibility to certain skin and blood conditions, cancers, and even depression.
- The study highlights the growing body of evidence indicating the **profound impact of Neanderthal and Denisovan genomes** on modern human biology and health.



➤ The Future of Genomic Research:

- The investigation of interbreeding events and their consequences represents an **exciting frontier in genomic research**.
- As more studies contribute to our understanding of the **interplay between archaic and modern human**

Note:

genomes, we will gain a more comprehensive picture of our genetic heritage.

- This knowledge has **the potential to revolutionize the study of diseases** and enhance our appreciation for the intricate tapestry of human genetic diversity.

Who are Neanderthals?

➤ About:

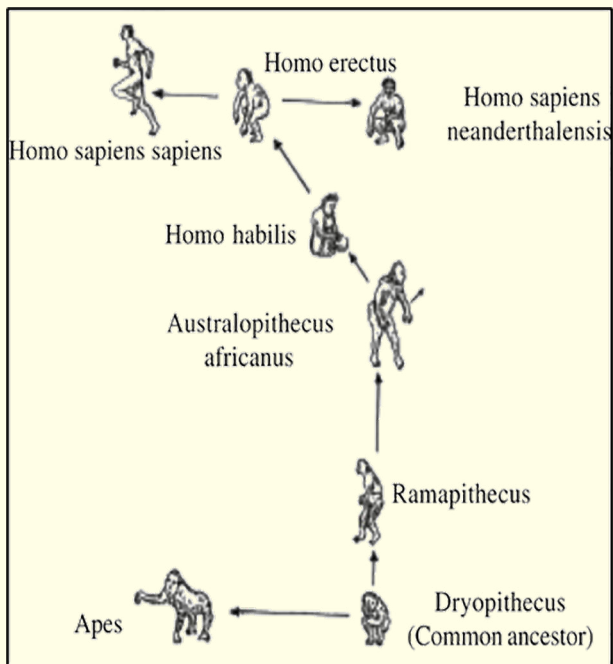
- Neanderthals lived in **Eurasia** from approximately 400,000 to 40,000 years ago.
- They were a species of archaic humans closely related to modern humans, sharing a common ancestor.

➤ Physical Characteristics:

- Neanderthals had a **robust build and a stocky physique**, adapted for survival in **colder environments**.
- They possessed distinct physical features, including:
 - **Prominent brow ridge.**
 - **Large nose.**
 - **Receding chin.**

➤ Skills and Tools:

- Neanderthals were skilled **hunters and toolmakers**.
- They utilized stone tools and weapons for various purposes, reflecting their adaptability and resourcefulness.



➤ Cultural Sophistication:

- Neanderthals had a sophisticated culture, as evidenced by:
 - **Symbolic behavior, such as cave paintings and personal ornaments**
 - Burial rituals, indicating an awareness of death and possibly spiritual beliefs.
 - Artistic expressions, showcasing their creativity and cognitive abilities.

Calcium-41 for Radiometric Dating

Why in News?

Scientists have suggested using **Calcium-41 for Radiometric Dating** as an alternative to **Carbon-14** for determining the age of fossilized bones and rocks.

- They have suggested a technique called **Atom-Trap Trace Analysis (ATTA)** as a solution, because ATTA is sensitive enough to **spot Calcium-41, which is a rare isotope**.

What is Calcium-41 and ATTA?

➤ Calcium-41:

- Calcium-41 is a **rare long-lived radioisotope of calcium** with a half-life of 99,400 years.
- Calcium-41 is produced in the **Earth's crust when cosmic rays from space collide with calcium atoms** in soil or rocks.
- This isotope has the potential to be employed in dating methods for objects that are older than what can be accurately determined **using carbon-14 dating**.

➤ ATTA:

- It is based on **laser manipulation and detection** of neutral atoms.
- The sample is vaporized, and the atoms are laser-cooled and loaded into a light and magnetic field cage.
- By tuning the laser's frequency, **Calcium-41 atoms can be detected through electron transitions**.
 - **Electron transition:** In an atom, an electron in one orbital **can transition to the next if it's given a specific amount of energy**; then it jumps back by releasing that energy.

Note:

- The researchers reported being able to spot one **calcium-41 atom in every 10^{16} calcium atoms** with 12% precision in seawater.
 - It is selective and avoids confusion with potassium-41 atoms.

➤ **Applications of ATTA:**

- The successful application of a calcium isotope opens the **possibility of extension to other metal isotopes**.
 - ATTA can be adapted to study other isotopes, such as argon-39, krypton-81, and krypton-85.
- In warmer climates, glaciers retreat and allow rock below to accumulate calcium-41. In colder climates, glaciers advance and block the calcium-41 from reaching the rock. This way, scientists **hope to use ATTA to study how long some rock has been covered by ice**.

What is Radiometric Dating?

➤ **About:**

- Radiometric dating is a method used to **determine the age of rocks, minerals, and fossils** based on the decay of radioactive isotopes.
- It relies on the principle that certain **isotopes of elements are unstable and spontaneously decay over time** into more stable forms. The rate of decay is measured by the **half-life, which is the time it takes for half of the parent isotope to decay into the daughter isotope**.
- Different isotopes have different half-lives, which makes them useful for dating different time ranges.
 - For example, **carbon-14 dating is effective for dating organic materials up to about 50,000 years old**. When an organic entity is alive, its body keeps absorbing and losing carbon-14 atoms. When it dies, this process stops and the extant carbon-14 starts to decay away.
 - Using the difference between the relative abundance of these atoms in the body and the number that should've been there, researchers can estimate when the entity died.

➤ **Limitations with Carbon-14:**

- Carbon-14 is an unstable and weakly radioactive isotope of carbon. It has a half-life of 5,700 years and is **used to estimate the age of carbon-based materials**.
- Carbon dating using Carbon-14 is limited to objects up to 50,000 years old due to carbon-14's 5,700-year half-life.

25th Anniversary of Pokhran-II

Why in News?

India recently celebrated the **25th anniversary of Pokhran-II on 11th May 2023** marking the successful nuclear bomb test explosions which became a significant **milestone in its journey to become a nuclear power**.

- May 11 is also celebrated as the **National Technology Day** to honour Indian scientists, engineers and technologists, who worked for the country's scientific and technological advancement and **ensured the successful conduct of Pokhran tests**.

What is Pokhran-II and India's Journey as a Nuclear Power?

➤ **Origin:**

- In 1945, renowned physicist Homi J. Bhabha lobbied for the establishment of the **Tata Institute of Fundamental Research (TIFR)** in Bombay, dedicated to nuclear physics research.
 - TIFR became India's **first research institution dedicated to the study of nuclear physics**.
- Post-independence, Bhabha convinced the then PM Jawaharlal Nehru about the importance of nuclear energy and in 1954, the Department of Atomic Energy (DAE) was founded, with Bhabha as the director.
 - The **DAE operated autonomously, away from significant public scrutiny**.

➤ **Reasons for India's Pursuit of Nuclear Weapons:**

- India's pursuit of nuclear weapons was motivated by concerns over its **sovereignty and security threats from China and Pakistan**.
- The **1962 Sino-Indian War and China's nuclear test in 1964** heightened the need for India to safeguard its national security.
- The **war with Pakistan in 1965, with Chinese support**, further emphasized the need for self-sufficiency in defense capabilities.

➤ **Pokhran- I:**

- **About:**
 - By the 1970s, India was capable of conducting a nuclear bomb test.
 - Pokhran-I was **India's first nuclear bomb test** conducted on **May 18, 1974**, at the **Pokhran Test Range in Rajasthan**.

Note:

- It was code-named **Smiling Buddha** and officially described as a “**peaceful nuclear explosion**” with “**few military implications**”.
- India became the **6th country in the world to possess nuclear weapons** capability after the US, Soviet Union, Britain, France and China.
- **Implications of Test:**
 - The tests faced near-universal condemnation and significant sanctions especially from US and Canada.
 - It hindered India’s progress in nuclear technology and slowed down its nuclear journey.
 - Domestic political instability, such as the **Emergency of 1975** and opposition to nuclear weapons also hindered progress.
- **After Pokhran-I:**
 - The 1980s saw a resurgence of interest in nuclear weapons development due to Pakistan’s progress.
 - India increased funding for its missile program and **expanded its plutonium stockpiles**.
- **Pokhran-II:**
 - **About:**
 - Pokhran-II refers to a sequence of **five nuclear bomb test explosions conducted by India** on between 11-13th May 1998 at Rajasthan’s Pokhran desert.
 - Code name - Operation **Shakti**, this event marked **India’s 2nd successful attempt**.
- **Significance:**
 - Pokhran-II cemented **India’s status as a nuclear power**.
 - It demonstrated **India’s ability to possess and deploy nuclear weapons**, thus enhancing its **deterrence capabilities**.
 - The Indian government led by **Prime Minister Atal Bihari Vajpayee** officially declared itself as a state possessing nuclear weapons following Pokhran-II.
- **Implication:**
 - While the tests in 1998 also invited sanctions from some countries (like the US), the **condemnation was far from universal like in 1974**.
 - In context of India’s fast-growing economy and market potential, **India was able to stand its ground** and thus cement its status as a dominant nation state.

➤ India’s Nuclear Doctrine:

- India adopted a policy of **credible minimum deterrence**, stating that it would maintain a **sufficient nuclear arsenal for deterrence purposes but would not engage in an arms race**.

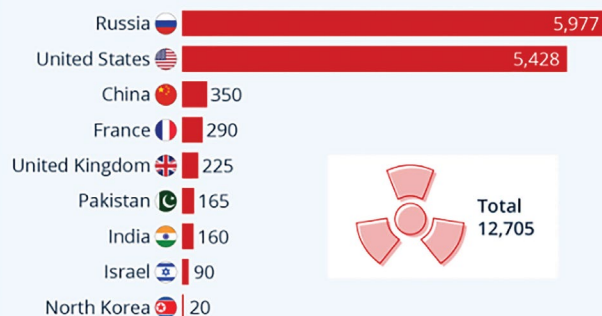
- In 2003, India officially came out with its nuclear doctrine that clearly elaborated on the “**no first use**” policy.

➤ India’s Current Nuclear Capability:

- India currently possesses approximately **160 nuclear warheads**, according to the **Federation of American Scientists (FAS)**.
- **India has achieved an operational nuclear triad capability**, allowing for the launch of nuclear weapons from land, air, and sea.
 - The triad delivery systems include **Agni, Prithvi, and K series ballistic missiles**, fighter aircraft, and nuclear submarines.

The Countries Holding The World’s Nuclear Arsenal

Estimated global nuclear warhead inventories (2022)*



* Includes deployed, stockpiled and retired warheads awaiting disarmament
Source: Federation of American Scientists



statista

What is India’s Status on Various International Treaties about Nuclear Weapons?

➤ **Non-Proliferation Treaty (NPT) 1968:**

- **India is not a signatory; it declined to accede to the NPT**, citing concerns about the treaty’s perceived discriminatory nature and lack of reciprocal obligations from nuclear weapons states.

➤ **Comprehensive Nuclear-Test-Ban Treaty (CTBT):**

Note:

- India has **not signed the CTBT** as it is a **strong advocate for a time-bound disarmament commitment from nuclear weapon states (NWS)** and may use the lack of a commitment as a reason to refrain from signing the CTBT.
- The **Treaty on the Prohibition of Nuclear Weapons (TPNW)**:
 - It entered into force on 22 January 2021 and **India is not a member of this treaty.**
 - **Nuclear Suppliers Group (NSG):**
 - India is not a member of the NSG.
- **Wassenaar Arrangement:**
 - India joined the arrangement on December 2017 as its 42nd participating state.

Artificial Sweeteners

Why in News?

Artificial sweeteners have gained popularity among calorie-conscious individuals seeking **low-calorie options**. However, recent studies have raised **concerns about their long-term effectiveness for weight loss and potential health risks**.

- The **World Health Organization (WHO)** has released recommendations against the use of artificial sweeteners for weight control and prevention of lifestyle diseases.

What are Artificial Sweeteners?

- **About:**
 - Artificial sweeteners are **sugar substitutes** that are used as **alternatives to natural sugars**.
 - These sweeteners are chemically synthesized and **provide a sweet taste without the high calorie content of regular sugar**.
 - They are commonly used in **various food and beverage products**, including diet sodas, sugar-free desserts, and low-calorie snacks.
 - Some examples of artificial sweeteners are **saccharin, aspartame, acesulfame potassium (Ace-K), sucralose, neotame, and advantame**.
- **Benefits:**
 - Artificial sweeteners offer **benefits for weight management, diabetes control, tooth decay prevention**, and provide safe options for individuals

with **phenylketonuria (PKU)**, a genetic disorder, due to their low or zero-calorie content, **minimal impact on blood sugar levels**, non-fermentable nature, and absence of phenylalanine.

➤ Negative Impacts:

○ Controversial Health Effects:

- Some studies suggest potential negative health effects of artificial sweeteners, such as an **increased risk of metabolic disorders, and disrupted gut microbiota**. However, scientific evidence remains inconclusive.

➤ Digestive Issues:

- Some people may experience digestive discomfort, such as bloating, gas, or diarrhea, after consuming products containing artificial sweeteners.

What are the

Key Findings from the WHO Report?

➤ Findings:

- WHO advises against using artificial sweeteners as a means of achieving weight control or reducing the risk of non-communicable diseases.
- While **short-term use may result in weight loss and reduced body mass index (BMI)**, long-term consumption of artificial sweeteners has been **associated with weight gain**.
- Some studies suggest a potential connection between artificial sweeteners and **bladder cancer and preterm birth in pregnant women**.
- Higher intake of artificial sweeteners, particularly in beverages and added to foods, is associated with an increased risk of **type-2 diabetes, cardiovascular disease (including stroke and hypertension)**, and preterm birth.

➤ WHO Recommendations:

- Instead of relying solely on non-sugar sweeteners, the WHO recommends considering **other methods to reduce the intake of free sugars**, such as **consuming naturally occurring sugars from fruits or opting for unsweetened food and beverages**.
 - These WHO recommendations are applicable to non-diabetic individuals. Diabetics should exercise caution and consult healthcare professionals for personalized advice.

➤ Expert Opinions:

- Diabetics are also advised to be cautious, as they are at a higher risk of cardiovascular diseases and cancer.

Note:



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- Experts highlight the potential risk of **insulin resistance** and **type-2 diabetes** associated with artificial sweetener consumption.
- **Damaging Effects of Diet Colas:**
 - Diet colas, marketed as zero-calorie alternatives to regular colas, use artificial sweeteners to achieve the zero-calorie claim.
 - The intense sweetness of artificial sweeteners can alter taste perception, making normal sweets seem less sweet and potentially leading to cravings for more sugary foods.
 - Special attention is given to **erythritol**, which should be avoided due to its potential health risks.

Transformers in Machine Learning

Why in News?

- In recent times, **Machine Learning (ML)** is experiencing a transformative shift with **the rise of transformer models**.
- Transformers have gained significant attention due to their **ability to revolutionize language processing, image understanding**, and more.
 - The impact of transformers on diverse domains and their potential for positive outcomes have made them a hot topic in the news.

What are Transformers in ML?

- **About:**
 - Transformers are a type of **deep learning model** used for **natural language processing (NLP)** and **computer vision (CV)** tasks.
 - They utilize a mechanism called **"self-attention"** to process sequential input data.
 - Transformers can process the entire input data at once, capturing context and relevance.
 - They can handle longer sequences efficiently and overcome the vanishing gradients problem faced by recurrent neural networks (RNNs).
 - Transformers were introduced in 2017 through the paper **"Attention is All You Need"** by Google Brain.
 - They have become popular and led to the development of pre-trained system **Generative Pre-trained Transformer(GPT)**.

➤ Understanding Transformers:

- Transformers consist of an **encoder and a decoder**, which work together to process input and generate output.
 - The encoder converts **words into abstract numerical representations and stores them in a memory bank**.
 - The decoder generates **words one by one, referring to the generated output and consulting the memory bank through attention**.

➤ Function:

- **Self-Attention Mechanism in Transformers:**
 - Attention in ML allows models to **selectively focus on specific parts of the input when generating outputs**.
- It enables transformers to **capture context and build relationships between different elements in the data**.

➤ Transformer Applications in Language Processing:

- Transformers have revolutionized tasks such as **language translation, sentiment analysis, text summarization**, and **natural language understanding**.
- They process entire sentences or paragraphs, capturing intricate linguistic patterns and semantic meaning.

● Transformer Applications in Image Understanding:

- Transformers have made significant strides in computer vision tasks, surpassing **traditional convolutional neural networks (CNNs)**.
- They analyze **images by breaking them into patches and learning spatial relationships**, leading to improved image classification, object detection, and more.

➤ Versatility and Cross-Modal Applications:

- Transformer's ability to process multiple modalities, such as **language and vision**, has paved the way for joint vision-and-language models.
- These models enable tasks like **image search, image captioning, and answering questions about visual content**.

➤ Evolution:

- **Evolution from Hand-Crafted Features to Transformers:**

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- Traditional machine learning approaches relied on **manually engineered features**, specific to narrow problems.
- Transformers, on the other hand, eliminate the need for hand-crafted features and learn directly from raw data.
- **Transformers in Computer Vision:**
 - Transformers have **found success in computer vision by dividing images into patches, resembling words in a sentence.**
 - Trained on large datasets, transformers outperform traditional convolutional neural networks (CNNs) in image classification, object detection, and more.
- **Recent Developments:**
 - **Large-Scale Transformer Models:**
 - Recent advancements have seen the development of transformer models with billions or trillions of parameters.
 - These models, known as **large language models (LLMs) like ChatGPT**, exhibit impressive capabilities in tasks like question answering, text generation, and image synthesis.
- **Challenges and Considerations:**
 - Evaluating the performance and **limitations of large-scale transformer** models remains an ongoing challenge for researchers.
 - Concerns related to **ethical use, privacy, and potential biases** associated with these models need to be addressed.

Carbon Dating

Why in News?

Recently, the Allahabad High Court allowed the **Archeological Survey of India (ASI)** to conduct **Carbon Dating** of a 'Shivling' inside the **Gyanvapi Mosque** in Varanasi, Uttar Pradesh.

- The petitioners have claimed the object inside the Gyanvapi mosque to be a **"Shivling"**. The claim was disputed by the Muslim side, which said the object was part of a "fountain".
- It set aside an order of the **Varanasi District Court** that rejected a plea for scientific investigation, including carbon dating, of the structure.

What is Carbon Dating?

- **About:**
 - Carbon dating is a widely used method to **establish the age of organic materials**, things that were once living.
 - Living things **have carbon in them in various forms.**
 - The dating method is based on the fact that **Carbon-14 (C-14) is radioactive**, and decays at a well-known rate.
 - C-14 is an isotope of carbon with an **atomic mass of 14.**
 - The most abundant isotope of **carbon in the atmosphere is C-12.**
 - A very small amount of C-14 is also present.
 - The ratio of C-12 to C-14 in the atmosphere is almost static and **is known.**
- **Half Life:**
 - Plants get their carbon through photosynthesis; **animals get it mainly through food.** Because plants and animals get their carbon from the atmosphere, they **too acquire C-12 and C-14 in roughly the same proportion** as is available in the atmosphere.
 - When they die, **their interactions with the atmosphere stop.** While C-12 is stable, the **radioactive C-14 reduces to one half of itself in about 5,730 years** — known as its 'half-life'.
 - The changing ratio of C-12 to C-14 in the remains **of a plant or animal after it dies can be measured and** can be used to deduce the approximate time when the organism died.
- **Age Determination of Inanimate Things:**
 - Carbon dating **cannot be applied in all circumstances.** It cannot be used to determine the age of non-living things like rocks, for example.
 - Also, the age of things that are more than **40,000-50,000 years old cannot be arrived at** through carbon dating.
 - This is because **after 8-10 cycles of half-lives**, the amount of C-14 becomes almost very small and is almost undetectable.
 - For determining the age of inanimate things, instead of carbon, **decays of other radioactive elements that might be present** in the material become the basis for the dating method.

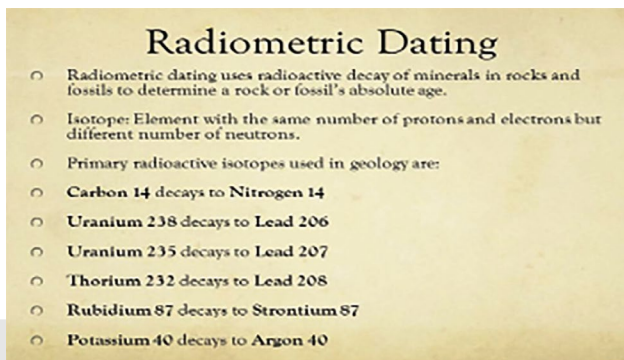
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- These are known as **Radiometric Dating Methods**. Many of these involve elements with **half-lives of billions of years**, which enable scientists to reliably estimate the age of very old objects.

What are the Radiometric Methods for Age Determination of Nonliving Things?

- **Potassium-Argon and Uranium-Thorium-Lead:** Two commonly employed methods for **dating rocks are Potassium-Argon dating and Uranium-Thorium-Lead dating**.
 - The radioactive isotope of potassium **decays into argon**, and their ratios can **give a clue about the age** of rocks.
 - Uranium and thorium have several radioactive isotopes, and all of them decay into the **stable lead atom**. The ratios of these elements present in the material **can be measured and used to make estimates about age**.
- **Exposure to Sunlight:** There are also methods to determine how long an object has remained exposed to sunlight. These apply different techniques but are **again based on radioactive decay and are particularly useful** in studying buried objects or changes in topology.
 - The most common of these is called **cosmogenic nuclide dating**, or CRN, and is regularly applied to study the **age of ice cores in polar regions**.
 - **Indirect Carbon Dating:** In some situations, carbon dating can be used indirectly as well.

- A way in which the **age of ice cores in glaciers and polar regions is determined** by studying carbon dioxide molecules trapped inside large ice sheets.
- The trapped molecules have no interaction with the outside atmosphere and are found in the **same state as when they were trapped**. Determining their age gives a rough estimate of the time when the ice sheets were formed.



What are the Limitations of Determining Age of Gyanvapi Shivling?

- There are specific limitations in the case that **prevent disruptive methods or uprooting** of the structure, as directed by the SC.
- Therefore, traditional methods like carbon dating, which involve analyzing trapped organic material beneath the structure, **may not be feasible in this particular situation**.

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Environment & Ecology

Highlights

- Threats from Plastic Recycling
- The World's Worst Animal Disease Killing Frogs Worldwide
- CPCB's New Guidelines for India's Stone Crusher Sector
- EU-India Clean Energy and Climate Partnership
- WMC Approves Global Greenhouse Gas Watch
- PBR and Biodiversity Management in India
- Axolotls and Organ Renegation
- The International Day for Biological Diversity 2023
- Air Pollution
- Groundwater Extraction and Land Subsidence
- Sea Butterflies
- Thawing Permafrost in Arctic and Industrial Contamination
- Land Reclamation
- Meri LiFE App
- Water Footprint of AI

Threats from Plastic Recycling

Why in News?

A recent report by Greenpeace Philippines titled **"Forever Toxic: The science on health threats from plastic recycling"** was published at the Second Session of Intergovernmental Negotiation Committee Meet in Paris, suggesting that recycling may not be the solution to **Plastic Pollution** as it is often believed to be.

What are the Key Findings of the Report?

➤ Higher Level of Chemicals:

- Recycled plastics often contain **higher levels of chemicals** such as toxic flame **retardants**, **benzene** and other **Carcinogens**, environmental pollutants including brominated and chlorinated dioxins, and numerous endocrine disruptors **that can cause changes to the body's natural hormone** levels.
 - Plastics contain more than 13,000 chemicals and 3,200 of them are known to be **hazardous to human health**.

➤ Poisonous Pathways:

- There are three poisonous **pathways for recycled plastic material** to accumulate toxic chemicals,
 - Direct contamination **from toxic chemicals in virgin plastic**.
 - Substances like **plastic containers for Pesticides**, cleaning solvents and others that enter the recycling chain and can contaminate plastic.

- The recycling process, when plastics are heated.

➤ Increased Risk of Plastic Fires:

- With an increase in plastic stockpiles, **the risk of large fires at recycling facilities has gone up**, especially in those that hold **e-waste** plastics with used batteries.
- A survey in the United States and Canada in 2022 found a record 390 fires in plastic recycling and waste facilities.
- In the 12 months up to April 2023, large fires **have been reported at plastic recycling facilities in Australia**, Canada, Ghana, Russia, Southern Taiwan, Thailand and the United Kingdom and in Florida, Indiana, North Carolina of the United States.

➤ Increase in Plastic Production:

- Plastic production is **forecast to triple by 2060**, with only a **minimal increase in recycling** predicted.
- Since the 1950s about **8 billion tonnes of plastic has been produced**.
 - Not only that just a tiny proportion (9%) of plastics are ever recycled, but also those that end up with higher concentrations of **toxic chemicals, multiplying their potential harm to human, animal and environmental health**.

➤ Implications:

- Plastic production, disposal and incineration facilities are most often located in low-income, **marginalized communities across the world**, which suffer from

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higher rates of **Cancer, Lung Disease** and adverse **birth outcomes** associated with their exposure to the toxic chemicals.

What are the Recommendations?

- Global plastic pollution can be reduced by 80% by 2040 if countries and companies make **deep policies and market shifts using existing technologies** and also shift to a circular economy.
- Plastics have **no place in a circular economy** and the only real solution to ending plastic pollution is to massively reduce plastic production.
- There is a need for an **ambitious, legally binding Global Plastics Treaty** that accelerates and provides the **conditions needed for a just transition** away from dependence on plastic.
 - The Treaty **should promote safer, toxics-free materials** and reuse-based, zero-waste economies, creating new jobs to support these practices, protecting human and planetary health, minimizing resource use and delivering a just transition for workers and affected communities across the plastics supply and waste chains.

What is Plastic Pollution?

- **About:**
 - Unlike other forms of waste like paper, food peels, leaves etc., which are biodegradable (capable of being decomposed by bacteria or other living organisms) in nature, **plastic waste because of its non-biodegradable nature persists into the environment, for hundreds** (or even thousands) of years.
- **Major Polluting Plastic Waste:**
 - **Microplastics:** They are small plastic pieces of less than **five millimeters in size**.
 - **Microplastic includes microbeads** (solid plastic particles of less than one millimeter in their largest dimension) that are used in cosmetics and personal care products, industrial scrubbers, microfibers used in textiles and virgin resin pellets used in plastic manufacturing processes.
 - Due to **sun exposure and physical wear**, large pieces of plastic that were not recycled break up to produce microplastics.
 - **Single-use plastic:** It is a disposable material that can be used only once before it is either thrown away or recycled, like **plastic bags, water bottles,**

soda bottles, straws, plastic plates, cups, most food packaging and coffee stirrers are sources of single use plastic.

➤ Initiatives to Tackle Plastic Pollution:

- **Indian:**
 - **Plastic Waste Management (Amendment) Rules, 2022**
 - **Extended Producer Responsibility (EPR)**
 - **National Dashboard on Elimination of Single Use Plastic and Plastic Waste Management**
 - **India Plastics Pact**
 - **Project REPLAN**
- **Global:**
 - **European Union' Directive on Single-Use Plastics**
 - **Closing the loop.**
 - **The Global Tourism Plastics initiative**

The World's Worst Animal Disease Killing Frogs Worldwide

Why in News?

For the past 40 years, a devastating **fungal disease, called chytridiomycosis or chytrid**, has been ravaging frog populations around the world, wiping out 90 species. This is a **"panzootic" – a pandemic in the animal world**.

- Transboundary and Emerging Diseases, a multinational study has **developed a method to detect all known strains of this disease**, caused by the amphibian chytrid fungus.

What is Chytridiomycosis or Chytrid?

- **About:**
 - **Chytrid infects frogs by reproducing in their skin, affecting their ability to balance water and salt levels**, and eventually leading to death if infection levels are high enough.
 - The **high mortality rate** and the high number of species affected **make chytrid unequivocally the deadliest animal disease known to date**.
- **Origin:**
 - **Chytrid originated in Asia** and was unwittingly spread to other continents through global travel and trade in amphibians.

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➤ **Infection:**

- Chytrid has been devastating frog populations for the past 40 years, **wiping out 90 species, including seven in Australia**, and causing severe **declines in over 500 frog species**.
- Many species' immune systems were simply not equipped to defend against the disease, and **mass mortalities ensued**.
 - In the 1980s, amphibian biologists began **to notice sharp population declines, and in 1998, the chytrid fungal pathogen** was finally recognised as the culprit.

➤ **Diagnosis of Disease:**

- **Researchers use a qPCR test to detect chytrid in frogs by swabbing their skin**, and the new test is more sensitive, meaning it can detect very low infection levels, thereby broadening the scope of species that can be studied.
 - **qPCR stands for quantitative polymerase chain reaction**. It is a way to measure the volume of DNA from a species of interest. **The test was developed at CSIRO, Australia in 2004**; unlike a COVID test, however, scientists swab the frog's skin, not the nose.
 - CSIRO, which stands for **Commonwealth Scientific and Industrial Research Organisation**, is **Australia's national science agency**.
- Over the past years, **researchers from the Council of Scientific and Industrial Research (CSIR)– Centre for Cellular and Molecular Biology** in India also has been working on a new qPCR test that can detect strains of chytrid from Asia.
 - In collaboration **with researchers in Australia and Panama**, India have now verified the qPCR test also reliably detects chytrid in these countries.
 - **This new test is more sensitive**, meaning it can detect very low infection levels, thereby broadening the scope of species study.
 - The **new qPCR test can detect strains of chytrid from Asia and another closely related species of chytrid that infects salamanders**.

➤ **Immunity to Some Amphibians:**

- **Some amphibian species don't become sick** when they carry the fungus, which is puzzling.

- So far, no clear trend has been found between resistance and immune function. There is also evidence chytrid can suppress a host's immune response.

➤ **Research about the Species:**

- Asia is lagging the rest of the world in chytrid research.
- A multinational study has **developed a method to detect all known strains of chytrid**, which will advance our ability to detect and research the disease, working towards a widely available cure.

What is CSIR – Centre for Cellular and Molecular Biology?

- The **Centre for Cellular & Molecular Biology (CCMB)** is a premier research organization in frontier areas of modern biology and promotes centralised national facilities for new and modern techniques in the inter-disciplinary areas of biology.
- **CCMB was set up initially as a semi-autonomous Centre on April 1, 1977** with the Biochemistry Division of the then Regional Research Laboratory (presently, Indian Institute of Chemical Technology, IICT) Hyderabad forming its nucleus.

CPCB's New Guidelines for India's Stone Crusher Sector

Why in News?

Stone crushing units have long been recognized as major contributors to fugitive dust emissions and severe air pollution.

- In response to the growing concern, the **Central Pollution Control Board (CPCB)** recently published the **Environmental Guidelines for Stone Crushing Units**.
- The guidelines are in alignment with the **recommendations made by New Delhi-based non-profit Centre for Science and Environment (CSE)**.

What are the**Key Guidelines Released By CPCB?**

- The CPCB guidelines cover various aspects of stone crushing, such as **source emissions, product storage, transportation, water consumption and legal compliance**. Some of the key features of the guidelines are:

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- The stone crushers should **obtain consent to establish and consent to operate (CTO) from the State Pollution Control Board (SPCB)** before starting their operations.
- Stone crushing unit shall comply with **emission norms prescribed under the Environment (Protection) Rules, 1986** and conditions laid down in CTO by concerned SPCB/PCC.
- They should install **adequate pollution control devices**, such as **dust suppression systems, covers, screens and sprinklers**, to reduce the dust emissions from crushing, loading and unloading activities.
 - They should also store their products in **covered areas or silos to prevent wind-blown dust**.
- The stone crushers **should use water judiciously and ensure its availability and quality** and procure their raw material from legal sources and maintain proper records of their transactions.
- A **District Level Committee to be constituted** under chairmanship of District Magistrate/Deputy Commissioner so that **surprise inspections for surveillance of stone crushing units located under their jurisdiction** can be carried out on regular basis.
- **Health survey of workers should be carried out** by the stone crusher on half-yearly basis.

What is the Issue

Associated with Stone Crushing Units?

➤ About:

- **Stone crushing units** are one of the major sources of **air pollution in India**.
 - These units produce **crushed stones that are used as raw material for various construction activities**.
- However, the process of stone crushing also **generates a lot of dust that affects the health of the workers** and the surrounding population.
 - Moreover, stone mining is also associated with this activity, which further degrades the environment.

➤ Recent Instances:

- In December 2022, a draft notification by Haryana government proposed **easing of proximity norms for setting up new stone crushers near residential areas**. This was met with criticism by

environmentalists who feared that it would worsen air quality and impact farmland.

- In June 2023, a report by CSE claimed that **many stone crushers in India were operating without consent or environmental clearance from SPCBs**.
- The report also highlighted that most of these units did not have proper pollution control devices or monitoring systems.
- **Steps to Address the Issue:**
 - The **Environment Pollution (Prevention & Control) Authority (EPCA)** banned the **operation of the stone crusher units, along with brick kilns and hot mix plants**, under the implementation of the **Graded Response Action Plan (GRAP)**.
 - **GRAP** includes the measures which will be taken by different government agencies to prevent worsening of **Air Quality of Delhi-NCR** and **prevent PM10 and PM2.5 levels** to go beyond the 'moderate' national **Air Quality Index (AQI)** category.
 - In May 2023, a study by researchers from Pune University revealed that **a model stone crusher unit in Pune had successfully implemented pollution control measures and reduced its dust emissions by 90%**. The study suggested that such units could serve as examples for other stone crushers in India.

What is the Central Pollution Control Board?

- The **CPCB** is a statutory organisation that was established in **September 1974** under the **Water (Prevention and Control of Pollution) Act, 1974**.
 - **Further**, CPCB was entrusted with the powers and functions under the **Air (Prevention and Control of Pollution) Act, 1981**.
 - It is the apex body for environmental protection and pollution control in India. It functions under the **Ministry of Environment, Forest and Climate Change (MoEFCC)** and coordinates with the State Pollution Control Boards (SPCBs) and other agencies.
- The CPCB has various divisions that deal with different aspects of pollution control such as **air quality management, water quality management, hazardous waste management, environmental assessment, laboratory services**, information technology, public participation etc.

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EU-India Clean Energy and Climate Partnership

Why in News?

The Minister of Power and New & Renewable Energy, Government of India has held a meeting with the Executive Vice President of **European Green Deal**, **European Union**, where both discussed cooperation under the **EU – India Clean Energy and Climate Partnership**.

What is the European Green Deal?

- The European Green Deal seeks to transform the **EU into a modern, resource-efficient and competitive economy**, ensuring:
 - No net emissions of greenhouse gases by 2050
 - Economic growth decoupled from resource use
 - No person and no place left behind
- One third of the €1.8 trillion investments from the Next Generation EU Recovery Plan, and the EU's seven-year budget **will finance the European Green Deal**.

What are the Key Highlights of the Meet?

- **Cooperation under the EU-India Clean Energy and Climate Partnership:**
 - The meeting focused on discussing collaboration in areas such as energy efficiency, **Renewable energy**, **Green hydrogen**, Energy storage, and Diversification of the **global supply chain** for the energy sector.
- **Renewable Energy Capacity Expansion:**
 - India highlighted its efforts to **ramp up renewable energy capacity**, including the establishment of manufacturing facilities for advanced solar cells and panels.
 - Manufacturing capacity for the most advanced solar cells and panels is increasing; and **by 2030, a total manufacturing capacity of 80 GW** will come up.
- **Energy Storage and Round-the-Clock Renewables:**
 - Recognizing the need for energy storage to **facilitate round-the-clock renewable energy supply**, India plans to introduce **bids for more storage capacity** and has already initiated a bid for **Production Linked Incentive (PLI)** for energy storage.

- India proposed joint pilots with the EU in areas like **Green Steel** and other frontier technologies, highlighting **India's pilot project for round-the-clock renewables** using hydrogen and ammonia as storage.

➤ **Green Hydrogen and Free Trade:**

- India emphasized the importance of **free and open trade for the journey towards green hydrogen** and cautioned against **Protectionism**.
- Mentioned India's plan to increase electrolyser manufacturing capacity and upcoming Production Linked Incentive bids in that regard.

➤ **Global Energy Efficiency Targets:**

- The Executive Vice President of the **European Green Deal** appreciated **India's leadership** in renewable energy and energy efficiency.
- Both sides discussed the **need to bring the agenda of energy efficiency** to the global stage and set global energy efficiency targets.

➤ **Grid-Scale Battery Storage Systems and Green Mobility:**

- Collaboration opportunities were explored in **batteries for grid-scale storage**, particularly for green mobility. India aims to have a significant market share in green mobility, with a majority of two-wheelers, three-wheelers, and a substantial portion of four-wheelers expected to be green by 2030.

➤ **Detoxifying Agriculture and Energy Access:**

- The Power Minister expressed India's goal of **transitioning away from chemical fertilizers** in agriculture. The **issue of energy access for the global population**, especially in Africa, was discussed.
- The role of the **International Solar Alliance (ISA)** in bringing clean energy to regions without access was highlighted, and a partnership between the EU, ISA, Africa, and India was proposed to address this issue.

What is EU-India Clean Energy and Climate Partnership?

➤ **About:**

- The India-EU Clean Energy and Climate Partnership was agreed at the **EU-India Summit in 2016**.
- It is financed by the Partnership Instrument of the EU and **managed by the Delegation of the European Union to India**.

Note:

- PricewaterhouseCoopers Private Limited (PwC India) is the implementing partner for this project, together with NIRAS A/S, EUROCHAMBRES and the Council on Energy, Environment and Water (CEEW).

➤ **Objective:**

- It aims to **reinforce cooperation on clean energy** and implementation of the **Paris Agreement** by strengthening joint activities for deployment of climate friendly energy sources, including solar and wind energy.
- The objective is envisaged to be achieved by focusing on **Energy Efficiency (EE), Renewable Energy (RE) and Climate Change (CC)**.

➤ **Focus Areas:**

- **Energy Efficiency:**
 - Energy Conservation Building Code (ECBC)
 - Nearly Zero Energy Building (nZEB)
 - Smart Readiness Indicator (SRI)
- **Renewable Energy:**
 - Large Scale Solar PV
 - Solar PV Rooftop
 - Offshore Wind
 - Energy Storage
 - Green Hydrogen
- **Climate Change:**
 - Adaptation
 - Mitigation
 - Cooling (including Cold-Chain)
 - Knowledge Management
- **Others:**
 - Smart Grid
 - Sustainable Finance

WMC Approves Global Greenhouse Gas Watch

Why in News?

Recently, the 19th **World Meteorological Congress (WMC)** has approved the **Global Greenhouse Gas (GHG) Watch (G3W)**, a **GHG** monitoring initiative, to reduce the heat-trapping gases and combat **Climate Change**.

- The **World Meteorological Organisation (WMO)** in the Collaboration with WHO also framed **2023-2033 Implementation Plan for Advancing Climate, Environment and Health Science and Services** to manage the impact of Climate Change.

Note: The Nineteenth World Meteorological Congress (Cg-19) is currently taking place from 22 May to 2 June 2023 at the International Conference Centre of Geneva (CICG). It is the supreme body of the World Meteorological Organization (WMO).

What is the World Meteorological Organization (WMO)?

- The WMO is an intergovernmental organization with a membership of 192 Member States and Territories.
- India is a member of WMO.
- It originated from the **International Meteorological Organization (IMO)**, which was established after the 1873 Vienna International Meteorological Congress.
- Established by the ratification of the **WMO Convention on 23rd March 1950**, WMO became the **specialized agency of the United Nations** for meteorology (weather and climate), operational hydrology and related geophysical sciences.
- WMO is headquartered in **Geneva, Switzerland**.

What is the Greenhouse Gas Watch (G3W)?

➤ **About:**

- It will establish internationally coordinated top-down monitoring of greenhouse gas fluxes to support the provision of actionable information to the **UNFCCC Parties** and other stakeholders.
- The GHG watch will fill critical information gaps and provide an **integrated and operational framework**. The framework will bring all space-based and surface-based observing systems, as well as modeling and data assimilation capabilities, under one roof.

➤ **Implementation:**

- The monitoring infrastructure will build on and expand WMO's long-standing activities in GHG monitoring, implemented as part of the **Global Atmosphere Watch (GAW)** and via its **Integrated Global GHG Information System (IG3IS)**.

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- The GAW of WMO focuses on building a single coordinated global understanding of atmospheric composition, its change, and helps to improve the understanding of **interactions between the atmosphere, the oceans and the biosphere.**
- IG3IS aims to coordinate an integrated global GHG information system, **linking inventory and flux model based information with atmospheric observations** and modelling, to provide the best possible estimates of greenhouse gas emissions at the national and urban scales.

➤ **Components:**

- Surface-based and satellite-based observations
- Prior estimates of the GHG emissions based on activity data and process-based models
- Global high-resolution Earth System models representing GHG cycles
- Data assimilation systems associated with models to generate products of higher accuracy

➤ **Significance:**

- At present, **there is no comprehensive, timely international exchange** of surface and space based GHG observations or modelling products.
- GHG monitoring infrastructure will help improve understanding of the carbon cycle. Understanding the full carbon cycle is **vitaly important for the planning of mitigation activities.**
- Globally consistent, gridded information on GHG and their fluxes with appropriate time resolution **will help in the improved evaluation of sources and sinks** of GHG and indicate their association with the biosphere, the ocean and the permafrost areas.

What is the 2023-2033 Implementation Plan?

➤ **Objective:**

- The plan aims to achieve “better health and well-being for people facing existing and emerging extreme weather events, climate change and environmental risks **through the effective integration of climate, environment and health science** and services across the world”.
- It seeks to promote **a coordinated approach to manage the impact of climate, weather, air pollution, ultraviolet radiation, extreme events and other environmental factors on health.**

➤ **Need:**

- By 2030-2050, climate change is **projected to cause approximately 250,000 extra deaths** annually due to **malnutrition, malaria, diarrhoea, and heat stress.**
- If current emission levels persist, up to **8.4 billion people could be at risk from malaria and dengue**, two major vector-borne diseases, by the end of the century.
- Concerns arise regarding extreme heat and the importance of strengthening understanding, early warning systems, and risk management for climate-related risks like heat waves, wildfires, and air quality issues.
- In 2022, India experienced its hottest March, leading to early heat waves across various regions.
- Extreme heat will expose **600 million Indians to dangerous temperatures by 2030.**

PBR and Biodiversity Management in India

Why in News

The **National Campaign for Updation and Verification of People's Biodiversity Register (PBR)** was launched in **Goa**, marking a significant milestone in the **documentation and preservation of India's rich biological diversity.** It was organised by the Union Ministry of Environment, Forest and Climate Change.

- Till now, **2,67,608 PBRs** have been prepared in the country.

What is the People's Biodiversity Register?

➤ **About:**

- The **People's Biodiversity Register** serves as a **comprehensive record of various aspects of biodiversity**, including **conservation of habitats, preservation of land races, folk varieties, and cultivars**, domesticated stocks and breeds of animals, and micro-organisms.
- **Biodiversity Management Committees (BMC)** are created as per the **Biological Diversity Act 2002** for promoting conservation, sustainable use, and documentation of biological diversity.
 - Local bodies in the states and union territories constitute **BMCs, which are entrusted with the preparation of People's Biodiversity Registers** in consultation with local communities.

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➤ Importance:

- It helps in conserving biodiversity, which is key to maintaining balance in nature. It also enables local communities to share the benefits derived from **genetic resources and associated traditional knowledge**.
- It supports the **implementation of the provisions of the Biological Diversity Act 2002**, which aims to **regulate access to biological resources** and ensure fair and equitable benefit sharing.
- Being a **bottom-up exercise**, it is also a means of understanding the **overlap of cultural and natural biodiversity**.
 - It envisages a **decentralised way through an inclusive approach**.
- It aligns with the concept of “**Lifestyle for the Environment (LiFE)**”, introduced by the Indian Prime Minister at **COP26 in Glasgow**.
 - This concept calls upon **individuals and institutions globally to promote mindful and deliberate utilisation of resources** to protect and preserve the environment.

What is the Status of Biodiversity Management in India?

➤ About:

- With only **2.4% of the earth's land area**, India accounts for **7-8% of the world's recorded species**.
- **4 of the world's 36 biodiversity hotspots are located in India**: The Himalayas, Western Ghats, Indo-Burma area, and Sundaland.
 - Two of these, the **Indo-Burma area and Sundaland**, are distributed throughout South Asia and are not precisely contained within India's formal borders.

➤ Biodiversity Governance in India:

- **India's Biological Diversity Act (BDA) 2002**, is in close synergy with the **Nagoya Protocol** and aims to implement provisions of the **Convention on Biological Diversity (CBD)**.
 - The **Nagoya Protocol sought to ensure commercial and research utilisation of genetic resources** led to sharing its benefits with the government and the community that conserved such resources.

- The BDA was **hailed as an important step towards preserving India's vast biodiversity**, as it recognised the **sovereign right of countries over its natural resources**.
- It seeks to address issues of managing **bio-resources in the most decentralised manner possible**.
- It also envisages **three layered structures**:
 - **The National Biodiversity Authority (NBA) at the national level.**
 - **The State Biodiversity Boards (SSBs) at the state level**
 - **Biodiversity Management Committees (BMCs) at the local level.**
- The act also **strengthens the country's stand with respect to anyone claiming an intellectual property right over biodiversity-related knowledge**.

➤ Challenges related to Biodiversity Conservation:

- **Introduction of Invasive Species: Invasive alien species** include **plants, animals and pathogens** that are non-native to an ecosystem cause environmental harm or **adversely affect ecological balance**.
 - According to CBD reports, **invasive alien species have contributed to nearly 40% of all animal extinction**.
- **Global Warming and Climate Change**: It poses threats to plant and animal species as many organisms are **sensitive to carbon dioxide concentration** in the atmosphere that may lead to their disappearance.
 - Use of **pesticide, rise of tropospheric ozone, sulphur and nitrogen oxides from industries** also contribute to the degradation of natural ecosystems.
- **Choking Marine Biodiversity**: Due to **lack of efficient plastic waste management**, **microplastics** are getting dumped into oceans choking and starving marine life and causing liver, reproductive, and gastrointestinal damage in animals and directly impacting marine biodiversity.
- **Genetic Modification Concern**: Genetically modified plants impose **high risks to the disruption of ecosystem and biodiversity** because the better traits produced from engineering genes can result in the favouring of one organism.
 - Hence, it can **eventually disrupt the natural process of gene flow and affect the sustainability of indigenous variety**.

Note:



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What is the Convention on Biological Diversity (CBD)?

- The Convention on Biological Diversity (CBD) was negotiated and signed by nations at the **Earth Summit at Rio de Janeiro in Brazil on June 5, 1992**.
 - The convention came into force on **December 29, 1993**. **India became a party to the convention on February 18, 1994**. At the present, there are **196 Parties to this Convention**.
- CBD is a legally binding treaty and has 3 main objectives:
 - Conservation of biodiversity.
 - Sustainable use of the components of biodiversity.
 - Fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.
- The **Secretariat of the CBD is based in Montreal, Canada**.

Axolotls and Organ Renegration

Why in News?

The **Axolotl**, a species of **salamander** (lizard-like **amphibians**) possesses an extraordinary ability to **regenerate lost body parts**, inspiring researchers to delve into the secrets of this **unique regenerative power**.

- The focus of their investigations lies in understanding the **elusive o** (for “ova deficient” **gene**, which plays a **pivotal role in the axolotl’s regenerative process**).

What is Axolotl?

- **About:**
 - **Axolotl are amphibians that spend their whole lives underwater**. They exist in the wild in only one place—**Lake Xochimilco near Mexico City**, a network of **artificial channels, small lakes, and**

temporary wetlands that help supply water to nearby **Mexico City’s 18 million residents**.

- **Lake Xochimilco is also a UNESCO World Heritage site**

- Axolotls, like humans, contain two copies of every gene – **one inherited from the father and the other from the mother**.
- **Prey:**
 - They feast on a **menu of mollusks, worms, insect larvae, crustaceans, and some fish**.
- **Special Feature:**
 - They have fascinated scientists for their **ability to regenerate lost body parts and for their rare trait of neoteny**, which means **they retain larval features throughout life**.
 - These features are also studied by cancer researchers for their unique **resistance to developing cancerous tissues**.
 - Even though they are **amphibians**, **axolotls remain aquatic throughout their lives but they are now almost extinct in the wild**.
- **Threat:**
 - Axolotl populations have declined considerably due to a **combination of habitat loss** (largely driven by Mexico City’s continued urbanisation), **water pollution, and invasive fish species** (such as **carp and tilapia**, which **compete with axolotls for food and prey upon them**).
- **Protection Status:**
 - **International Union for the Conservation of Nature and Natural Resources (IUCN)** has classified the axolotl as a **critically endangered species since 2006**.

What is Organ Regeneration?

- **About:**
 - Organ regeneration is the process of **restoring or replacing damaged or missing organs or tissues in living organisms**. It is a fascinating phenomenon that varies widely among different species, **from plants to animals**.
 - Organ regeneration has enormous potential for **medical applications**, such as **treating injuries and diseases that affect human organs**.
- **Major Processes:**
 - **Remodelling:** This involves **reshaping and reorganising the existing tissues to form new structures**.

Note:

- For example, **plants and some sea creatures**, such as jellyfish, can replace missing parts by extensively **remodelling their remaining tissues**.
- **Blastema formation:** This involves growing a mass of undifferentiated cells at the site of injury that can differentiate into various cell types and form new tissues and organs.
 - For example, some animals such as **salamanders** can regenerate missing parts by first growing a blastema.
- **Compensatory hypertrophy:** This involves increasing the size and function of the remaining part of an organ to compensate for the loss of another part.
 - For example, in **humans if one kidney is removed from a human, the other enlarges**.
- **Other Example of Organisms that can Regenerate Organs:**
 - Planarians, Zebrafish and **Sea cucumber**.

The International Day for Biological Diversity 2023

Why in News?

The **International Day for Biological Diversity (IDB)**, celebrated on **22nd May 2023**, raises awareness about the importance of biodiversity for sustaining life on Earth.

- The Global Assessment Report on Biodiversity and Ecosystem Services highlights the **risk of extinction for around one million species**.
- To address the biodiversity crisis, the **Kunming-Montreal Global Biodiversity Framework** was adopted at the **15th Conference of Parties (COP 15)** to the **Convention on Biological Diversity**
 - This framework sets ambitious targets for 2030 and provides a roadmap for conservation, restoration, and sustainable use of biodiversity.

What is International Day for Biological Diversity?

- **About:**
 - The **United Nations General Assembly (UNGA)** in 1993 proclaimed **22nd May** as IDB to increase understanding and awareness of biodiversity issues.

- The UNGA also declared the period **2011-2020** as the **United Nations (UN) Decade on Biodiversity** to promote the implementation of a strategic plan on biodiversity and its overall vision of living in harmony with nature.
- It also declared **2021-2030** as the **UN Decade of Ocean Science for Sustainable Development** and the **UN Decade on Ecosystem Restoration**.
- **Theme:**
 - The theme for 2023 is **"From Agreement to Action: Build Back Biodiversity"**, which signifies the **pressing requirement to go beyond mere commitments and transform them into concrete actions** aimed at revitalizing and safeguarding biodiversity.

What is Kunming-Montreal Global Biodiversity Framework?

- **About:**
 - It calls for **urgent and integrated action** to reflect **biodiversity considerations in all sectors of the global economy** but crucial issues - like funding conservation in poorer countries and committing to biodiversity-friendly supply chains have been left to discuss later.
 - It is **not a binding international agreement**.
 - It **calls upon the parties to mainstream biodiversity protection in decision-making** and recognise the importance of conservation in protecting human health.
 - The theme of the declaration is **Ecological Civilization: Building a Shared Future for All Life on Earth**.
 - By adopting this, the **nations have committed themselves to support the development, adoption and implementation** of an effective post-2020 implementation plan, a capacity building action plan for the **Cartagena Protocol on biosafety**.
 - The Protocol seeks to protect biological diversity from the potential risks posed by **living modified organisms** resulting from modern biotechnology.
 - As per the declaration the signatory nations will ensure that the **post-pandemic recovery policies, programmes and plans contribute to the conservation** and sustainable use of biodiversity, promoting sustainable and inclusive development.
- **30 by 30 Target:**

Note:



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- The declaration made a reference to the '30 by 30' target which is a **key proposal being debated at the COP15**, that would afford **30% of the Earth's land and oceans protected status by 2030**.

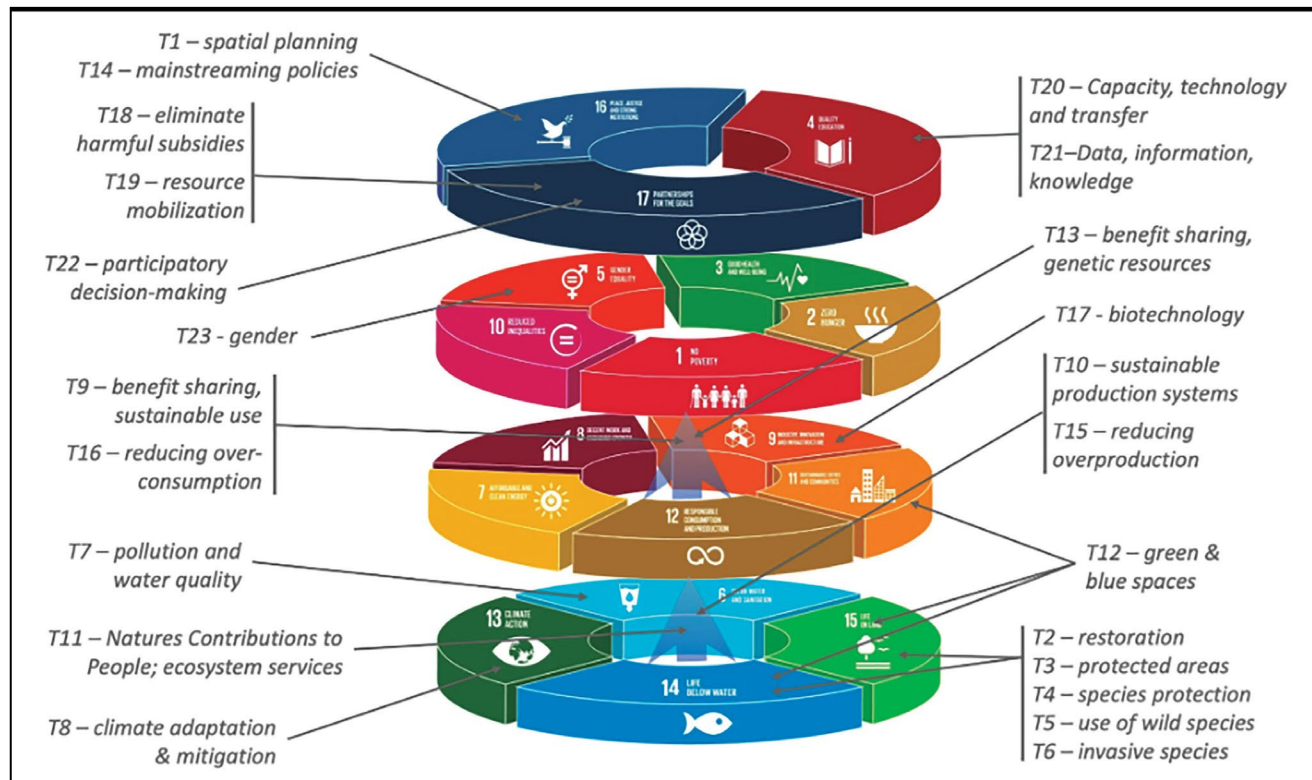
➤ **Main targets:**

- The framework consists of **four goals and 23 targets for 2030**.

- **The four goals are:**

- **Conserve and restore biodiversity.**
- **Ensure sustainable use of biodiversity.**
- **Share benefits fairly and equitably.**
- **Enable transformative change.**

- **The 23 targets are:**



➤ **Challenges with Implementation:**

- **Limited Timeframe and Urgency:**

- With just seven years remaining to meet the GBF targets, immediate action is imperative due to the **critical state of around one million animal and plant species threatened with extinction**.
- The urgent need to address biodiversity loss requires **accelerated efforts and comprehensive implementation strategies**.

- **Funding Gap:**

- The Signatories aim to **ensure 200 billion USD per year is channelled to conservation initiatives**, from public and private sources. Raising international financial flows from developed to developing countries to at least USD 30 billion per year by 2025, and at least

30 billion USD a year by 2030. But this **funding has yet to be fulfilled**.

- **Lack of specific funding commitments for biodiversity**, as seen in recent **statements from the G7**, hinders the financial support required for effective implementation.

- **National Biodiversity Strategy and Action Plans (NBSAP):**

- Member states agreed to realign their **NBSAPs to the GBF**, but progress in submitting the revised plans has been slow.
- **Spain is the only country that has submitted its realigned NBSAP** so far, highlighting the need for more countries to develop and submit their plans to the CBD secretariat before COP16 in 2024.

Note:

- **Balancing Conservation and Indigenous Rights:**
 - The **target of protecting 30% of land and water has raised concerns regarding potential infringements on the rights of indigenous communities.**
 - Striking a balance between conservation efforts and respecting the rights and traditional knowledge of indigenous peoples is essential for successful implementation.

Air Pollution

Why in News?

Recently, a research has been published in the journal Nature titled- **“Machine learning-based country-level annual air pollutants exploration using Sentinel-5P and Google Earth Engine”**, showing that, during 2018-2021, India witnessed the maximum levels of human-induced **Air Pollution.**

What Methodology did the Researchers Use?

- Researchers carried out machine learning-based country-level annual air pollution monitoring using **Sentinel-5P satellite and Google Earth Engine (GEE).**
 - Sentinel-5P satellite is a European satellite tracking the levels of air pollutants around the world.
- While **Sentinel-5P monitored** the atmospheric air pollutants and chemical conditions (from 2018-21), the **cloud computing-based GEE platform was used to analyse** the two factors.

What are the Findings of the Study?

- **Air Quality Index:**
 - The years 2020 and 2021 saw drastic changes in **Air Quality Index (AQI)**, whereas 2018 and 2019 saw **low AQI throughout** the year.
 - AQI has been developed for eight pollutants viz. **PM2.5, PM10, Ammonia, Lead, nitrogen oxides, sulphur dioxide, ozone, and carbon monoxide.**
 - Delhi, Kolkata, Mumbai, Pune and Chennai recorded **huge fluctuations in terms of air pollution during the study period.**
 - High levels of nitrogen dioxide were observed in seven AQI monitoring stations of Kolkata: **102 in 2018, 48 in 2019, 26 in 2020 and 98 in 2021.**

- Delhi also recorded high NO2 variations; 99 in 2018, 49 in 2019, 37 in 2020), and 107 in 2021.

➤ **Causes:**

- This period, traversing the three phases of the **Covid-19 Pandemic** (pre, during and post), saw a surge in air pollution owing to the **development of transportation, industrial power plants, green space dynamics** and unplanned urbanization in the country.
- Anthropogenic actions are the **foremost reason for climatic conditions** and atmospheric changes, and India is the country **most affected by such activities.**
- In terms of rural air pollution, agricultural waste burning is also the main reason.

➤ **Implications:**

- Anthropogenic activities in India are **causing an increase in health problems** and pollution-related diseases such as **Asthma, Respiratory disease, Lung cancer, and skin-related** diseases. The main pollutants of concern are NO2, carbon monoxide, ozone, sulphur dioxide, and methane.
- Air pollution and extreme weather conditions are interconnected. Air pollutants like **Methane, Ozone**, and aerosols affect sunlight.
- The discharge of high voltage electricity has transformed oxygen into ozone, leading to **depletion of the ozone layer and increased penetration of ultraviolet rays.**

➤ **Recommendations:**

- Awareness and planning are much needed for protecting the environment.
- Proper planning, management and development strategies **can help protect the environment.**

What are the Government Initiatives to Combat Air Pollution?

- **Graded Response Action Plan (Delhi)**
- **Polluter Pay principle**
- **Smog Tower**
- **Tallest Air Purifier**
- **National Clean Air Programme (NCAP)**
- **BS-VI vehicles**
- **New Commission for Air Quality Management**
- **Turbo Happy Seeder (THS)**

Note:

- **Air Quality and Weather Forecasting and Research (SAFAR)**
- **Dashboard for Monitoring Air Quality**
- **National Air Quality Index (AQI)**
- **Air (Prevention and Control of Pollution) Act, 1981**
- **Pradhan Mantri Ujjwala Yojana (PMUY)**

Groundwater Extraction and Land Subsidence

Why in News?

Cracks in **buildings** and 'sinking' land in **Joshimath, Uttarakhand** a hill town in Uttarakhand, made the headlines earlier in 2023.

- A similar phenomenon has been playing out for years in the plains of **Punjab, Haryana, Delhi and Faridabad**. According to the data gathered for years by the **Central Ground Water Board (CGWB)**, **excessive groundwater extraction** is identified as the underlying cause of these alarming incidents

What is Land Subsidence?

- **About:**
 - Land subsidence refers to the **gradual sinking or settling of the Earth's surface**, usually due to the compaction of underground layers of **soil, rock, or other materials**.
 - It occurs when the **support structures beneath the land**, such as **aquifers, underground mines, or natural gas extraction**, are depleted or when certain geological processes take place.
- **Impact:**
 - In urban areas, it can **damage infrastructure, including roads, buildings, and underground utilities**.
 - It can also increase the **risk of flooding in coastal regions by reducing the elevation of the land relative to sea level**.
 - In agricultural areas, subsidence can affect irrigation systems, disrupt the flow of water in rivers and canals, and cause **permanent damage to farmland**.

What has the CGWB Identified About Groundwater Extraction and Land Subsidence?

- **Land Subsidence Due to Groundwater Extraction:**

- Digging operations conducted for mining activities demonstrated the **occurrence of "soil settlement" or sinking due to voids created from mining**. Similar observations prompted researchers to **investigate the role of groundwater extraction in land subsidence in India**.
- **Evidence of Land Subsidence in Different Regions:**
 - Unlike **land movement from landslides or earthquakes**, subsidence from groundwater extraction was gradual and barely visible annually.
 - Studies utilizing satellite-based analysis of ground movement have identified **building deformities resulting from groundwater withdrawals**.
 - Using data from the Sentinel-1 satellite shows that the **National Capital Region (NCR)** sank an average of **15 mm per year from 2011-2017**.
 - **Urbanization and unplanned growth** exacerbated groundwater withdrawal and contributed to subsidence in the NCR.
 - Kolkata and parts of eastern India also **experience overexploited groundwater blocks and land subsidence**.

What is the Status of Ground Water Extraction in India?

- **About:**
 - Currently, **85% of rural and 50% of urban population** is dependent on groundwater for sustenance, **making India the largest groundwater user globally**.
 - India's stage of groundwater extraction, **which is the percentage of utilization of groundwater against recharge**, has **dropped from 61.6% in 2020 to 60.08% in 2022**, according to the report on the **National Compilation of Dynamic Ground Water Resources in India**.
- **Groundwater Depletion in Northwest India:**
 - Agricultural practices in N-W India heavily depend on **groundwater withdrawal due to limited monsoon rain**.
 - Data from the **CGWB** reveals alarming levels of groundwater exploitation:
 - Punjab: **76% of groundwater blocks are 'over exploited.'**
 - Chandigarh: **64% of groundwater blocks are 'over exploited.'**
 - Delhi: **Approximately 50% of groundwater blocks are 'over exploited.'**

Note:



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➤ **Issues Associated:**

- **Unregulated Pumping:** Several states affected by depletion of groundwater provide **free or heavily subsidized power (including solar pumps)** for pumping groundwater for irrigated agriculture.
 - This enables **overexploitation and depletion of scarce groundwater resources.**
- **Preference to Water-Intensive Crops:** The **minimum support price** for wheat and rice creates highly skewed incentive structures in **favor of wheat and paddy**, which are water intensive crops and depend heavily on ground water for their growth.
- This makes **groundwater a heavenly resource for their farming.**
- **Saline Water Intrusion:** In coastal areas, excessive groundwater pumping can cause **saline water intrusion.**
 - As fresh groundwater is depleted, **seawater infiltrates into the aquifers, making the water unsuitable for various uses** and adversely impacting agriculture and ecosystems.
- **Ecological Impacts:** Groundwater depletion affects ecosystems by altering the **flow of water in rivers, lakes, and wetlands.**
 - This **disrupts the natural balance, harming aquatic life and biodiversity.** It also affects the availability of water for plants and animals dependent on groundwater sources.

What are the Government Initiatives Related to Groundwater Conservation?

- **Pradhan Mantri Krishi Sinchayee Yojana**
- **Jal Shakti Abhiyan- Catch the Rain Campaign**
- **Atal Bhujal Yojana**
- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)**

Sea Butterflies

Why in News?

The population of the sea butterflies in the Southern Ocean is shrinking due to **climate change**, making them extremely vulnerable.

What are Sea Butterflies?

➤ **About:**

- Sea butterflies, scientific name *Thecosomata*, are a **suborder of sea snails** known as **shelled pteropods**.
- They have **muscular feet that allow them to swim in water** instead of gliding on solid surfaces.
- Sea butterflies are **holoplanktonic** (organisms that pass their whole life floating, drifting, or swimming weakly in the water) and spend their entire life cycle in the water column.
- They are **found in all oceans** but are more diverse and **abundant in colder waters.**
- Sea butterflies have **bilateral symmetry** and a **coiled or uncoiled shell** of various shapes and sizes.
 - **Their shell** is mostly transparent and very fragile and **can be easily dissolved by ocean acidification.**
- They have a pair of wing-like lobes or parapodia for propulsion and a head with eyes, tentacles, and a mouth with a long proboscis to capture prey.
- They have a reduced or absent gill and rely on their body surface for gas exchange.



➤ **Importance:**

- They are a major **food source** for many fish, seabirds, whales, and other marine animals.
- They also play a key role in **transporting carbon from the surface to the deep ocean** through their shells and fecal pellets.

How does Climate Change Impact the Population of Sea Butterflies?

➤ **Ocean Acidification:**

- Increased **carbon dioxide absorption by the ocean leads to higher acidity.**
- **Reduced availability of carbonate ions** necessary for shell formation and maintenance.
- The ocean is the **most acidic in winter** because **cooler water absorbs more CO₂**. This means, the winter months are the most dangerous for the shelled sea butterflies.
 - Sea butterflies' shells can dissolve, weaken, or deform.
 - Increased vulnerability to predators, infections, and stress.

Note:



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- Affects metabolism, growth, reproduction, and survival.

➤ **Ocean Warming:**

- **Rising ocean temperatures** due to climate change.
- Changes in distribution and abundance of sea butterflies.
- Seek optimal thermal conditions for development and survival.
- Alters **food availability and quality**.
- Impacts **ocean currents and mixing affecting sea butterfly transport**.
- **Ocean Deoxygenation:**
 - Warmer and stratified ocean leads to decreased oxygen levels.
 - Affects **sea butterflies' respiration and energy balance**.
 - **Alters vertical migration patterns**.
 - Exacerbates effects of ocean acidification by increasing dissolved carbon dioxide concentrations.

How can this Reduced Population Impact Antarctic Marine Ecosystems?

- **Reducing the Food Availability for Higher Trophic Levels:**
 - Sea butterflies serve as a major food source for fish, seabirds, whales, and other marine animals.
 - Population decline of sea butterflies can lead to starvation, malnutrition, or reduced reproduction in their predators and prey.
- **Disrupting the Balance of the Marine Food Web:**
 - Sea butterflies play a crucial role in linking **primary producers (phytoplankton)** with **secondary consumers (zooplankton)** and higher trophic levels.
 - Decline in sea butterfly population can alter the structure and function of the marine food web.
 - Biodiversity and productivity of the Antarctic marine ecosystem may be affected.
- **Decreasing the Carbon Sequestration Capacity of the Ocean:**
 - Sea butterflies contribute to the **"biological pump,"** transporting carbon from the surface to the deep ocean through their shells and fecal pellets.
 - Population decline **reduces the amount of carbon sequestered (process of capturing and storing atmospheric carbon dioxide)** in the ocean.

- This results in increased carbon dioxide in the atmosphere and further ocean acidification.

Thawing Permafrost in Arctic and Industrial Contamination

Why in News?

According to a New Study, **"Thawing Permafrost poses an environmental threat to thousands of sites with legacy industrial contamination"**, thawing of **Permafrost** may result in the spread of toxic substances in the **Arctic Region**.

What is Permafrost?

- Permafrost is **essentially any ground that stays frozen** — 0 degree Celsius or lower — for at **least two years straight**.
- These permanently frozen grounds **are often found in Arctic regions** such as Greenland, Alaska (the United States), Canada, Russia and Eastern Europe.
- According to the **National Aeronautics and Space Administration (NASA)**, permafrost is composed of **"a combination of soil, rocks and sand that are held together by ice"**. The soil and ice in permafrost stay frozen all year long.
 - However, although the **ground remains perennially frozen**, permafrost regions aren't always covered with snow.

What are the Findings of the Study?

- **Contaminated Sites In the Region:**
 - 4,500 industrial facilities in the permafrost regions **have most likely produced between 13,000 and 20,000 contaminated sites**.
 - As of now, around 1,000 of the known industrial sites and 2,200 to 4,800 of the known contaminated sites **are already at risk of destabilising due to thawing permafrost**.
- **Industrial Waste in Arctic:**
 - Known industrial waste types in the region include **drilling and Mining wastes**, toxic substances like drilling muds and fluids, mine waste heaps, heavy metals, spilled fuels, and **Radioactive Waste**.
- **Rapid Thawing and Destabilizing Industrial Site:**
 - The **Arctic is getting warmer nearly four times as fast as the rest of the planet** due to **Climate Change**,

Note:



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and therefore permafrost is thawing rapidly, which could destabilize not only the industrial sites **but also the contaminated areas.**

- Nearly 2,100 industrial sites and between **5,600 and 10,000 contaminated sites are under threat of destabilization** by the end of this century.

➤ **Reasons for building Such Sites:**

- Once believed to be perennially stable and reliable, the Arctic is far from an uninhabited and untouched region.
 - It's dotted with countless **industrial facilities such as oilfields and pipelines**, mines and military bases.
- All this infrastructure is built on permafrost, the toxic waste from these industrial facilities has been buried in the permafrost, on the assumption **that it would stay locked away permanently.**
 - But danger looms as the planet continues to heat up.
- The Arctic region experienced **increased development during the Cold War**, becoming a hub for **resource extraction and military operations.**
 - As a result, industrial and toxic waste accumulated on or within the permafrost, and no measures were taken to remove it.

What are the Implications of Thawing Permafrost?

- One of its most dangerous consequences is the **release of Greenhouse Gases (GHG)** into the atmosphere.
 - A 2022 report by NASA said, "Arctic permafrost alone holds an estimated 1,700 billion metric tons of carbon, including **methane** and carbon dioxide. That's roughly **51 times the amount of carbon the world released as fossil fuel emissions in 2019.**"
- Plant matter frozen in permafrost doesn't decay, but when permafrost thaws, microbes **within the dead plant material start to break the matter down**, releasing carbon into the atmosphere.
- A 2022 study by Columbia University observed that **thawing permafrost would unleash thousands of dormant viruses and bacteria.**
- Some of these "could be new viruses or ancient ones for which humans lack immunity and cures, or diseases that society has eliminated, such as **smallpox** or **Bubonic plague.**"

Land Reclamation

Why in News?

The **increasing economic importance of coastal zones**, particularly in **East Asia, the Middle East, and West Africa**, has led to significant **land reclamation projects** worldwide. Despite the economic benefits, these projects face **environmental challenges** and potential risks from **rising sea levels** and **storm surges.**

What is Land Reclamation?

➤ **About:**

- Land reclamation refers to the **process of creating new land by altering the topography of existing bodies of water**, such as seas, rivers, lakes, or marshes.
 - It is **typically done along coastlines** but can also occur inland, involving the conversion of **wetlands** or other water bodies.
- Land reclamation has a long history of being used to **expand coastal areas for agriculture and industrial purposes.**

➤ **Traditional Land Reclamation:**

- Traditionally, land reclamation meant building a **series of dikes to enclose tidal marshes** or **shallow offshore waters** and draining these enclosures to create dry land.
- In some cases, **streams were diverted to carry additional sediment into these areas**, building up the land to a higher level.
- **Soil and stone could also be excavated from the mainland and dumped along the shore** or on the coast of existing islands, **gradually expanding the land into the sea.**

➤ **Modern Land Reclamation:**

- Today, **major engineering projects** involve the **construction of kilometres of offshore concrete barrier walls**, which are filled with substantial amounts of sand, earth, clay or rock, often shipped in from far afield.
- The reclamation site can also be **filled with dredged soil from the nearby seafloor mixed with water**, in a process known as **hydraulic reclamation.**

➤ **Current Extent of Land Reclamation:**

Note:



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- The study, which examined satellite imagery of coastal cities with a population of at least 1 million, found that reclamation projects in 106 cities around the world had altogether created around 2,530 square kilometres (more than 900 square miles) of coastal land.
- Nearly 90% of new coastal land was created in East Asia over the last two decades, most often to make way for industry and port facilities catering to the globalised economy.
 - From 2000 to 2020, China alone added around 350 square kilometres, with Singapore and Incheon, in South Korea, also raising vast new areas.

What are the Issues

Associated with Land Reclamation?

- **Coastal Flooding:** Most coastal land expansion in the past couple of decades happened in low-lying areas, with more than 70% of that land “at high risk from coastal flooding between 2046 and 2100,” due in part to storm surges linked to global warming and the risk of land subsidence.
 - Stronger storms and increasingly destructive flooding are already taking coastal communities by surprise.
- **Distortion of Seabed Ecosystem:** Using materials like sand which are obtained from the marine and river environment can mean the destruction of habitats and spawning grounds of organisms.
 - Several countries have already banned the export of sand for land reclamation. The resulting sand shortage has forced some construction companies to extract sand and clay from the ocean floor, destroying the seabed ecosystem in the process.
- **Loss of Wetlands:** Coastal wetlands, such as mangroves, salt marshes, and estuaries, are highly productive ecosystems that provide numerous ecological benefits.
 - Land reclamation often involves draining or filling these wetlands, resulting in their destruction or alteration.
 - This loss of wetlands can disrupt the natural balance of coastal ecosystems, affecting water quality, fish nurseries, and the overall resilience of the coastal zone.

Meri LiFE App

Why in News?

The Ministry of Environment, Forest, and Climate Change has launched a mobile application called “Meri LiFE” (My Life) to mobilize youth for climate change ahead of World Environment Day on 5th June.

- The Ministry has developed two dedicated portals for LiFE: the Mission LiFE Portal and the Meri LiFE Portal.

What is the Goal of the Meri LiFE App?

- The Meri LiFE app aims to showcase the power of citizens, especially young people, in saving the environment by emphasizing the impact of simple actions in daily lives.
 - The app is intended to catalyze a national movement for LiFE (Lifestyle for Environment) by creating a structured way to track the progress being made on Mission LiFE.
- It encourages users to participate in a series of LiFE-related tasks under five themes: Save Energy, Save Water, Reduce Single Use Plastic, Adopt Sustainable Food Systems, and Adopt Healthy Lifestyle.
 - Upon successful sign-up, users are guided through a gamified experience to take the 5 for 5 challenge and take five LiFE actions towards June 5th, 2023.

What is Mission LiFE?

- The idea of LiFE was introduced by the Prime Minister of India during the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow on 1st November 2021.
- The LiFE Movement aims to utilize the power of collective action and nudge individuals across the world to undertake simple climate-friendly actions in their daily lives.
 - Additionally, it also seeks to leverage the strength of social networks to influence social norms surrounding climate.
- The Mission plans to create and nurture a global network of individuals, namely ‘Pro-Planet People’ (P3), who will have a shared commitment to adopt and promote environmentally friendly lifestyles.
 - Through the P3 community, the Mission seeks to create an ecosystem that will reinforce and enable environmentally friendly behaviors to be self-sustainable.

Note:

- The Mission envisions replacing the prevalent ‘**use-and-dispose**’ economy—governed by mindless and destructive consumption—with a circular economy, which would be defined by mindful and deliberate utilization.

World Environment Day 2023

➤ About:

- World Environment Day was established on June 5th, 1974, by the **United Nations General Assembly**. It serves as a global platform for raising awareness and acting on pressing environmental issues.

➤ Theme for 2023:

- The theme for World Environment Day 2023 is **Solutions to Plastic Pollution**, which aligns with one of the seven themes of Mission LiFE: “Reducing the use of single-use plastic items.”
- More than **400 million tonnes of plastic** is produced every year, half of which is designed to be used only once. Of that, **less than 10% is recycled**. An estimated **19-23 million tonnes** end up in lakes, rivers and seas.

➤ Host:

- It is hosted by Côte d’Ivoire in partnership with the Netherlands.
- India hosted **2018 World Environment Day** with “Beat Plastic Pollution” as the theme.

Water Footprint of AI

Why in News?

As AI tools like **OpenAI’s ChatGPT** continue to gain popularity for their versatility and automation capabilities, concerns are being raised regarding their environmental impact.

- A recent study has shed light on the water footprint of **Artificial Intelligence(AI)** models, highlighting the significant amounts of water required to maintain data centers and train these models.

What is the Water Footprint of AI?

- The water footprint of AI is the **amount of water that is used to generate electricity and provide cooling for the data centers** that run AI models.

- The water footprint of AI can be divided into two components: direct water consumption and indirect water consumption.
 - Direct water consumption refers to the **water that is evaporated or discharged as waste during the cooling process** of data center servers.
 - Indirect water consumption refers to the water that is used to produce the **electricity that powers data center servers**.
- The water footprint of AI can vary depending on several factors, such as the type and size of the AI model, the location and efficiency of the data center, and the source and mix of electricity generation.

How Much Water Does AI Consume?

- According to a recent study titled “**Making AI Less ‘Thirsty:’ Uncovering and Addressing the Secret Water Footprint of AI Models**”, training a large AI model such as **GPT-3** can directly consume up to **700,000 liters of clean freshwater**, which is enough to produce **370 BMW cars or 320 Tesla electric vehicles**.
- The same study also estimated that a conversation with an AI chatbot such as **ChatGPT** can consume up to **500 ml of water for 20-50 questions and answers**, which may not seem like much until you consider that **ChatGPT has more than 100 million active users** who engage in multiple conversations.
- The **GPT-4**, expected to have a larger model size, is predicted to further amplify these water consumption statistics.
 - However, estimating the water footprint of GPT-4 is challenging due to the lack of publicly available data for calculation.
- Although online activities using AI models occur digitally, the **physical storage and processing of data take place in data centers**.
 - Data centers **generate considerable heat**, necessitating water-intensive cooling systems, often utilizing evaporative cooling towers.
 - To maintain system integrity, the **water used must be pure freshwater**, and **data centers also require significant water for power generation**.

What are the

Concerns with the Water Footprint of AI?

- **Water Scarcity:**

Note:



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- Water scarcity is a global issue, and **AI technologies contribute to the problem**. AI infrastructure requires significant amounts of freshwater for cooling, which strains limited water resources.
- **Environmental Impact:**
 - Extraction of freshwater for AI operations can harm **aquatic biodiversity**.
 - Energy required for water treatment and transport for AI operations contributes to carbon emissions and **climate change**.
- **Unsustainable Resource Management:**
 - Diverting water for AI operations can hinder access to water for **human consumption, agriculture, and other critical needs**.
 - **Equity and Social Implications:**
 - Water scarcity disproportionately affects **vulnerable communities** that rely on limited water supplies for their livelihoods.
 - The water-intensive nature of AI can further exacerbate inequities by diverting water away from communities that need it the most.
- **Long-term Sustainability:**
 - The expanding AI industry could place additional strain on water resources without addressing the water footprint issue.
 - Addressing the water footprint is crucial for the long-term sustainability of both AI development and water availability.
- By using renewable energy sources like **wind or solar power to generate electricity**, we can significantly reduce the amount of water needed.
- **Implement Water-Efficient Cooling Systems:**
 - Most data centers, which house the servers and other hardware that power AI systems, use water-based cooling systems. Implementing **water-efficient cooling technologies** like **air cooling or direct-to-chip liquid cooling** can help reduce the amount of water used.
- **Develop Water-Efficient Algorithms:**
 - AI algorithms can be designed to be more water-efficient by **reducing the need for computational power or by optimizing algorithms** to use less water-intensive processes.
- **Increase Hardware Lifespan:**
 - **Extending the lifespan of hardware can reduce the amount of water used** in its production. By designing hardware that lasts longer and is upgradeable, we can reduce the need to replace hardware frequently.
- **Promote Responsible Water Management:**
 - Encouraging responsible **water management practices by data centres** and other AI companies can help reduce the water footprint of AI.
 - This includes measures like recycling wastewater, using rainwater harvesting systems, and implementing water-efficient landscaping practices.
 - Adopting policies and regulations that incentivize or mandate the reduction of the water footprint of AI by setting standards, targets, or taxes.



How Can the Water Footprint of AI be Reduced?

- **Use Renewable Energy Sources:**

Note:

Security

Highlights

- Rohingya Refugees in India

- Innovations for Defence Excellence

Rohingya Refugees in India

Why in News?

A recent report titled 'A Shadow of Refuge: **Rohingya Refugees in India**' sheds light on the challenges faced by Rohingya refugees in India.

- The report was jointly prepared by **The Azadi Project**, a women's rights non-profit and **Refugees International**, an international NGO that advocates for the rights of stateless people

What is the Rohingya Crisis?

- The Rohingya people have suffered decades of **violence, discrimination and persecution in Myanmar**.
 - Rohingya are not recognized as an official ethnic group and have been **denied citizenship since 1982**. They are one of the largest stateless populations in the world.
- Since the early 1990's, the **Rohingya have fled successive waves of violence in Myanmar**.
 - Their **largest and fastest exodus began in August 2017** when violence broke out in Myanmar's Rakhine State, driving more than 742,000 people to seek refuge in neighbouring countries —**the majority of whom were women and children**.



What are the Concerns and Recommendations Outlined in the Report?

➤ Concerns Related to Rohingya:

○ Denied Exit Permissions for Resettlement:

- India's refusal to grant exit visas to Rohingya refugees who have completed refugee status determinations and gained approval for resettlement in third countries is a **significant concern**.

○ Stigmatisation and Anti-Refugee Sentiment:

- The Rohingya refugees in India face various **challenges**, including being labelled as **"illegal migrants"**.
- This **stigmatisation not only hampers their integration into society but also places them at risk of being deported back to Myanmar**, where they fled from a genocidal regime.

○ Fear of Deportation:

- Actual and threatened deportations have instilled a **sense of fear within the Rohingya community**, compelling some to return to **camps in Bangladesh**.
- International conventions, including the **International Covenant on Civil and Political Rights and the Convention on the Rights of the Child**, obligate India **not to return the Rohingya to Myanmar**.
 - However, the Supreme Court has accepted the government's arguments **regarding national security threats**, allowing deportations to proceed.

○ Harsh Living Conditions:

- The report details the dire living conditions of Rohingya refugees in India, residing in **slum-like settlements without safe running water, toilets, or access to basic healthcare and education**.

Note:



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- Without valid travel documents, obtaining an **Aadhaar card for essential services such as school admissions** has become impossible.
- **Recommendations:**
 - **Formal Recognition and Domestic Laws:** India should formally recognize **Rohingya refugees as individuals with a right to asylum rather than as illegal migrants.**
 - Signing the **1951 Refugee Convention** and establishing domestic laws on refugees and asylum can be the crucial steps to achieve this.
 - **Acknowledgment of Residency:** India can recognize UNHCR cards as sufficient for accessing basic education, work, and health services.
 - UNHCR cards refer to **identification documents issued by the United Nations High Commissioner for Refugees (UNHCR)** to individuals who have been recognized as refugees or asylum seekers.
 - UNHCR is the United Nations agency responsible for protecting and supporting refugees worldwide.
 - UNHCR cards **serve as proof of the individual's status as a refugee or asylum seeker** and may grant them certain rights and access to services in the country where they reside.
 - **Global Credibility and National Security:** Treating refugees better would enhance **India's global credibility and serve national security interests** by documenting new arrivals and discouraging them from remaining under the radar.
 - The report suggests that **India can play a proactive role in facilitating resettlement opportunities for Rohingya refugees** by advocating for their acceptance in ally countries such as the **U.S., Canada, Australia, Germany, and other European nations.**

What can be the Reasons behind India's Decision not to Sign the 1951 Refugee Convention?

- **Issue with Definition of Refugee:** According to the 1951 convention, **refugees are defined as people who have been deprived of their civil and political rights, but not their economic rights.**
- If the violation of economic rights were to be included in the definition of a refugee, **it would clearly pose a major burden on the developed world.**

- **Sovereignty Concerns:** Countries may be reluctant to sign international agreements that they believe could **compromise their sovereignty or interfere with their domestic policies and decision-making processes.**
 - By not signing the convention, **India retains the freedom to implement its own refugee policies.**
- **Limited Resources:** India is one of the **most populous countries in the world** and already faces significant challenges in providing basic services and resources to its own population.
 - Signing the convention might result in **increased responsibilities and resource burdens related to the protection and support of refugees.**
- **Regional Dynamics:** India is located in a region that has been historically affected by various conflicts and displacement situations.
 - The country has faced influxes of refugees from neighbouring countries, due to the **porous nature of borders in South Asia.**
 - However, India is still **bound by other international human rights treaties and customary international law principles.**

What is the Current Legislative Framework in India to Handle Refugees?

- India treats all foreigners whether illegal immigrants, refugees/asylum seekers or those overstaying visa permits under
 - **Foreigners Act of 1946:** Under Section 3, the central government is empowered to **detect, detain and deport illegal foreign nationals.**
 - **Passport (Entry into India) Act, 1920:** Under Section 5, authorities can remove an **illegal foreigner by force under Article 258(1) of the Constitution of India.**
 - **Registration of Foreigners Act of 1939:** Under this, there is a mandatory requirement under which all foreign nationals (excluding overseas citizens of India) visiting India on a long-term visa (more than 180 days) are required to register themselves with a **Registration Officer within 14 days of arriving in India.**
 - **Citizenship Act, 1955:** It provided provisions for renunciation, termination, and deprivation of citizenship.

Note:

- Further, **Citizenship Amendment Act, 2019 (CAA)** seeks to provide citizenship to **Hindu, Christian, Jain, Parsi, Sikh, and Buddhist immigrants persecuted in Bangladesh, Pakistan, and Afghanistan.**

- India issued a **Standard Operating Procedure (SOP)** to be followed by all concerned agencies while dealing with foreign nationals who claim to be refugees.

Innovations for Defence Excellence

Why in News?

Innovations for Defence Excellence (iDEX), the flagship initiative of the Ministry of Defence, has signed its 250th contract – first under **Mission DefSpace** – and 100th **SPRINT (Navy)** contract.

What are Mission DefSpace and SPRINT Navy Contracts?

- **Mission DefSpace Contract:**
 - Space startup Inspecity has been awarded the **first iDEX contract of Mission DefSpace.**
 - Inspecity had emerged as the winner of a challenge conducted by the Defence Space Agency focused on developing a gas based **Micropropulsion system for cubesats.**
 - Cubesats are a class of small satellites and are easy to manufacture, modular, modular, low cost, integrate and launch. The cubesats are critical for **launch-on-demand capabilities and are good for Imagery, Reconnaissance/communication, and also Intelligence Surveillance.**
 - This technology will enable **precise manoeuvring and orbit correction for satellites**, including the cubesat swarm being developed under Mission DefSpace.
- **SPRINT (Navy) Contract:**
 - Siliconia Technologies Pvt Ltd, has emerged as the winner of a **SPRINT (Supporting Pole-Vaulting in R&D through iDEX, NIO and TDAC)** Challenge focused on developing a **lightweight Application-Specific Integrated Circuit (ASIC)** based communication system for phased-array radars.

- The system provides **multiple independent receiver/transmitter sources** crucial for satellite tracking.
- It utilizes software-defined antennas for communication with **Low Earth Orbit (LEO), Medium Earth Orbit, and Geostationary Satellites.**

What is iDEX?

- **About:**
 - iDEX, launched in 2018, is an **ecosystem to foster innovation & technology development in Defence and Aerospace** by engaging innovators & entrepreneurs to deliver technologically advanced solutions for modernizing the Indian Military.
 - It provides funding/grants to **Micro Small and Medium Enterprises (MSMEs), start-ups**, individual innovators, R&D (Research and Developments) institutes and academia to carry out research and development.
 - The iDEX-Prime aims to support projects requiring support beyond **Rs 1.5 crore up to Rs 10 crore, to help ever-growing start-ups** in the defence sector.
 - **iDEX portal** was launched to provide wider publicity and better visibility of iDEX activities and enable more efficient running of future challenges through better information management.
- **Objectives:**
 - **Indigenization:** Rapid development of **new, indigenized and innovative** technology.
 - **Innovation:** Creates a **culture of engagement with innovative startups** to encourage co-creation.
- **Funding:**
 - iDEX is funded and managed by **"Defence Innovation Organisation (DIO)".**
 - iDEX will function as the **executive arm of DIO**, carrying out all the required activities while DIO will provide high level policy guidance to iDEX.
- **Achievement:**
 - iDEX has been awarded the prestigious Prime Minister Award for Public Policy in Innovation Category for the year 2021.

What is Mission DefSpace?

- It was inaugurated by Prime Minister of India during the October 2022 edition of India's DefExpo.
- It aims to **nurture the Indian Private Space industry through challenges addressing every stage** of a

Note:



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space mission – from mission planning to satellite data analytics.

- This mission encompasses **75 Defense Space Challenges that directly suit the needs of end users.**
- These challenges have been categorised into the existing **DDP initiatives of IDEX, Make-I, and Make-2**, allowing participation from private industries, including startups, MSMEs, and individual innovators.
- The challenges are categorized into **five different domains:**
 - Launch System
 - Satellite System

- Communication & Payload System
- Ground System, and Software System.
- Together, they offer an in-depth and complete understanding of space from a 360-degree perspective.

What are Government Initiatives Regarding Defense?

- **First Negative Indigenisation**
- **Positive Indigenisation List**
- **New FDI Policy in Defence Sector**
- **Defence Acquisition Procedure 2020**
- **Defence Industrial Corridors**



Note:

Art and Culture

Highlights

- Sengol to be Installed in New Parliament Building
- Dancing Girl Figurine

Sengol to be Installed in New Parliament Building

Why in News?

On **May 28th 2023**, the Prime Minister will inaugurate the **new Parliament building**, which is part of the **Central Vista redevelopment project**.

- One of the highlights of the event will be the installation of a **historic golden sceptre**, called **Sengol**, near the **Speaker's seat**.
- The Sengol is a **symbol of India's independence and sovereignty**, as well as its **cultural heritage and diversity**.

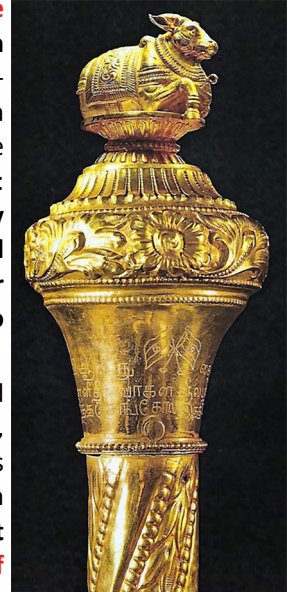
What is the Historical Significance of Sengol?

- The **Sengol** is profound in meaning, derived from the Tamil word "**Semmai**", it means "**Righteousness**". It was made of **gold or silver** and was often decorated with precious stones.
 - A Sengol sceptre was carried by **emperors on ceremonial occasions**, and used to represent their authority.
- It is associated with the **Chola Empire**, one of the longest-ruling and **most influential dynasties in South India**.
 - The Cholas ruled over parts of **Tamil Nadu, Kerala, Karnataka, Andhra Pradesh, Telangana, Odisha, and Sri Lanka** from the **9th to 13th century CE**.
 - They were known for their **military prowess, maritime trade, administrative efficiency, cultural patronage, and temple architecture**.
- The Cholas had a tradition of **handing over the Sengol sceptre from one king to another** as a mark of succession and legitimacy.
 - The ceremony was usually performed by a **high priest or a guru who blessed the new king and conferred him with the Sengol**.

How did Sengol

Become a Part of India's Independence?

- Before **independence** from the British rule in **1947**, the then Viceroy - Lord Mountbatten posed a question to the to-be Prime Minister Jawaharlal Nehru: "**What is the ceremony that should be followed to symbolise the transfer of power from British to Indian hands?**"
 - PM Nehru then consulted **C. Rajagopalachari**, commonly known as **Rajaji**, who went on to **become the last Governor-General of India**.
 - Rajaji suggested that the **Chola model of handing over the Sengol sceptre** could be adopted as a suitable ceremony for India's independence.
 - He said that it would reflect **India's ancient civilisation and culture**, as well as its **unity in diversity**.
 - The Sengol sceptre was presented to **PM Nehru by Thiruvavaduthurai Adheenam** (a **500-year-old Saivaite monastery**) on **August 14, 1947**.
- A golden sceptre was crafted by **Vummidi Bangaru Chetty**, a famous jeweller in Madras (now Chennai).
 - The **Nandi**, with its unyielding gaze as the beholder of "**Nyaya**", is **hand-carved at the top**.



Where is Sengol Now and Why is it Being Installed in the New Parliament Building?

- After receiving the **Sengol sceptre in 1947**, Nehru kept it at his residence in Delhi for some time.

Note:



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- He then decided to donate it to **Anand Bhavan Museum** in **Allahabad (now Prayagraj)**, his ancestral home.
 - The museum was established by his **father Motilal Nehru in 1930** to preserve the history and legacy of India's freedom movement.
- The Sengol sceptre **remained at Anand Bhavan Museum for over seven decades.**
- In **2021-22**, when the **Central Vista redevelopment project was underway**, the government decided to **revive this historical event and install the Sengol sceptre in the new Parliament building.**
 - It will be placed near the Speaker's seat in the new Parliament building and will be accompanied by a **plaque that will explain its history and meaning.**
- The installation of Sengol in the new Parliament building is not just a **symbolic gesture but also a meaningful message.**
 - It signifies that **India's democracy is rooted in its ancient traditions and values** and that it is **inclusive and respectful of its diversity and plurality.**

What is the Central Vista Redevelopment Project?

- The **Central Vista Redevelopment Project** is a project that aims to revamp the Central Vista, India's central administrative area located near Raisina Hill, New Delhi.
- In **Union Budget 2022-23**, the **Ministry of Housing and Urban Affairs** was allocated an amount of **Rs 2,600 crore** for the construction of non-residential office buildings of the ambitious Central Vista project, including the Parliament as well as the Supreme Court of India.

Dancing Girl Figurine

Why in News?

A "contemporised" version of **Dancing Girl figurine** of **Mohenjodaro**, was used as a mascot for the **International Museum Expo 2023** in Delhi. The traditional craft of **Channapatna toys**, also protected by a **GI (geographical indication)** tag, was used to create this mascot.

- However, it has recently sparked controversy due to **distortion from the original form.**
- The Ministry of Culture defended it as an **inspired craft work and a contemporary representation of dwarvals or Door Guardian.**



What is the Significance of the Dancing Girl Figurine?

➤ About:

- The **Dancing Girl figurine** is one of the most famous and iconic artefacts of the **Indus Valley Civilization (IVC)**, also known as the **Harappan Civilization**.
- It was discovered in 1926 by archaeologist **Ernest Mackay** at **Mohenjodaro**, one of the **largest and most advanced urban settlements of the ancient world.**

- The figurine is **made of bronze** and was sculpted using the **lost wax technique.**

➤ Significance of the Dancing Girl:

- The existence of the **figurine indicates the presence of high art in Harappan society**, reflecting their artistic sophistication.
 - The **meticulous craftsmanship and symbolic aesthetic of the Dancing Girl** suggest that it was not created for utilitarian purposes but as a symbol of cultural significance.
- The figurine also shows a remarkable **sense of realism and naturalism**, capturing the subtle details of the **girl's anatomy, expression and posture.** Historian **AL Basham** also praised her lively pertness, distinguishing her from other ancient civilisations' works.

➤ Current Location of Dancing Girl:

- Despite **Mohenjodaro and Harappa becoming part of Pakistan** after the Partition, the **Dancing Girl remained in India as part of an agreement.**
- Today, the **bronze figurine is housed in the National Museum of India**, captivating visitors in the museum's Indus Civilisation gallery as its **"star object."**

Note:



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What is the Lost Wax Technique?

- The process involves creating a **wax model of the desired object**, which is then **encased in a mold**. The mold is typically made of a **heat-resistant material such as plaster or ceramic**.
 - Once the mold is created, it is **heated to melt and remove the wax**, leaving behind a hollow cavity in the shape of the original wax model.
- **Molten metal, such as bronze or silver, is then poured into the cavity of the mold, filling the space left by the wax**.
 - The metal is allowed to cool and solidify, taking the shape of the original wax model. Once the metal has cooled, the mold is broken or otherwise removed, revealing the **final metal object**.
- The **Lost Wax Technique allows for great precision** and detail in the final metal casting, as the wax model can be intricately carved or sculpted before being cast. This technique is often used in the creation of sculptures, jewelry, and other decorative metal objects where fine details are desired.
- In contemporary practice, the **Lost Wax Technique is often combined with modern technologies such as 3D printing or computer-aided design (CAD)** to create the initial wax model, **enhancing the precision and efficiency of the process**.



Note:

History

Highlights

- Revolt of 1857

REVOLT OF 1857

The first expression of organised resistance against the East India Company (EIC), occurred when Lord Canning was Governor General of India (tenure - 1856-62)

Centre of Revolt	Leader	British Officials (suppressed the revolt)
Delhi	Bahadur Shah Zafar	John Nicholson
Lucknow	Begum Hazrat Mahal	Henry Lawrence
Kanpur	Nana Saheb	Sir Colin Campbell
Jhansi & Gwalior	Rani Lakshmbai & Tantia Topo	General Hugh Rose
Bareilly	Khan Bahadur Khan	Sir Colin Campbell
Bihar	Kunwar Singh	William Taylor
Allahabad & Banaras	Maulvi Liyakat Ali	Colonel O'Neill

FAILURE OF REVOLT

- ◊ Limited uprising - princely states, southern provinces didn't join
- ◊ No effective leadership
- ◊ Limited resources - men, money and arms
- ◊ English-educated middle class, rich merchants, traders and zamindars of Bengal helped suppress the revolt

CONSEQUENCES

- ◊ EIC's rule in India ended
- ◊ Direct rule of British crown in India
- ◊ Viceroy replaced Governor General
- ◊ Doctrine of Lapse abolished - adoptive sons approved as legal heirs
- ◊ Ratio of British officers to Indian soldiers increased

CAUSES OF REVOLT

- ◊ Political - British expansion policy (Doctrine of Lapse)
- ◊ Military - inferior treatment of Indian soldiers who mainly had farmer background
- ◊ Economic - Heavy tax imposition on farmers, stringent revenue collection ways, ruin of local industries by introducing British goods
- ◊ Socio-Religious - Rapidly spreading Western Civilisation, abolition of Sati pratha and female infanticide, introduction of western education methods, belief about converting Indians to Christianity
- ◊ Immediate Cause - Rumours about cartridges of new enfield rifles being greased with cow and pig fat violating religious beliefs

Books written on the Revolt of 1857

- ◊ The Indian War of Independence by Veer Savarkar
- ◊ Rebellion, 1857: A Symposium by Puran Chand Joshi
- ◊ The Indian Mutiny of 1857 by George Bruce Malleson
- ◊ Great Mutiny by Christopher Hibbert
- ◊ Religion and Ideology of the Rebels of 1857 by Iqbal Hussain
- ◊ Excavation of Truth: Unsung Heroes of 1857 War of Independence by Khan Mohammad Sadiq Khan



Note:

Geography

Highlights

- Western Ghats
- Glacial Landforms
- River Landforms
- The Slowdown in Overturning Circulation
- Son River
- The Palghat Gap
- Cyclone Mocha

Western Ghats

Western Ghats

One of the four biodiversity hotspots of India; recognised as a UNESCO WHS (2012)



Names

- Sahyadri - northern Maharashtra; **Sahya Parvatham** - Kerala

Diverted views about Mt. type

- View 1: Block Mt. formed due to down warping of a part of land into Arabian Sea
- View 2: Not true mt. rather the faulted edge of **Deccan Plateau**

Major Rocks

- Basalt, granite gneiss, khondalites, metamorphic gneisses, crystalline limestone, iron ore

Geographical Extent

- Satpura (in north) to the end of TN at Kanyakumari (in south)

Mt. Ranges

- Nilgiri ranges, Shevaroyis and Tirumala range
- Highest peak - **Anamudi** (Kerala)

Rivers (originating)

- West-flowing: **Periyar**, Bharathappuzha, Netravati, Sharavathi, Mandovi
- East-flowing: **Godavari**, **Krishna**, **Kaveri**, Tunga, Bhadra, Bhima, Malaprabha, Ghataprabha, Hemavathi, Kabini

Endemic Species

- **Nilgiri tahr** (IUCN Status - EN)
- **Lion-tailed macaque** (IUCN Status - EN)

Imp Protected Areas

- Biosphere Reserves - Agasthyamala and Nilgiri
- NP - Silent Valley, Bandipur, Eravikulam, Wayanad-Mudumalai, Nagarhole
- TR - Kalakad-Mundanthurai, Periyar

Imp Passes

▪ Thal Ghat Pass (Kasara Ghat)	▪ Amba Ghat Pass
▪ Bhore Ghat Pass	▪ Naneghat Pass
▪ Palakkad Gap (Pal Ghat)	▪ Amboli Ghat Pass

Significance

- Hydroelectricity production
- Influences Indian monsoon weather patterns
- Carbon sequestration (neutralise ~4 MT of carbon every year)
- One of the 8 global **hottest hotspots** of biodiversity (due to richness in species and endemism)
- Rich in iron, manganese and bauxite ores, **timber**, **pepper**, **cardamom**, **oil palm** and **rubber**
- Sizeable indigenous population (including PVTGs)
- Important tourism/pilgrimage centres

Major Threats

- Mining, Industrialisation
- Massive extraction of forest produce
- Human-wildlife conflict, encroachment, illegal hunting
- Livestock grazing, deforestation
- Large hydropower projects
- Climate change

Imp Committees

- **Gadgil Committee (2011)** (Western Ghats Ecology Expert Panel)
 - » Recommendation: All of WG be declared as Ecological Sensitive Area (ESA) with only limited development allowed in graded zones.
- **Kasturirangan Committee (2013)**
 - » Recommendation: Instead of whole, only 37% of the total area of WG be brought under ESA + complete ban on mining, quarrying and sand mining be imposed in ESA.



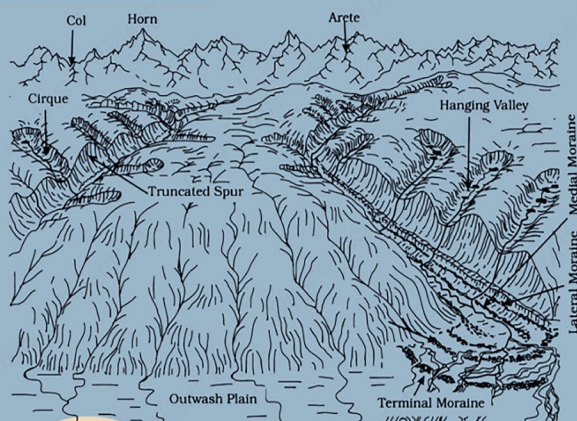
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Glacial Landforms

GLACIAL LANDFORMS

“Glacier is any large mass of perennial ice that originates on land by the recrystallisation of snow or other forms of solid precipitation”

EROSIONAL LANDFORMS



Cirque/ Cirque/ Cwm

- Small glaciers and are characteristically bowl-shaped
- Found at the heads of glacial valleys

Horns and Serrated Ridges

- Form through head ward erosion of the cirque walls
- Present in areas where multiple glaciers flow in multiple directions

Glacial Valleys /Troughs

- Trough-like and U-shaped with broad floors and relatively smooth, and steep sides
- Fjords are deep glacial troughs filled with seawater, forming shorelines

Bergschrund

- A crevasse/crack or series of crevasses often found near the head of a mountain glacier

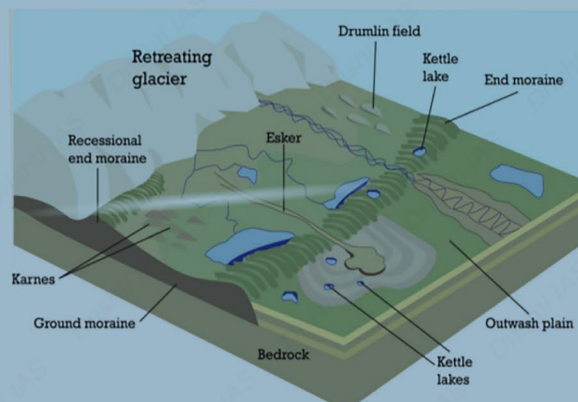
Hanging Valley

- Form when glacier ice deeply erodes a main or trunk valley, leaving tributary valleys hanging far above the main valley floor.

Crag and Tail

- **Crag:** Mass of hard rock with a precipitous slope.
- **Tail:** Formed by the deposition of glacial debris or till as the glacier retreats.

DEPOSITIONAL LANDFORMS



Moraines

- **Lateral Moraines:** Form on the sides of glaciers
- **Ground Moraines:** Deposits varying greatly in thickness and in surface topography
- **Medial Moraines:** Form where two tributary glaciers come together

Eskers

- Winding ridges of sand and gravel formed by streams flowing within or beneath glaciers

Outwash Plains

- Deposit of sand and gravel carried by running water from the melting ice of a glacier

Drumlins

- Hills of sediment that have been streamlined by glacier flow.
- Up to 1 km in length and 30 m or so in height
- So commonly described as having a *basket of eggs'* topography

Note:

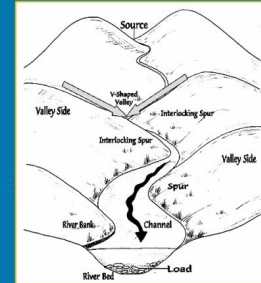
River Landforms

RIVER LANDFORMS

Different types of landforms formed at different courses of a river - Upper, Middle & Lower

UPPER (MOUNTAIN) COURSE

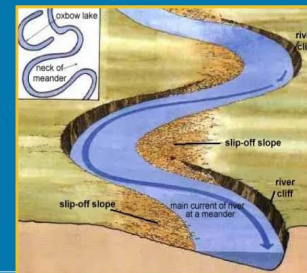
- ◉ Starts at source of river (usually a mountain range)
- ◉ Very fast speed of river due to steep slope
- ◉ Main action of river is vertical corrasion
- ◉ Landforms -
 - » V-shaped Valleys (formed due to vertical corrasion)
 - ✦ Lao Valley, Hawaii
 - » Interlocking Spurs
 - ✦ West Liddar valley above Pahalgam, Kashmir
- » Gorges (formed where rocks are too hard and resistant)
 - ✦ Indus Gorge, Kashmir
- » Canyons (formed where rainfall is very low)
 - ✦ Bryce Canyon, US
- » Rapids and Waterfalls
 - ✦ Lava Falls Rapid, US and Niagara Falls, Canada



Corrasion (or abrasion) is the erosion of a rock surface by rock fragments transported over it by water, wind, or ice

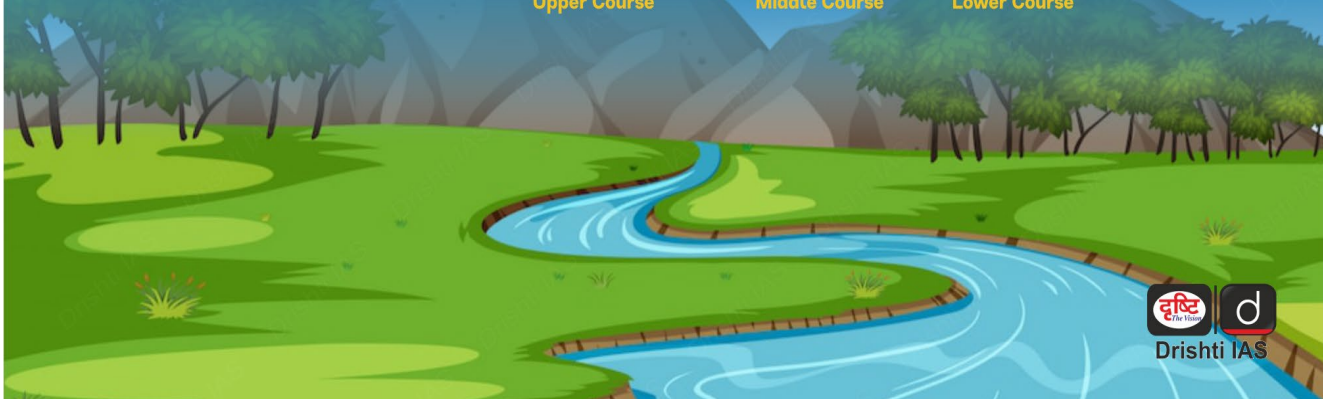
MIDDLE (VALLEY) COURSE

- ◉ Here, lateral corrasion overtakes vertical
- ◉ Confluence of tributaries → More volume of water → More loaded river
- ◉ Transportation main event in the region
- ◉ Interlocking spurs also formed on both sides of the valley
- ◉ Landforms -
 - » Meanders
 - ✦ Owens River, SE California, US
 - » River Cliffs and Slip-off slope
 - ✦ White Cliffs of Dover, UK



LOWER (PLAIN) COURSE

- ◉ River now heavy with material brought down from upper courses
- ◉ Vertical corrasion almost negligible, lateral corrasion still active
- ◉ Deposition plays key role in formation of riverbeds and extensive flood plains
- ◉ More volume in water; finer material carried to the mouth of river
- ◉ Landforms -
 - » Floodplains and Levees
 - ✦ Ganga-Yamuna floodplain
 - » Deltas
 - ✦ Sunderbans Delta



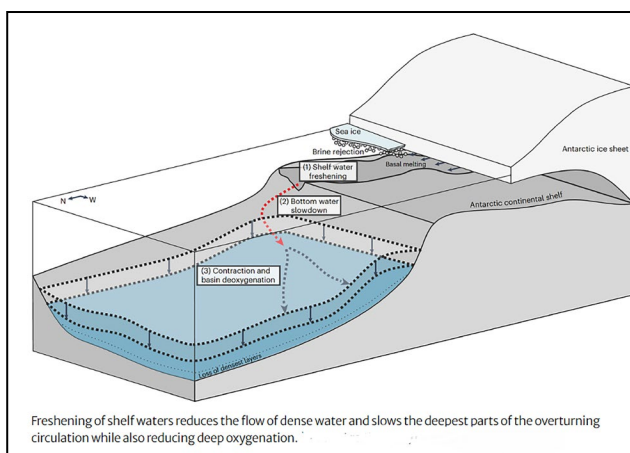
Note:

The Slowdown in Overturning Circulation

Why in News?

Recently, **Deep Ocean currents in Antarctica** are **slowing down** earlier than predicted, potentially **disrupting the crucial overturning circulation**.

- The slowdown in circulation and declining oxygen levels in the deep ocean have been observed, indicating significant changes in the **Antarctic deep ocean over the past three decades**.
- The consequences of this phenomenon are further underscored by the **impacts of melting Antarctic ice** on the overturning circulation.



What is Overturning Circulation?

- **About:**
 - Overturning circulation refers to the **global network of ocean currents** that redistribute heat, carbon, and nutrients across the world's oceans.
 - In Antarctica, it involves the **sinking of dense, oxygen-rich water from the surface**, its spread along the **sea floor**, and slow rise in distant regions.
- **Process:**
 - In polar regions, the surface water cools due to **low temperatures and exposure to frigid air masses**.
 - The cooling leads to the formation of **sea ice, which extracts freshwater from the surrounding seawater**. This process increases the **salinity and density of the remaining water**.

- The high salinity and density cause the **surface water to become denser, making it more likely to sink**.
 - The dense water sinks to deeper layers, forming what is known as **bottom water**.
- The sinking of dense water drives the deeper limb of the **overturning circulation**. It flows towards the equator, while at the same time, warmer surface water from lower latitudes moves towards the poles.
- As the deep-water travels, it gradually mixes with surrounding water masses, **exchanging heat, carbon, and nutrients**. Eventually, the upwelling of this modified water occurs in other regions, completing the overturning circulation.

➤ Importance:

- Overturning circulation plays a crucial role in maintaining **climate stability on Earth**.
- It facilitates the **transport of heat, carbon, and nutrients, influencing the planet's climate system**.
- Additionally, it **ensures the supply of oxygen to the deep ocean**, supporting marine life and its ecosystems.

➤ Impact of Slowdown in Overturning Circulation:

- The observed slowdown of deep ocean currents in Antarctica, occurring earlier than anticipated, raises concerns about climate stability.
- A reduced flow of bottom water results in a **decline in oxygen supply** to the deep ocean, impacting **oxygen-dependent organisms**.
- Lower oxygen levels may lead to **behavioral changes, migrations, and disruptions in the marine food chain**.
- Moreover, the slowdown amplifies **global warming** as the ocean's **capacity to store carbon dioxide and heat diminishes**, intensifying the **greenhouse effect**.

➤ Melting Antarctic Ice and its Contribution:

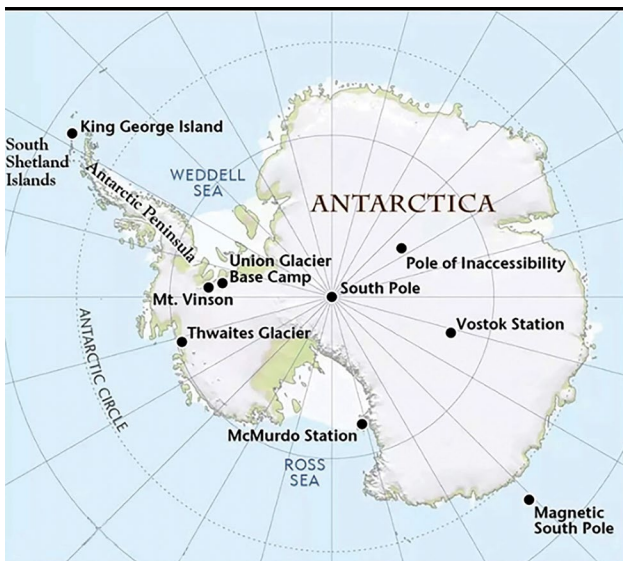
- Melting Antarctic ice disrupts the formation of **Antarctic bottom water**, making **surface waters fresher and less dense, impeding their sinking**.
 - This disruption weakens the overturning circulation, further diminishing the oxygen supply to the deep ocean.
- The replacement of bottom water with warmer, oxygen-depleted waters exacerbates the **decline in oxygen levels**.

Note:

- Additionally, melting ice contributes to **rising sea levels** through thermal expansion as warmer water occupies more space.

What are the Key Highlights about Antarctica?

- Antarctica is **uninhabited except for those manning the nearly 40 permanent stations** established by several countries, including India, for carrying out scientific research.
- India maintains **two research stations on the continent**: 'Maitri' (commissioned in 1989) at Schirmacher Hills and 'Bharati' (2012) at Larsemann Hills.
- It has also **launched 41 scientific expeditions every year** thus far. Together with 'Himadri' station in Svalbard, above the Arctic circle, India is among an **elite group of countries with multiple research** in the polar regions.
- Antarctica is **Earth's southernmost continent**. It contains the **geographic South Pole** and is situated in the **Antarctic region of the Southern Hemisphere**.
- At 14,000,000 square kilometres, it is the **fifth-largest continent**.
- The **Indian Antarctic Programme** is a multi-disciplinary, multi-institutional programme under the control of the National Centre for Antarctic and Ocean Research, Ministry of Earth Sciences.
- India officially **acceded to the Antarctic Treaty System in August 1983**.



Son River

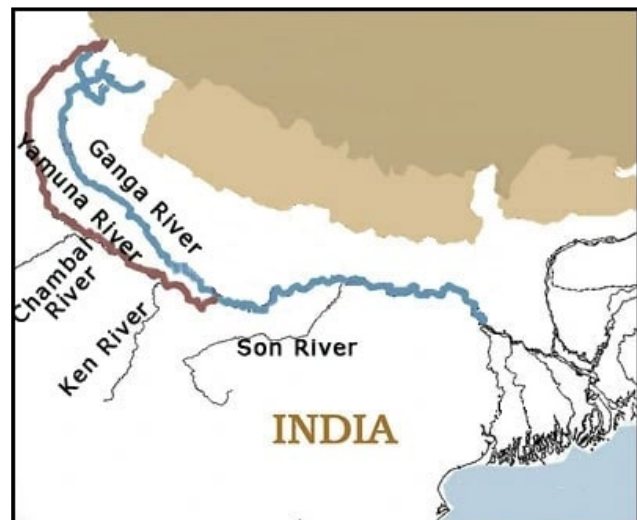
Why in News?

The **National Green Tribunal (NGT)** has issued a directive to halt all mining activities in **Son riverbed** in Sonbhadra district, Uttar Pradesh.

- The directive addresses **illegal mining, imposing environmental compensation on mining companies**.

What are the Characteristics of Son River?

- **About:**
 - The Son River, also known as the **Sone River**, is a **perennial river** that flows through central India.
 - The Son River is the **2nd-largest southern (right bank) tributary** of the **Ganges** after the **Yamuna River**.
- **Geography:**
 - It originates near **Amkantak Hill in the Gaurela-Pendra-Marwahi district of Chhattisgarh** and finally merges with the **Ganges River near Patna in Bihar**.
 - **Son forms a series of waterfalls at the edge of Amkantak plateau.**
 - It flows through four states: **Chhattisgarh, Madhya Pradesh, Uttar Pradesh, and Bihar**.



- **Tributaries:**
 - Ghaghar, Johilla, Chhoti Mahanadi, Banas, Gopad, Rihand, Kanhar and North Koel River.
- **Prominent Dams and Hydroelectric Projects:**
 - **Bansagar Dam** in Madhya Pradesh

Note:



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- **Rihand Dam** near Pipri in Uttar Pradesh on **Rihand River**.
- **Indrapuri Barrage** in Bihar; it diverts water from the Son River to the Sone Canal System for irrigation purposes.
- **Koilwar Bridge** constructed in 1862 in Bihar; it serves as **India's oldest river bridge**, connecting Arrah with Patna.

The Palghat Gap

Why in News?

Often called as a significant discontinuity in the **Western Ghats**, the **Palghat Gap** is a geographical marvel spanning approximately 40 km in width, **separating the Nilgiris and Anamalai hills**, both towering above **2,000 meters above sea level**.



What is the Significance of Palghat Gap?

- **Origin and Formation:** The Palghat Gap originated due to the **drift of continental shelves** after the **separation of Australia and Africa** from the **Gondwana landmass**.
 - The **splitting of India and Madagascar** led to the formation of the Gap approximately 100 million years ago.
- **Vegetation:** In contrast to the tropical rainforests of the Western Ghats, the vegetation in the Palghat Gap is classified as **dry evergreen forest**.
- **Significance:**
 - **Historical:**
 - **Gateway to Kerala:** The Palghat Gap has historically served as a vital entry point into Kerala, **facilitating both road and rail transportation** between Coimbatore and Palakkad.

- Also, the **Bharathappuzha river** flows through the Palghat Gap, enhancing its importance as a transportation route.

Geographical:

- **Shear Zone:** The Palghat Gap is a geological shear zone, **running from east to west**, which represents a weak region in the earth's crust.
- This geological characteristic can explain **occasional tremors** experienced in the Coimbatore region.
- **Climate:** While the **Western Ghats north of the Palghat Gap** receive more annual rainfall, the **southern region experiences more evenly distributed rainfall** throughout the year.
- **Ecological:**
 - **Biogeographic Distinctions:** The distinct flora and fauna on either side of the Palghat Gap are believed to be a **consequence of ancient river systems or past incursions of the sea**.
 - **Genetic Variations:** Genetic studies have revealed differences in the **mitochondrial DNA of elephant populations** residing on the Nilgiris side compared to those in the Anamalai and Periyar sanctuaries.
 - **Bird Species Variation:** Research conducted by IISc Bangalore highlighted genetic divergence in the **White-bellied Shortwing**, an endemic and threatened bird species.
 - ◆ The **Nilgiri blue robin** and **White-bellied blue robin** populations exhibit slight variations in appearance based on their location around **Ooty and the Anamalai hills**.
 - **Species Richness and Phylogenetic Diversity:** A recent study conducted by groups from CCMB at Hyderabad and other institutions revealed that the southern region of the Western Ghats, located south of the Palghat Gap, **boasts abundant species richness and phylogenetic diversity**.
 - This region is home to more than **450 tree species**, including ancient species like **Magnolia champaca** (Champa; Tamil: Sambagan), which have **thrived for over 130 million years**.
- **Other Gaps:**
 - **Thalghat** (Mumbai and Nashik)
 - **Bhorghat** (Mumbai and Pune)

Note:

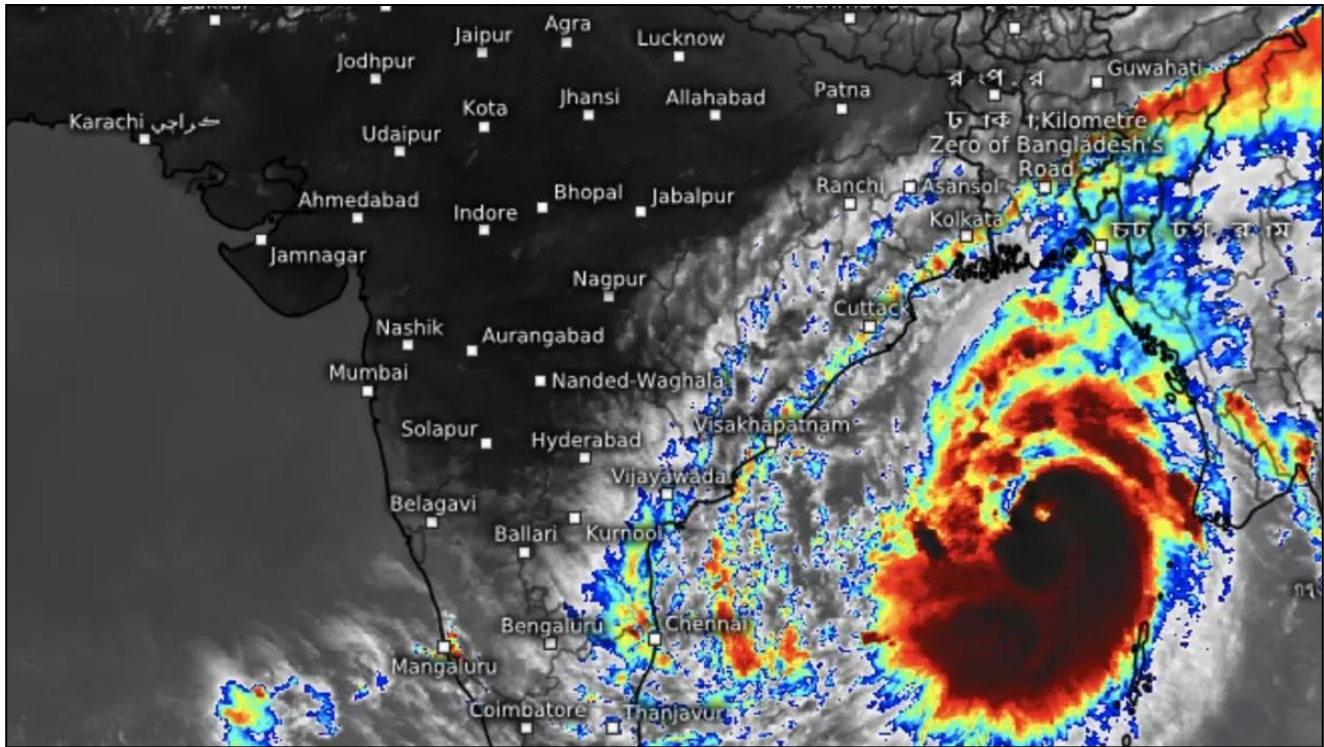
Cyclone Mocha

Why in News?

Cyclone Mocha that made landfall recently in Myanmar has been categorized as an **Extremely Severe Cyclonic Storm** by the **IMD (Indian Meteorological**

Department) and as a 'Super Cyclone' by global weather website Zoom Earth.

- It became the strongest cyclone on earth so far in 2023 according to Typhoon Research Center in South Korea's Jeju National University.
- There have been 16 cyclones so far this year in **both Northern and Southern Hemispheres**.



What is Mocha?

- **Naming:**
 - Yemen suggested the name '**Mocha**', which is supposed to be pronounced as Mokha.
 - The cyclone has been named after a **Red Sea port city known for its coffee production**. The city also gave its name to the popular beverage, café Mocha
- **Origin:**
 - It originated in the **Bay of Bengal**.
- **Intensity:**
 - With a recorded wind speed of 277 kmph, Mocha became the strongest cyclone for all seasons in both **Arabian Sea and Bay of Bengal**, since 1982, in the North Indian Ocean, tying with **Cyclone Fani in terms of speed and intensity**.

- **Amphan**, witnessed in 2020, was 268 kmph while **Tauktae** in 2021 it was 222 kmph and Gonu in 2007 recorded a speed of 268 kmph.

What is a Cyclone?

- **About:**
 - Cyclones are **rapid inward air circulation around a low-pressure area**. The air circulates in an **anticlockwise direction in the Northern hemisphere** and clockwise in the Southern hemisphere.
 - Cyclones are usually **accompanied by violent storms** and bad weather.
 - The word Cyclone is derived from the **Greek word Cyclos meaning the coils of a snake**. It was coined by Henry Peddington because the tropical storms in the Bay of Bengal and the Arabian Sea appear like coiled serpents of the sea.

Note:



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➤ **Types:**

- **Tropical Cyclones:** The **World Meteorological Organisation** (WMO) uses the term 'Tropical Cyclone' to cover weather systems in which winds exceed 'Gale Force' (minimum of 63 km per hour).
 - Tropical cyclones develop in the **region between the Tropics of Capricorn and Cancer**.
- **Extra Tropical cyclones:** They are also called Temperate cyclones or middle latitude cyclones or Frontal cyclones or Wave Cyclones.
 - They occur in **temperate zones and high latitude regions**, though they are known to originate in the Polar Regions.

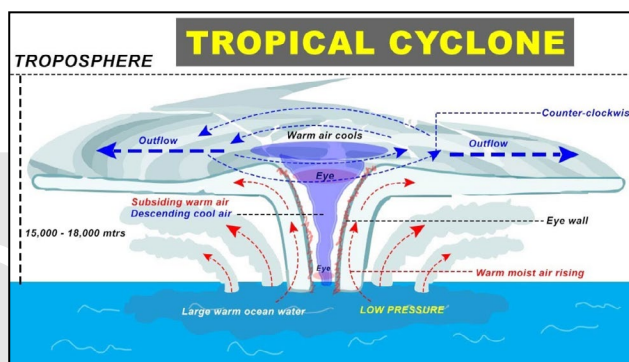
What are Tropical Cyclones?➤ **About:**

- A **tropical cyclone** is an intense circular storm that originates over warm tropical oceans and is characterized by low atmospheric pressure, high winds, and heavy rain.
- A **characteristic feature of tropical cyclones is the eye**, a central region of clear skies, warm temperatures, and low atmospheric pressure.
- Storms of this type are called **hurricanes in the North Atlantic and eastern Pacific** and **typhoons in SouthEast Asia and China**. They are called **tropical cyclones in the southwest Pacific and Indian Ocean region** and **Willy-willies in north-western Australia**.
- Storms **rotate counterclockwise in the northern**

hemisphere and clockwise in the southern hemisphere.

➤ **Conditions for Formation:**

- The **conditions favourable** for the formation and intensification of tropical storms are:
 - Large sea surface with temperature higher than 27° C.
 - Presence of the **Coriolis force**.
 - Small variations in the vertical wind speed.
 - A pre-existing weak low- pressure area or low-level-cyclonic circulation.
 - Upper divergence above the sea level system.

**How are Low-Pressure Systems Classified based on their Intensity?**

- The IMD has developed criteria for **classifying low-pressure systems in the Bay of Bengal and the Arabian Sea** based on their potential for causing damage which have been adopted by the WMO.

Type of Disturbances	Wind Speed in Km/h	Wind Speed in Knots
Low Pressure	Less than 31	Less than 17
Depression	31-49	17-27
Deep Depression	49-61	27-33
Cyclonic Storm	61-88	33-47
Severe Cyclonic Storm	88-117	47-63
Super Cyclone	More than 221	More than 120

Note: 1 knot - 1.85 km per hour

How are Names of Cyclones Decided?

- Cyclones that form in every ocean basin across the world are named by the regional **specialised meteorological centres (RSMCs)** and Tropical Cyclone Warning Centres (TCWCs).

- There are six RSMCs in the world, including the India Meteorological Department (IMD), and five TCWCs.
- In 2000, a group of nations called WMO/ESCAP (World Meteorological Organisation/United Nations Economic and Social Commission for Asia and the Pacific), which comprised Bangladesh, India, the Maldives, Myanmar, Oman, Pakistan, Sri Lanka and

Note:

Thailand, decided **to start naming cyclones in the region**. After each country sent in suggestions, the **WMO/ESCAP Panel on Tropical Cyclones (PTC)** finalised the list.

- The WMO/ESCAP expanded to include five more countries in 2018 — Iran, Qatar, Saudi Arabia, United Arab Emirates and Yemen.

What is the Occurrence of Cyclones in India?

- India has a **bi-annual cyclone season** that occurs between **March to May and October to December**. But on rare occasions, cyclones do **occur in June and September months**.
- Typically, **tropical cyclones in the North Indian Ocean region** (Bay of Bengal and Arabian Sea) develop during the **pre-monsoon (April to June)** and post-monsoon (October to December) periods.
- May-June and October-November are known to produce cyclones of severe intensity that affect the Indian coasts.



Note:

Miscellaneous

Highlights

- The Rising Popularity of Chess in India
- 44th Edition of The ISO COPOLCO Plenary
- World Bee Day
- International Museum Expo 2023
- Greenwashing TechSprint
- Alzheimer's Disease

The Rising Popularity of Chess in India

Why in News?

Chess, once considered a niche game, is now **gaining immense popularity in India**. With a rising number of ardent fans and exceptional players, the sport is making waves on the global stage.

- Recently, **GM Arjun Erigaisi** won the **Sharjah master's International Chess Championship 2023**.

Note:

- Sharjah master's International Chess Championship is an **annual chess tournament** that is held at the **Sharjah Cultural and Chess Club in Sharjah, UAE**.
- It aims to promote **chess as a sport and a cultural activity in Sharjah** and the region, and to provide an opportunity for chess players to compete and improve their skills.

What are the Factors Driving the Popularity of Chess in India?

- **Exceptional Indian Players:**
 - D. Gukesh (World No. 18), Arjun Erigaisi (World No. 37), R. Praggnanandhaa (World No. 47), and Nihal Sarin (World No. 64) are highly talented young chess players from India.
 - **India is ranked No. 2 in the world in international chess**, showcasing the country's strong presence in the game.
 - **Viswanathan Anand, a five-time World champion**, acts as a mentor to the next generation of Indian players.

➤ Success on the Global Stage:

- Indian chess players' impressive performance on the international level has contributed to the sport's popularity in the country.
- The presence of gifted teenagers and the emergence of talented players have further fueled interest in the game.
- The **44th Chess Olympiad** was held in **Chennai** in 2022. The prestigious competition, which has been organized **since 1927**, is being **hosted in India for the first time and in Asia after 30 years**.

➤ Development of Chess Academies:

- The establishment of the **WestBridge Anand Chess Academy** has played a crucial role in nurturing young talents and providing them with guidance.
- Viswanathan Anand's involvement in mentoring promising players has helped elevate the standards of Indian chess.
- Chess academies and training programs have created opportunities for young enthusiasts to hone their skills.

➤ Increasing Media Coverage and Spectator Engagement:

- Major chess events like the **Chess Olympiad** and **Tata Steel Chess India** have gained significant media attention in recent times.
- Spectator **participation and fan engagement have grown**, with thousands of people attending live chess tournaments.
- Enhanced **media coverage and online streaming** have made chess more accessible to a wider audience.

➤ All India Chess Federation (AICF):

- It was founded in 1951 and is affiliated to **Fédération Internationale des Échecs (FIDE)**, the world body for chess.

Note:



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- **Role of AICF:**
 - Organizing **national-level tournaments**.
 - Supporting player development and training.
 - **Representing India in international chess organizations.**
 - Identifying and nurturing young talent.
 - **Facilitating participation in international tournaments.**
 - Advocating for chess inclusion in school curricula.

What Challenges

Exist in Promoting Chess in India?

- **Limited mainstream attention** compared to other sports.
- Lack of **corporate sponsorships and investment** in elite tournaments.
- Need for **greater emphasis on women's chess and talent identification.**

World Titles Won by Indians

- **Viswanathan Anand:**
 - The most successful Indian chess player, who won the **FIDE World Chess Championship in 2000, 2007, 2008, 2010 and 2012.**
 - He also won the **World Rapid Chess Championship in 2003 and 2017**, and the **World Blitz Chess Championship in 2000 and 2017**. He is the only player to have won the world title in all three formats of chess.
- **Koneru Humpy:**
 - The highest rated Indian female chess player, who won the **Women's World Rapid Chess Championship in 2019.**
 - She also won the **Women's Grand Prix series in 2019-2020.**
- **Harika Dronavalli:**
 - The second highest rated Indian female chess player, who won the **bronze medal at the Women's World Chess Championship in 2012, 2015 and 2017.** She also won the **FIDE Women's Grand Prix event in Chengdu in 2016.**
- **R Praggnanandhaa:**
 - The **youngest Indian grandmaster** and one of the most promising talents in world chess, who won the **World Youth Chess Championship (under-18) in 2019.** He also won the **Asian Continental Chess Championship (open) in 2021.**

44th Edition of The ISO COPOLCO Plenary

Why in News?

India is hosting the **44th edition of the ISO COPOLCO Plenary** in New Delhi from 23-26 May 2023. This event is organised by the **Bureau of Indian Standards (BIS).**

What is ISO COPOLCO Plenary?

- **About:**
 - ISO COPOLCO is the **Committee on Consumer Policy**, a committee of the **International Organization for Standardization (ISO).**
 - It ensures standards are developed with **consumer needs** in mind and promotes consumer engagement in the standardization process.
- **Significance:**
 - The ISO COPOLCO Plenary plays a crucial role in **shaping global standards and subsequently impacting the lives of people worldwide.**
 - The event fosters **collaboration among ISO member countries** and strategizes for the accelerated development of standards.
- **Importance:**
 - The event aims to **address challenges and good practices for consumer engagement, sustainable futures, and legal frameworks** for consumer protection.
 - It provides a platform for high-level speakers, including ministers and eminent personalities, to discuss consumer-related matters.

What is ISO?

- **About:**
 - It is an international standard development organization **composed of representatives from the national standards organizations** of member countries.
 - It develops and publishes standardization in all technical and nontechnical fields other than electrical and electronic engineering, which is handled by the IEC.
 - ISO officially came into existence in **1947.**
- **Headquarters:**
 - Geneva, Switzerland.

Note:



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- **Official languages:**
 - English, French, and Russian.
- **Members:**
 - ISO is an independent, non-governmental international organization with a membership of 168 national standards bodies.
- **India's Role in International Standardization:**
 - India has been actively involved in international standardization efforts and was one of the **founding members of ISO**.
 - The BIS serves as the **National Standards Body of India** and **participates in international and regional standardization initiatives**.
 - BIS is a member of ISO, the International Electrotechnical Commission (IEC), and regional standards bodies like Pacific Area Standards Congress (PASC), and the South Asian Regional Standards Organization (SARSO) within the framework of **IBSA**.

What is Bureau of Indian Standards?

- **BIS** is the National Standard Body of India for the harmonious development of the activities of **standardization, marking and quality certification** of goods.
 - It was established by the BIS Act, 1986 which came into effect in December 1986 and a new BIS Act 2016 was brought into force in 2017.
- BIS works under the aegis of the **Ministry of Consumer Affairs, Food & Public Distribution**
- BIS has been providing **traceability** and **tangibility** benefits to the **national economy** in a number of ways by:
 - Providing safe **reliable quality goods**.
 - Minimizing **health hazards** to consumers.
- Promoting **exports and imports** substitute.
- Control over **proliferation** of varieties etc through standardization, certification and testing.

World Bee Day

Why in News?

The **Ministry of Agriculture and Farmers Welfare (MoA&FW)**, recently celebrated **World Bee Day** on May 20th, 2023 at Balaghat, Madhya Pradesh.

- The event aimed to **promote and popularise beekeeping nationwide** through the **National Beekeeping & Honey Mission (NBHM)** under the Atma-Nirbhar Bharat initiative.
- The Theme of 2023 is **"Bee engaged in pollinator-friendly agricultural production"**.

What is World

Bee Day and Why is it Important?

- **About:**
 - **World Bee Day** is an annual event that is celebrated on **May 20th** to **raise awareness about the importance of bees** and other **pollinators** for the environment, food security and biodiversity.
 - The date was chosen to **commemorate the birthday of Anton Janša**, a pioneer of modern beekeeping from Slovenia.
 - The **United Nations General Assembly** declared **World Bee Day in 2017**, following a proposal by Slovenia and the support of 115 countries.

Note: Pollinators are agents that assist in the process of pollination. Pollination is the **transfer of pollen grains from the male reproductive organs (anthers) of a flower to the female reproductive organs (stigma) of the same or a different flower**, leading to fertilization and the production of seeds.

- **Significance of Bees:**
 - **Pollination:**
 - Bees are vital for the **survival of many plants and animals**, as they pollinate about **one-third of the world's crops** and **90% of the wild flowering plants**.
 - They also produce **honey, wax, propolis** and **other valuable products** that have nutritional, medicinal and economic benefits.
 - **Tackling with Climate Change:**
 - Bees **help plants to grow faster and healthier**, which increases their carbon uptake and storage. Bees also reduce the **need for chemical fertilizers and pesticides**, which emit harmful gases into the atmosphere.
 - They are also **indicators of the health of ecosystems**, as they respond to changes in the environment such as **climate change, pollution, habitat loss** and **pesticides**.
 - **Enhancing Crop Productivity:**

Note:



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- They help in **enhancing crop productivity and quality** by providing pollination services to various crops such as fruits, vegetables, oilseeds, pulses etc.
- It is estimated that **bee pollination can increase crop yields by 20-30% on average.**
- **Generating Employment Opportunity:**
 - Generating **income and employment opportunities for rural households by producing honey and other bee products** such as wax, propolis etc.
 - Honey is a high-value product that has a huge demand in domestic and international markets. It is also a source of **nutrition and health for consumers.**
 - It can also help in **empowering women and youth** by involving them in beekeeping activities as **entrepreneurs or self-help groups.**

➤ Threats and Challenges:

- **Loss and fragmentation of natural habitats** due to urbanization, agriculture and deforestation
- **Intensive and monoculture farming practices** that reduce floral diversity and expose bees to pesticides and herbicides
- **Diseases, pests and invasive species** that affect bee health and productivity
- **Climate change** that alters the flowering seasons, distribution and availability of plants.
- **Lack of awareness, knowledge and support for beekeeping** among farmers and consumers

What is the Status of Beekeeping in India?

➤ Production Statistics:

SWEET REVOLUTION



- An ambitious initiative of the Govt for **promoting apiculture**
- Launched in 2016 under **Khadi and Village Industries Commission (KVIC)** (Ministry of MSME)
- Along its lines, the **Honey Mission** was launched in 2017

BEEKEEPING IN INDIA (APICULTURE)

About Beekeeping

- An agro-based activity undertaken by farmers/ landless labourers in rural areas as a part of **Integrated Farming System (IFS)**

Significance

- **Useful in pollination** of crops
- **Increases income** of the farmers
- **High value beehive products** - honey, beeswax, bee pollen, etc.

World Bee Day

- 20 May

NATIONAL BEEKEEPING AND HONEY MISSION (NBHM)

About

- Central Sector (CS) Scheme
- Announced as a **part of Atmanirbhar Bharat Scheme** (for 2020-21-2022-23)
- Implemented by the **National Bee Board (NBB)** (under MoA&FW)

Objectives

- Development of scientific beekeeping to **achieve the goal of 'Sweet Revolution'**
- Enhance **agri/ horticulture production**
- Set up **Integrated Beekeeping Development Centre (IBDC)**, Api-therapy centres and Bee disease diagnostic labs
- **Empowerment of women** through beekeeping

Note:

- India is **one of the largest producers and consumers of honey in the world**, with an estimated annual production of **1.2 lakh metric tonnes**. India has a rich tradition and culture of beekeeping, dating back to ancient times.
- At present, about **12,699 Beekeepers and 19.34 lakhs honey bees colonies** are registered with the **National Bee Board** and India is producing about 1,33,200 Metric tonnes of Honey (**2021-22 estimate**).
- In **November 2022**, a new species of endemic honeybee named **Indian black honeybee (*Apis karinjodiana*)** was discovered in the **Western Ghats** after a gap of more than 200 years.
- **Exports:**
 - India is one of the **major honey exporting countries in the World** and has exported 74,413 MT of Honey during 2021-22.
 - More than **50% of the honey production in India is being exported** to other countries.
 - India exports honey to about **83 countries**. The major markets for Indian honey are the **USA, Saudi Arabia, United Arab Emirates, Bangladesh, Canada**, etc.
- **Honey Producing States:**
 - As per the National Horticulture Board (NHB), **Uttar Pradesh, West Bengal, Punjab, Bihar, Rajasthan, Himachal Pradesh, Haryana, Uttarakhand, Madhya Pradesh and Karnataka** were the **top ten honey-producing states in 2021-22**.

What is National Beekeeping & Honey Mission (NBHM)?

- The NBHM, implemented through the **National Bee Board**, focuses on promoting **scientific beekeeping and entrepreneurship among small and marginal farmers**.
- It encompasses infrastructure development for post-harvest management, support for research and development, and aims to achieve the goal of a **"Sweet Revolution."**
- The scheme is aligned with the **Atma-Nirbhar Bharat initiative** and plays a crucial role in increasing farmer incomes and enhancing agricultural productivity.

International Museum Expo 2023

Why in News?

Recently, the Prime Minister (PM) of India inaugurated the **International Museum Expo 2023** in New Delhi to celebrate the **47th International Museum Day (IMD)**.

- The PM also unveiled the plan for what is set to be the world's largest museum, **Yuge Yugeen Bharat**, which will capture **5,000 years of India's history**.

What is International Museum Day?

- **About:** IMD is **observed on 18th May** every year to raise awareness among people about the museums.
 - **2023 Theme:** 'Museums, Sustainability and Well Being'
- **History:** The Day was instituted in 1977 by the **International Council of Museums (ICOM)**.
- **Objective:** To raise awareness about the fact that museums are an important means of cultural exchange, enrichment of cultures and development of mutual understanding, cooperation and peace among peoples.
- **International Museum Day and SDG:** Each year since 2020, the International Museum Day supports a set of Goals from the **Sustainable Development Goals of the United Nations**. In 2023, we will focus on:
 - **Goal 3 Global Health and Wellbeing, Goal 13 Climate Action, Goal 15 Life on Land.**

What is International Council of Museum?

- ICOM is a **membership association and a non-governmental organisation** that establishes professional and ethical standards for museum activities. It is the **only global organisation in the museum field**.
- It was **created in 1946** and is headquartered in **Paris, France**.
- The **ICOM Red Lists of Cultural Objects at Risk** are practical tools to curb the illegal traffic of cultural objects.

What are the Major Highlights of the Expo?

- The Prime Minister unveiled the **Mascot of the International Museum Expo, the Graphic Novel – A Day at the Museum, the Directory of Indian Museums, the Pocket Map of Kartavya Path, and Museum Cards**.

Note:

- The **Mascot of the International Museum Expo** is a contemporized version of the **Dancing Girl made of wood in the Chennapatnam art style**.
- The Prime Minister also highlighted the significance of museums in **preserving history, promoting sustainability, and fostering a sense of well-being**.
- **Preserving Heritage and Reviving Cultural Infrastructure:**
- Emphasis is being placed on **conserving India's rich heritage** and **reviving long-lost aspects of the country's cultural legacy**.
- A new cultural infrastructure is being developed to showcase India's fight for independence and its **extensive thousand-year-old heritage**.
- **Ten special museums** are being established to **honour and immortalise the contributions of tribal communities in India's freedom struggle**.
- **Promoting Sustainability and Well-being:**
 - The theme of **'Sustainability and Well-being'** aligns with the present-day **global priorities**, recognizing the **significant role museums play in raising awareness and promoting sustainable practices**.
- **Combating Smuggling and Appropriation of Artefacts:**
 - The challenges of **smuggling and appropriation of artefacts, particularly for countries with ancient cultures like India**, have been acknowledged.
 - Efforts are **being made to recover and repatriate stolen artefacts**, resulting in the **retrieval of over 240 ancient items in the past nine years**.
- **Examples: 18th-Century Annapurna statue stolen from Banaras** (recently returned from Canada), the **12th-Century statue of Mahishasur Mardini stolen from Gujarat** (returned by New York's Met Museum in 2018), and the **idols of Nataraja built during the Chola Empire**.
- Increased cooperation among art connoisseurs and museums worldwide is **advocated to prevent the unethical acquisition of artworks**.

Administration of Museums in India

- Multiple ministries hold charges of various Museums.
- Not all Museums are administered by the **Ministry of Culture**.
- Some are run without government support by a handful of people **under a Board of Trustees**.

Notable Museums in India

- National Museum, New Delhi (Subordinate Office under the Ministry of Culture)
- National Gallery of Modern Art, Bengaluru
- Victoria Memorial Hall (VMH), Kolkata
- Asiatic Society, Kolkata
- National Museum of Natural History (NMNH), New Delhi

Greenwashing TechSprint

Why in News?

The **Reserve Bank of India (RBI)** will be among **13 international regulators** taking part in the Global Financial Innovation Network's (GFIN) first-ever Greenwashing TechSprint.

- The **RBI** has invited Indian companies to participate in the **Greenwashing TechSprint**, an international initiative aimed at **tackling greenwashing in the financial services industry**.

What is Greenwashing TechSprint?

- The **Greenwashing TechSprint** is organized by the **Global Financial Innovation Network (GFIN)**.
 - It is currently chaired by the **Financial Conduct Authority (FCA)**, a leading regulatory body in the **United Kingdom**.
- TechSprint aims to develop a tool or **solution that can effectively help regulators and the market tackle the risks of greenwashing in financial services**.
- The TechSprint will launch on 5th June and will run for 3 months, ending with a showcase day in September 2023.

What is the Global Financial Innovation Network?

- The **GFIN** was formally launched in January 2019 by an **international group of financial regulators and related organizations**.
- It is a **network of over 70 organizations** committed to supporting financial innovation in the interests of consumers.
- It seeks to provide a more efficient way for **innovative firms to interact with regulators**, helping them navigate between countries as they look to scale new ideas.

Note:

- The GFIN is **overseen by the Coordination Group**. The Coordination Group is made up of GFIN Members and sets the overall direction, strategy and annual work programme of the GFIN.
 - The Coordination Group is currently being chaired by the Financial Conduct Authority (UK). **Membership in the Coordination Group lasts for two years**, and members meet twice a year to provide ongoing input and engagement into the work-streams.
- **Members from India:**
 - **International Financial Services Centres Authority (IFSCA)**
 - **Insurance Regulatory and Development Authority of India (IRDAI)**
 - **Pension Fund Regulatory & Development Authority RBI.**

What is Greenwashing?

- **About:**
 - **Greenwashing** refers to the practice of making **false or exaggerated claims about the environmental benefits of a product, service, or company** in order to present a **misleading image of sustainability or eco-friendliness**.
 - It is a form of **deceptive marketing** that aims to capitalize on the growing consumer demand for environmentally friendly products and practices.
 - The RBI recognizes the increasing number of investment products marketed as **“green” or making wider sustainability claims**.
 - Exaggerated, misleading or unsubstantiated claims about **Environmental, Social and Governance (ESG)** credentials damage confidence of the public in the product
- **Major Forms of Greenwashing:**
 - **Vague or Misleading Labels:** Companies may use terms like **“eco-friendly,” “green,” or “natural”** without providing specific information or clear standards for what those terms mean.
 - **Irrelevant Claims:** Companies may highlight a **minor environmental improvement while ignoring more significant environmental issues** related to their products or operations.
 - For example, a **car manufacturer might promote a fuel-efficient model** while downplaying the environmental impact of its manufacturing processes.

- **Hidden Trade-offs:** This occurs when a product is marketed as **environmentally friendly in one aspect but neglects to mention other negative environmental impacts**.
 - For instance, a **disposable product might be labeled as biodegradable**, but the **production process still has a significant carbon footprint**.
- **Impacts of Greenwashing:**
 - **Dilution of Genuine Efforts:** Companies genuinely committed to sustainability and implementing eco-friendly practices can suffer because greenwashing makes it **harder for consumers to differentiate between genuinely sustainable products and those that are falsely marketed**.
- **Legitimate sustainability initiatives may be overshadowed** and undermined by companies engaging in greenwashing.
 - **Stifling Innovation:** Greenwashing can discourage genuine innovation in sustainability.
 - When companies can deceive consumers with superficial or misleading green claims, there may be **less motivation to invest in developing truly sustainable solutions**. This hinders the overall progress in creating environmentally friendly products and practices.

Alzheimer's Disease

Why in News?

After the **US Food and Drug Administration (FDA)** granted “accelerated” approval for a drug to treat Alzheimer’s disease, developed by Biogen and Eisai and called **lecanemab**, another pharmaceutical company, Eli Lilly, has released its **own candidate Alzheimer’s treatment, donanemab**.

- Donanemab is currently not approved for use in either the US or Europe.

What is Donanemab and Lecanemab?

- **About:**
 - Donanemab belongs to a class of **antibody-based therapies** that target **amyloid-beta (Aβ) proteins**. These proteins can form amyloid plaques in the brain, leading to cognitive decline.
 - Donanemab aims to **remove these plaques** and slow the progression of the disease.

Note:

- Lecanemab belongs to a class of drugs called **monoclonal antibodies**. These antibody-mediated drugs also **target beta amyloid and disrupt cell function**.

➤ **Safety Concerns and Side Effects:**

- Both donanemab and lecanemab carry a high risk of side effects, including **amyloid-related imaging abnormalities (ARIA)**, such as **brain swelling or bleeding**.
- Tragically, three patients in the donanemab trials **lost their lives due to these side effects**.

What is Alzheimer's Disease?

➤ **About:**

- Alzheimer's disease is a **progressive neurodegenerative disorder** that affects the **brain, leading to memory loss, cognitive decline, behavioral changes, problems with words in speaking or writing, poor judgment, changes in mood and personality, confusion with time or place, etc.**
- Alzheimer's disease is the most **common cause of dementia**, accounting for **60-80% of dementia cases**.

➤ **Causes and Risk Factors: Currently the causes of Alzheimer are not fully known, still factors that may contribute to Alzheimer's include:**

- **Age:** Advancing age is the primary risk factor, with the **majority of cases occurring in individuals over 65**.
- **Genetics:** Certain gene mutations, such as those in the **APP, PSEN1, and PSEN2 genes**, can increase the risk of developing Alzheimer's.
- **Amyloid Protein:** Alzheimer's disease is thought to be caused by the abnormal build-up of amyloid-beta and tau proteins in and around brain cells.

- Amyloid-beta protein clumps together to form plaques between nerve cells in the brain, while tau protein forms twisted tangles inside neurons.

- **Lifestyle Factors:** Chronic conditions like **cardiovascular disease, diabetes, obesity, smoking**, and a sedentary lifestyle may contribute to the risk.

➤ **Diagnosis:**

- Cognitive and neuropsychological tests to assess memory, thinking, and problem-solving abilities.
- Imaging techniques (MRI, PET scans) to identify brain changes.
- **Biomarker tests (cerebrospinal fluid analysis, amyloid PET)** to detect amyloid plaques.

➤ **Treatment and Management:**

- There's currently **no cure for Alzheimer's disease**. But there is medicine and supportive therapies available that can temporarily reduce the symptoms.

➤ **Prevalence:**

- Alzheimer's disease affects a significant number of people worldwide, with **at least 55 million individuals suffering from the condition**.
- In India, As India's population ages, the number of people with **dementia and Alzheimer's** is set to rise to **7.6 million by 2030**.

Dementia:

- **Dementia** is an umbrella term that refers to a **group of symptoms characterized by a decline in cognitive abilities** severe enough to interfere with daily functioning.
- Dementia is currently **the seventh leading cause of death** and one of the major causes of disability and dependency among older people globally.



Note:

Rapid Fire Current Affairs

Highlights

- New Snake Eel Species Discovered in Odisha's Palur Canal
- Urgent Action Needed to Save the Himalayas from Climate Change
- Mumbai Trans Harbour Link
- CAG Chief Re-elected as WHO External Auditor
- China Sends First Civilian into Space
- Boosting Unani Medicine
- Increased Bird Migration to Chilika Lake Despite High Temperatures
- Kheer Bhawani Mela
- Child Marriage-Free Campaign in Udaipur
- Bulgarian Writer Wins International Booker Prize 2023
- UDAN 5.1, Specifically Designed for Helicopter Routes
- High Forest Fire Occurrences in Indian Protected Areas
- Neeraj Chopra: The Quest for the 90m Mark
- The Changathi Project
- Deaths Linked to Extreme Weather
- INS Sindhuratna
- INSV Tarini Crew Returns Home After Historic Voyage
- Drying Trend in Major Lakes of India Raises Concerns
- Centre of Excellence on Sustainable Land Management
- DRI Busts Ambergris Smuggling Gang
- Annual Forex Spends up to ₹7 Lakh Exempted from TCS
- Greater Flamingo
- Production-Linked Incentive Scheme
- Baobab Tree
- NIA's Operation Dhvast
- Caste-Based Survey
- M2023 SAFF Championship
- Trimbakeshwar Temple
- World Hypertension Day
- Kuru Hydro-electric Power Project
- Project Collaboration Agreement on Assistive Technology
- Bangladesh Withdraws "Extra Security Escort" for Diplomats
- Indigenous Dengue Vaccine Trials in India
- Sikkim's Statehood Day
- Gharial
- Director of the Central Bureau of Investigation

New Snake Eel Species Discovered in Odisha's Palur Canal

Scientists from the **Zoological Survey of India (ZSI)** have identified a new species of eel in the **Palur canal of Odisha's Ganjam district**. Named *Pisodonophis kalinga* after ancient Odisha, the eel belongs to the family **Ophichthidae** and order **Anguilliformes**.

It has a snake-like appearance and can range in length from **560 millimetres to 7 metres**. The discovery was made in the **Chilika lagoon**, Asia's largest brackish water lagoon, and the adjoining Palur canal.

The new species, *Pisodonophis kalinga*, is abundant in the region during the monsoon season from September to November. DNA analysis confirmed its distinction from the previously assumed ***Pisodonophis boro* (rice-paddy eel)**. This finding increases the total number of ***Pisodonophis* species in Indian waters to three**.

Read more: **Zoological Survey of India (ZSI)**

Urgent Action Needed to Save the Himalayas from Climate Change

The **Hindu Kush Himalaya (HKH) region**, including **Mount Everest**, faces irreversible changes due to global warming. **Rising temperatures endanger the environment, two-thirds of glaciers could vanish in 70 years**, and extreme weather events become more frequent. The **International Centre for Integrated Mountain Development (ICIMOD)** urges immediate global action to honour the **Paris Agreement**, make emission cuts, and transition to renewable energy. The **SaveOurSnow** campaign seeks public support. With 240 million people and vital water resources at risk, protecting the Himalayas requires urgent action.

Note:



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cameras, streamlines traffic flow and enhances efficiency on the bridge. Additionally, the **MTHL utilizes Orthotropic steel deck technology**, a construction method that **combines strength and flexibility**. This technology allows the bridge's steel deck to withstand heavy loads, such as vehicles, while maintaining a lightweight structure.



Read more: [India's Infrastructure Push](#)

CAG Chief Re-elected as WHO External Auditor

Girish Chandra Murmu, the **Comptroller and Auditor General of India (CAG)**, has been re-elected as the **External Auditor of the World Health Organization (WHO)** for a **four-year term from 2024 to 2027**. The re-election took place during the **76th World Health Assembly in Geneva**. This marks his second major international audit assignment this year, following his selection as the **External Auditor for the International Labour Organisation (ILO) in March 2023**. Additionally, the CAG of India holds the position of External Auditor for several other international organizations, including the **Food and Agriculture Organization, the International Atomic Energy Agency, and the Inter-Parliamentary Union**. The CAG's re-election as the WHO External Auditor highlights **India's strong presence and influence in international audit and governance bodies**.

The function of the External Auditor of the WHO is to conduct **independent audits** and provide assurance on the financial statements, **compliance with regulations, effectiveness of operations, and risk management** within the organization.

Read more: [Comptroller and Auditor General of India \(CAG\), World Health Organization \(WHO\)](#)

China Sends First Civilian into Space

China's space program achieved a significant milestone by successfully launching the **Shenzhou 16 spacecraft, carrying 3 astronauts using a Long March 2F rocket**. This marks the **country's first-ever mission involving a civilian astronaut**. With ambitions to catch up with the United States and Russia, China has invested billions of dollars into its military-run space program. This milestone **marks a departure from the previous practice of only sending astronauts from the People's Liberation Army**. The civilian astronaut, Gui Haichao, a payload expert from Beijing University of Aeronautics and Astronautics, will be responsible for space science experimental payloads. China's space dream includes plans for a **lunar base** and a **crewed lunar mission by 2029**, while the **Tiangong space station** will facilitate scientific experiments and the testing of new technologies.

Read more: [China's Tiangong Space Station](#)

Boosting Unani Medicine

The Union Ministry of Minority Affairs has allocated **Rs 45.34 crore to bolster the research and development of Unani medicine**, a traditional healing system. The **Central Council of Research in Unani Medicine (CCRUM)** and the **National Institute of Unani Medicine (NIUM) Bengaluru** have received **Rs 35.52 crore and Rs 9.81 crore respectively** to enhance Unani facilities in Hyderabad, Chennai, Lucknow, Silchar, and Bengaluru.

The grants have been disbursed under the centrally sponsored scheme **Pradhan Mantri Jan Vikas Karyakram**, aiming to promote the advancement of Unani medicine and its accessibility to the public.

Unani medicine, **based on the principle of boosting the body's inherent self-healing power**, is one of India's popular alternative treatments, alongside **Ayurveda** and **homoeopathy**.

Read more: [Pradhan Mantri Jan Vikas Karyakram](#)

Increased Bird Migration to Chilika Lake Despite High Temperatures

Chilika Lake in Odisha, Asia's largest brackish water lagoon, saw a higher influx of migratory birds this summer

Note:



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compared to previous years, defying the scorching temperatures ranging from **39 to 41 degrees Celsius**.

The **Tangi range** recorded the highest number of **bird sightings**, followed by Balugaon, Satapada, Chilika and Rambha. Notably, the **grey-headed swamphen** or **purple swamphen** was the most commonly sighted species, followed by the **Asian Openbilled-stork**, **whiskered tern**, **little cormorant**, and **little egret**.

Factors such as **habitat improvement**, **food availability**, and the **removal of prawn enclosures** in the lake contribute to the increased bird migration. The birds, mostly from beyond the **Himalayas in northern Eurasia**, the **Caspian region**, **Siberia**, **Kazakhstan**, **Baikal Lake** and the **remote areas of Russia** and neighbouring countries, visit the Chilika every winter and start their homeward journey before the onset of summer.

Read more: **Chilika Lake**

Kheer Bhawani Mela

Kashmiri Pandits embark on the **annual pilgrimage to Mata Kheer Bhawani temple** in Ganderbal, Jammu Kashmir. However, in recent years, the pilgrimage has experienced a decline in attendance **due to a rise in militant attacks targeting Kashmiri Pandits**. Since the revocation of **Jammu and Kashmir's special status in 2019**, several Pandits have fallen victim to such attacks in different parts of the region.

The history of Mela Kheer Bhawani dates back centuries, symbolizing the reverence and devotion of the people towards the **divine Mother Ragnya Devi**. It is observed on the Ashtami day during Shukla Paksha or waxing phase of moon in **Jyeshtha month (June – July)**. This vibrant celebration showcases the **harmonious coexistence and communal harmony** prevalent in the region, fostering cultural exchange and a shared appreciation for Kashmir's rich heritage.

Read more: **In Depth: Jammu and Kashmir**

Child Marriage-Free Campaign in Udaipur

The **district administration in Udaipur, Rajasthan**, in collaboration with **NGOs**, has launched a proactive campaign to **combat child marriages in the district**. To facilitate reporting, a helpline number has been set up, ensuring the confidentiality of the callers' identities. As

an incentive, individuals who report cases of child marriage will receive a **cash prize of Rs 2,100**.

The district administration has established dedicated teams for the campaign, focusing on **obtaining injunction orders against families involved in child marriages**. These orders **render the marriage null and void from the outset**, eliminating the need for the bride and groom to wait until they reach adulthood to take legal action.

Notably, the issuance of an **injunction order under Section 13(1) of the Child Marriage Prohibition Act, 2006** in Udaipur is a significant achievement.

Read more: **Child Marriages**

Bulgarian Writer Wins International Booker Prize 2023

Bulgarian writer **Georgi Gospodinov** and translator **Angela Rodel** won the **International Booker Prize 2023** for **Time Shelter**.

This is the first time a novel originally published in Bulgarian has won the annual award, given to a work of fiction translated into English and published in the United Kingdom in the preceding year.

Time Shelter has also won **Italy's Strega European Prize for literature** in Italian translation.

The **International Booker Prize** is awarded **every year** to a **translated work of fiction published in the U.K. or Ireland**. It is run alongside the **Booker Prize for English-language fiction**, which will be handed out in the autumn.

Last year's (2022) winners of the **International Booker Prize** were **Indian writer Geetanjali Shree** and **American translator Daisy Rockwell** for "**Tomb of Sand**."

UDAN 5.1, Specifically Designed for Helicopter Routes

The **Ministry of Civil Aviation** has launched **UDAN 5.1** to further enhance the **connectivity to remote areas** of the country and achieve last mile connectivity through helicopters.

For the first time under **Regional Connectivity Scheme - UDAN**, this round is designed **specifically for helicopter routes**.

Note:



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The scheme will now allow routes where **one of the origin or destination locations** is in a **priority area**. Earlier both points had to be **priority areas**.

Airfare caps have been reduced by **25%** to make flying in helicopters more affordable for passengers.

Viability Gap Funding (VGF) caps for the operators have been increased substantially for both **single and twin-engine helicopters** to enhance **financial viability** for operating the awarded routes.

The latest round of **UDAN scheme** is a testament to two emerging phenomena in Indian civil aviation: One is a deeper democratization of air travel with a focus on last-mile connectivity. Second is a growing appetite for helicopters in aiding tourism.

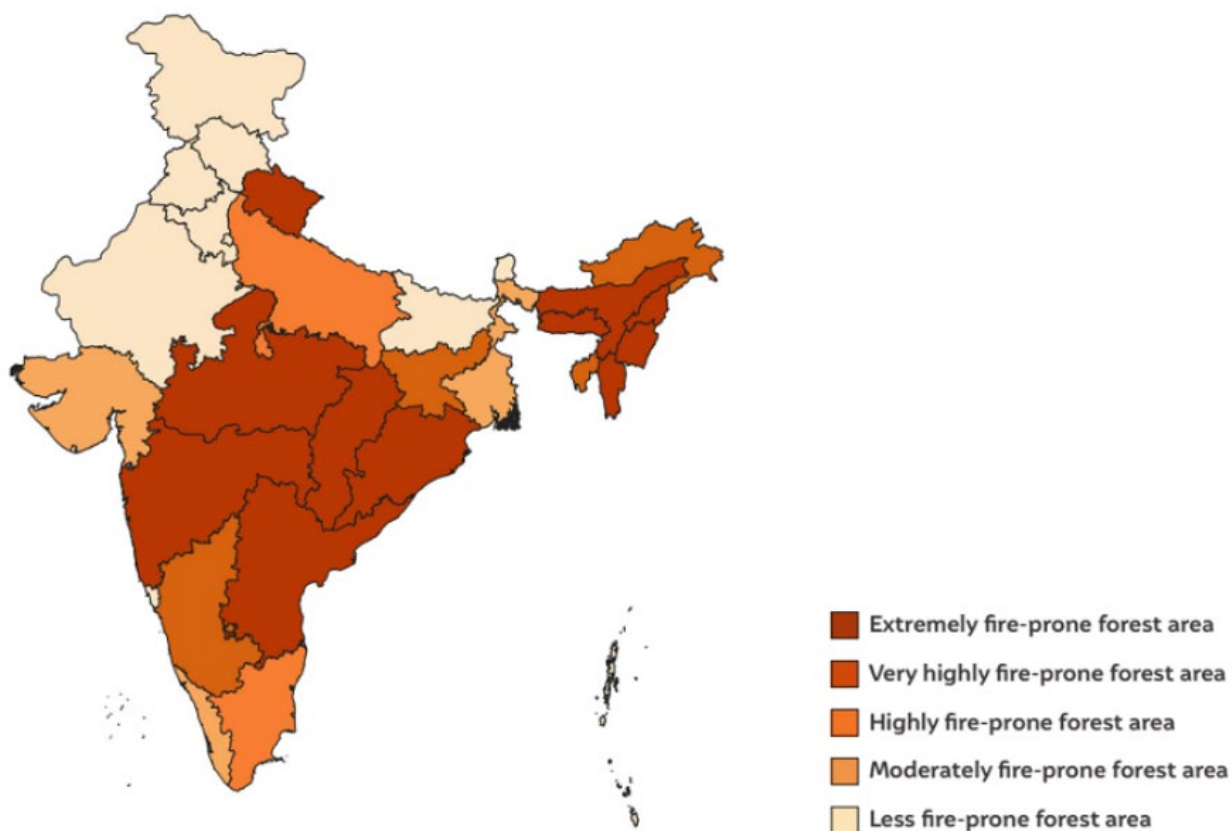
It may be mentioned that up to date **46 helicopter routes** have been operationalized under previous rounds of the scheme benefiting several hilly and Northeast states and this round is targeting coverage of a much larger number of routes.

High Forest Fire Occurrences in Indian Protected Areas

An analysis reveals that **despite significant excess rainfall** in the last two months, over **50% of forest fire occurrences in India** were reported from **nine national parks and wildlife sanctuaries**. From May 17 to May 23, 2023, a total of 516 forest fires were reported, with **Guru Ghasidas National Park** recording the **highest number of incidents (129)**. These fires were observed in states such as **Madhya Pradesh, Chhattisgarh, and Jharkhand**.

While the cause of these wildfires remains unknown, it is perplexing that these areas have experienced significant excess rainfall. The **Forest Survey of India** indicates that **approximately 4% of forest cover in the country is highly prone to fires, while another 6% is extremely prone**.

More than 62% of Indian states are prone to high-intensity forest fire events (2000–19)



Read more: **Forest Fires**

Note:

Neeraj Chopra: The Quest for the 90m Mark

Neeraj Chopra is India's golden boy in javelin throw, having won the **Olympic gold medal in 2020** and becoming the **world number one in 2023**. He happens to be the first Asian to win an Olympic Gold Medal in the men's javelin throw. However, there is one elusive target that he has not yet achieved: **the 90m mark**. This is considered a significant milestone in the sport, as **only 23 men have crossed it since 1986**.

Read more: **Target Olympic Podium Scheme**

The Changathi Project

The accomplishment of **migrant workers** in the Malayalam examination highlights the success of the **Changathi project under the Kerala Literacy Mission**.

Designed to address the **exclusion faced by migrant labourers in society**, this program aims to teach them to read and write Malayalam and Hindi. Recognizing the importance of socio-cultural integration, the **literacy mission seeks to equip migrant workers with the necessary skills to understand the nuances of the state they reside in**. The programme was first launched on **August 15, 2017**, in **Perumbavoor, Kerala**. Through initiatives like Changathi, **migrant workers are being empowered**, breaking down barriers and fostering greater inclusivity in society.

Read More: **Migrant Issues and Safeguards**

Deaths Linked to Extreme Weather

According to the **World Meteorological Organization (WMO)**, nearly 150,000 Indians have lost their lives over the past 51 years due to **extreme weather** events.

The analysis by WMO revealed that **between 1970 and 2021**, India experienced **573 climate-related disasters**, resulting in the **2nd-highest number of deaths in Asia, after Bangladesh**. These fatalities (138,377) highlight the vulnerability of communities to **weather-related hazards**. This information is a part of the updated data released by WMO, emphasizing the **urgent need for effective early warning systems** and **disaster management** to mitigate the impact of extreme weather events.

According to the **IPCC**, many extreme weather events have become **more frequent and intense since 1950** due to human-induced **greenhouse gas emissions** that increase **global temperatures**.

Read more: **World Meteorological Organization (WMO), Events of Extreme Weather**

INS Sindhuratna

The **Kilo-class submarine INS Sindhuratna** has successfully reached Mumbai, India, after undergoing a significant upgrade in Russia. **INS Sindhuratna, a diesel-electric submarine** belonging to the **Sindhughosh-class**, has a rich history and has served the Indian Navy for over three decades. Commissioned in 1988, it has undergone several upgrades and refits to extend its operational life and capabilities. Notably, in 2010, it was equipped with the **Klub-S cruise missile system**, enhancing its striking range. In 2018, it underwent a comprehensive **Medium Refit Life Certification (MRLC) process in Russia**, involving the replacement of crucial systems.

INS Sindhuratna plays a significant role in enhancing the force level and **operational readiness of the Western Naval Command**. With its modernized weapon and sensor suite, the submarine strengthens India's maritime capabilities and contributes to safeguarding the nation's interests and security in the **Indian Ocean Region**.

The Kilo-class submarines **have a displacement of 2,300 tonnes, a maximum diving depth of 300 metres** and a top speed of 18 knots.

The **Navy** has 16 conventional submarines in service. These are seven Russian Kilo-class submarines, four German-origin HDW submarines and five French Scorpene-class submarines.

Read more: **INS Sindhukesari in Indonesia**

INSV Tarini Crew Returns Home After Historic Voyage

A **17000-nm long trans-ocean inter-continental voyage** by the crew of **INSV Tarini** is reaching its completion, marking a remarkable achievement in the field of ocean sailing. A grand **'Flag in' ceremony will be held on 23 May 2023** at the **Indian Naval Watermanship Training Centre (INWTC), INS Mandovi, Goa**, to honour the **six-member crew, including two exceptional women officers**.

Note:



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The **Navika Sagar Parikrama**, a previous sailing expedition by six women naval officers, further increased the popularity of **ocean sailing** within the navy and the country. The current voyage of INSV Tarini is a significant step towards the **Navy's** upcoming endeavour to send a woman on a solo circumnavigation of the globe.

INSV Tarini is the second sailboat of the Indian Navy that was constructed at **Aquarius Shipyard** in Goa. She was commissioned to Indian Navy service on **18 February 2017** and named after the **Tara Tarini Temple in Odisha**, which was the patron deity for sailors and merchants of ancient Odisha.

Read More: **Tara Tarini Temple in Odisha**.

Drying Trend in Major Lakes of India Raises Concerns

New research reveals a **concerning trend** of more than **30 large lakes in India** experiencing a drying trend from **1992 to 2020**. Among these lakes, **16 are major lakes located in southern India**, including **Mettur** (Tamil Nadu), **Krishnarajasagar** (Karnataka), **Nagarjuna Sagar** (between Guntur district of Andhra Pradesh state and Nalgonda district of Telangana state), and **Idamalayar** (Kerala). It suggests that **recent droughts may have contributed to the decline in reservoir storage in southern India**.

Lakes, covering **3% of the global land area**, play a **crucial role in regulating climate through carbon cycling**. Despite their importance, lakes are often not well managed and **receive less attention compared to rivers**, which have a higher profile.

Satellite observations have recorded a **loss of 90,000 square kilometers of permanent water area globally**, but the factors driving these losses remain unclear.

A recent study reveals that **53% of the world's largest lakes have been losing water, while 24% have experienced an increase**. Approximately **33% of the global population resides in a basin with a large, dry lake**. A more pronounced drying trend is observed in Arctic lakes and suggests that **climate change, along with human water consumption**, plays a significant role in driving these changes.

Understanding the drivers of lake decline, such as **temperature, precipitation, runoff, and human consumption**, is crucial for effective **lake management and recognizing their importance in sustaining societies and water supplies worldwide**.

Read More: **Lakes in India**

Centre of Excellence on Sustainable Land Management

The **Centre of Excellence on Sustainable Land Management (CoE-SLM)** was formally inaugurated on **20th May 2023** at the **Indian Council of Forestry Research and Education (ICFRE)**, Dehradun. This initiative was announced by the **Prime Minister of India** during the **14th Conference of the Parties (COP-14)** of the **United Nations Convention to Combat Desertification (UNCCD)** in **2019**. The CoE-SLM aims to **tackle land degradation issues through sustainable land management practices**, promote **South-South Cooperation**, and contribute to achieving **Land Degradation Neutrality (LDN)**. By leveraging technical support, capacity building, and knowledge sharing, the CoE-SLM intends to restore degraded land, align with international conventions and goals such as the **SDGs, Convention on Biological Diversity, and UNFCCC**, and address the impacts of land degradation on **greenhouse gas emissions** and biodiversity loss. The establishment of the CoE-SLM reflects the Indian government's commitment to environmental conservation and combating climate change.

Read more: **Dialogue on Desertification, Land Degradation and Drought**

DRI Busts Ambergris Smuggling Gang

The **Directorate of Revenue Intelligence (DRI)** has made a significant breakthrough by busting an **Ambergris smuggling gang racket**, which poses a threat to the **nation's flora and fauna**.

The DRI is an Indian intelligence agency that functions under the **Central Board of Indirect Taxes and Customs (CBIC)**, Ministry of Finance. It was constituted in **1957** as the apex **anti-smuggling agency** to counter the menace of smuggling and commercial frauds related to **international trade and evasion of customs duty**. The DRI also works as the lead agency for **Anti-Smuggling National Coordination Centre (SCord)**, which coordinates the efforts of various agencies involved in anti-smuggling activities.

Ambergris, known as "**whale vomit**," is a **solid waxy substance** that originates in the intestines of **sperm**

Note:



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whales. Produced by only around 1% of these whales, ambergris contains alkaloids, acids, and a compound called ambreine, similar to cholesterol. It is often found floating on the surface of water bodies and occasionally washes up on coastlines. Due to its **high value**, ambergris is often referred to as “**floating gold**”. The main use of ambergris is in the **perfume industry**, particularly for creating musk fragrances.



Read more: **Directorate of Revenue Intelligence (DRI), Ambergris**

Annual Forex Spends up to ₹7 Lakh Exempted from TCS

India will **not impose a 20% tax on spending of up to 7 lakh rupees through international debit and credit cards** in a financial year to eliminate any procedural uncertainties. This decision comes in response to concerns raised regarding the application of **Tax Collection at Source (TCS)** to small transactions under the **Liberalised Remittance Scheme (LRS)** from July 1, 2023.

It clarified that expenditures up to **₹7 lakh per year would neither fall under the LRS nor be subject to TCS**. To facilitate this exemption, the necessary changes to the **Foreign Exchange Management (Current Account Transactions Rules), 2000** would be separately issued.

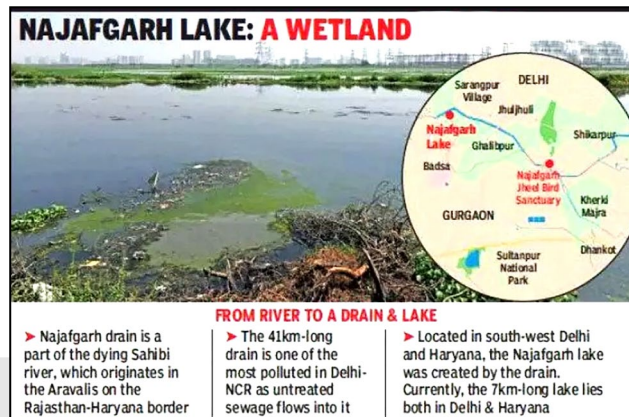
Additionally, the ministry emphasised that the existing beneficial TCS treatment for education and health payments would continue, with a **TCS rate of 5% for such payments up to ₹7 lakh per year**.

Also, the **Reserve Bank of India** recently introduced a new provision under the LRS, allowing individuals to make **forex remittances of up to USD 2.5 lakh annually**.

Read more: **Liberalised Remittance Scheme, Reserve Bank of India.**

Greater Flamingo

Recently, a **greater flamingo** was rescued from **Najafgarh wetland**, bordering Haryana.



Greater flamingo (*Phoenicopterus roseus*) is the **state bird of Gujarat**. They are found in the middle east, including Iran, Turkey, Dubai, Oman, and Afghanistan. They are **also common in south and southwest Asia**. They are **mainly found in shallow waters** of lagoons, lakes, estuaries, and muddy beaches. **Of the six species of flamingos in the world, two are found in India:** the tallest of them, the greater flamingo and the smallest one, the lesser flamingo (*Phoeniconaias minor*). They are **taller, with black-tipped light pinkish beaks, yellowish eyes and pinkish-white body colour**.

In the **IUCN Red List of Threatened Species**, they are categorized as “**least concern (LC)**”.



Read More: **Najafgarh wetland, Greater Flamingo**

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Production-Linked Incentive Scheme

The Indian government is offering a modified **production-linked incentive (PLI) scheme** for **electric vehicles (EVs)** and **advanced chemistry cell batteries** to attract investments from companies, including **Tesla**. This modification is not exclusive to Tesla but follows a similar approach taken with **telecom products and IT Hardware PLI schemes**. The finalization of the modified PLI scheme will determine the specifics of the incentives and structure for participating companies.

Read more: Enhanced Production Linked Incentive for IT Hardware

Baobab Tree



The High Court of Madhya Pradesh has **directed the state government to stop cutting down Baobab trees in the Dhar district of MP**. This decision came after tribal communities protested against the removal of these trees.

The court has **ordered the state to ensure that "not a single Baobab tree is cut for any purpose whatsoever by any authority until further orders of this court"**. The district has around 1,000 Baobabs, some of which are **centuries old, and are of heritage and historical value**. The trees have been **placed under the Biological Diversity Act, 2002**, meaning **permission for commercial use must be taken from the state biodiversity board**.

Baobabs are **deciduous trees ranging in height from 5 to 20 meters**. They are **native to Africa but were likely brought to this corner by African soldiers between the**

10th and 17th century. It is **known as the 'World Tree in Africa'**. Baobab trees **can live for more than a thousand years and provide food, livestock fodder, medicinal compounds, and raw materials**.

Read More: Baobab Tree

NIA's Operation Dhvast

The **National Investigation Agency (NIA)** recently conducted a nationwide operation called **'Operation Dhvast'** targeting the **interconnected network of terrorists, gangsters, and drug smugglers**. Collaborating with the police in Punjab and Haryana, the NIA carried out raids at 129 locations across multiple states, resulting in the arrest of three individuals. The operation was aimed at breaking the **terror nexus of terrorists, and other notorious gangsters** involved in targeted killings, terror funding of **pro-Khalistan** outfits, and extortion, and smuggling of drugs and weapons.

The **NIA is a federal agency established in 2009** by the Indian government to investigate and prosecute crimes related to **terrorism, insurgency, and national security**. It operates under the Ministry of **Home Affairs** and has jurisdiction over matters that affect the entire country. The NIA was formed in response to the **2008 Mumbai terrorist attacks** and operates under the **National Investigation Agency (NIA) Act, 2008**. The agency was further empowered by the **National Investigation Agency (Amendment) Act, 2019**. It seeks the sanction of the Central government for prosecuting accused individuals under the **Unlawful Activities (Prevention) Act (UAPA)** and other scheduled offenses.

Read more: National Investigation Agency (NIA)

Caste-Based Survey

The **Supreme Court of India** has refused to lift the **interim stay order** passed by the Patna High Court on the **caste-based survey in Bihar**. The survey was initiated by the Bihar government to **collect data on the socio-economic status and educational level of various castes in the state**. The Supreme Court also said that it needs to determine whether the **survey was a census or a voluntary exercise**.

A caste-based survey is a process of collecting information on the population of different castes in a region or a country. **Caste is a system of social stratification based on birth, occupation, and religion**. Caste-based

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surveys are often conducted to **identify the backward classes and provide them with reservation and welfare schemes**. However, caste-based surveys are also controversial as they may affect social harmony, political representation, and individual privacy. **Article 340 mandates the appointment of a commission to investigate the conditions of socially and educationally backward classes** and make recommendations as to the steps that should be taken by governments.

Read more: **Caste Census**

M2023 SAFF Championship

The **2023 SAFF Championship** is a biennial international men's football tournament for South Asian countries, organized by the **South Asian Football Federation (SAFF)**. The **14th edition of the tournament will be hosted by India in Bengaluru** from June 21 to July 3, 2023. India is the defending champion, having won its **eighth title in 2021 by defeating Nepal in the final**. The tournament will feature **eight teams, including two guest teams from outside the region: Kuwait and Lebanon**. Sri Lanka was unable to participate due to its **suspension by FIFA (Fédération internationale de Football Association)**, while **Afghanistan withdrew from SAFF** and joined the Central Asian Football Federation. The eight teams are divided into two groups of four each, with the top two teams from each group advancing to the semi-finals. India is drawn in **Group A with Kuwait, Nepal, and Pakistan**, while **Lebanon is in Group B with Maldives, Bhutan, and Bangladesh**.

SAFF was formed in 1997 by founding Member Associations from **Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka**. The SAFF motto '**Unity in Strength**' depicts the power and bond of these seven Member Associations which is currently epitomized by the leader and President of SAFF. The SAFF Secretariat currently operates from **Dhaka, Bangladesh**. The SAFF is a part of the larger Asian Football Confederation (AFC).

Read more: **Indian Football's Vision 2047**

Trimbakeshwar Temple

Maharashtra has set up a **special investigation team (SIT)** to investigate an incident in which members of the **minority community** were accused of trying to enter the **Trimbakeshwar temple in Nashik**. As per the temple management, **only Hindus are allowed to enter the temple, non-Hindus are not allowed** to enter the temple.

Trimbakeshwar temple is an ancient and sacred Hindu temple **dedicated to Lord Shiva**, located in the town of Trimbak in the Nashik district of Maharashtra. It is **one of the twelve Jyotirlingas**, the holiest shrines of Shiva, where he is worshipped as **Trimbakeshwar, the lord of three worlds**. The temple was built by the **third Peshwa Balaji Bajirao** in the 18th century on the site of an old temple, near the mountain of Brahmagiri, from where the **river Godavari originates**. The temple is built of black stone in the **Nagara style of architecture** and is enclosed in a spacious courtyard.



Read more: **Temple Architecture**

World Hypertension Day

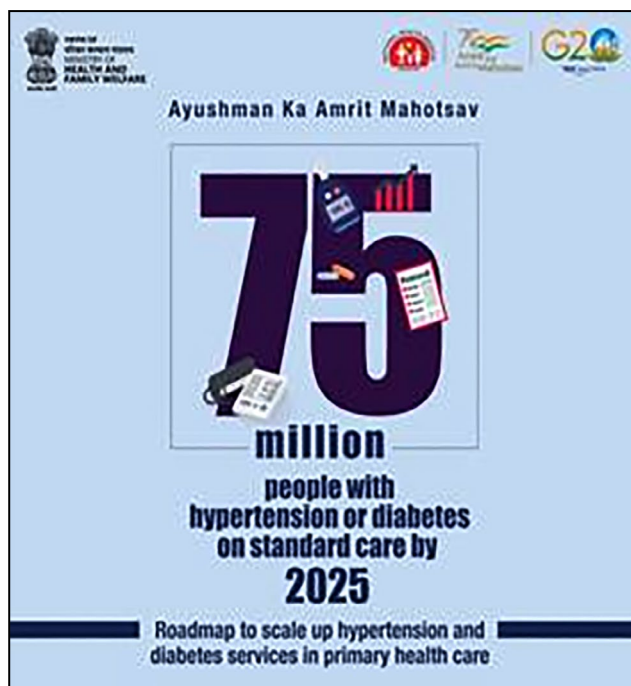
The Union Health Ministry of India has unveiled a groundbreaking initiative, the **"75/25" program**, on the occasion of **World Hypertension Day (WHD) on 17th May 2023**. This ambitious undertaking aims to screen and provide standard care to a **staggering 75 million individuals with hypertension and diabetes by the year 2025**.

WHD is an annual event that aims to raise awareness and promote education about **hypertension or high blood pressure**, which affects millions of people worldwide and can lead to serious complications such as **heart failure, stroke, kidney damage, and liver damage**. The **theme for 2023 is "Measure Your Blood Pressure Accurately, Control It, Live Longer"**, which focuses on **combatting low awareness rates**, especially in low to middle-income areas, and accurate **blood pressure measurement methods**. The event was inaugurated in May 2005 by the **World Hypertension League (WHL)**, a non-governmental organization that works with the **World Health Organization (WHO)** and other partners to prevent and control hypertension. World Hypertension Day encourages people to know their numbers, check their blood pressure regularly, adopt a healthy lifestyle and seek medical advice if needed.

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Read more: [Hypertension](#)

Kiru Hydro-electric Power Project

An investigation into alleged corruption in the Kiru hydro-electric power project in Jammu and Kashmir (J&K) has led the **Central Investigation Bureau (CBI)** to search Delhi and Rajasthan locations.

The Kiru Hydro Electric Project is proposed on River Chenab, located in Kishtwar district of J&K. The project is envisaged as a Run of River Scheme.

Run-of-river hydro projects use the natural downward flow of rivers and micro turbine generators to capture the kinetic energy carried by water.

Chenab River rises in the upper Himalayas in the Lahaul and Spiti districts of Himachal Pradesh state. The river is formed by the confluence of two rivers, Chandra and Bhaga, at Tandri, Himachal Pradesh. It flows through the Jammu region of J&K into the plains of Punjab, Pakistan, before flowing into the Indus River. Some of the important projects/dams on Chenab are **Ratle Hydro Electric Project**, Salal Dam- the hydroelectric power project, Dul Hasti Hydroelectric Plant, and Pakal Dul Dam (under construction).

Read More: [Chenab River](#)

Project Collaboration Agreement on Assistive Technology

The Department of Health Research (DHR), Ministry of Health and Family Welfare and **World Health Organization (WHO)** signed a **Project Collaboration Agreement** to foster research, innovation, and capacity building aimed at increasing access to high-quality affordable assistive technology.

This collaboration aims to work towards drawing global attention toward access to assistive technology, fostering research and innovation and developing and disseminating appropriate training programmes.

Assistive technology is an umbrella term covering the systems and services related to the delivery of assistive products and services. Assistive products maintain or improve an individual's functioning and independence, thereby promoting their well-being. For Example, technologies and devices such as prosthetics, braces, walkers, special switches, special-purpose computers, screen readers and specialised curricular software.

Read More: [Assistive Technology](#)

Bangladesh Withdraws "Extra Security Escort" for Diplomats

Bangladesh has decided to withdraw extra security provided to top diplomats from India, the United States, the United Kingdom, and Saudi Arabia, deeming it discriminatory and unnecessary due to the country's well-controlled law and order situation. The decision comes after heightened security measures were implemented following a militant attack in 2016. The foreign minister stated that the current law and order situation does not warrant additional security for specific envoys, suggesting that private security services can be hired if needed. Normal security measures for diplomatic missions, in line with international conventions, will continue to be upheld by the host country.

In the context of diplomatic security, the **Vienna Convention** on Diplomatic Relations of 1961 plays a significant role. This international treaty establishes the framework for diplomatic relations between independent countries. The convention grants diplomatic agents and missions various privileges and immunities to ensure their

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effective performance and protection from undue interference by the host state. Article 22 of the convention emphasizes the inviolability of the mission premises, with the receiving state having the duty to protect them against any intrusion or damage. Furthermore, Article 29 highlights the inviolability of the person of a diplomatic agent, with the **receiving state being obligated to treat them with respect and prevent any attack on their person, freedom, or dignity. The convention also grants diplomatic agents immunity from criminal jurisdiction.** However, it also mandates that diplomatic agents respect the laws and regulations of the receiving state and refrain from interfering in its internal affairs. These provisions ensure the security and functioning of diplomatic missions and personnel.

Read more: [Vienna Convention](#)

Indigenous Dengue Vaccine Trials in India

Serum Institute of India and Panacea Biotech, two prominent drug manufacturers, have taken a significant step towards **developing India's first vaccine against dengue.** They have submitted applications to the **Indian Council of Medical Research (ICMR)** in response to the 'Expression of Interest' for collaborative **Phase-III clinical trials** for indigenous manufacturers. Phase-III trials are conducted to **evaluate the efficacy, safety, and immunogenicity** of the tetravalent dengue vaccine candidate developed by Indian manufacturers.

Dengue virus disease poses a substantial health burden globally, with **India reporting 2 to 2.5 lakh cases annually.** The **World Health Organization (WHO)** has **recognized dengue as one of the top ten global health threats.** Presently, there is no specific treatment for dengue, underscoring the urgent need for effective vaccines.

Dengue is a mosquito-borne tropical disease caused by the **dengue virus (Genus Flavivirus)**, transmitted by several species of female mosquito within the genus *Aedes*, principally *Aedes aegypti*. This mosquito also transmits **chikungunya**, yellow fever and **Zika infection.**

Read more: [Dengue](#)

Sikkim's Statehood Day

On the occasion of **Sikkim's Statehood Day**, Prime Minister extended his greetings to the people of Sikkim.

Celebrated annually on **May 16**, this day marks the acknowledgment of **Sikkim's integration with India and its establishment as the 22nd state of the country in 1975.**

The formation of the state of Sikkim came about through the **36th Amendment of the Indian Constitution.** Sikkim has a rich history that dates back to the 17th century when the **Namgyal dynasty founded the Kingdom of Sikkim.** It is a former British protectorate, maintained its **administrative independence under the Chogyal rulers.** After India's independence, **Sikkim continued as a protectorate with India overseeing its external relations, defense, and communications.** However, in 1973, the people's agitation led to changes in governance. The Chogyal became a titular figure, and **Sikkim was designated an "associated state."** In 1975, Sikkim was granted statehood, integrating it into India and abolishing the monarchy on May 16.

Sikkim is bordered by the **Tibet Autonomous Region of China** to the north and northeast, by **Bhutan** to the southeast, by the Indian state of **West Bengal** to the south, and by **Nepal** to the west.

Mount Kanchenjunga, India's highest peak and the world's third highest mountain lies in Sikkim.



Read more: [Sikkim's Statehood Day](#)

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Gharial

After a three-decade absence, a **Gharial**, unique crocodilian species native to the **Indian subcontinent**, has been spotted in Pakistan's Punjab province. The sighting could potentially be linked to a **population reintroduced in 2017 on the Pakistani side of the Radcliffe Line**. Experts suggested that the gharial may have come from India during floods and settled in the **Satluj river**, near the border, where it is believed that around 10 individuals reside. The **Harike wetland**, located 50 km from the border, is where the **Beas and Satluj rivers meet**, and it served as the **release site for 94 gharials under a conservation program initiated by the Punjab government in India between 2017 and 2021**.



Gharials are a **species of crocodilian** found in the **fresh waters** of the northern part of India, primarily in the **Chambal River**. They are known for their **long, thin snouts**. Gharials are listed as **critically endangered on the IUCN Red List** and are included on **Appendix I of CITES and Schedule I of the Wild Life (Protection) Act, 1972**. They are also **important indicators of clean river water**. The main threats to their survival are river pollution, dam construction, fishing operations, floods, illegal sand mining, and poaching. Conservation efforts, such as the

Kukrail Gharial Rehabilitation Centre in Lucknow and the **National Chambal Sanctuary**, are in place to protect the species and their habitats.

Read more: **Gharials**

Director of the Central Bureau of Investigation

Karnataka **Director General of Police (DGP) Praveen Sood** has been appointed as the new **Director of the Central Bureau of Investigation (CBI)**, according to a **Department of Personnel and Training (DoPT) order**. The appointment order specified a **two-year tenure**.

The Director of the CBI is appointed under the **Delhi Special Police Establishment Act of 1946**. The Director is responsible for the administration of the organization and has the security of a **two-year tenure in the office**, as provided by the **Central Vigilance Commission Act of 2003**. The appointment of the Director is made by the **Central Government** on the recommendation of a **three-member committee** consisting of the **Prime Minister as the chairperson**, the **Leader of Opposition in the Lok Sabha**, and the **Chief Justice of India or Judge of the Supreme Court** nominated by him. In 2014, the **Delhi Special Police Establishment (Amendment) Act** modified the composition of the committee to include the **leader of the single largest opposition party in the Lok Sabha** when there is no recognized leader of the opposition.

Read more: **Central Bureau of Investigation (CBI)**



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Key Points

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Summary

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Key Points

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