Current Affairs

(CONSOLIDATION)

SEPTEMBER 2023
(PART – I)

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Polity and Governance

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Himachal Pradesh Seeks National Disaster Tag

Why in News?

Recently, Himachal Pradesh has requested the Indian Prime Minister to declare the destruction caused by heavy rains in the state a National Disaster.

➢ Himachal Pradesh suffered losses of **Rs 10,000 crore and around 418 people have died due to rain-related incidents** this **Monsoon 2023**.

➢ In the event of a calamity of a severe nature, additional Central assistance is provided from the National Disaster Response Fund.

How are States Assisted During Natural Disasters?

➢ There is no official or defined category of "National Disasters".

➢ Disasters of this nature come under the Disaster Management Act 2005, which defines a "**disaster" as "a catastrophe, mishap, calamity** or grave occurrence in any area, arising from natural or man made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature

or magnitude as to be beyond the coping capacity of the community of the affected area".

➢ The Act saw the creation of the **National Disaster Management Authority (NDMA)**, to be headed by the Prime Minister, and State Disaster Management Authorities (SDMAs) headed by respective Chief Ministers.

o The Act also led to the **National Disaster Response Force**. It has several battalions or teams, which are responsible for on-ground relief and rescue work in several states.

What is the National Disaster Relief Fund (NDRF) and State Disaster Response Fund (SDRF)?

➢ **NDRF:**
o The NDRF is mentioned in the 2005 Disaster Management Act.
o The NDRF supplements SDRF of a State, in case of a disaster of severe nature, provided adequate **funds are not available in SDRF.**

➢ **SDRF:**
o The SDRF is constituted under Disaster Management Act, 2005.
o SDRFs exist for the states and are the primary funds available to state governments for responses to notified disasters.
o The Central Government contributes **75% to the SDRF in general states and 90% in northeastern and Himalayan states.**

Note:

○ The SDRF is to be used only for meeting the expenditure for providing immediate relief to the victims of notified calamities like **Cyclones**, **Droughts**, **Earthquakes**, Fires, **Floods**, **Tsunamis**, hailstorms, landslides, avalanches, cloud bursts, pest attacks and frost/cold waves.

   ● According to a publication of the **National Disaster Management Authority** from November 2019, "The state government is primarily responsible for undertaking rescue, relief and rehabilitation measures in the event of a disaster." But these can be supplemented with Central assistance.

What is a Severe Calamity?

➢ **About:**

   ○ A severe calamity refers to a **catastrophic event or disaster** of significant magnitude and intensity that **causes widespread damage, loss of life, and disruption** to normal life.

   ○ When a calamity is declared to be of severe nature, it triggers a **specific procedure for disaster relief and financial assistance**.

➢ **Procedure for Disaster Relief in India:**

   ○ **Declaration:** The state government submits a memorandum detailing the extent of damage caused by the **disaster and its fund requirements for relief** operations.

   ○ **Assessment:** An inter-ministerial central team conducts an **on-the-spot assessment of the damage** and fund requirements for relief efforts.

   ○ **Committee Evaluation:** Committees examine the assessment reports, and a High-Level Committee must **approve the amount of immediate relief t**o be released from the NDRF.

      ● The Disaster Management Division of the Ministry of Home Affairs will then provide support and monitor the utilisation of funds.

   ○ **Financial Support:** SDRF is the primary fund available with State Governments for responses to notified disasters.

   ○ **Additional Assistance:** If the resources in the SDRF are insufficient, additional assistance **may be considered from** NDRF which is fully funded by the Centre.

      ● Funds for the NDRF and SDRFs are allocated by the government as part of budgetary allocations.

○ **Loan Relief:** Relief measures may include **relief in repayment of loans** or the provision of fresh loans to affected individuals on concessional terms.

○ **Finance Commission:** Funds for immediate relief are recommended by the Finance Commission. The **15th Finance Commission** (for 2021-22 to 2025-26) adopted a new methodology for state-wise allocations, based on factors like past expenditure, risk exposure (area and population) hazard and vulnerability of states.

○ **Release of Funds:** Central contributions for disaster relief are released in two equal installments, subject to utilization certificates and reports on activities undertaken by the state governments.

Food Processing Sector in India

Why in News?

At the **17th edition of ANUTEC - International FoodTec India,** held in Mumbai, prominent figures from the industry and government unveiled a promising future for the **food processing sector in India.** It is on a **remarkable trajectory of growth,** poised to become **one of the key drivers of the nation's economy.**

What is the Status of the Food Processing Sector in India?

➢ **About Food Processing:**

   ○ The **food processing sector is a crucial component of the overall food supply chain**.

      ● It involves the **transformation of raw agricultural and livestock products into processed and value-added food products** that are suitable for consumption.

   ○ This sector encompasses a wide range of **activities, technologies, and processes** aimed at making food products **safer, more convenient, and longer-lasting,** while also enhancing their flavor and nutritional value.

➢ **Food Processing Sector in India:**

   ○ The Food processing sector significantly contributes to India's economy, accounting for **13% of exports and 6% of industrial investment.**

      ● The sector has attracted substantial **foreign direct investments (FDI),** with **USD 4.18 billion** pouring in from **2014 to 2020**, indicating **confidence in its future prospects.**

Note:

- It is **expected to generate a whopping 9 million jobs by 2024**. Also, by 2030, India is set to become the **world's fifth-largest consumer of food and food technology,** as household consumption quadruples.
  - This underlines the **sector's immense growth potential.**
- ➢ **Government Initiatives Related to Food Processing Sector:**
  - Inclusion of **food & agro-based processing units** and cold chain as an agricultural activity under **Priority Sector Lending (PSL)** norms in April 2015.
  - Shifting from **product-by-product approval to an ingredient and additive-based approval process** by the **Food Safety and Standards Authority of India (FSSAI)** through notifications in **2016 as a measure toward ease of doing business.**
  - Allowing **100% Foreign Direct Investment (FDI)** approval under automatic route for the food processing sector.
  - Setting up a Special Food Processing Fund of Rs. 2000 crore with **National Bank for Agriculture and Rural Development (NABARD).**
  - Other Government Initiatives:
    - **Pradhan Mantri Kisan Sampada Yojana**
    - **Pradhan Mantri Formalisation of Micro Food Processing Enterprises Scheme**
    - **Production Linked Incentive (PLI) Scheme** for food processing industry
- ➢ **Challenges Related to Food Processing Sector:**
  - **Lack of Cold Chain and Storage: Inadequate cold storage and transportation** facilities result in significant post-harvest losses of perishable goods. This not only **affects food quality but also impacts the income of farmers.**
  - **Fragmented Supply Chain:** The supply chain in India is **highly fragmented, leading to inefficiencies and increased costs**. Poor road and rail infrastructure can result in delays and losses during transportation.
  - **Complex Regulations:** The food processing industry is subject to a **complex web of regulations, licenses, and permits**, which can be challenging for businesses to navigate.
    - **Inconsistent enforcement of regulations** can lead to unfair competition and quality issues.
  - **Food Safety Concerns:** Ensuring food safety and quality standards across the supply chain remains a significant challenge. **Contaminated or adulterated food products can harm public health** and damage the reputation of the sector**.**
  - **Research and Development:** Limited investment in research and development inhibits innovation and the development of new, value-added products.
    - India's **research and development (R&D) expenditure-GDP ratio** of **0.7%** is very low when compared to major economies and is **much below the world average of 1.8%.**

Vidya Samiksha Kendras

Why in News?

Under the **National Digital Education Architecture (NDEAR)**, the Ministry of Education is pushing the establishment of **Vidya Samiksha Kendras (VSKs)** across states.

- ➢ This initiative aligns with the **National Education Policy, 2020**.
- ➢ Currently, at the Central level, a VSK centre is housed in the **Central Institute of Educational Technology** building in the National Council for Educational Research and Training (NCERT) campus .

What is Vidya Samiksha Kendras (VSKs)?

- ➢ **About:**
  - VSK is aimed at **leveraging data and technology** to bring a big leap in learning outcomes.
  - This will cover data of more than **15 Lakh schools**, 96 Lakh teachers and 26 Crore students and analyze them meaningfully using big data analysis, **Artificial Intelligence (AI)** and machine learning in order to enhance the overall monitoring of the education system and thereby improving learning outcomes.
- ➢ **Objectives:**
  - To monitor the **real-time status of various projects/ activities** under the ambit of Samagra Shiksha.
  - To keep track of enrolled **students including learning outcomes**, Dropouts, support required by teachers and schools, etc.
  - To monitor and **track field level academic and non-academic activities** at state level and also empower administrators and teachers in the field to take data driven decisions.

Note:

○ To set up a centralized **help desk for grievance redressal mechanisms** for stakeholders of the School ecosystem.

○ To identify and analyse improvement areas for decision making and implementation that needs urgent attention.

➢ **Significance:**

○ The ability to effectively collect, monitor, correlate, and analyse data will lead to timely actions to implement schemes.

○ Integrating various data sets and breaking through the barrier of operating in silos **will help us effectively leverage different entities** towards a common goal.

What is NDEAR?

➢ **About:**

○ NDEAR is federated, unbundled, interoperable, inclusive, accessible, evolving which aims to create and **deliver diverse, relevant, contextual, innovative solutions** that benefit students, teachers, parents, communities, administrators and result in timely implementation of policy goals.

○ NDEAR is under the aegis of the Ministry of Education in collaboration with the Ministry of Electronics and IT (MeitY).

○ It aims to enable a **common set of principles** and approaches to be followed in building, using and **re-using technology for education.**

➢ **Vision:**

○ A globally pioneering effort in education - A unifying national digital infrastructure to energise and catalyse the education.

➢ **Outcomes:**

○ The Students get access to on demand learning materials, videos, graphics and animations, virtual labs and different forms of assessment tools. Access to personalized adaptive learning (PAL), Transition to higher education and skilling to be tracked

○ The Teachers get access to **online support for lesson plans**, use of TLM (Teaching-learning material), pedagogic transactions, online reference materials, competency based evaluation tools etc. They also get access to online modules for improving professional standards.

Himachal Pradesh Contemplates Legalizing Cannabis Cultivation

Why in News?

The Himachal Pradesh government is exploring the possibility of **Legalizing Cannabis (Hemp)** cultivation, aligning with farmers' **longstanding demands to lift the ban on cultivation.**

➢ The **Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985** permits states to make **rules regarding cannabis cultivation for fiber, seeds, or horticultural** purposes, under **Section 10 (a) (iii).**

What is Cannabis?

Cannabis sativa L.

About:

○ According to the **WHO (World Health Organization)**, cannabis is a generic term used to denote the several **psychoactive preparations of the plant** *Cannabis sativa.*

● According to the WHO, cannabis is by far the **most widely cultivated, trafficked and abused illicit drug** in the world.

Note:

- Most species of **cannabis are dioecious plants** that can be identified as either male or female. The unpollinated female plants are called hashish.
  - ○ The major psychoactive constituent in cannabis is **Delta9 tetrahydrocannabinol (THC).**
- ➢ **Definition by NDPS Act, 1985:**
  - ○ According to the NDPS Act "cannabis plant" means any **plant of the genus cannabis.**
    - ● 'Charas' is the separated resin extracted from the cannabis plant. The NDPS Act covers separated raisin, in whatever form, whether crude or purified, obtained from the cannabis plant and also includes concentrated preparation and resin known **as hashish oil or liquid hashish.**
    - ● The Act defines **'ganja' as the flowering or fruiting tops of the cannabis plant** but it clearly excludes the seeds and leaves.
    - ● The Act illegalises any mixture **with or without any neutral material**, of any of the two forms of cannabis, charas and ganja, or any drink prepared from it.
    - ● The legislature **left seeds and leaves of the cannabis plant** out of the ambit of the Act, because the serrated leaves of the plant have negligible THC content.

What are the Benefits of Cannabis Cultivation in Himachal Pradesh?

- ➢ **About:**
  - ○ Hemp, a variant of Cannabis sativa cultivated for industrial and medicinal applications, is currently grown in parts of Himachal Pradesh, albeit illegally under the **NDPS Act of 1985**.
    - ● Himachal Pradesh's neighboring state, Uttarakhand, became the **first in India to legalize cannabis cultivation in 2017.**
  - ○ Controlled cultivation also occurs in some districts of Gujarat, Madhya Pradesh, and Uttar Pradesh.
- ➢ **Support for Legalization:**
  - ○ **Diverse Application:**
    - ● Advocates of legalization point out that cannabis has **diverse applications beyond recreational use.** These include phytoremediation, fiber and cloth manufacturing, **medicinal purposes**, and the pulp and paper industry.

- ○ **Alternative Income:**
  - ● Hemp cultivation can generate revenue for Himachal Pradesh and provide an alternative income source for locals.
- ○ **Traditional and Medicinal Uses:**
  - ● The traditional uses of cannabis in Himachal Pradesh, such as rope making (from hemp fibers), shoe making and seed consumption. The ban on cultivation disrupted these local practices.
  - ● Legalizing cannabis for medicinal (Pain Management, Anti-Inflammatory Properties), industrial, and scientific purposes will harness its medicinal properties and boost state revenue.

What are the Concerns Related to Cannabis Cultivation in India?

- ➢ **Drug Addiction:**
  - ○ Approximately 95% of drug addicts in Himachal Pradesh use cannabis and its derivatives. Critics argue that **legalizing cultivation may entice youth towards cannabis use** and potentially lead to lifelong addiction, undermining the socio-economic contributions of drug-addicted youth.
- ➢ **Health Risks:**
  - ○ Cannabis use can have adverse **health effects**, including impaired cognitive function, **respiratory issues (when smoked), and an increased risk of mental health disorders**, particularly in individuals with a genetic predisposition. Concerns about the public health impact of widespread cannabis use are paramount.
- ➢ **Psychiatric Issues:**
  - ○ Cannabis use, especially in high quantities or over an extended period, can lead to **psychiatric issues, including anxiety**, depression, and psychosis. Legalizing cultivation could exacerbate these problems if not coupled with adequate mental health support and education.
- ➢ **Illicit Market:**
  - ○ Legalization may not completely eliminate the illicit cannabis market. There is a risk that the illegal production and distribution of cannabis will continue alongside legal cultivation, **potentially leading to increased criminal activities and law enforcement challenges.**

Note:

- ➤ **Enforcement Challenges:**
  - ○ Regulating cannabis cultivation and use poses significant challenges for law enforcement agencies. Determining legal limits, enforcing age restrictions, and preventing diversion to the **illicit market require a robust and well-funded regulatory apparatus.**

What are the Initiatives to Tackle Drug Addiction?
- ➤ The **Narco-Coordination Centre (NCORD)** was constituted in 2016 and the scheme of "Financial Assistance to States for Narcotics Control" was revived.
- ➤ Seizure Information Management System has created a complete online database of drug offences and offenders.
- ➤ National Drug Abuse Survey to measure trends of drug abuse in India through the Ministry of Social Justice & Empowerment with the help of National Drug Dependence Treatment Centre of AIIMS.
- ➤ **Project Sunrise:** It was launched by the Ministry of Health and Family Welfare in 2016, to tackle the **rising HIV prevalence** in north-eastern states in India, especially among people injecting drugs.
- ➤ **'Nasha Mukt Bharat', or Drug-Free India Campaign**

Abbott India's Digene Gel Antacid Syrup Recalled

Why in News?

Abbott India's popular antacid syrup, **Digene Gel**, manufactured at its **Goa facility**, is being **voluntarily recalled** due to isolated customer complaints regarding **taste and odor.**
- ➤ The **Drugs Controller General of India (DCGI)**, who leads the **Central Drugs Standard Control Organisation (CDSCO)**, further recommended that healthcare practitioners exercise caution when prescribing Digene Gel.

What is Digene Gel?

- ➤ Digene Gel is a popular **antacid syrup** known for **relieving acidity and its associated symptoms**, including heartburn, stomach discomfort, abdominal pain, and gas.
  - ○ The antacid's primary mechanism of action involves the **use of basic compounds like magnesium hydroxide** to neutralize stomach acid.

What is a Drug Recall?

- ➤ A drug recall is a **process in which a pharmaceutical company or regulatory authority removes a specific medication from the market** due to safety concerns, defects, or other issues that may harm patients or consumers.
- ➤ Presently, **India does not possess legislation that empowers the recall of complete batches of substandard drugs.**
- ➤ The establishment of a comprehensive Drug Recall Law in India is imperative. Such a law would ensure that **when a drug is identified as being of substandard quality (NSQ), the entire batch is promptly removed from circulation in the market.**

Central Drugs Standard Control Organization:
- ➤ The **Central Drugs Standard Control Organization (CDSCO)** is the Central Drug Authority for discharging functions assigned to the Central Government under the **Drugs and Cosmetics Act, 1940.**
  - ○ CDSCO has **6 zonal offices, 4 sub-zonal offices, 13 port offices** and laboratories under its control.
- ➤ Major functions of CDSCO:
  - ○ Regulatory control over the import of drugs
  - ○ Approval of new drugs and clinical trials
  - ○ Meetings of Drugs Consultative Committee (DCC) and Drugs Technical Advisory Board (DTAB)
  - ○ Approval of certain licenses as **Central License Approving Authority** is exercised by the CDSCO headquarters.

Drugs Controller General of India
- ➤ DCGI is the head of the CDSCO. The DCGI is responsible for approving licenses of specified categories of drugs such as **blood and blood products, IV fluids, vaccines, and sera** in India.
  - ○ The DCGI also sets standards and **quality of manufacturing, selling, import and distribution of drugs in India.**

New Education Policy in West Bengal

Why in News?

Recently, the West Bengal government has announced its own **State Education Policy for 2023,** declining some

Note:

of the aspects of the **NEP (National Education Policy) 2020**.

➢ Many states such as Kerala, Karnataka, and Tamil Nadu have also **declined to adopt the NEP 2020 in its entirety.**

What are the Key Highlights of the West Bengal Education Policy?

➢ **Continuation of 5+4+2+2 Pattern:**
  ○ The state will maintain the **existing 5+4+2+2 pattern** for school education.
  ○ This structure begins with one year of pre-primary education, followed by four years of primary education (up to class 4), four years of upper primary education (class V to VIII), two years of secondary education, and finally, two years of higher secondary education.
  ○ The NEP suggests transitioning to a 5+3+3+4 school system, where Class 9-12 is considered a continuum offering students subject choices, is declined by the state government.

➢ **Three-Language Formula:**
  ○ The policy recommends the introduction of a **three-language formula for students in classes V to VIII.**
  ○ The first language, referred to as the "mother tongue," will be the medium of instruction.
    ● For example, in Nepali-medium schools, **Nepali will be the medium of instruction,**Santhali in Santhali-medium school, and similarly for other languages and mediums.
    ● The second language can be English or any language other than the first language, depending on the student's choice.
    ● The third language can be any language chosen by the student, different from the first and second languages.

➢ **Introduction of 'Bangla' as a Subject:**
  ○ Bangla will be introduced as a subject from **Class I to Class XII for students** in schools with languages **other than Bangla** as the medium of instruction.
  ○ However, it is not recommended as a first language.

➢ **Semester System at Higher Secondary Level:**
  ○ In higher secondary education (Class XI and XII), it has introduced a semester system to **facilitate a smoother transition from school to university.**

  ● Semester examinations may include a combination of multiple-choice questions (MCQs) and descriptive questions.

Why has West Bengal Developed its Own Education Policy Instead of Implementing NEP 2020?

➢ **Autonomy and Regional Needs:**
  ○ One of the primary reasons is the **desire for autonomy in shaping the education system** according to the unique needs and priorities of West Bengal.
  ○ Education is a **Concurrent Subject** in India, which means both the central and state governments can legislate on it. States often seek to customize educational policies to align with their cultural, linguistic, and socio-economic contexts.

➢ **Rural Disadvantage**:
  ○ The proposal for a common entrance test for **undergraduate courses, as suggested by NEP 2020**, raised worries in Bengal.
  ○ The state government fears this **could put rural students at a disadvantage** and prefers a decentralized admission approach to ensure fairness for all.

➢ **Historical and Cultural Factors:**
  ○ West Bengal has a rich cultural and linguistic diversity, with Bengali being the predominant language.
  ○ The state has felt that it is important to **preserve and promote the Bengali language** and culture through its education policy.
  ○ This could lead to **variations from the NEP,** which seeks to implement a uniform policy across the country.
  ○ Another point of contention is the NEP's encouragement of private-sector participation in education.
    ● Bengal remains cautious about this, advocating for a **stronger role of the public sector to ensure equal and accessible** education opportunities.

➢ **Consideration of Alternatives:**
  ○ The West Bengal government has indicated its intention to analyze educational initiatives in states like Maharashtra and Kerala to propose an alternative approach.
  ○ This signals a **willingness to explore different models** and adapt best practices from other states.

Note:

What is NEP 2020?

➢ **About:**
  ○ The NEP 2020 aims at making "India a global knowledge superpower". It is only the 3rd major revamp of the framework of education in India since independence.
    ● The two earlier education policies were brought in 1968 and 1986.

➢ **Salient Features:**
  ○ Ensuring Universal Access at All Levels of schooling from pre-primary school to Grade 12.
  ○ Ensuring quality early childhood care and education for all children between 3-6 years.
  ○ New Curricular and Pedagogical Structure (5+3+3+4) corresponds to the age groups of 3-8, 8-11, 11-14, and 14-18 years respectively.
    ● It covers four stages of schooling: Foundational Stage (5 years), Preparatory Stage (3 years), Middle Stage (3 years), and Secondary Stage (4 years).
  ○ No hard separations between arts and sciences, between curricular and extra-curricular activities, between vocational and academic streams;
  ○ Emphasis on promoting multilingualism and Indian languages
  ○ Setting up of a new National Assessment Centre, **PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development)**
  ○ A separate Gender Inclusion fund and Special Education Zones for disadvantaged regions and groups.

What are the Issues With NEP 2020?

➢ **Size and Diversity:**
  ○ India's education sector is **enormous and diverse, making it challenging to implement uniform policies** across the country.
  ○ The country's vast population, multiple languages, and varying socio-economic conditions necessitate localized approaches to education, which the NEP's one-size-fits-all approach may not adequately address.

➢ **Capacity Limitation:**
  ○ The NEP 2020 proposes significant transformations in the education sector, from the school level to higher education.

  ○ However, many **states and regulatory bodies lack the internal capacities** and resources needed to implement such wide-ranging changes effectively.

➢ **Language and Curriculum:**
  ○ Adapting curriculum materials to be taught in the mother tongue is a key feature of the NEP 2020.
  ○ However, India's linguistic diversity, with 22 official languages and numerous dialects, **poses a significant challenge.**
  ○ States are concerned about the practicality of implementing this aspect and ensuring quality education in multiple languages.

➢ **Digital Divide:**
  ○ The NEP emphasizes the use of technology in education, including e-learning and digitization.
  ○ However, India faces a **digital divide where a substantial portion of the population lacks access** to smartphones and computers.
  ○ This divide could **lead to unequal access to educational resource**s and opportunities, disadvantaged marginalized communities.

➢ **Limited Resources:**
  ○ The NEP calls for a substantial increase in the allocation of resources for education, targeting 6% of the GDP.
  ○ Achieving this level of funding may be **difficult given the competing demands on government finances**, such as healthcare, infrastructure, and social welfare programs. States may struggle to allocate sufficient resources to meet NEP objectives.

➢ **Local Autonomy:**
  ○ Some states are concerned about the NEP's perceived centralization of education policy and decision-making.
  ○ They believe that it infringes on their **autonomy to design and implement education policies** that align with their specific needs and priorities.

Delhi High Court Orders on Service Charge

Why in News?

Recently, the **Delhi High Court** has issued an interim order directing members of the **Federation of Hotel and Restaurant Association of India (FHRAI)** to replace the

term 'Service Charge' with 'staff contribution' while adding that the amount charged should not **exceed 10% of the total bill.**

What is the Case About?

➢ **Background:**
  ○ The order was passed on pleas **filed by the National Restaurant Association of India (NRAI)** and the FHRAI, challenging the July, 2022, guidelines issued by the Central Consumer Protection Authority (CCPA) .
  ○ The **CCPA** guidelines stipulated that service charges should not be collected from consumers under any other name, and they should be **optional and voluntary.**
  ○ Alternatively, they could request that the eatery remove the service charge from the bill.
    ● A complaint against unfair trade practices could also be **lodged electronically with the Consumer Commission through the eDaakhil porta**l for speedy redressal or otherwise.
  ○ **The guidelines also prohibited** the addition of service charges to the bill automatically, without informing consumers.
  ○ These guidelines were introduced in **response to consumer grievances**, as many restaurants and hotels were imposing service charges without clearly stating that payment was voluntary.
  ○ The guidelines were issued by the **CCPA under Section 18(2)(1) of the Consumer Protection Act, 2019.**

> **Note:** Under Section 18(2)(1) of the Act, CCPA has issued **guidelines to prevent unfair trade practices and protection of consumer** interest with regard to levy of service charge in hotels and restaurants.

➢ **Court's Initial Stay:**
  ○ In July 2022, the Delhi High Court had stayed the **CCPA guidelines, subject to the condition** that associations ensure the clear display of service charge on menus or elsewhere, along with informing customers of their obligation to pay it.
  ○ This stay was initially extended.

➢ **Evolving Court Directions:**
  ○ In April, 2023, the court clarified that the interim order **should not mislead consumers.** The court also suggested exploring alternative terminology for "service charge" to prevent confusion.

  ○ The court ordered **petitioners to provide information** on what percentage of their members mandatorily imposed service charges and if there were objections to renaming it.

➢ **Court's Recent Decision:**
  ○ The FHRAI indicated its **willingness to rename "service charge"** to "staff contribution." However, the NRAI opposed this change, citing past decisions and the fact that a significant percentage of its members imposed service charges.
  ○ The court noted the lack of uniformity within the FHRAI's membership regarding the imposition of service charges.
  ○ Consequently, the court directed FHRAI members to adopt the term 'staff contribution' and cap it at 10% of the total bill amount.

➢ **Relationship with 2017 Guidelines:**
  ○ The 2022 service charge guidelines **were intended to complement,** not replace, the 2017 guidelines issued by the Central Government. These 2017 guidelines had prohibited the levy of service charges by hotels and restaurants without the express consent of customers, addressing concerns about unfair trade practices.
  ○ In conclusion, the **Delhi High Court's recent decision to rename 'service charge' to 'staff contribution' with a 10% ca**p represents a significant development in the ongoing legal battle between industry associations and consumer protection authorities.
    ● This case highlights the **importance of transparency and consumer choice** in restaurant billing practices, aligning with India's consumer protection regulations.

> **Note:**
> ➢ The FHRAI, is the Apex Body of the four Regional Associations representing the Hospitality Industry.
> ➢ National Restaurant Association of India (NRAI) is the voice of the Indian Restaurant Industry. Founded in 1982, NRAI aspires to **promote and strengthen the Indian Food Service Sector.**

What is a Service Charge?

➢ **About:**
  ○ Service charge is a fee that is **sometimes added to a bill or invoice by businesses**, particularly in the

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hospitality industry such as restaurants, hotels, and banquet halls.

○ It is intended to cover the cost of the service provided by the staff, including waiters, servers, and other service personnel.

○ It also may be called a customer service fee or maintenance fee.

● Restaurants and hotels generally levy a service charge of 10% on the food bill.

➢ **Issues:**

○ **Lack of Transparency:** One of the primary issues with service charges is the lack of transparency. Customers are **often not informed about the inclusion of service charges** until they receive the bill. This lack of upfront information can lead to confusion and dissatisfaction.

○ **Mandatory Nature:** In many cases, service charges are mandatory, meaning customers are required to pay them regardless of the quality of service they receive. This mandatory aspect can be **problematic, especially if the service falls short of expectations.**

○ **Quality of Service:** Since service charges are guaranteed additional income for staff, there may be **less incentive for service personnel to provide exceptional service.** This can lead to complacency and a decrease in the overall quality of service.

○ **Compulsion:** Customers may f**eel compelled or pressured to pay the service** charge, even if they are dissatisfied with the service. This compulsion can result in customer discomfort and dissatisfaction.

What is CCPA?

➢ It was established under the **Consumer Protection Act (CPA) of 2019**.

➢ It is empowered to **regulate abuses of consumer rights, unfair trade practices,** and false or misleading marketing that are detrimental to the public's interest.

➢ It has authority under **Section 18 of the CPA**, 2019 to safeguard, promote, and, most importantly, defend consumers' rights and prevent violations of their rights under the Act.

➢ Further, enhances consumer rights and makes sure that no person engages in unfair trade practices, it is also empowered to issue guidelines to enforce the rights of the consumers.

Shifting Trends in Online News Consumption

Why in News?

The Reuters Institute's recently published *2023 Digital News Report* has unveiled significant shifts in online news consumption patterns across the globe.

➢ The Reuters Institute for the Study of Journalism is **dedicated to exploring the future of journalism worldwide through debate, engagement, and research.**

What are the Key Highlights of the Report?

➢ **Shifting Patterns in Online News Consumption in India:**

○ Indians are increasingly turning to **search engines and mobile news aggregators(43%)** (online platforms or software devices that collect news stories) as their **primary sources of online news,** moving away from traditional news websites.

● Only 12% prefer reading news from direct sources, i.e. newspapers, while 28% prefer social media for news reading.

○ Prefer **watching or listening to news content over reading it.**

➢ **Regional Contrasts in Online News Engagement:**

○ **Scandinavian countries** maintain direct engagement with established news brands.

○ Asia, Latin America, and Africa rely heavily on social media for news.

➢ **Diverse Preferences Across Countries:**

○ Reading dominates in Finland and the UK (80%).

○ **India and Thailand** prefer **watching news online (40%).**

○ The **Philippines leads with 52% favouring video news.**

➢ **Impact of Covid-19 on News Consumption:**

○ There are alarming declines in both the reading and sharing of news in India. The data show that access to **online news** has sharply fallen by 12 % points between 2022 and 2023.

● Television viewership, especially among younger and urban individuals, has also decreased by 10%.

○ The decline in news engagement can be linked, in part, to the diminishing influence of the **Covid-19 pandemic** since the relaxation of lockdown measures in April 2022.

Note:

➢ **Trust in News:**

○ Trust in news in **India has remained stagnant at 38%** between 2021 and 2023, ranking among the lowest in the Asia-Pacific region.

○ In countries such as **Finland (69%) and Portugal (58%),** trust levels are higher.

○ On the other hand, **countries with higher degrees of political polarization** such as the United States (32%), Argentina (30%), Hungary (25%), and Greece (19%) **have lower trust levels.**

Disruption in dissemination

The data for the charts were sourced from the Reuters Institute Digital News Report 2023. For the report, research was conducted by YouGov using an online questionnaire at the end of January/ beginning of February 2023. Data from India, Kenya, Nigeria, and South Africa are representative of younger English-speakers and not the national population

Chart 1: Which of these was the main way in which you came across news in the last week: Mostly direct, mostly social, mostly aggregated (in %)

Legend: Direct | Social | Search + aggregators

Mostly direct

Country	Direct	Social	Search + aggregators
Finland	63	13	17
Norway	59	12	20
Denmark	50	18	16
Sweden	48	10	24

Mostly social

Country	Direct	Social	Search + aggregators
Thailand	7	64	23
Philippines	8	53	25
Chile	13	52	21
Peru	10	49	26

Deeply aggregated

Country	Direct	Social	Search + aggregators
South Korea	6	18	66
Japan	12	10	65
Taiwan	11	14	50
India	12	28	43

Axis: 0% | 25% | 50% | 75%

Chart 2: In thinking about your online habits around news and current affairs, which of the following statements applies best to you: Prefer to read, prefer to watch, prefer to listen? (in %)

Legend: Prefer to read | Prefer to watch | Prefer to listen

	All	Philippines	Thailand	India	Germany	U.K.	Finland
Prefer to listen	13	12	22	21	10	7	6
Prefer to watch	30	52	40	40	23	15	12
Prefer to read	57	36	38	39	67	78	82
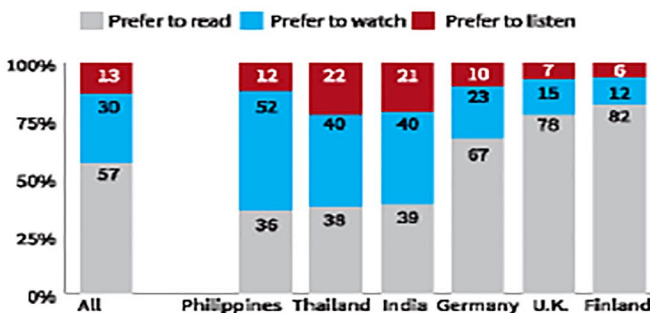
Chart 3: The chart shows sources of news for Indian news consumers between 2021 and 2023

SOURCES OF NEWS 2021-23

Online (incl. social media): 82% → 72%
Social media: 63% → 52%
TV: 59% → 49%
Print: 50% → 40%

(Years: 2021, 2022, 2023)
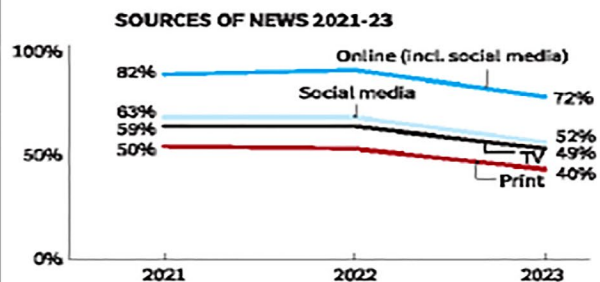
Chart 4: The chart shows trust in news among Indian consumers between 2021 and 2023

OVERALL TRUST SCORE 2021-23

38% (2021) → 38% (2023)

Proportion that trusts 'most news most of the time'
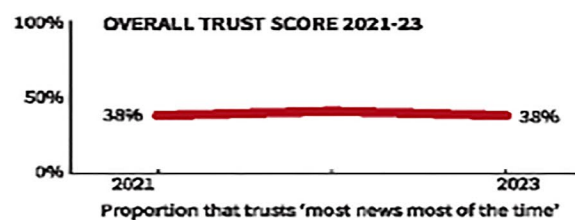
Chart 5: The chart plots the share of respondents across nations in the Asia-Pacific who said that they trust 'most news most of the time'

Country	Value
Thailand	51
Singapore	45
Australia	43
Japan	42
Malaysia	40
Hong Kong	39
Indonesia	39
India	38
Philippines	38
South Korea	28
Taiwan	28

Note:

drishti
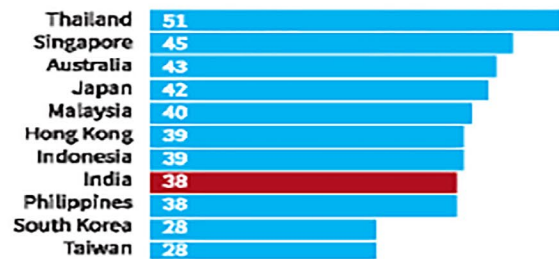
What are the Challenges Faced by India Due to Changes in News Consumption Patterns?

➢ **Misinformation and Fake News:**
  ○ The shift away from traditional news sources and increased reliance on search engines and social media **may contribute to the spread of misinformation and fake news.** This can lead to **public confusion, false beliefs, and even social unrest.**

➢ **Quality of Journalism:**
  ○ A decreased preference for traditional news websites and newspapers could impact the quality of journalism.
    ● Independent and credible journalism may **face financial challenges**, potentially **leading to a decline in investigative reporting and in-depth analysis.**

➢ **Democracy and Polarization:**
  ○ The influence of social media as a news source can contribute to **political polarization**. People may be exposed to biased information, which can ultimately affect the democratic process.

➢ **Media Trust:**
  ○ India's persistently **low trust in news is concerning for a healthy democracy**.
    ● Rebuilding trust in the media is essential for informed citizenship.

➢ **Youth Disconnect:**
  ○ The drop in television viewership among younger people suggests a disconnect between traditional news mediums. Engaging and informing the younger generation through **reliable news sources is essential for their civic education.**

➢ **Dependence on Algorithmic Feeds:**
  ○ Relying on search engines and social media for news means individuals are exposed to **content determined by algorithms. This may limit exposure to diverse perspectives and important news stories.**

What Initiatives Have Been Taken to Curtail Fake News in India?

➢ **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021:**
  ○ Proposes that social media **platforms must delete content labeled false by the Press Information Bureau's fact-check unit.**

  ○ Rule aims to **curb the spread of fake news and misinformation on social media platforms.**

➢ **IT Act 2008:**
  ○ **Section 66 A of the IT Act 2008** regulates offences related to electronic communication.
  ○ This includes **punishing individuals who send offensive messages through communication services** or social media platforms. This act can be used to penalize those who spread fake news through electronic communication.

➢ **Indian Penal Code of 1860:**
  ○ It **regulates news that causes riots and information** that causes defamation. This act can be used to hold individuals accountable for spreading fake news that incites violence or defames someone's character.

➢ **Related Authorities:**
  ○ **Press Council of India (PCI):**
    ● It is a statutory body established under the **Press Council Act of 1978.**
      ■ The PCI also issues guidelines and codes of conduct for the print media.
    ● PCI helps maintain "high standards of public taste" and foster responsibility among citizens.
  ○ **Ministry of Information and Broadcasting (MIB):**
    ● The MIB grants licenses and permissions to private broadcasters, and monitors their content and performance.
  ○ **News Broadcasting Standards Authority (NBSA):**
    ● It is an independent body that serves as a representative of private television news, current affairs, and digital broadcasters.
    ● The NBSA's purpose is to **set high standards, ethics, and practices for news broadcasting.** The NBSA also considers and decides on complaints against broadcasters related to the content of their broadcasts.
  ○ **Broadcasting Content Complaint Council (BCCC):**
    ● Admits complaints against TV broadcasters for objectionable TV content and fake news.
  ○ **Indian Broadcast Foundation (IBF):**
    ● It also looks into the complaints against content aired by channels.

Note:

Viability Gap Funding Scheme for Battery Energy Storage Systems

Why in News?

Recently, the Union Cabinet has approved the Scheme for **Viability Gap Funding (VGF)** for the development of **Battery Energy Storage Systems (BESS)**, aiming to boost the adoption of renewable energy sources.

➤ Battery storage, or BESS, are devices that enable energy f**rom renewables, like solar and wind,** to be stored and then **released when the power is needed most.**

> **Note:** VGF is a financial mechanism used by governments **to bridge the gap between the cost of infrastructure projects and their economic viability**. It is typically employed in projects that are considered **economically unviable or financially unattractive** for private investors due to various reasons, such as high capital costs, low revenue potential, or long gestation periods.

What is the VGF Scheme for Battery Storage?

➤ **About:**
  ○ The government will provide financial support of up to **40% of the capital cost as budgetary support through Viability Gap Funding (VGF)** to substantially reduce the cost of battery storage systems, making them more economically viable.
  ○ The scheme is strategically designed to harness the potential of renewable energy sources**, such as solar** and **wind power**, to provide clean, reliable, and affordable electricity to citizens.
  ○ To ensure the benefits of the scheme reach consumers, **a minimum of 85% of the BESS project capacity will be made available to Distribution Companies** (Discoms).
    ● This strategic move not only strengthens the integration of renewable energy into the electricity grid but also **minimizes waste and optimizes the utilization of transmission networks**. Consequently, it reduces the need for costly infrastructure upgrades.
➤ **Objective:**
  ○ The primary objective is to facilitate the development of **4,000 megawatt hour (MWh) of BESS projects by 2030-31.**

○ By offering VGF support, the scheme targets achieving a Levelized Cost of Storage (LCoS) ranging from **Rs. 5.50-6.60 per kilowatt-hour (kWh).**
  ● This cost-effectiveness makes stored renewable energy a practical choice for managing peak power demand nationwide.
➤ **Significance:**
  ○ The Government of India reaffirms its commitment to promoting clean and green energy solutions. The BESS Scheme represents a **significant step towards achieving this vision by harnessing renewable energy** and promoting the adoption of battery storage.
  ○ This initiative aims to create a brighter and greener future for all citizens, aligning with global **sustainability goals**.

Swachh Vayu Survekshan 2023 and NCAP

Why in News?

Recently, the awards for **Swachh Vayu Survekshan** (Clean Air Survey) **2023** were announced. The survey was conducted by the **Central Pollution Control Board (CPCB)**.

> **Note:**
> ➤ Every year, the **International Day of Clean Air for Blue Skies** is celebrated on **7 September** to raise awareness and facilitate actions to improve air quality.
>   ○ It was **declared so by the United Nations General Assembly (UNGA)** in 2019.
> ➤ Theme for 4th International Day of Clean Air for Blue Skies (Swachh Vayu Diwas 2023) - **"Together for Clean Air."**

What are the Key Findings about the SVS 2023?

➤ **About:**
  ○ Swachh Vayu Survekshan (SVS) is a **new initiative by the Ministry of Environment, Forest and Climate Change** (MoEFCC) to rank cities on the basis of air quality and implementation of activities approved under the **city action plan (NCAP)** in 131 **non-attainment cities.**
    ● Cities are declared non- attainment if **over a 5-year period they consistently do not meet the NAAQS** for PM10 or NO_2.

❍ The categorisation of cities has been based on the **2011 population census**.

➤ **Criteria:** The cities were assessed on eight major points:
   ❍ Control of biomass
   ❍ Municipal solid waste burning
   ❍ Road dust
   ❍ Dust from construction and demolition waste
   ❍ Vehicular emissions
   ❍ Industrial emissions
   ❍ Public awareness
   ❍ improvement in PM10 concentration

➤ **Performance:**
   ❍ Top 3 cities under **1st category (million plus population):** Indore followed by Agra and Thane.
      ● **Worst Performers:** Madurai (46), Howrah (45) and Jamshedpur (44)
      ● **Bhopal** ranked 5th and **Delhi** ranked 9th
   ❍ Top 3 cities under **2nd category (3-10 lakhs population):** Amravati followed by Moradabad and Guntur.
      ● **Worst Performers:** Jammu (38), Guwahati (37) and Jalandhar (36)
   ❍ Top 3 cities under **3rd category (<3 lakhs population):** Parwanoo followed by Kala Amb and Angul.
      ● **Worst Performer:** Kohima (39)

➤ **Comparison:**
   ❍ In SVS 2022, the first three spots (million-plus category) were secured by cities in Uttar Pradesh — **Lucknow (1), Prayagraj (2) and Varanasi (3).**
      ● All three cities have been ranked lower this year.

CITY LAGS IN AIR QUALITY

Category 1 Cities with population over 10 lakh

City	Rank
Indore	1
Agra	2
Thane	3
Srinagar	4
Bhopal	5
Trichy	6
Vadodara	7
Ahmedabad	8
Delhi	9
Mumbai	10

Swachh Vayu Survekshan is an initiative by MoEF&CC to rank cities on the basis of implementation of activities approved under city and air quality action plans in 131 NCAP cities

CRITERIA

Category 1 Population over 10 lakh	Category 2 Population 3-10 lakh
No. of cities **47**	No. of cities **44**

Category 3 Population under 3 lakh
No. of cities **40**

Note:
➤ In 2020, the Prime Minister of India announced the intent and plan to improve the air quality in more than 100 cities through a holistic approach.
   ❍ In the context, the MoEFCC has been implementing a **National Clean Air Programme (NCAP)** as a national-level strategy outlining the actions for reducing the levels of air pollution at city and regional scales in India since 2019.

What is the NCAP?

➤ **About:** The National Clean Air Programme (NCAP) aims to systematically address air pollution by engaging all stakeholders and ensuring necessary action.
   ❍ **131 cities have been identified** for the implementation of the city specific action plans under NCAP.

➤ **Target:** It is the **first-ever effort in the country** to frame a national framework for air quality management with a **time-bound reduction target.**
   ❍ It seeks to cut the concentration of **coarse (PM10)** and **fine particles (PM2.5)** by at least **20% in the next five years** (base year for comparison - 2017).

➤ **Monitoring:** The **"PRANA" portal** has also been launched by MoEFCC for:
   ❍ Monitoring implementation of NCAP.
   ❍ Monitoring the action plans and implementation status of cities.
   ❍ Sharing best practices adopted by cities for others to emulate.

Other Initiatives to Ensure Cleaner Air:
➤ **Air (Prevention and Control of Pollution) Act, 1981**
➤ **Statutory Commission for Air Quality Management for Delhi-NCR**
➤ **Graded Response Action Plan (Delhi)**
➤ **Polluter Pay principle**
➤ **Smog Tower**
➤ **BS-VI vehicles**
➤ **Air Quality and Weather Forecasting and Research (SAFAR)**
➤ **Dashboard for Monitoring Air Quality**

Note:

Air Pollutants

Sulphur Dioxide (SO₂)
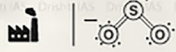
It comes from the consumption of fossil fuels (oil, coal and natural gas). Reacts with water to form acid rain.

Impact: Causes respiratory problems.

Ozone (O₃)

Secondary pollutant formed from other pollutants (NOx and VOC) under the action of the sun.

Impact: Irritation of the eye and respiratory mucous membranes, asthma attacks.

Nitrogen Dioxide (NO₂)

Emissions from road transport, industry and energy production sectors. Contributes to Ozone and PM formation.

Impact: Chronic lung disease.

Carbon Monoxide (CO)

It is a product of the incomplete combustion of carbon-containing compounds.

Impact: Fatigue, confusion, and dizziness due to inadequate oxygen delivery to the brain.

Ammonia (NH₃)
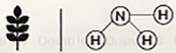
Produced by the metabolism of amino acids and other compounds which contain nitrogen.

Impact: Immediate burning of the eyes, nose, throat and respiratory tract and can result in blindness, lung damage.

Lead (Pb)

Released as a waste product from extraction of metals such as silver, platinum, and iron from their respective ores.

Impact: Anemia, weakness, and kidney and brain damage.

Particulate Matter (PM)

PM10: Inhalable particles, with diameters that are generally 10 micrometers and smaller.
PM2.5: Fine inhalable particles, with diameters that are generally 2.5 micrometers and smaller.
Source: Emitted from construction sites, unpaved roads, fields, fires.
Impact: Irregular heartbeat, aggravated asthma, decreased lung function.

Note: These major air pollutants are included in the Air quality index for which short-term National Ambient Air Quality Standards are prescribed.

Drishti IAS

State of Educational Empowerment for Religious Minorities in India

Why in News?

Recently, the **status of educational empowerment schemes for religious minorities** in India has come under scrutiny.

➤ These programs were initially designed to bridge the educational gap and promote inclusivity among different religious communities in the country.

➤ However, there have been **significant changes and controversies** surrounding these schemes, leading to concerns about their impact on minority communities.

What is the Status of Educational Empowerment Schemes for Religious Minorities in India?

➤ **About**:
  ○ **Religious minorities in India,** including **Muslims, Christians, Sikhs, Buddhists, Jains, and Zoroastrians,** constitute a substantial portion of the population, making up approximately **20%.**
    ● The **Sachar Committee's report in 2006** highlighted these disparities,

placing Muslims behind several other groups in development indicators.

- ○ To address the disparities, the government established the **Ministry of Minority Affairs in 2006,** focusing on **educational empowerment, economic development, infrastructure improvement,** and special needs of religious minorities.
  - **Scholarships for minority students** became a pivotal component of this initiative, aimed at providing financial assistance and access to quality education.

➤ **Current Status of Welfare Schemes for Educational Empowerment of Minorities:**

- ○ **Pre-Matric Scholarship Scheme**: Initially awarded to minority students from class 1 to 10. Later, discontinued for classes 1 to 8, only covering class 9 and 10 in its revised form.
  - While discontinuing the scholarship, the government said the **Right to Education Act (RTE Act)** covered compulsory education up to **class 8** for all students.
- ○ **Post-Matric Scholarship Scheme:** For students of class 11 and above (till Ph.D.). Funds increased from Rs 515 crore to Rs 1,065 crore in 2023-24.

- ○ **Merit-cum-Means based Scholarship Scheme:** Targeted professional and technical courses at undergraduate and postgraduate levels. However, it faced a significant reduction in funds in 2023-24.
- ○ **Maulana Azad National Fellowship (MANF):** Provided financial assistance to research scholars pursuing M.Phil and Ph.D. However, it was **discontinued in 2022.**
- ○ **Padho Pardesh:** Provided an **interest subsidy on education loans** for overseas studies. However, it was **discontinued from 2022-23.**
- ○ **Begum Hazrat Mahal National Scholarship:** Scholarship for meritorious girls for higher secondary education. However, no funds have been allocated in 2023-24.
- ○ **Naya Savera:** Provided free coaching to minority students for competitive exams. However, it was **discontinued in 2023-24.**
- ○ **Nai Udaan:** Supported minority students preparing for various examinations. However, no funds have been allocated in 2023-24.
- ○ **Scheme for Providing Education to Madrasas and Minorities (SPEMM):** Aimed at modernizing madrasa education. Allocation reduced in 2023-24.

Change in sanctioned amount (2019-20 to 2021-22)

Scheme	Change
Nayi Udaan	0.49%
Naya Savera	165.92%
Begum Hazrat Mahal National Scholarship	-44.55%
Padho Pardesh	53.49%
Maulana Azad National Fellowship (MANF)	-29.33%
Merit-cum-Means based Scholarship Scheme	11.95%
Post-Matric Scholarship Scheme	-2.49%
Pre-Matric Scholarship Scheme	-16.29%
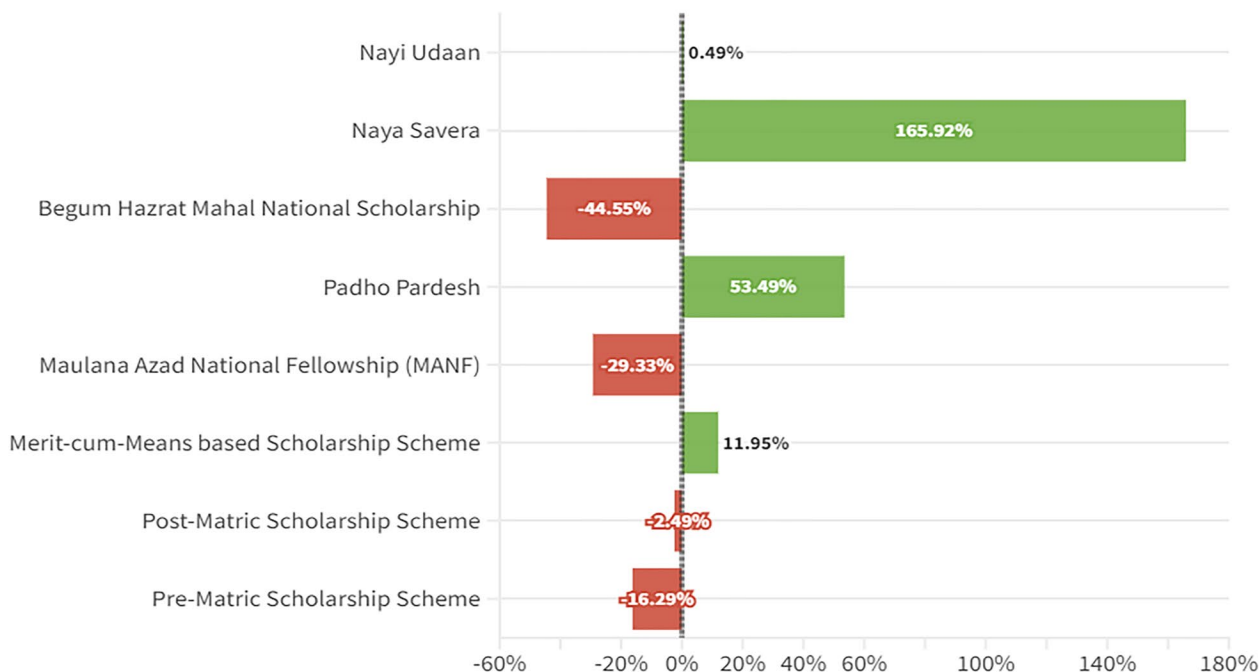
Source: Press Information Bureau, Parliament reply documents • The Hindu Graphics

Note:

Note: The budget allocation for the **Ministry of Minority Affairs** saw a drastic reduction, with a **38% decrease for the fiscal year 2023-24 compared to the 2022-23.** This cut in funding has had a direct impact on the implementation of various programs, with underutilization of funds being a common trend.

What are the Constitutional Provisions Related to Religious Minorities?

➢ **Article 25:** It guarantees **freedom of conscience and free profession, practice and propagation** of religion to all persons.

➢ **Article 26**: It grants every religious denomination or section thereof the **right to establish and maintain institutions for religious and charitable purposes**, and to manage its own affairs in matters of religion.

➢ **Article 29**: It provides that any section of the citizens residing in any part of India having a **distinct language, script or culture of its own,** shall have the right to conserve the same.

➢ **Article 30**: Under the article, **all minorities shall have the right to establish and administer educational institutions** of their choice.

Note: The term "**minority**" is not defined in the **Indian Constitution**. However, the Constitution recognizes only religious and linguistic minorities.

What are the Other Major Challenges Related to Religious Minorities?

➢ **Communal Violence:** One significant challenge is the occurrence of **communal violence**, where **conflicts erupt along religious lines.**
   ○ These incidents result in loss of life, property damage, and displacement of minority communities.
   ○ This challenge is rooted in factors like **political manipulation, economic disparities, and historical tensions** that need careful examination.

➢ **Intersectional Discrimination**: Beyond religious discrimination, religious minorities, especially **women**, may **face intersectional discrimination.**

➢ **Social Isolation:** Religious ghettoization, where minority communities cluster in **specific neighborhoods,** impacts their **social integration and economic opportunities.**

➢ **Cyberbullying and Online Harassment:** The rise of cyberbullying and online harassment to target religious minority individuals or groups,is impacting their **online safety and mental well-being.**

Pradhan Mantri Ujjwala Yojana

Why in News?

The **Pradhan Mantri Ujjwala Yojana (PMUY)** , aimed at providing **LPG gas cylinders** to rural and deprived households, has faced challenges in ensuring consistent usage among beneficiaries.

➢ Out of 9.58 crore Pradhan Mantri Ujjwala Yojana households, **1.18 crore bought no refills in 2022-23, and another 1.51 crore bought one refill.**

➢ Low refill rates raise concerns about the scheme's ability to ensure sustained usage among beneficiaries.

What are the Concerns Regarding the PMUY?

➢ **Limited Refill Consumption:**
   ○ Data reveals that the average PMUY beneficiary refilled **fewer than four LPG cylinders during 2022-23.**
   ○ One in four PMUY beneficiaries did not use any LPG cylinders or took just one refill in 2022-2023.
      ● In contrast, non-PMUY households consumed significantly more cylinder refills, whose per household consumption of LPG cylinders **was 6.67 refills** highlighting a disparity in consumption patterns.

➢ **Rising LPG Cylinder Prices:**
   ○ Steep price increases in LPG cylinders, even with subsidies, have made them **less affordable for rural and deprived households.**
      ● High prices may discourage beneficiaries from using LPG for cooking, defeating the scheme's purpose.

➢ **Subsidy Expenditure:**
   ○ Between January 2018 and March 2023, rates for subsidised LPG cylinders increased by 82%, reaching ₹903 in March 2023 from ₹495.64 in January 2018.
      ● Subsidy amounts depend on the difference between the Retail Selling Price (RSP) and the subsidised cost set by the government.
   ○ Non-subsidised LPG cylinders saw a 49% price increase, reaching ₹1,103 in March 2023.

➢ **International Factors Impacting LPG Prices:**
   ○ Various factors, including import charges, bottling charges, freight, delivery charges, GST, and distributor commission, contribute to the final LPG price.

What is Pradhan Mantri Ujjwala Yojana (PMUY)?

➢ **About:**
  ○ The **Ministry of Petroleum and Natural Gas (MOPNG),** introduced the **'Pradhan Mantri Ujjwala Yojana' (PMUY)** as a flagship scheme with the objective of making **clean cooking fuel such as LPG available to the rural and deprived households** which were otherwise using traditional cooking fuels such as firewood, coal, cow-dung cakes etc.
    ● Usage of traditional cooking fuels had detrimental impacts on the health of rural women as well as on the environment.

➢ **Objectives:**
  ○ Empowering women and protecting their health.
  ○ Reducing the number of deaths in India due to unclean cooking fuel.
  ○ Preventing young children from a significant number of acute respiratory illnesses caused due to indoor air pollution by burning fossil fuel.

➢ **Features:**
  ○ The scheme provides a financial support of Rs 1600 for each LPG connection to the BPL households.
  ○ Along with a deposit-free LPG connection, Ujjwala 2.0 will provide the first refill and a hotplate free of cost to the beneficiaries.

➢ **Benefits of PMUY:**
  ○ The eligible beneficiaries receive a **free LPG connection.**
  ○ The beneficiaries also r**eceive a subsidy on the first six refills of 14.2 kg cylinders or eight refills of 5 kg cylinders.**
  ○ The beneficiaries **can opt for an EMI facility to pay for the cost of the stove and the first refill.**
  ○ The beneficiaries can also join the **PAHAL scheme to receive the subsidy amount directly in their bank accounts.**

➢ **Phases of PMUY:**
  ○ **Phase I:**
    ● The scheme was launched on May 1, 2016.
    ● The target under the scheme was to release 8 Crore LPG Connections to the deprived households by March 2020.

    ● The release of 8 Crore LPG connections under the scheme has also helped in increasing the LPG coverage from 62% on 1st May 2016 to 99.8% as on 1st April 2021.
  ○ **Ujjwala 2.0:**
    ● In the Union budget for FY 21-22, provision for the release of additional 1 crore LPG connections to the eligible households by March 31, 2022.

➢ The target of releasing additional 1 crore LPG connections under **Ujjwala 2.0** was achieved in January 2022.Subsequently, it was decided to release additional 60 lakh LPG connections under Ujjwala 2.0. OMCs have achieved the target of releasing 1.6 Crore LPG Connections under Ujjwala 2.0 on 31st December 2022.

Formula To Calculate the LPG Price:

➢ The price of LPG is calculated based on the **formula known as import parity price (IPP)**.

➢ Basically, the calculations as per the **IPP are dependent on the international market.**

➢ The IPP calculation is done through **Saudi Aramco's LPG price, which is the world's largest producer.**
  ○ The price **involves costs like free on board (FOB) price,** ocean freight, customs duties, port charges and insurance costs, among other things.

➢ The price fluctuation of **crude oil also affects the international price of LPG.**
  ○ The inland prices include freight costs, oil company's margins, bottling costs, marketing expenses, dealer commissions and the **Goods and services Tax(GST).**

➢ The final price thus calculated gives the retail selling price for non-subsidised cooking gas cylinders for consumers across different states.

➢ **India uses the IPP as most of its consumption is through imports.** The formula of LPG cylinders is revised on a monthly basis.
  ○ LPG is an important requirement with three major PSU suppliers like Indian oil, Bharat Petroleum Corporation Limited (BPCL) and Hindustan Petroleum Corporation Limited (HPCL), charging mostly similar prices with different cost structures and operational efficiencies.

Note:

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India, that is Bharat: The Ongoing Debate

Why in News?

Recently, invitations for the upcoming **G-20 Summit** in New Delhi have introduced a noteworthy alteration. Instead of the conventional **"President of India,"** the invitations now bear the term **"President of Bharat"**, renewing **a broader conversation regarding the nation's nomenclature** and its historical connotations.

What are the Historical Perspectives on the Names "India" and "Bharat"?

➢ **Constitutionality:**
  ○ **Article 1 of the Indian Constitution** already uses both **"India" and "Bharat"** interchangeably, stating, **"India, that is Bharat, shall be a Union of States."**
  ○ The preamble of the Indian Constitution begins with "**We the People of India,"** but the **Hindi version uses "Bharat" instead of India,** indicating interchangeability.
    ● Additionally, some government institutions, such as the **Indian Railways,** already have Hindi variants that include **"Bharatiya."**

➢ **Origin of the Name Bharat:**
  ○ The term "Bharat" has deep historical and cultural roots. It can be traced back to **Puranic literature and the epic Mahabharata**.
  ○ Vishnu Purana describes **"Bharata" as the land between the southern sea and the northern snowy Himalayan mountain**.
    ● It signifies a religious and socio-cultural entity more than a mere political or geographical one.
  ○ **Bharata is also the name of a legendary ancient king,** considered the ancestor of the **Rig Vedic tribes of Bharatas,** symbolizing the progenitor of all subcontinent's people.

➢ **Origin of the Name India:**
  ○ The name India is derived from the word **Indus,** which is the name of a river that flows through the northwestern part of the subcontinent.
    ● The ancient **Greeks** called the people living beyond the **Indus as Indoi,** which means **"the people of Indus".**

    ● Later, the Persians and the Arabs also used the term **Hind or Hindustan to refer to the land of Indus.**
  ○ The Europeans adopted the **name India from these sources**, and it became the official name of the country after the British colonial rule.

THE MANY NAMES OF INDIA

1. **MELUHA** — Appears in ancient texts of Mesopotamia to refer to the Indus Valley Civilization
2. **BHARAT/ BHARATVARSHA** — Appears in Puranas as the land between the 'sea in the south and the abode of snow in the north'.
3. **ARYAVARTA** — Appears in the Manusmriti as the land occupied by the Indo-Aryans
4. **JAMBUDVIPA** — Appears in Vedic texts and is still used in a few Southeast Asian countries to describe subcontinent
5. **HIND/HINDUSTAN** — First used by Persians to refer to the land across river Sindhu.
6. **INDIA** — First used by the Greeks, who transliterated 'Hind' as 'Indus'

➢ **Constitutional Assembly Deliberation Regarding India and Bharat:**
  ○ The debate surrounding the country's name is not new. When the **Constituent Assembly** was framing the **Constitution in 1949**, there was a division of opinions regarding the name.
    ● Some members felt that **"India" was a reminder of colonial oppression** and sought to prioritize "Bharat" in official documents.
      ▪ **Seth Govind Das from Jabalpur advocated for placing "Bharat" above "India,"** emphasizing that the latter was merely a translation of the former in English.
      ▪ **Hari Vishnu Kamath** cited the example of the Irish Constitution, which changed the name of the country upon achieving independence, as a **precedent for using "Bharat."**
      ▪ **Hargovind Pant** argued that the people wanted "**Bharatvarsha**" and rejected the term "India" imposed by foreign rulers.

➢ **Recent Development:**
  ○ In 2015, **Centre opposed a name change**, stating that the issue had been extensively deliberated upon during the Constitution's drafting.
    ● The **Supreme Court** has twice rejected pleas to rename '**India' to 'Bharat', once in 2016 and then in 2020**, reaffirming that "**Bharat" and "India" both find mention in the Constitution.**

Note:

What is the Historical Significance of the Name "Hindustan"?

➢ The term "Hindustan" has historical significance and was popular in Punjab. Sikh founder Guru Nanak Dev mentioned **"Hindustan" in Gurbani**, and **Guru Teg Bahadur is known as the protector of "Hind" and religion.**

➢ Shah Muhammad documented conflicts between the British and Sikhs as a war between "Hind" and Punjab.

➢ The **Ghadar Party and freedom struggle activists used "Hindustan"** in their movements, making it relevant in Punjab's history.

TOI, SEPTEMBER 19, 1949

Constituent Assembly Agrees To Name Country "Bharat"

SECOND READING OF DRAFT CONSTITUTION IN OCTOBER

NEW DELHI, September 18.

THE Constituent Assembly today agreed to name the country by her ancient name "Bharat."

The decision was greeted in the House by shouts of "Bharat Ki Jai."

Hargovind Pant said Bharat was used by Kalidasa to refer to the kingdom of the son of Dushyanta and Shakuntala, whereas India was a name given by foreigners and that clinging to it "would only show that we are not ashamed of having this insulting word which has been imposed on us by alien rulers".

SOME COUNTRIES THAT RENAMED THEMSELVES

Year	Current Name	Previous Name
2022	Turkiye	Turkey
2019	Myanmar	Burma
2018	Eswatini	Swaziland
2002	Timor-Leste	East Timor
1997	Congo DRC	Zaire
1972	Sri Lanka	Ceylon
1935	Iran	Persia
1939	Thailand	Siam
1949	Jordan	Transjordan
1957	Ghana	Gold Coast
1966	Botswana	Bechuanaland

Legal Insight: Legal Perspectives of Renaming India to Bharat

National Mission for Clean Ganga

Why in News?

In the last seven years, while some progress has been made by India's **National Mission for Clean Ganga (NMCG)**, there are still significant challenges ahead in achieving the mission's goals.

What is the Progress of Sewage Treatment under the NMCG?

➢ The NMCG has **installed treatment plants capable of treating just 20%** of the sewage estimated to be generated in the five major States that lie along the Ganga River.

○ These states are Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, and West Bengal.

➢ The NMCG has projected that the treatment capacity for sewage will increase to **33% of the estimated amount generated by 2024**, and further increase to **60% by 2026.**

➢ The NMCG plans to set up **Sewage Treatment Plants (STPs)** capable of treating about **7,000 MLD of sewage by 2026.**

➢ As of **July 2023, STPs** with a total capacity of **2,665 MLD have been commissioned and are operational.** The progress has picked up significantly in recent years, with 1,455 MLD capacity completed in the last financial year (2022-23).

➢ **STPs and sewerage networks** are at the heart of the **Namami Ganga Mission** and account for about 80% of the overall project outlay.

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What is the National Mission for Clean Ganga (NMCG)?

➢ **About:**
- On 12th August 2011, the NMCG was listed **as a society** under the **Societies Registration Act, 1860.**
- It acted as the implementation arm of the **National Ganga River Basin Authority (NGRBA)** which was constituted under the provisions of the **Environment (Protection) Act (EPA),1986.**
  - **NGRBA** was dissolved in 2016 and **replaced by the National Council for Rejuvenation, Protection, and Management of River Ganga.**

➢ **Objective:**
- The objective of the NMCG is to **reduce pollution and ensure the rejuvenation** of the Ganga River.
  - **Namami Gange** is one of the Coveted Programmes of NMCG to clean Ganga.
- This can be achieved by promoting intersectoral coordination for comprehensive planning & management and maintaining minimum ecological flow in the river, with the aim of ensuring water quality and environmentally **sustainable development.**

➢ **Organization Structure:**
- The Act envisages a five-tier structure at the national, state, and district levels to take measures for prevention, control, and abatement of environmental pollution in river Ganga as below:
  - **National Ganga Council** under the chairmanship of the Hon'ble Prime Minister of India.
  - Empowered Task Force (ETF) on river Ganga under the chairmanship of Hon'ble Union Minister of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation).
  - National Mission for Clean Ganga (NMCG).
  - State Ganga Committees
  - District Ganga Committees in every specified district abutting river Ganga and its tributaries in the states.

What are the Challenges Faced by NMCG?

➢ **Land Acquisition:**
- Several plants took time to be commissioned as **there were problems with land acquisition.**

- In many instances, the Detailed Project Reports (which prescribe all the steps necessary to execute a project, and the roles of agencies) needed revision.

➢ **Lack of Local Initiatives:**
- State Governments are under the impression that **building treatment plants was entirely the Centre's responsibility.**
- Waste management, especially MSW segregation and recycling, is most effective when handled at the source.
- While there were plans to create a cadre of village and town-level volunteers to monitor water quality and support local bodies, the mission has faced challenges in effectively implementing these initiatives.

➢ **Improper Funding:**
- Though NMCG is a ₹20,000 crore mission, the government has so far given in-principle approval for projects worth ₹37,396 crore, of which only ₹14,745 crore has been released to States for infrastructure work, as of June 2023.

➢ **Municipal Solid Waste Management:**
- The mission faced criticism for not adequately addressing the problem of municipal solid waste flowing into the Ganga.
- Many towns and cities along the river lack proper waste treatment infrastructure, allowing untreated waste to enter the river.

➢ **Inadequate Sewerage Coverage:**
- Much of India's urban population resides outside sewerage networks, resulting in a substantial portion of waste not reaching STPs.

➢ **Improper Waste Disposal:**
- The study by the Quality Council of India revealed that rubbish heaps are found near ghats in numerous towns along the river, indicating improper waste disposal practices. This poses a threat to the cleanliness of the Ganga.

What are the Effects of the NMCG?

➢ The river's water quality is now within prescribed limits of notified primary bathing water quality.

➢ There is a conspicuous sign of the improvement in water quality along the Ganga was a rise in the dolphin population — both adult and juvenile — from 2,000 to about 4,000.

Note:

○ Dolphins can be seen in new stretches of the river as well as in tributaries.

➢ Fishermen are also reporting the increased presence of Indian carp (a fish species) that only thrives in clean water. So we have nature's verdict on river improvement.

➢ The typical parameters used by the Central Pollution Control Board (such as the levels of dissolved oxygen, biochemical oxygen demand, and faecal coliform) vary widely along various stretches of the river.

➢ The NMCG is now working to develop a **water quality index,** on the lines of the air quality index, to be able to better communicate about river-water quality.

What are the Initiatives Related to Ganga?
➢ **Namami Gange Programme**
➢ **Ganga Action Plan**

➢ **National River Ganga Basin Authority (NRGBA)**
➢ **Clean Ganga Fund**
➢ **Bhuvan-Ganga Web App**
➢ **Ban on Waste Disposal**

What is the Ganga River System?
➢ The headwaters of the Ganga called the **'Bhagirathi' are fed by the Gangotri Glacier** and joined by the Alaknanda at Devprayag in Uttarakhand.

➢ At Haridwar, **Ganga emerges from the mountains** to the plains.

➢ The Ganga is joined by many tributaries from the Himalayas, a few of them being major rivers such as the Yamuna, the Ghaghara, the Gandak, and the Kosi.
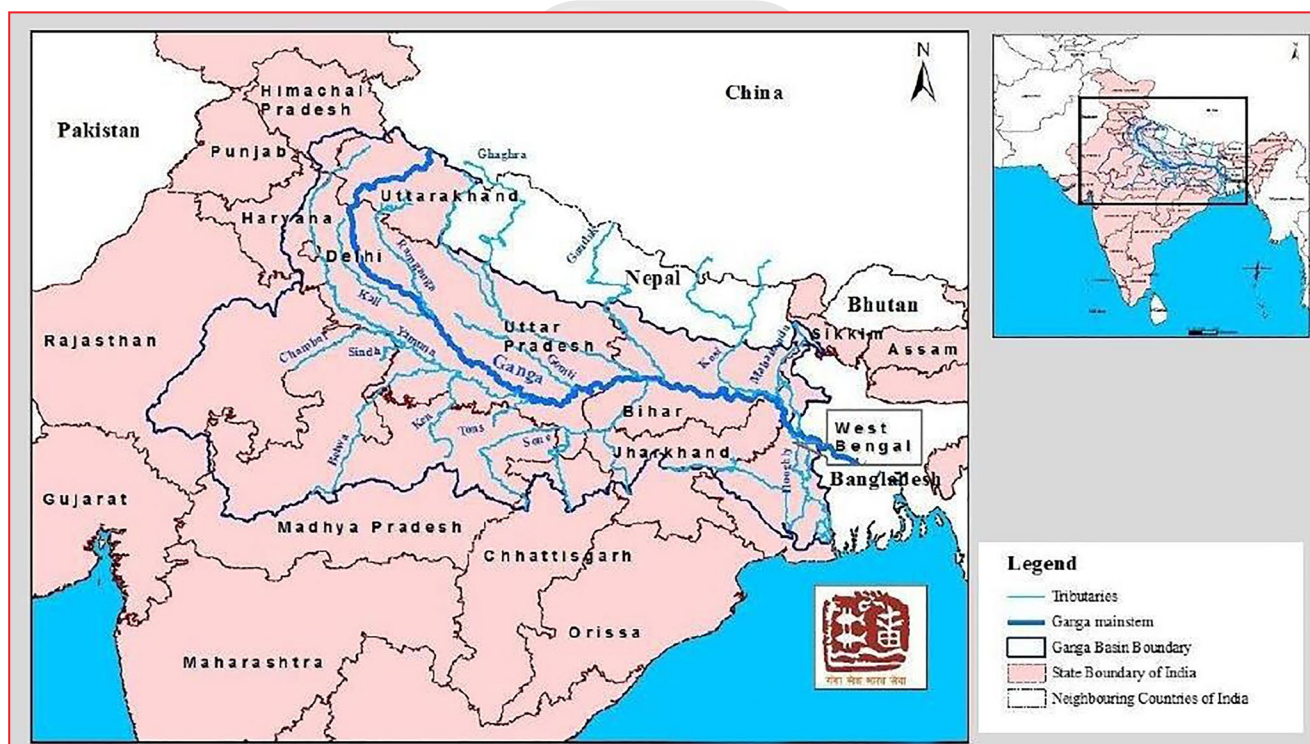
Simultaneous Elections

Why in News?

The Central government set up a panel headed by former **President Ram Nath Kovind to explore the feasibility of the 'one nation, one election' (ONOE) plan.**

➢ Despite Logistical and other challenges, the idea of holding **Simultaneous Elections**/ ONOE to the Lok Sabha (Parliament) and state Assemblies in India has been a topic of discussion.

What are Simultaneous Elections?
➢ **About:**
○ The idea is about **structuring the Indian election cycle** in a manner so that elections to the **Lok Sabha and the State Assemblies are synchronised** together so that the election to both can be held within a given span of time.

Note:

❍ While this concept had been practiced until 1967, it gradually fell out of sync due to the frequent dissolution of Assemblies and Lok Sabhas before their terms ended.

❍ Currently, only a few states **(Andhra Pradesh, Arunachal Pradesh, Odisha, and Sikkim)** hold elections along with the Lok Sabha polls.

➢ **Advantages:**

❍ According to the draft report on simultaneous elections by the Law Commission of India (LCI) in August 2018, **ONOE will lead to the saving of public money, reducing the strain on the administrative setup** and security forces, timely implementation of government policies, and administrative focus on development activities rather than electioneering.

What are the Challenges in Holding Simultaneous Elections?

➢ **Feasibility:**

❍ Article 83(2) and Article 172 of the Indian Constitution stipulate that the tenure of Lok Sabha and State Assemblies respectively, will **last for five years unless dissolved earlier** and there can be circumstances, as in Article 356, wherein assemblies can be dissolved earlier. Therefore, the ONOE plan raises serious issues of feasibility if the Central or State government collapses mid-tenure.

❍ Amending the Constitution for such a significant change would not only necessitate extensive consideration of various situations and provisions but **would also set a concerning precedent for more constitutional amendments.**

● The **Election Commission of India (ECI)** submitted a feasibility report to the government in 2015, suggesting amendments to the **Constitution and the Representation of the People Act, 1951.**

➢ **Not Aligned with Federalism:**

❍ The idea of ONOE does not square with the concept of 'federalism' as it is established on the notion that the **entire nation is "one" contradicting the content of Article 1** which envisages India as a "Union of States".

➢ **Present Form is More Beneficial:**

❍ The present form of recurrent elections can be seen as beneficial in a democracy as it allows voters to have their voices heard more frequently.

❍ As the underlying issues of national and State polls are different, the present framework **prevents the blending of issues, ensuring greater accountability.**

➢ **EVM and VVPAT Requirement:**

❍ Approximately 30 lakh **Electronic Voting Machines (EVMs)** and **Voter-Verified Paper Audit Trail (VVPAT)** machines would be **needed for simultaneous elections.**

➢ **Cost Considerations:**

❍ The ECI has highlighted that simultaneous elections would require a substantial budget.

❍ A total of approximately Rs 9,284.15 crore would be needed for procuring EVMs and VVPATs, with additional costs for replacing machines every 15 years.

❍ Simultaneous elections would increase warehousing costs due to the storage of machines between elections.

➢ **Impact on Voter Behaviour:**

❍ Some political parties argue that it may influence voter behaviour in a manner that voters would end up voting on national issues even for State elections and this may lead to larger national parties winning both State and Lok Sabha elections thereby marginalizing regional parties.

➢ **Election Issues:**

❍ State and national elections are often fought on different sets of issues — and in simultaneous elections, voters may end up privileging one set over the other in ways they might not have done otherwise.

➢ **Diminished Accountability:**

❍ Having to face the electorate more than once every 5 years enhances the accountability of politicians and keeps them on their toes. Finally, a lot of jobs are also created during the elections, which boosts the economy at the grassroots levels.

How can Simultaneous Elections be Restored in India?

➢ According to the **Recommendations of the Law Commission Working Paper (2018),**

❍ Simultaneous elections may be **restored through an amendment of the Constitution, Representation of the People Act, 1951** and Rules of Procedure of Lok Sabha and State Legislative Assemblies. A definition may be added to section 2 of the 1951 Act.

Note:

❍ The no-confidence motion may be replaced with a constructive vote of no-confidence through amendments in Lok Sabha and State Assemblies rules of business.

❍ **Anti-Defection Law** may be suitably diluted to prevent stalemate in case of a hung Assembly or Parliament

❍ The statutory limit of six months for issuance of notification of general elections may be extended for securing flexibility as a one-time measure.

What are the Countries where Simultaneous Elections are conducted?

➢ In **South Africa**, elections to **national as well as provincial legislatures are held simultaneously for five years** and municipal elections are held two years later.

➢ In **Sweden** elections to the national legislature (Riksdag) and provincial legislature/county council (Landsting) and local bodies/municipal Assemblies (Kommunfullmaktige) are **held on a fixed date i.e**. second Sunday in September for four years. But most other large democracies do not have any such system of simultaneous elections.

➢ In **Britain**, the Fixed-term Parliaments Act, 2011 was passed to provide a sense of stability and predictability to the British Parliament and its tenure. It provided that the first elections would be held on the 7th of May, 2015 and on the first Thursday of May every fifth year thereafter.

➢ **Article 67 of Basic Law for the Federal Republic of Germany** proposes a constructive vote of non-confidence (electing a successor while dismissing the incumbent).

NCERT Attains Deemed University Status

Why in News?

The **63rd Foundation Day of the National Council of Educational Research and Training (NCERT)** was recently observed in New Delhi, accompanied by the notable achievement of NCERT being granted the esteemed **Deemed-to-be-University** status.

What are the Major Highlights of the Event?

➢ **'Jadui Pitara' Revolutionizes Early Education:**

❍ At the event, a play-based educational resource named **'Jadui Pitara' received acclaim for its suitability for children aged 3 to 8**.

❍ With the capacity to positively impact a staggering 100 million children across the country, 'Jadui Pitara' is positioned to play a crucial role in revolutionizing the field of education.

➢ **Promotion of Mother Tongue and Integration of Advanced Technologies:**

❍ In an effort to preserve and promote regional languages, emphasis was placed on the **critical importance of developing educational content in mother tongues.**

  ● Additionally, it was highlighted that NCERT is committed to developing educational materials in all 22 languages with **the help of software like Anuvadini.**

❍ A visionary proposal was made for the **establishment of Augmented Reality, Virtual Reality, and Artificial Intelligence laboratories** in all **seven regional centers under the aegis of NCERT.**

  ● The ultimate goal is to equip these centers with state-of-the-art global technologies, thereby nurturing an environment conducive to innovation and advanced research.

➢ **Standardization of Teacher Training and Readiness for Industry 4.0:**

❍ The event called to **standardize the teacher training curriculum**, aligning it with the **principles of the Early Childhood Care and Education (ECCE)** framework.

❍ With a focus on preparing India's youth for the **challenges posed by Industry 4.0,** a proposal was made to create concise booklets covering contemporary topics such as **India's Covid-19 Pandemic management** and **Chandrayaan 3.**

  ● The aim is to keep the younger generations informed about the latest developments while instilling Indian values and ethos.

What is NCERT?

➢ The **National Council of Educational Research and Training** is an **autonomous** organization that was established in **1961** under the **Societies Registration Act**.

  ❍ It is the apex body for advising the central and state governments on matters related to school education.

➢ **It undertakes various activities and programmes related tp:**
- Educational research and innovation
- Curriculum development and revision
- Development of textbooks and other teaching-learning materials
- Teacher education and professional development
- Educational evaluation and assessment
- International cooperation in education

➢ As per the National Education Policy(NEP) 2020, NCERT is the nodal agency to develop National Curriculum Frameworks (NCFs) for: **Early Childhood Care and Education (ECCE), School Education, and Adult Education.**

What is a Deemed University?

➢ **About:**
- ○ A deemed university is an institution of higher education that is recognised by the University Grants Commission (UGC) under Section 3 of the UGC Act, 1956.
  - It is not established or incorporated by an Act of Parliament or State Legislature, but is **conferred the status of a university by the central government on the recommendation of the UGC**.
- ○ A deemed university enjoys **academic autonomy** and can design its own courses, syllabi, admission criteria, fee structure, faculty recruitment and examination system.

➢ **De Novo Category:**
- ○ The NCERT has been granted the deemed university status under the '**de novo' category**, which means that it has been **recognised for its excellence in a new or emerging area of knowledge.**
  - De-novo Institution means an institution devoted to innovations in teaching and research in unique and **"emerging areas of knowledge"** such as biotechnology, nanotechnology, space science, etc.

➢ **Benefits of Getting the Deemed University Status:**
- ○ They can also launch **new courses and programmes that are relevant to the changing needs** and demands of the education sector without having to seek approval from any other authority.

- ○ They can collaborate with national and international universities and institutions for **academic exchange, research projects, faculty development** and student mobility.
- ○ They can attract more students and faculty from diverse backgrounds and regions, as well as **more funding from various sources.**
- ○ They can play a more active role in **implementing the NEP 2020,** which envisages a transformation of the school education system in India.

Supreme Court Judgment on Inheritance

Why in News?

Recently, the Supreme Court (SC) has ruled that children born of void or voidable marriages can inherit their parent's share in a **joint Hindu family** property under the **Mitakshara Law.**

➢ However, it emphasized that these children would not be entitled to rights in or to the property of any other person in the family.

Note:
➢ **Voidable Marriage:** A voidable marriage is a marriage that is initially valid but has certain defects or conditions that can lead to its annulment if one of the parties chooses to do so.
➢ **Void Marriage:** A void marriage is one that is considered invalid from the very beginning as if **it never existed in the eyes of the law.**

What is the Background?

➢ The verdict was given in reference to a two-judge bench judgment in *Revanasiddappa vs. Mallikarjun, 2011*, which had held that children born out of void/voidable marriages are entitled to inherit their parents' property, whether self-acquired or ancestral.
- ○ The case was related to an amended provision in the Hindu Marriage Act, 1955 Section 16(3).
➢ This judgment laid the foundation for **recognizing the inheritance rights of such children.**

What are the SC's Ruling?

➢ **Determining Inheritance Share:**

Note:

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○ The first step in inheritance for a child from a void or voidable marriage is to ascertain the **exact share of their parent in the ancestral property**.

○ This determination involves conducting a **"notional partition" of the ancestral property to calculate the portion** that the parent would have received immediately before their death.

➢ **Legal Basis for Inheritance:**

○ **Section 16 of the Hindu Marriage Act, 1955** plays a crucial role in conferring legitimacy to children born out of void or voidable marriages, stipulating that such children have **a right to their parents' property.**

➢ **Equal Inheritance Rights:**

○ Children from void or voidable marriages are **considered "legitimate kin"** under the **Hindu Succession Act**, 1956 which governs inheritance.

○ They cannot be deemed illegitimate when it **comes to inheriting family property.**

➢ **Impact of the Hindu Succession (Amendment) Act, 2005:**

○ The court noted that after the enactment of the Hindu Succession (Amendment) Act in 2005, a deceased person's share in a joint Hindu family governed by **Mitakshara law** can be inherited by testamentary or intestate succession.

○ This amendment expanded the scope of inheritance beyond survivorship and granted equal succession rights to women and men.

Note: In June 2022, the SC in *Kattukandi Edathil Krishnan & Another Vs Kattukandi Edathil Valsan & Others* ruled that **children born to partners in live-in relationships can be considered legitimate**. This is conditional in a way that the relationship needs to be long-term and **not of 'walk in, walk out' nature.**

What are the Supreme Court Rulings Regarding Daughter's Inheritance?

➢ *Arunachala Gounder v. Ponnusamy, 2022*:

○ The SC held that the self-acquired property of a **Hindu male dying intestate** i.e., without writing a will, would **devolve by inheritance and not by succession.**

○ Further, the Court said that such property shall be **inherited by the daughter**, in addition to the property of the coparcenary which was obtained through partition.

➢ *Vineeta Sharma v. Rakesh Sharma, 2020*

○ The SC held that a **woman/daughter shall also be considered as a joint legal heir** as a son and can inherit ancestral property equally as a male heir, irrespective that the father was not alive before the **Hindu Succession (Amendment) Act, 2005, came into effect.**

What is Mitakshara Law?

➢ **About:**

○ The Mitakshara Law is a **legal and traditional Hindu law system** that primarily governs the rules of inheritance and property rights among members of a **Hindu Undivided Family (HUF)**.

● It is one of the two major schools of Hindu law, the other being the **Dayabhaga school.**

○ The Mitakshara law of succession applies to the entire country **except West Bengal and Assam.**

Schools of Hindu Laws	
Mitakshara Law School	**Dayabhaga Law School**
The term **Mitakshara** is derived from the name of a commentary written by Vijnaneswara, on the Yajnavalkya Smriti.	The term Dayabhaga is derived from a similarly named text written by Jimutavahana.
It is observed in all parts of India and subdivided into the Benares, the Mithila, the Maharashtra, and the Dravida schools.	It is observed in Bengal and Assam.
A son, by birth, acquires an interest in the ancestral property of the joint family.	A son has no automatic ownership right by birth but acquires it on the death of his father.
All the members enjoy coparcenary rights during the father's lifetime.	Sons do not enjoy coparcenary rights when the father is alive.
A coparcener's share is not defined and cannot be disposed of.	The share of each coparcener is defined and can be disposed of.
A wife cannot demand partition but has the right to a share in any partition between her husband and her sons.	Here, the same right does not exist for the women because the sons cannot demand partition as the father is the absolute owner.

Note:

Nine Years of Pradhan Mantri Jan Dhan Yojana

Why in News?

The **Pradhan Mantri Jan Dhan Yojana (PMJDY)** has successfully completed **nine years** of implementation.

➢ It was launched on August 28, 2014 and **stands as one of the largest financial inclusion initiatives globally**, led by the **Ministry of Finance** to provide affordable financial services to vulnerable and economically disadvantaged sections.

What is Pradhan Mantri Jan Dhan Yojana?

➢ **About:**
○ PMJDY creates a **platform for universal access to banking facilities** with at least one basic banking account for every household, financial literacy, and access to credit, insurance, and pension facilities.

➢ **Features of PMJDY:**
○ It aims to expand banking services through branches and Banking Correspondents (BCs).
● It covers both urban and rural areas and those who open an account would get indigenous **Debit Card (RuPay card).**
● There is no requirement to maintain any minimum balance in PMJDY accounts.
○ Accident Insurance Cover of **Rs.1 lakh (enhanced to Rs. 2 lakh to new PMJDY accounts opened after 28.8.2018)** is available with RuPay card issued to the PMJDY account holders.
○ It provides an **overdraft facility** of Rs. 10,000 to every eligible adult.
○ PMJDY accounts are eligible for **Direct Benefit Transfer (DBT)**, **Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)**, **Pradhan Mantri Suraksha Bima Yojana (PMSBY)** and **Atal Pension Yojana (APY).**

Note: An **overdraft** allows individuals to **withdraw money from their bank account** even if **they have an insufficient balance**. Overdrafts are primarily intended to be used for covering **immediate, short-term expenses**.

➢ **Significance:**
○ **Promoting Equitable Growth:** PMJDY fosters **Financial Inclusion (FI)**, leading to **inclusive growth** through the provision of affordable financial services to low-income and disadvantaged segments of the population.
● The **Jan Dhan–Aadhaar–Mobile (JAM) architecture** has enabled seamless transfer of government benefits to common citizens' accounts.
○ **Bringing Savings to Formal Systems:** PMJDY has brought the savings of the poor into the formal financial system, freeing them from usurious money lenders.
○ **Empowering Women:** Approximately **55.5% of Jan Dhan accounts belong to women**, promoting financial empowerment.
● **Overdraft** is available in only one account per household, **preferably lady of the household.**

➢ **Achievements**
○ More than **50 crore people** have been included in the formal banking system through Jan Dhan accounts.
● Approximately **67% of these accounts** have been opened in rural and semi-urban areas.
● Around **34 crore RuPay cards** have been issued to these accounts, providing **₹2 lakh accident insurance cover.**
○ Guinness World Records has acknowledged the PMJDY's success, certifying that the **"Most bank accounts opened in one week as part of the Financial Inclusion Campaign is 18,096,130 and was achieved by the Department of Financial Services, Government of India."**

What are the Other Government Initiatives to Promote Financial Inclusion in India?

➢ **National Centre for Financial Education (NCFE)**
➢ **Unified Payments Interface**
➢ **Micro Units Development and Refinance Agency (MUDRA)**
➢ **Small Finance Banks (SFBs)** and **Payment Banks**
➢ **Jan Dhan Darshak App**

Note:

Aatmanirbhar Bharat Rozgar Yojana (ABRY)

Why in News?

The **Aatmanirbhar Bharat Rozgar Yojana (ABRY) has surpassed its initial employment generation targets**, demonstrating its effectiveness in promoting job creation and aiding the **recovery efforts amidst the Covid-19 pandemic**.

What is Aatmanirbhar Bharat Rozgar Yojana (ABRY)?

➢ **About & Aim:**
  ○ The ABRY **came into effect on October 1, 2020**, with the primary goal of stimulating the **creation of new job opportunities**.
  ○ It **achieved this by offering financial assistance to employers** of enterprises **registered with the Employees' Provident Fund Organisation (EPFO)**.
  ○ The scheme **specifically aimed to incentivise the employment of individuals, including those who had lost their jobs due to the pandemic.**
  ○ It **covered both employee and employer contributions**, equivalent to 24% of earnings, for businesses employing up to 1000 workers.
  ○ For larger firms with over 1000 employees, **the scheme covered only the employee's EPF payments, equivalent to 12% of salaries.**
➢ **Achievements:**
  ○ As of July 31, 2023, the ABRY exceeded **its initial employment generation target by enrolling approximately 7.58 million new employees.**
➢ **Significance:**
  ○ The initiative **has played a significant role in reviving the job market, contributing to the broader economic recovery** during the pandemic.

What are the Government's Initiatives to Generate Employment Opportunities?
➢ **Support for Marginalized Individuals for Livelihood and Enterprise (SMILE)**
➢ **PM-DAKSH (Pradhan Mantri Dakshta Aur Kushalta Sampann Hitgrahi)**
➢ **Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA)**

➢ **Pradhan Mantri Kaushal Vikas Yojana (PMKVY)**
➢ **Start-Up India Scheme**
➢ **Rozgar Mela**

6ᵗʰ Rashtriya Poshan Maah

Why in News?

The **Ministry of Women and Child Development (MoWCD)** is **celebrating the 6ᵗʰ Rashtriya Poshan Maah throughout September 2023**.

What are the Key Highlights About Poshan Maah 2023?

➢ **Focus & Objective:**
  ○ The focus is on **comprehensively addressing malnutrition using a life-cycle approach**, which is a **key component of Mission Poshan 2.0**.
  ○ The main objective is to raise awareness about critical life stages, including pregnancy, infancy, childhood, and adolescence, in order to **promote better nutrition across India**.
➢ **Theme:**
  ○ **'Suposhit Bharat, Sakshar Bharat, Sashakt Bharat'** (Nutrition-rich India, Educated India, Empowered India), emphasising the importance of nutrition, education, and empowerment in **building a healthier and stronger country**.
➢ **This Year's Initiatives:**
  ○ During this month-long event, the MoWCD will lead nationwide efforts to raise awareness about nutrition, **focusing on key themes such as Exclusive Breastfeeding and Complementary Feeding**.
  ○ **These efforts include activities like:**
    ● **Swasth Balak Spardha** (Healthy Child Competition) to encourage healthy competition for better nutrition and overall well-being.
    ● **Poshan Bhi Padhai Bhi** (Nutrition and Education), improving nutrition through **Mission LiFE (Lifestyle for Environment)**, sensitising tribal communities about nutrition, and **addressing anaemia** through a Test, Treat, Talk approach.
➢ **2022's Progress:**
  ○ During 2022 Poshan Maah, **more than 170 million sensitization activities took place**, focusing on key themes related to nutrition.

Note:

○ **Over 600 million activities have been conducted** as part of the **Jan Andolan movement** during **Poshan Pakhwadas** (March) and Poshan Maahs (September) each year.

What is Poshan Abhiyaan?

➤ **About:**
   ○ It is a **flagship initiative by the Government of India (GoI)** for addressing malnutrition comprehensively.

➤ **Aim:**
   ○ This integration aims to create an integrated nutrition support program that **enhances the content, delivery, outreach, and overall outcomes of nutritional services**.
   ○ The primary focus is on **promoting practices that improve health**, wellness, and **immunity against diseases and malnutrition**.

➤ Target Audience:
   ○ It targets **pregnant women, lactating mothers, adolescent girls,** and **children** under 6 years of age.

➤ Poshan Tracker App:
   ○ In 2021, the MoWCD **launched an application called Poshan Tracker**.
   ○ As of February 2022, the **number of beneficiaries registered on Poshan Tracker:**

Total Beneficiaries	Lactating Moters	Pregnant Women	Children 0-6	Children 6M-3Y	Children 3-6Y
10,10,50,463	52,41,440	80,40,215 10,10,50,463	45,95,834	4,06,33,040	4,25,39,934

What is Saksham Anganwadi and Poshan 2.0?

➤ **About:**
   ○ In FY 2021-22, the government restructured some schemes **into Saksham Anganwadi and POSHAN 2.0.** It includes the following sub-schemes:
      ● **Integrated Child Development Services (ICDS)**
      ● POSHAN Abhiyaan
      ● Scheme for Adolescent Girls (SAG)
      ● National Creche Scheme

➤ **Fund:**
   ○ Poshan 2.0 is an **ongoing Centrally-Sponsored Scheme** being implemented through the State Govts/ UT administrations **based on a cost-sharing ratio between the Central and the State Government.**

➤ **Vision:**
   ○ Address the challenging situation of malnutrition among **children up to the age of 6 years, adolescent girls** (14-18 years) and **pregnant and lactating women**.
   ○ Achievement of the **Sustainable Development Goals** (SDG 2 on Zero Hunger and SDG 4 on Quality Education) **lies at the forefront of this programme design**.
   ○ **Focus on the fundamental importance of nutrition and early childhood care** and education for the well-being, growth and development of children into healthy and productive adults.

➤ **Components:**
   ○ Nutrition Support for POSHAN through SNP **for children of the age group of 06 months to 6 years, pregnant women and lactating mothers (PWLM)**.
      ● For Adolescent Girls **in the age group of 14 to 18 years in Aspirational Districts and North Eastern Region (NER)**.
   ○ **Early Childhood Care and Education** (3-6 years) and early stimulation for (0-3 years).
   ○ Anganwadi Infrastructure including modern, upgraded Saksham Anganwadi, and Poshan Abhiyaan.

What are the Other Related Initiatives?

➤ **Anemia Mukt Bharat Abhiyan**
➤ **The National Food Security Act (NFSA), 2013**
➤ **Pradhan Mantri Matru Vandana Yojana (PMMVY)**
➤ **PM POshan SHAkti Nirman (PM-POSHAN).**

Laïcité: Principle of Secularism in France

Why in News?

Recently, the French government **announced a ban on the wearing of the abaya, a traditional Islamic robe**, in state-run schools.

➤ This decision was framed as a measure to uphold the **principle of Laïcité, France's commitment to secularism**. The move was met with both **support and criticism,** sparking a broader conversation **about the role of Laïcité in modern France.**

Note:

What is Laïcité?

➤ **About**:
  ○ Laïcité is a complex and politically charged term in France. It signifies a **formal separation of the State and Church,** emphasising the complete **removal of religious values from the public sphere**, replaced by **secular values such as liberty, equality, and fraternity.**
    ● Laïcité finds its origins in the **struggle of anti-clerical Republicans** against the power of the Catholic Church.

➤ **Changing Demographics and Tensions:**
  ○ For the majority of the 20th century, **laïcité was generally not considered a significant issue** in France due to the **country's relative homogeneity**.
  ○ However, during the **1950s and 1960s,** significant **decolonization efforts in North Africa** resulted in a substantial migration of people from predominantly Muslim nations like **Tunisia, Morocco, and Algeria to France**.
    ● This demographic shift triggered occasional tensions and challenges related to laïcité.

➤ **Related Controversial Legislation and Interpretations**
  ○ In 2004, France enacted a law prohibiting the **wearing of "ostentatious" religious symbols in public spaces**, including Catholic dresses, Jewish kippahs, and Muslim headscarves.
  ○ In 2011, **face-covering veils were banned in public places**. Each such decision stirred new interpretations of Laïcité.

How does Laïcité
Compare with Indian Secularism?

➤ **Historical Origins:**
  ○ **Laïcité:** Laïcité is a concept rooted in **French history** and is a cornerstone of the French Republic.
    ● It was solidified with the enactment of the **1905 law on the Separation of Church and State.**

  ○ **Indian Secularism: Preamble** of the Indian Constitution declares India to be a **"Sovereign Socialist Secular Democratic Republic."** This sets the tone for the secular nature of the state.
    ● The term 'Secular' was added to the **preamble by the 42nd Constitution Amendment Act of 1976.**

➤ **Characteristics:**
  ○ **Laïcité:** Laïcité in France is characterized by **strict separation of religious institutions from the state.**
    ● This includes the prohibition of religious symbols in public schools, government buildings, and the public sphere.
  ○ **Indian Secularism:** Indian secularism, as enshrined in the Indian Constitution, is more accommodative of religious diversity.
    ● The state is not separated from religion but is expected to treat all **religions equally and impartially.**
    ● The Indian government can provide financial support to religious institutions, and religious symbols are allowed in various public spaces.

➤ **Inspiration that France Can Draw From Indian Secularism**
  ○ **Sarva Dharma Sambhava:** Indian philosophy of secularism is related to "**Sarva Dharma Sambhava"** (literally it means that the destination of the paths followed by all religions is the same, though the paths themselves may be different) which means **equal respect to all religions.**
    ● Indian secularism does not exclude religion from the public sphere, but rather **accommodates it in a way that does not infringe on the rights of others.**
  ○ **Protecting the Rights of Minorities:** Indian secularism recognizes the right to **profess, practice, and propagate religion** as a **fundamental right,** subject to public order, morality, and health.
    ● It also protects the educational and cultural rights of minorities, and allows them to establish and administer their own institutions.

■■■

Note:

Economic Scenario

Highlights

- Incremental capital Output Ratio (ICOR)
- Gresham's Law and Currency Exchange Rate
- RBI to Discontinue I-CRR
- Cotton Production in India
- Economic Insights Beyond GDP: ICOR
- Measurement of Unemployment In India
- Safeguarding the Global Financial Ecosystem
- One-Hour Trade Settlement
- Central Bank Digital Currency
- Indian Economy and Impossible Trinity
- India's Fiscal Deficit
- Governance in Urban Cooperative Banks
- Minimum Export Price for Rice

Incremental capital Output Ratio (ICOR)

INCREMENTAL CAPITAL OUTPUT RATIO (ICOR)

Measures additional units of cap-investment needed to produce an additional unit of output

ABOUT

- Explains relationship between - **Level of investment made** in the economy and **Subsequent increase in GDP**

EVOLVED FROM

- **Harrod-Domar Growth Theory** in 1939 (which stresses the importance of savings and investment as key determinants of growth)

RELATION WITH PRODUCTION

- Determines a country's level of production efficiency
- **Lower ICOR = More efficient production/capital** (implies that an economy can generate more output with a smaller increase in cap-investment)

While GDP gives information about the size of an economy, ICOR tells how efficiently it operates

$$ICOR = \frac{Annual\ Investment}{Annual\ Increase\ in\ GDP}$$

ILLUSTRATION

For a Country 'A' investing in a product 'P';

Capital Investment: $1,000,000
Change (↑) in GDP: $500,000

Now, to calculate ICOR, use the above formula;
ICOR = $1,000,000 ÷ $500,000
ICOR = 2

Meaning -

- **For every additional $1,000,000 in cap-investment made in the economy, the economic output (or GDP) increases by $500,000**
- It takes **$2 of cap-investment to produce an additional $1 of economic output.**

Now, if A's ICOR was 4 last year, it means that A has become more efficient in its use of capital.

INDIA & ICOR

- ICOR in FY12 - **7.5**
- ICOR in FY22 - **3.5**

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CRITICISM

- **Favours developing countries** who can still enhance their infra and tech unlike developed countries who are already operating at their highest level
- **Intangible assets (designing, R&D etc) are more challenging** to include in investment levels and GDP

Note:

Gresham's Law and Currency Exchange Rate

Why in News?

Gresham's law, attributed to **English financier Thomas Gresham,** was a significant factor in the **2022 economic crisis in Sri Lanka**. The crisis was characterized by the Central Bank of Sri Lanka's implementation of a **fixed exchange rate** between the **Sri Lankan Rupee and the U.S. Dollar.**

What is Gresham's Law?

➤ **Gresham's law** is a monetary principle that states that "**bad money drives out good". Bad money** is a currency with equal or less value than its face value. **Good money** has the potential for a greater value than its face value.

   ○ This means that if there are two types of **money in circulation,** one with a **higher intrinsic value and one with a lower intrinsic value,** people will tend to hoard the more valuable money and spend the less valuable money.

      ● As a result, the **less valuable money will dominate the market**, while the more valuable money will disappear from circulation.

   ○ This law comes into play when the **government fixes the exchange rate between two currencies**, creating a disparity between the official rate and the market rate.

      ● It applies not just to **paper currencies but also to commodity currencies** and other goods.

➤ **Instances of Gresham's Law in Action:**

   ○ Gresham's Law became noticeable during **Sri Lanka's economic crisis** when the country's Central Bank set a **fixed exchange rate between the Sri Lankan rupee and the U.S. dollar.**

      ● Despite unofficial market rates suggesting that the U.S. dollar was worth much more, the **government insisted on a fixed rate of 200 Sri Lankan rupees for one U.S. dollar.**

      ● This led to the **Sri Lankan rupee being considered more valuable than it actually was** and the U.S. dollar being undervalued according to market rates.

   ○ As a result, **fewer U.S. dollars were available in the official foreign exchange market**, and people started to avoid using them in official transactions.

➤ **Contrast to Gresham's Law:**

   ○ In contrast to **Gresham's Law**, **Thiers' Law** highlights a phenomenon where **"good money drives out bad."** In a free exchange rate environment, **people tend to favor higher-quality currencies** and **gradually discard those they perceive as inferior.**

      ● The **rise of private cryptocurrencies (Good Money)** in recent years is often cited as an example of **how well-regarded, private money producers can displace government-issued currencies (Bad Money).**

What is a Fixed Exchange Rate?

➤ **About:**

   ○ A fixed exchange rate, also **called pegged exchange rate,** is a regime applied by a government or central bank that **ties the country's official currency exchange rate to another country's currency** or the price of gold.

      ● The purpose of a fixed exchange rate system is to **keep a currency's value within a narrow band.**

➤ **History:**

   ○ The **Bretton Woods Conference,** **which took place in 1944,** established the international monetary system that was characterized by fixed exchange rates.

      ● At the conference, participating countries agreed to peg their currencies to the U.S. dollar, which was convertible into gold at a fixed rate of **USD 35 per ounce**.

   ○ It aimed to **promote stability and prevent competitive devaluations of currencies,** which had contributed to **economic instability during the Great Depression and World War II.**

➤ **Downfall:**

   ○ The downfall of the fixed exchange rate system, established at the Bretton Woods Conference, was **due to persistent trade imbalances, inflation, speculative attacks, lack of exchange rate adjustability**, and **dwindling U.S. gold reserves.**

   ○ The **"Nixon Shocks" in 1971**, which included **suspending the U.S. dollar's convertibility into gold,** marked the system's collapse.

   ○ This **transitioned major currencies to floating exchange rates**, allowing flexibility in response to economic conditions.

Note:

What are Some Advantages and Disadvantages of Fixed Exchange Rates?

➢ **Advantages:**

  ❍ **Price Stability:** Fixed exchange rates can provide **price stability**. This stability can be especially beneficial for countries with **high inflation rates or volatile currencies.**

  ❍ **Reduced Transaction Costs:** In a fixed exchange rate system, businesses engaged in international trade may face **fewer currency-related transaction costs,** such as **currency conversion fees** and exchange rate risk management expenses.

  ❍ **Investor Confidence:** Fixed exchange rates can **boost investor confidence**. Investors are more likely to commit capital to a country with a stable currency, reducing the cost of capital and potentially spurring economic growth.

➢ **Disadvantages:**

  ❍ **Loss of Monetary Policy Autonomy:** One significant drawback is that countries adopting fixed exchange rates **give up control over their monetary policy.**

    ● To maintain the peg, they may **need to adjust interest rates and money supply according to the anchor currency's policies**, which may not align with their domestic economic needs.

  ❍ **Speculative Attacks:** Fixed exchange rate systems can be vulnerable to speculative attacks.

    ● If investors believe a **country's currency is overvalued, they may engage in massive sell-offs**, forcing the central bank to deplete its foreign exchange reserves to maintain the peg.

  ❍ **External Dependency**: Fixed exchange rate systems tie a country's **fortunes to the stability and policies of the anchor currency issuer.**

    ● If the anchor currency faces problems, the pegged country may suffer without the ability to adjust its exchange rate.

What are Alternatives to Fixed Exchange Rates?

➢ **Floating Exchange Rate:** A **floating exchange rate,** also known as a flexible exchange rate, is a system where a **currency's value is determined by supply and demand in the foreign exchange market.**

  ❍ In this system, exchange rates can fluctuate continuously and are not officially pegged or fixed to any other currency or commodity.

  ❍ Floating exchange rates allow currencies to adjust freely to **economic conditions, trade imbalances, and market forces.**

    ● **Example**: Canada and Australia.

➢ **Managed float**: A **managed float exchange rate**, also referred to as a **dirty float,** is a system where a **country's central bank or government occasionally intervenes in the foreign exchange market** to influence its currency's value.

  ❍ While the exchange rate is allowed to float to some extent, **authorities may buy or sell their own currency to stabilize or manage its value** in response to certain economic goals or to prevent excessive volatility.

  ❍ **Example:** India and China.

RBI to Discontinue I-CRR

Why in News?

Recently, the Reserve Bank of India (RBI) announced that it would discontinue the **Incremental Cash Reserve Ratio (I-CRR)** in a phased manner.

➢ The central bank will release the amount that banks have maintained under I-CRR in stages.

How Will the RBI Implement Discontinuation of I-CRR?

➢ The discontinuation of the I-CRR will be **implemented in stages** to ensure a smooth transition and **prevent sudden shocks to the system's liquidity.**

  ❍ In the first and second stages of the I-CRR reversal, 25 % of each of the Banks' impounded funds will be released. The remaining 50% of the balance will be released in the third stage.

➢ This measured approach aims to ensure that **banks have sufficient liquidity to meet increased credit demand** during the **upcoming festival season.**

What is I-CRR?

➢ **Background:**

  ❍ On 10th August 2023, following the announcement of the **monetary policy** and the **demonetization** of Rs 2000 notes, the RBI declared that banks would be required to maintain an **Incremental Cash Reserve Ratio (I-CRR)** of 10% on the increase in their **Net Demand and Time Liabilities (NDTL).**

Note:

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- **NDTL** is the **difference** between the **sum of demand and time liabilitie**s (deposits) of a bank (with the public or the other bank) and the deposits in the form of **assets held by the other banks.**
  - Stated that it would review it in September 2023, or earlier.
- **Purpose of Introducing I-CRR:**
  - The RBI introduced the I-CRR as a temporary measure to **manage excess Liquidity** in the banking system.
    - Several **factors contributed** to the **Surplus Liquidity**, including the demonetisation of Rs 2,000 banknotes.
  - RBI's surplus transfer to the government, increased **government spending, and capital inflows.**
  - This liquidity surge had the **potential to disrupt price stability and financial stability**, necessitating efficient liquidity management.
- **Impact of I-CRR on Liquidity Conditions:**
  - The I-CRR measure would absorb over **Rs 1 lakh crore of excess liquidity** from the banking system.
  - As a result of the I-CRR mandate, the banking system's **liquidity temporarily turned into a deficit on 21st August 2023**, exacerbated by **outflows related to Goods and Services Tax (GST)** and central bank intervention to stabilize the rupee.
  - However, liquidity conditions returned to Liquidity from the system.

What is the Cash Reserve Ratio (CRR)?

- **About:**
  - The percentage of cash required to be kept in reserves as against the bank's total deposits, is called CRR.
  - All banks in India, except Regional Rural Banks (RRBs) and Local Area Banks (LABs), have to deposit the CRR money to RBI.
    - RRBs and LABs are exempted from maintaining CRR with RBI, **as per the RBI Act, 1934**. However, they have to maintain CRR with themselves in the form of **cash or gold or unencumbered approved securities**.
  - Banks can't lend the CRR money to **corporates or individual borrowers**, banks can't use that money for investment purposes, and **Banks don't earn any interest on that money.**

- **Need to Have Reserve cash with the RBI:**
  - Since a part of the bank's deposits is with the RBI, it ensures the **security of the amount in case of any emergencies**.
  - The cash is **readily available when customers want** their deposits back.
  - CRR helps in keeping **inflation under control.** If there is a threat of high inflation in the economy, RBI increases the CRR, so that banks need to keep more money in reserves, effectively reducing the amount of money that is available to the banks.
    - This curbs the **excess flow of money in the economy.**
  - When there is a need to pump funds into the market, the RBI lowers the CRR rate, which in turn, helps the banks provide loans to a large number of businesses and industries for investment purposes. **Lower CRR also boosts the growth rate of the economy.**
  - The CRR and other monetary tools require every commercial bank to maintain but not the NBFC.

Why is RBI using I-CRR in the Case of Demonetisation?

- RBI has chosen to implement I-CRR in the case of a **sudden influx of liquidity, such as during demonetization**.
  - **RBI used I-CRR in November 2016**, after the demonetization of Rs 500 and Rs 1,000 banknotes.
- It allows the RBI to **address the issue without affecting other aspects of monetary policy**. This precision can be crucial, especially during **unique situations like demonetization.**
- The I-CRR **can be implemented relatively quickly**. When there is a sudden surge in liquidity due to a large-scale event like the **return of demonetized currency notes,** the central bank may need a tool that can be put into effect promptly.
- The **I-CRR is typically intended to be a temporary measure.** It can be introduced when there is a need to absorb excess liquidity temporarily and can be phased out once the liquidity situation stabilizes.
- But on the other hand **Other tools such as Repo Rate, Statutory Liquidity Ratio (SLR) etc may have rather long term and slower impact on liquidity.**

Note:

What are the Monetary Policy Instruments Available to the RBI?

➤ **Qualitative:**

○ **Moral Suasion:** This is a **non-binding technique where the RBI uses persuasion and communication** to influence banks' lending and investment behavior.

○ **Direct Credit Controls:** These are measures that involve **regulating the flow of credit to specific sectors or industries**. The RBI can issue directives on lending to certain sectors or set credit limits to achieve policy objectives.

○ **Selective Credit Controls:** These are **more specific than direct credit controls and target particular types of loans, such as consumer credit**, to control demand in specific areas of the economy.

➤ **Quantitative:**

○ **Cash Reserve Ratio (CRR):** CRR is the proportion of a **bank's deposits that it must keep as reserves with the RBI** in the form of cash. By adjusting the CRR, the RBI can control the amount of funds available for lending by banks.

○ **Repo Rate:** The repo rate is the **interest rate at which the RBI lends money to commercial banks for the short term**. A change in the repo rate can influence banks' borrowing costs and, subsequently, their lending rates.

○ **Reverse Repo Rate:** The reverse **repo rate is the interest rate at which banks can park their excess funds with the RBI**. It provides a floor for short-term interest rates and helps manage liquidity.

○ **Bank Rate:** The bank rate is the rate at which the **RBI provides long-term funds to banks and financial institutions**. It influences interest rates in the long-term money market.

○ **Open Market Operations (OMOs):** OMOs involve the **buying or selling of government securities by the RBI in the open market.** This action affects the money supply and liquidity in the banking system.

○ **Liquidity Adjustment Facility (LAF):** The LAF includes the repo rate and the reverse repo rate and is used by banks for their short-term liquidity needs. It **helps the RBI manage daily liquidity conditions**.

○ **Marginal Standing Facility (MSF):** MSF is the rate at which **banks can borrow overnight funds from the RBI against the collateral of government securities.** It serves as a secondary source of funding for banks.

○ **Statutory Liquidity Ratio (SLR):** SLR is the percentage of a bank's net demand and time liabilities (NDTL) that it must maintain in the form of approved securities.

Cotton Production in India

Why in News?

Cotton is a versatile crop that provides **food, feed, and fiber for various uses,** including **textiles, cooking oil, and livestock feed**. It is also a major source of income and employment for millions of farmers in India.

➤ However, in recent years, **cotton production and yields have declined significantly,** posing a challenge for the country's agriculture and textile sectors.

What is the Significance of Cotton for India?

➤ **About**:

○ Cotton is one of the most important **commercial crops** cultivated in India and accounts for around **25% of the total global cotton production.**

● Due to its economic importance in India, it is also termed as "**White-Gold".**

○ In India, around **67% of India's cotton is grown on rain-fed areas** and 33% on irrigated areas.

➤ **Growing Conditions:**

○ Cotton cultivation necessitates a hot, and sunny climate with a **long frost-free period**. It is most **productive in warm and humid climatic conditions**.

○ Cotton can be successfully grown in a range of soil types, including **well-drained deep alluvial soils in northern regions**, **variable-depth black clayey soils** in the central region, and **mixed black and red soils in the southern zone.**

● While cotton exhibits some tolerance to salinity, it is highly sensitive to waterlogging, emphasizing the **importance of well-drained soils in cotton farming.**

➤ **Species of Cultivated Cotton:**

○ India is the country to grow all four species of cultivated cotton *Gossypium arboreum and Herbaceum* **(Asian cotton)**, *G.barbadense* **(Egyptian cotton)** and *G. hirsutum* **(American Upland cotton).**

○ Majority of the cotton production comes from ten major cotton growing states, which are grouped into three diverse **agro-ecological zones**, as under:

Note:

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- **Northern Zone:** Punjab, Haryana and Rajasthan
- **Central Zone:** Gujarat, Maharashtra and Madhya Pradesh
- **Southern Zone:** Telangana, Andhra Pradesh, Karnataka and Tamil Nadu

➢ **Significance:**

○ Cotton, often likened to coconut, serves as a source of three essential components:

- **Fiber:** The **white fluffy fiber or lint**, constituting about 36% of the raw unginned cotton, is the **primary source for the textile industry.**The rest is **seed (62%) and wastes (2%)** separated from the lint during ginning.

➢ Cotton commands a **two-thirds share in India's total textile** fiber consumption.

- **Food:** Cottonseed contains **13% oil**, which is commonly used for cooking and frying.

➢ Cottonseed cake/meal is **India's second-largest feed cake,** following soybean.

- **Feed:** The **leftover cottonseed cake,** comprising **85% of the seed**, is a valuable, protein-rich feed ingredient for livestock and poultry.

➢ Cottonseed oil ranks as the **country's third-largest domestically-produced vegetable oil,** following mustard and soybean.

What led to Rapid Increase and Subsequent Decline in Cotton Production in India?

➢ **Surge:**

○ Between 2000-01 and 2013-14, India witnessed a remarkable surge in cotton production, primarily attributed to **Bt (Bacillus thuringiensis) technology.** Key developments include:

- Adoption of **genetically-modified (GM) cotton hybrids with Bt genes,** designed to **combat the American bollworm insect pest.**

- It led to a surge in lint yields from **278 kg per hectare in 2000-01 to 566 kg per hectare in 2013-14.**
  - A corresponding increase in cottonseed oil and cake production.

- However, the gains achieved through **Bt technology were short-lived. Post-2013-14,** cotton production and yields began to decline.

COTTON PRODUCTION — in lakh bales
398.00 (2013-14), 343.47 (2022-23), 140.00

COTTON LINT YIELD — in kg/hectare
566 (2013-14), 447 (2022-23), 278
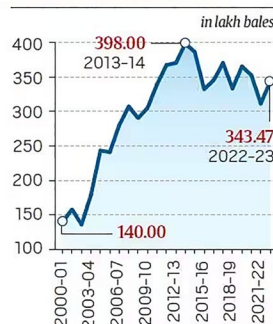
Source: Ministry of Textiles; Figures for 2022-23 are provisional estimates.

➢ **Decline:**

○ The primary factor responsible for decline was the **emergence of the pink bollworm (***Pectinophora gossypiella)*.

- When pink bollworm(PBW) larvae invade cotton bolls, it causes **cotton plants to produce less cotton** and the **cotton produced is of lower quality.**

○ Unlike the polyphagous American bollworm, **PBW is monophagous**, feeding mainly on cotton, which contributed to the **development of resistance against Bt proteins.**

- Continuous cultivation of **Bt hybrids led to PBW populations developing resistance**, replacing susceptible ones.

○ In 2014, **Gujarat experienced an unusual surge in PBW larvae survival on cotton flowers 60-70 days after planting.** In 2015, **Andhra Pradesh, Telangana, and Maharashtra** also reported PBW infestations.

- In 2021, even Punjab, Haryana and northern Rajasthan saw heavy infestation of the pest for the first time.

Note: Monophagous means an organism that primarily feeds on a single specific type of food or host.

➢ **Current Methods Employed to Manage the PBW Pest:**

○ Traditional insecticides had limited success in controlling PBW larvae. Instead, a different method called **"mating disruption"** has been used.

- It entails the use of **Gossyplure, a pheromone signaling chemical** that is secreted by female PBW moths to attract male adults. In this case, the pheromone is artificially synthesised and filled into pipes or lures.

Note:

- This method hinders **male moths from locating females** and engaging in mating, thereby causing disruption in their reproductive cycle.
  - **There are two approved products for mating disruptions:**
    - **PBKnot,** which uses ropes with these chemicals on cotton plants to **reduce infestation** and boost yields.
    - **SPLAT-PBW,** which is a **special emulsion** that disrupts PBW mating with synthetic chemicals.

What are the Other Issues Associated with the Cotton Sector in India?

- **Yield Fluctuations:** Cotton production in India can be quite unpredictable due to several factors.
  - Limited access to **irrigation systems, declining soil fertility, and erratic weather patterns**, including unexpected droughts or excessive rainfall, contribute to the uncertainty surrounding cotton yields.
- **Smallholder Dominance:** The majority of cotton farming in India is **carried out by small-scale farmers.**
  - These farmers **often rely on traditional agricultural practices** and have limited access to modern farming technologies, which in turn affects overall cotton production.
- **Limited Market Access:** A significant number of cotton growers in India face constraints in reaching markets and are **compelled to sell their harvest at reduced rates to intermediaries.**

Economic Insights Beyond GDP: ICOR

Why in News?

- India's latest **Gross Domestic Product (GDP)** data is making headlines with a remarkable **7.8% growth during the April to June quarter of 2023,** solidifying its position as one of the **world's fastest-growing major economies.**
- However, India's economic narrative extends beyond the numerical figures. **Incremental Capital Output Ratio (ICOR)** is also gaining traction, offering insights into **capital efficiency and resource allocation.**

What is GDP and ICOR?

- **GDP** is one of the most widely used indicators of **economic performance and development.** It measures the **total value of goods and services produced within a country in a given period of time**.
  - While GDP has its merits, it **does not offer a complete view of economic well-being**. It overlooks factors like **efficiency, income distribution, and institutional quality,** which are essential for sustainable growth.
  - Merely increasing investment may inflate GDP, but true **sustainable growth** relies on **productivity enhancements.**
  - Therefore, economists and policymakers often use other complementary indicators to assess the **efficiency, sustainability, and quality of economic growth.**
- One such indicator is the **ICOR**; it has evolved from the **Harrod-Domar Growth Theory** and examines the **relationship between fresh investments and economic growth**, indicating how much additional capital is required to generate a **1% higher output**.
  - **A lower ICOR signifies greater efficiency** and productive use of capital.
  - According to an **SBI report,** India is experiencing an upward trend in savings and investments, which is accompanied by a simultaneous **decrease in the ICOR.**
    - The **current ICOR in India stands at 4.4,** indicating a reasonably efficient use of capital.

> **Note**: The **Harrod-Domar model,** created by economists **Roy Harrod and Evsey Domar**, asserts that **economic growth relies on the availability of capital for investment,** and the rate of capital accumulation is directly linked to the rate of savings.

What are the Factors Behind Declining ICOR in India?

- **Economic and Technical Innovation:** India has been a hotbed for **cost-conscious innovation**, where companies develop **cost-effective solutions** that require minimal capital investment and minimum wear and tear replacement.
  - For example, companies like **Tata Motors developed the Nano car,** a low-cost alternative for the **middle-class population**, showcasing how frugal innovation can lead to lower ICORs.
- **Economic Diversification:** India's shift towards a **more services-oriented and technology-intensive economy** reduces the capital intensity of economic activities.

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- ○ Services, such as **IT and software development**, typically require less capital per unit of output compared to traditional manufacturing.
  - **Unified Payments Interface (UPI)** developed by **National Payments Corporation of India (NPCI)** has become a **cost-effective and efficient digital payment system** that has accelerated **financial inclusion** and made transactions more accessible to a broader population.
  - ○ However, it's essential to exercise caution and **maintain a balanced approach by also nurturing the manufacturing sector.**
- ➤ **Decentralized Manufacturing:** The rise of **decentralized and distributed manufacturing using 3D printing** and other technologies reduces the need for centralized factories and heavy capital investment in large-scale production facilities.
  - ○ **India's first 3D-printed post office** has been inaugurated in Bengaluru.
- ➤ **AI and Machine Learning Integration: Artificial Intelligence** and **Machine learning** (ML) are playing a pivotal role in lowering the ICOR in India by enhancing efficiency and productivity across various sectors.
  - ○ For instance, in healthcare, **AI-driven diagnostics reduce reliance on costly equipment,** lowering the healthcare sector's ICOR.
  - ○ In manufacturing, **ML-based predictive maintenance** decreases downtime and extends machinery life, reducing the need for frequent capital replacements.
  - ○ Also, **AI-enabled precision farming** in agriculture enhances resource utilization, resulting in higher crop yields with reduced capital expenditure.

What are the Limitations of Using ICOR as an Economic Indicator?

- ➤ **Informal Economy Impact:** India's informal economy is **vast and dynamic,** but it **largely operates outside the scope of formal data collection**.
  - ○ The informal sector's interactions with the formal sector can be complex and challenging to capture accurately in ICOR calculations.
  - ○ As a result, **ICOR may not fully account for the informal sector's** contribution to economic growth and capital efficiency.

- ➤ **Price Distortions:** ICOR is based on **nominal values of investment and output,** which are affected by price changes over time.
  - ○ Therefore, **inflation** or **deflation** may distort the **true relationship between investment and output**, leading to misleading results of ICOR.
  - ○ Also, obtaining reliable ICOR calculations can be hindered by the availability and accuracy of data.
- ➤ **Infrastructure Bottlenecks**: Despite a declining ICOR, **India continues to grapple with infrastructure bottlenecks**.
  - ○ This could mean that while **new capital investments are relatively efficient,** existing infrastructure constraints could hinder the overall economic efficiency and productivity.
- ➤ **Regional Disparities:** Regional variations in India can significantly affect the **interpretation of ICOR.** A declining national ICOR might **hide disparities where some regions benefit from more efficient capital use while others lag behind.**
- ➤ **Natural Resource Depletion:** A lower ICOR **may not reflect the depletion of natural resources**, which can lead to long-term sustainability challenges.
  - ○ Capital-intensive industries that exploit natural resources might show a declining ICOR while harming the environment.

How can ICOR be Improved?

- ➤ **Regional and Sectoral Analysis**: Instead of only national-level analysis, **there is a need to conduct regional and sectoral assessments of ICOR.**
  - ○ This allows for a more **granular understanding of where capital investments are most efficient and where improvements are needed**. Targeted policies can then be designed accordingly.
- ➤ **Blockchain for Transparent Data Recording**: Utilizing **blockchain technology to ensure transparent and tamper-proof recording of economic data**, can reduce the risk of data manipulation or inaccuracies. This can enhance the reliability of ICOR calculations.
- ➤ **Public-Private Collaboration:** Fostering collaboration between **public and private sectors to jointly address capital allocation inefficiencies.**
  - ○ Public-private partnerships can **leverage resources, expertise, and innovation** for more efficient infrastructure and development projects.

Note:

Measurement of Unemployment In India

Why in News?

In 2021-22, India's **Unemployment** rate dropped to 4.1% according to **Periodic Labour Force Survey (PLFS)** of 2021-22, but higher than the US (Fluctuating between 3.5% and 3.7%), highlighting the contrasting economic landscapes between the two countries and thus are differing methods to measure unemployment.

What is Unemployment?

➢ **ILO's Definition:**
  ○ Unemployment, as per the **International Labour Organization (ILO)**, involves being out of a job, being available for work, and actively seeking employment.
  ○ A crucial aspect is that those **not actively searching for work are not considered unemployed.**

➢ **The Labour Force:**
  ○ It comprises the **employed and the unemployed.** Those not in these categories (e.g., students, unpaid domestic workers) are categorized as **out of the labour force.**
  ○ The unemployment rate is calculated as the **ratio of the unemployed to the labour force.**
    ● The unemployment rate could also fall if an economy is not generating enough jobs, or if people decide not to search for work.

➢ **Types of Unemployment:**
  ○ **Disguised Unemployment:**
    ● It is a phenomenon wherein more people are employed than actually needed.
    ● It is primarily traced in the agricultural and the unorganised sectors of India.
  ○ **Seasonal Unemployment:**
    ● It is an unemployment that occurs during certain seasons of the year.
    ● Agricultural labourers in India rarely have work throughout the year.
  ○ **Structural Unemployment:**
    ● It is a category of unemployment arising from the mismatch between the jobs available in the market and the skills of the available workers in the market.

● Many people in India do not get jobs due to lack of requisite skills and due to poor education level, it becomes difficult to train them.
  ○ **Cyclical Unemployment:**
    ● It is a result of the business cycle, where unemployment rises during recessions and declines with economic growth.
    ● Cyclical unemployment figures in India are negligible. It is a phenomenon that is mostly found in capitalist economies.
  ○ **Technological Unemployment:**
    ● It is the loss of jobs due to changes in technology.
    ● In 2016, **World Bank** data predicted that the proportion of jobs threatened by automation in India is 69% year-on-year.
  ○ **Frictional Unemployment:**
    ● The Frictional Unemployment also called as Search Unemployment, refers to the time lag between the jobs when an individual is searching for a new job or is switching between the jobs.
  ○ **Vulnerable Employment:**
    ● This means, people working informally, without proper job contracts and thus sans any legal protection.
    ● These persons are deemed 'unemployed' since records of their work are never maintained.
    ● It is one of the main types of unemployment in India.

How is Unemployment Measured in India?

➢ **NSSO Classification Methods:**
  ○ **Usual Principal and Subsidiary Status (UPSS):** Principal status is determined based on the activity one spent the most time on in the previous year.
    ● Subsidiary roles lasting at least 30 days are also **considered employment.** This method tends to **lower unemployment rates.**
  ○ **Current Weekly Status (CWS):**
    ● A shorter reference period of a week is adopted. Individuals are counted as employed if they have worked **for at least one hour on at least one day in the preceding seven days**.
      ■ CWS often results in **higher unemployment rates than UPSS** due to the shorter reference period.

Note:

Note: The **National Sample Survey Office (NSSO)** is merged with the Central Statistical Office to form the National Statistical Office (NSO) in 2019.

The unemployment rates as per the Periodic Labour Force Survey

	UPSS			CWS		
	Rural	**Urban**	**Aggregate**	**Rural**	**Urban**	**Aggregate**
2017-18	5.3%	7.8%	6.1%	8.5%	9.6%	8.9%
2018-19	5%	7.7%	5.8%	8.4%	9.5%	8.8%
2019-20	4%	7%	4.8%	7.9%	11%	8.8%
2020-21	3.3%	6.7%	4.2%	6.5%	10%	7.5%
2021-22	3.3%	6.3%	4.1%	6%	8.3%	6.6%

➢ **Complexities in Measuring Unemployment in India:**
  ❍ **Constraints from Social Norms:**
    ● In developing economies, social norms significantly influence work-seeking decisions, leading to variations in labour force participation rates.
      ■ For instance, a 2009-10 **NSSO** survey revealed that 33.3% of rural women and 27.2% of urban women aged 15 and above **engaged in domestic work would be willing to work if it were available within the premises of the households**, but they are not counted among the unemployed because they aren't actively job-hunting.
  ❍ **Informal Sector Complexity:**
    ● In contrast to developed economies, the informal nature of jobs in India **complicates measurement.**
      ■ Unlike developed economies, individuals do not hold one job year-round.
    ● People often engage in various economic activities throughout the year, making it **challenging to categorize them as employed or unemployed** at any given time.
      ■ An individual may be unemployed this week, but may h**ave worked as a casual labourer last month,** and as a farmer for most of the year.

  ❍ **Rural vs. Urban Disparities:**
    ● The low threshold for employment in UPSS explains why unemployment rates are **typically lower in rural areas** than in urban areas.
    ● In agrarian economies, access to family farms or casual agrarian work **increases the likelihood of finding some work.**

What are the Major Causes of Unemployment in India?

➢ **Social Factors:**
  ❍ In India the caste system is prevalent. The work is prohibited for specific castes in some areas.
  ❍ In big joint families having big business, many such persons will be available who do not do any work and depend on the joint income of the family.
➢ **Rapid Growth of Population:**
  ❍ Constant increase in population has been a big problem in India.
➢ **Dominance of Agriculture:**
  ❍ Still in India nearly half of the workforce is dependent on Agriculture.
    ● However, Agriculture is underdeveloped in India.
    ● Also, it provides seasonal employment.
➢ **Fall of Cottage and Small industries:**
  ❍ The industrial development had adverse effects on cottage and small industries.

Note:

○ The production of cottage industries began to fall and many artisans became unemployed.

➤ **Immobility of Labour:**

○ Mobility of labour in India is low. Due to attachment to the family, people do not go to far off areas for jobs.

○ Factors like language, religion, and climate are also responsible for low mobility.

➤ **Defects in Education System:**

○ Jobs in the capitalist world have become highly specialised but India's education system does not provide the right training and specialisation needed for these jobs.

○ Thus, many people who are willing to work become unemployed due to lack of skills.

Safeguarding the Global Financial Ecosystem

Why in News?

Recently, the Union Finance & Corporate Affairs Minister addressed the **Global Fintech Fest 2023** in Mumbai.

➤ The importance of **global cooperation in addressing threats to the Global Financial Ecosystem** is highlighted.

➤ India Under the **G20 Presidency** has sought for global cooperation and collaboration in the areas where we have continued challenges.

What is Global Fintech Fest (GFF)?

➤ It is the **largest fintech conference**, jointly organized by the **National Payments Corporation of India (NPCI),** the **Payments Council of India (PCI)**, and the **Fintech Convergence Council (FCC).**

➤ Aim is to provide a **singular platform for fintech leaders to foster collaborations** and develop a blueprint for the future of the industry.

➤ GFF is a platform where policymakers, regulators, industry leaders, academics, and all major FinTech ecosystem stakeholders converge once a year to exchange ideas, share insights, and drive innovation.

➤ **GFF'23 Theme:**

○ Global Collaboration for a Responsible Financial Ecosystem.

● The theme of GFF 2023 highlights the critical need for global collaboration to build a financial ecosystem that is **inclusive, resilient, and sustainable.**

Note:

➤ **Payments Council of India (PCI)**: PCI is a body representing **over 85% of the non-Bank companies in the Payments ecosystem** and was formed to effectively cater to the needs of the digital payments industry.

○ PCI comprises the following sub-committees:

● Payment Aggregators / Payment Gateways

● Prepaid Payments Issuers (PPI)

● Payments Networks

● Payments Bank

● Bharat Bill Payments Operating Units Committee (BBPOU)

● United Payment Interface (UPI)

● International Remittances and Trade Committee

● Technology Enablers

➤ **Fintech Convergence Council (FCC):** Setup in 2017 as a fintech committee, **FCC** was later converted into an independent council with an independent governing board, with over 70 members.

○ The FCC represents various players in the fintech, banking, financial services, and technology space.

What is Fintech?

➤ Fintech (Financial technology) is used to describe new technology that seeks to **improve and automate the delivery and use of financial services.**

○ The key segments within the FinTech space include **Digital Payments, Digital Lending, BankTech, and Cryptocurrency.**

➤ FinTech spans various sectors, including education, retail banking, fundraising, nonprofit, and investment management, making it a rapidly growing industry with significant business expansion and job creation.

○ Additionally, FinTech plays a crucial role in advancing financial inclusion goals.

What Threats Does the Global Financial Ecosystem Face?

➤ **Crypto Threats:**

○ **Cybersecurity:**

- Cryptocurrencies are vulnerable to **cyberattacks, hacking, theft, fraud, and scams** due to their anonymity and decentralization.
  - ○ **Regulation:**
    - **Crypto** faces regulatory challenges globally, leading to uncertainty and inconsistency in approaches and standards among countries.
  - ○ **Stability:**
    - Cryptocurrency prices are **highly volatile, impacting user confidence and business investments.**
  - ○ **Sustainability:**
    - Crypto mining consumes **excessive energy and generates electronic waste**, raising environmental concerns.
- ➢ **Cyber Threats**
  - ○ **Phishing:**
    - Fraudulent emails and messages trick users into revealing sensitive information, compromising financial institutions.
  - ○ **Ransomware:**
    - Malware encrypts victim files and demands ransom, targeting financial services for extortion.
  - ○ **Data Breaches:**
    - Unauthorized access to **confidential data can compromise the privacy**, identity, and assets of financial entities and individuals.
  - ○ **Supply Chain Attacks:**
    - Hackers **infiltrate suppliers of financial institutions** to compromise their systems and services.
- ➢ **Drug Wars and Mafias:**
  - ○ Drug traffickers and mafias use **money laundering** to integrate illegal funds into the legitimate financial system.
- ➢ **Tax Havens and Evasion:**
  - ○ A **tax haven** is a **country or jurisdiction that offers foreign individuals and businesses little or no tax liability.**
  - ○ **Tax evasion** is the **illegal avoidance or reduction of taxes by concealing or misreporting income or assets.**
  - ○ Major threats Posed by Tax Havens and Evasion:
    - **Revenue Loss:**

- **Tax havens** and evasion result in significant revenue loss for governments, especially in developing countries.
  - ● **Inequality:**
    - Tax havens and evasion worsen inequality by benefiting the wealthy at the expense of the poor.
  - ● **Corruption:**
    - These practices facilitate corruption by providing safe havens for illicit financial flows and tax fraud.

Why is Global Collaboration Essential for the Security of the Global Financial Ecosystem?

- ➢ **Complexity of Threats:**
  - ○ Threats to the global financial ecosystem, such as cyberattacks, crypto challenges, and drug mafias, are **multifaceted and transcend national boundaries.**
    - A global collaborative effort is needed to counter these challenges and work together to create a responsible, inclusive, resilient, and **sustainable financial ecosystem.**
- ➢ **Cross-Border Nature:**
  - ○ Many financial threats, like **cyberattacks and money laundering, originate in one country but impact institutions and individuals across the world.**
    - Collaboration is necessary to track and mitigate these threats effectively.
- ➢ **Consistency in Regulation:**
  - ○ Inconsistent regulations across countries create opportunities for criminals to exploit regulatory gaps.
    - Global collaboration can help establish uniform standards and regulations, reducing the risk of regulatory arbitrage.
- ➢ **Information Sharing:**
  - ○ **Collaboration enables information sharing, expertise development, and unified regulations** to mitigate threats effectively. It also allows proactive identification and prevention of potential financial crises through shared intelligence.

How Can Fintech Address Global Financial Ecosystem Threats?

- ➢ Fintech companies can invest heavily in **robust security measures** utilizing advanced encryption and other measures to protect user data and financial transactions.

Note:

➢ Fintechs use innovative solutions like **machine learning and blockchain** to bolster **cybersecurity and deter malicious activities**.

➢ Fintechs can promote financial inclusion by offering underserved populations access to services that boost **economic well-being and reduce financial vulnerability.**

➢ Fintechs can also play a crucial role in **developing and implementing regulatory frameworks for emerging technologies like crypto assets,** which can help mitigate the risks associated with these assets while promoting innovation and growth in the financial sector.

One-Hour Trade Settlement

Why in News?

Recently, the **Securities and Exchange Board of India (SEBI)** has announced that it is aiming to launch One-Hour Settlement of trades by March 2024 in order to enhance the **efficiency of trade settlement processes.**

➢ The SEBI will launch **Application Supported by Blocked Amount (ASBA)**-like facility for trading in the **Secondary Market** by January 2024.

What is Application Supported by Blocked Amount (ASBA)?

➢ ASBA is a mechanism introduced by the SEBI to facilitate the **application and allotment process for Initial Public Offerings (IPOs)**, rights issues, and other securities offerings.

➢ ASBA is designed to make the **application process more efficient and investor-friendly** by allowing investors to apply for shares without transferring the **entire application amount upfront.**

➢ It entails that the amount to be paid for subscribing the shares **does not get debited from the investor's account until the shares have been allotted** by the company.

What is the Trade Settlement?

➢ **About:**
  ○ Trade settlement is a critical process in the financial markets that involves the transfer of funds and securities between parties involved in a trade.
  ○ It ensures that the **buyer receives the purchased securities**, and the seller receives the **agreed-upon funds.**

○ In the context of securities trading, this settlement **process finalizes the transaction.**

➢ **T+1 Settlement Cycle:**
  ○ In January 2023, India adopted the **T+1 settlement cycle**, where T represents the trade date.
  ○ This means that trade-related settlements occur **within one business day or 24 hours** of the actual transaction.
  ○ India became the second country, after China, **to implement the T+1 settlement cycle** in top-listed securities.
  ○ This transition brought several advantages, including **increased operational efficiency, faster fund transfers, prompt share delivery**, and improved convenience for participants in the stock market.

What is SEBI's New Plan for Real-Time Trade Settlement?

➢ **One-Hour Trade Settlement:**
  ○ Under this scheme, when an **investor sells a share,** the money from the sale will be credited to their **account within one hour**, and the buyer will receive the purchased **shares in their demat account within the same time frame**.
  ○ This represents a **significant reduction in settlement time** compared to the existing T+1 cycle.

➢ **Instantaneous Trade Settlement:**
  ○ SEBI acknowledges that achieving instantaneous settlement is a more intricate task, **requiring additional technology development.**
  ○ Therefore, they plan to focus on implementing one-hour trade settlement first and then proceed **towards instantaneous settlement.**
    ● The timeframe for launching instantaneous settlement is projected to be by the end of 2024.

What are the Benefits of One-Hour Trade Settlement?

➢ **Faster Transactions:**
  ○ Investors will experience **significantly reduced settlement times**, enabling quicker access to funds and securities.

➢ **Enhanced Liquidity:**
  ○ Quicker settlement can lead to improved market liquidity as funds become available for **reinvestment sooner.**

Note:

➢ **Risk Reduction:**
  ○ Reducing the settlement time can mitigate **counterparty and market risk, enhancing overall market stability.**

➢ **Investor Convenience:**
  ○ Investors will appreciate the s**wifter access to their funds and securities,** making the market more user-friendly.

Central Bank Digital Currency

Why in News?

Recently, the **Reserve Bank of India (RBI)** Governor has highlighted the potential of **Central Bank Digital Currency (CBDC)** or **E-rupee** in improving cross-border payments' efficiency.

➢ RBI is gradually expanding its CBDC pilots to include more banks, cities, diverse use cases, and a broader audience.

➢ The RBI launched pilots for the **digital rupee in the wholesale in November 2022** and in the retail segment in December 2022.

What is Central Bank Digital Currency (CBDC)?

➢ **About:**
  ○ CBDCs are a digital form of a **paper currency and unlike cryptocurrencies** that operate in a regulatory vacuum, these are **legal tenders issued and backed by a central bank.**
  ○ It is the same as **a fiat currency** and is exchangeable one-to-one with the fiat currency.
    ● A fiat currency is a national currency that is not pegged to the price of a commodity such as gold or silver.
  ○ The digital fiat currency or CBDC can be transacted using wallets backed by **blockchain.**
  ○ Though the concept of CBDCs was directly **inspired by Bitcoin,** it is different from decentralised virtual currencies and crypto assets, which are not issued by the state and lack the 'legal tender' status.

➢ **Objectives:**
  ○ The main objective is to mitigate the risks and trim costs in handling physical currency, costs of phasing out soiled notes, transportation, insurance and logistics.
  ○ It will also wean people away from cryptocurrencies as a means for money transfer.

➢ **Global Trends:**
  ○ Bahamas has been the first economy to launch its nationwide CBDC — Sand Dollar in 2020.
  ○ Nigeria is another country to have roll out eNaira in 2020.
  ○ China became the world's first major economy to pilot a digital currency e-CNY in April 2020.

DIGITAL RUPEE

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- A digital version of Indian rupee
- Also known as e-rupee, Central Bank Digital Currency (CBDC)
- A centrally owned digital currency, **unlike privately owned cryptos**
- **Offline functionality proposed** - one can transact without the internet

Advantages

- **No or Minimal Disruption** to the financial system
- **Free of Risk:** Offers people the experience of dealing in currency in digital form, minus the risks seen with cryptos
- **Reasonable Anonymity:** Offers reasonable anonymity for small value transactions akin to physical cash

Issues

- Cyber security
- Privacy and issue of Data use
- Digital Divide
- Uncompetitive step vis-a-vis other market players like Visa, Mastercard, etc.

Roll Out Plan

Wholesale: For restricted access to select financial bodies, also called **CBDC-W.**
- Targets to make settlement systems more efficient and secure
- It could be account-based

Retail: It would be potentially available for use by all also called **CBDC-R.**
- It could offer safer means of digital payment for citizens
- This could likely be token-based, akin to cash

Ten countries have launched CBDC (July 2022) First was Bahamian Sand Dollar in 2020 and the latest was Jamaica's JAM-DEX

Note:

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What is the Significance of CBDC?

➢ **Cross-Border Transactions:**
  ○ CBDCs possess unique attributes that can **revolutionize cross-border transactions**.
  ○ Instant settlement feature of **CBDCs as a significant advantage**, making cross-border payments cheaper, faster, and more secure.
    ● Faster, cheaper, transparent, and **inclusive cross-border payment services can yield substantial benefits** for individuals and economies worldwide. These improvements can support economic growth, international trade, and financial inclusion on a global scale.

➢ **Traditional and Innovative:**
  ○ CBDC can gradually **bring a cultural shift towards virtual currency** by reducing currency handling costs.
  ○ CBDC is envisaged **to bring in the best of both worlds:**
    ● The convenience and security of digital forms like cryptocurrencies
    ● The regulated, reserved-backed money circulation of the traditional banking system.

➢ **Financial Inclusion:**
  ○ The increased use of CBDC could be explored for many other financial activities to push the **informal economy** into the formal zone to ensure better tax and regulatory compliance.
  ○ It can also pave the way for furthering financial inclusion.

What are the Challenges in Adopting CBDC Across India?

➢ **Privacy Concerns:**
  ○ The first issue to tackle is the **heightened risk to the privacy of users**—given that the central bank could potentially end up handling an enormous amount of data regarding user transactions.
    ● This has serious implications given that digital currencies will not offer users the level of privacy and anonymity offered by transacting in cash.
  ○ Compromise of credentials is another major issue.

➢ **Disintermediation of Banks:**
  ○ If sufficiently large and **broad-based, the shift to CBDC can impinge** upon the bank's ability to plough back funds into credit intermediation.

  ○ If e-cash becomes popular and the Reserve Bank of India (RBI) places no limit on the amount that can be stored in mobile wallets, weaker banks may struggle to retain low-cost deposits.

➢ **Other Risks are:**
  ○ Faster **obsolescence of technology could pose a threat to the CBDC** ecosystem calling for higher costs of upgradation.
  ○ Operational risks of intermediaries as the staff will have to be retrained and groomed to work in the CBDC environment.
  ○ **Elevated cyber security risks, v**ulnerability testing and the costs of protecting the firewalls.
  ○ Operational burden and costs for the central bank in managing CBDC

Indian Economy and Impossible Trinity

Why in News?

The **Reserve Bank of India(RBI)** and Indian investors are facing a challenge in overcoming the **"impossible trinity".**

What is the Impossible Trinity?

➢ **About:**
  ○ The impossible trinity, or the trilemma, refers to the idea that an economy cannot pursue **independent monetary policy, maintain a fixed exchange rate, and allow the free flow of capital across its borders** all at the same time.
    ● In a fixed exchange rate regime, the domestic currency is tied to another foreign currency such as the U.S. dollar, Euro, the Pound Sterling or a basket of currencies.
  ○ An able policymaker can, at best, **achieve two of these three objectives at any given time.**
  ○ The idea was proposed independently by **Canadian economist Robert Mundell and British economist Marcus Fleming in the early 1960s.**
  ○ The Impossible Trinity is a **fundamental concept in international economics and monetary policy.**
  ○ It describes the inherent challenges countries face when trying to simultaneously achieve three specific policy objectives related to their exchange rate and capital flows.

Note:

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➢ **Challenges Involved:**
  ○ When a country **prioritizes free capital flow and a fixed exchange rate, it loses control over its monetary policy,** making it susceptible to external economic pressures.
  ○ If a country chooses to **maintain a fixed exchange rate and independent monetary policy, it must impose capital controls** to limit the flow of funds across its borders.
  ○ Opting for **independent monetary policy and free capital flow requires accepting exchange rate fluctuations,** potentially leading to volatility.

➢ **Examples of the Impossible Trinity in Action:**
  ○ Various countries have faced the challenges of the Impossible Trinity, with some notable examples being the **Asian Financial Crisis in 1997** and the **European Exchange Rate Mechanism crisis in 1992.**
    ● These crises were partly attributed to the inability of affected countries to maintain fixed exchange rates, independent monetary policies, and free capital flows simultaneously.

How is India Struggling with the Impossible Trinity?

➢ Strategies and Actions to Address the Impossible Trinity:
  ○ **Managing Interest Rates:**
    ● The RBI has been **cautious in raising interest rates compared to the US Federal Reserve.**
      ■ The reluctance to raise rates is driven by the fear of causing a **recession,** especially with the upcoming elections in 2024.
    ● A lower interest rate arbitrage signifies a flight of capital back to the US (the world's reserve currency) and an impending **depreciation of the Indian rupee.**
  ○ **Composition of Foreign Exchange Reserves:**
    ● India's **foreign exchange reserves** primarily consist of **'hot money'** (from **Foreign Institutional Investors (FIIs) investing in domestic debt or equity markets to cash in on arbitrage opportunities)** and corporate borrowing (for example, Adani Green Energy, Vedanta, etc.), not money earned from trade.
      ■ Relying on reserves not earned through trade poses challenges for maintaining currency stability.

○ **Implementing Capital Controls:**
  ● India has implemented various measures to **control capital flows, but their effectiveness remains uncertain.**
  ● Policy Measures to Control Capital Outflows:
○ **Import Bans and Licensing Policies:**
  ● India **imposed import bans, particularly on electronic goods,** as a quick response to limit capital outflows.
    ■ These bans were later transformed into **license-based import policies** due to domestic manufacturing limitations.
    ■ However, these measures may inadvertently contribute to supply-pull inflation rather than preventing capital outflows.
○ **Tax Changes:**
  ● India has also increased tax rates on outbound remittances from 5% to 20% as a means to restrict capital outflows.
  ● The effectiveness of this tax increase in managing the 'Impossible Trinity' is under scrutiny.

➢ **Influence of China on India's Economic Situation:**
  ○ **China's deflation** and rate cuts aim to stimulate economic growth. The Chinese consumer price index fell by 0.3% in July year-on-year. Additionally, the INR has appreciated by 4% against the Chinese yuan.
  ○ A stronger Indian rupee can lead to increased imports from China, **affecting India's trade balance and currency dynamics.**
  ○ The depreciating Chinese yuan can make India's exports less competitive in global markets.

➢ **Foreign Institutional Investors (FIIs) and Indian Debt:**
  ○ FIIs are selling holdings of Indian debt **securities and seeking more profitable investments abroad**, increasing the demand for foreign currency and weakening the Indian rupee in the foreign exchange market.

What are the Implications of the Impossible Trinity for Indian Investors?

➢ **Shielding Against Rupee Depreciation:**
  ○ Investing in sectors like **IT and Pharma that primarily earn in dollars can shield against rupee depreciation.**

Note:

- As the rupee weakens, these companies may experience increased competitiveness and offer attractive returns.
➢ **Diversifying Investments Abroad:**
  ○ Investors must acknowledge the challenges posed by the 'Impossible Trinity' and adapt accordingly.
    - Investing in international assets becomes crucial for protecting investments in a complex economic environment.

India's Fiscal Deficit

Why in News?

➢ Recently, the **Centre's fiscal deficit** in the **first four months of 2023-24** touched **33.9%** of the **full-year target**.
  ○ In the **Union Budget,** the government projected to bring down the **fiscal deficit** to **5.9%** of the **gross domestic product (GDP)** in the **current FY.**
  ○ The **deficit** was **6.4%** of the **GDP** in **2022-23** against the earlier estimate of **6.71%.**

What is Fiscal Deficit?

➢ **About:**
  ○ **Fiscal deficit** is the **difference** between the **government's total expenditure** and its **total revenue** (excluding borrowings).
  ○ It is an indicator of the extent to which the government must borrow in order to finance its operations and is expressed as a percentage of the **country's GDP.**
➢ **High and Low FD:**
  ○ A **high fiscal deficit** can lead to **inflation, devaluation of the currency** and an increase in the **debt burden.**
  ○ While a **lower fiscal deficit** is seen as a **positive sign** of **fiscal discipline** and a **healthy economy.**
➢ **Positive Aspects of Fiscal Deficit:**
  ○ **Increased Government Spending: Fiscal deficit** enables the government to increase spending on **public services, infrastructure,** and **other important areas** that can stimulate **economic growth.**
  ○ **Finances Public Investments:** The government can finance **long-term investments,** such as **infrastructure projects**, through **fiscal deficit.**

○ **Job Creation:** Increased government spending can lead to **job creation,** which can **help reduce unemployment** and **increase** the standard of living.
➢ **Negative Aspects of Fiscal Deficit:**
  ○ **Increased Debt Burden:** A persistent **high fiscal deficit** leads to an increase in government debt, which puts pressure on future generations to repay the debt.
  ○ **Inflationary Pressure: Large fiscal deficits** can lead to an increase in **money supply** and **higher inflation**, which reduces the **purchasing power** of the general public.
  ○ **Crowding out of Private Investment:** The government may have to borrow heavily to finance the **fiscal deficit**, which can lead to a **rise in interest rates**, and make it difficult for the private sector to access credit, thus crowding out private investment.
  ○ **Balance of Payments Problems:** If a country is running large **fiscal deficits**, it may have to borrow from **foreign sources**, which can lead to a decrease in **foreign exchange reserves** and put pressure on the **balance of payments**.

Governance in Urban Cooperative Banks

Why in News?

Recently, the Governor of the **Reserve Bank of India (RBI)** addressed concerns regarding **Urban Cooperative Banks (UCBs)** and emphasized the need to **bolster their governance.**

➢ While the UCB sector has shown overall financial improvement, **individual entities face vulnerabilities** that must be addressed to ensure the sector's stability.

What are the Concerns Regarding Urban Cooperative Banks (UCBs)?

➢ **Financial Vulnerabilities:**
  ○ Some urban cooperative banks (UCBs) face financial vulnerabilities, such as **low capitalization, high levels of non-performing assets (NPAs), or insufficient reserves,** which indicate potential instability.
➢ **Governance Issues:**
  ○ Inadequate robust governance practices can hinder a **UCB's overall performance and integrity.**

Note:

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○ Poor governance may lead to **mismanagement, non-compliance, or ethical concerns within the bank.**

➢ **Compliance Challenges:**

○ Compliance issues suggest that certain UCBs may **struggle to meet regulatory and legal requirements.**

○ Non-compliance can result in penalties, legal issues, and reputational damage.

➢ **Risk Management:**

○ Concerns exist about the ability of some UCBs to effectively **identify, assess, and manage various risks.**

● Risk management deficiencies can lead to unexpected financial losses or operational disruptions.

○ **Credit Risk:**

● UCBs may need to improve credit risk management practices. This includes issues related to **loan underwriting standards, monitoring of borrower performance, and handling non-performing loans.**

○ **Liquidity Risk:**

● Inadequate liquidity management can lead to difficulties in meeting financial obligations.

○ **IT Infrastructure and Cybersecurity:**

● UCBs must establish **robust IT infrastructure and cybersecurity** measures to protect sensitive data and systems.

What are the RBI's Recommendations for UCBs?

➢ The RBI directed the directors of UCBs to strengthen their governance practices, especially the three supporting pillars of **compliance, risk management, and internal audit.**

➢ The RBI urged the boards to be more proactive in **Asset Liability Management** and the necessity of managing liquidity risk in a more systematic manner.

➢ On the functioning of the boards, the RBI emphasised five aspects - **adequate skills and expertise of directors**, **the constitution of a professional board of management**, **diversity, and tenure of board members**, **transparent and participatory nature of board discussions**, and **effective functioning of board-level Committees.**

➢ The RBI cautioned them **against using innovative accounting practices** to camouflage their actual financial position.

○ The RBI encouraged them to adopt appropriate business strategies and explore **suitable technology solutions to sustain and grow their business and serve their customers.**

What are Urban Cooperative Banks (UCBs)?

➢ Co-operative Banks, which are distinct from commercial banks, were born out of the concept of **co-operative credit societies where members from a community group together to extend loans to each other, at favorable terms.**

➢ Co-operative Banks are broadly classified into **Urban and Rural co-operative banks based on their region of operation.**

➢ UCBs are regulated and supervised by **State Registrars of Co-operative Societies (RCS) in case of single-state co-operative banks** and **Central Registrar of Co-operative Societies (CRCS) in case of multi-state co-operative banks** and by the RBI.

○ But in 2020, **all UCBs and multi-state cooperatives were brought under the supervision of RBI.**

➢ In 2021 RBI appointed a committee that suggested a 4-tier **structure for the UCBs.**

○ **Tier 1** with all unit UCBs and salary earner's UCBs (irrespective of deposit size) and all other UCBs having deposits up to Rs 100 crore.

○ **Tier 2** with UCBs of deposits between Rs 100 crore and Rs 1,000 crore,

○ **Tier 3** with UCBs of deposits between Rs 1,000 crore and Rs 10,000 crore, and

○ **Tier 4** with UCBs of deposits more than Rs 10,000 crore.

➢ As of **March 2021, there are about 1,539 UCBs in India**. The deposit base of UCBs stood at Rs 5 lakh crore as of March 2020 and advances over Rs 3 Lakh crore.

○ Despite their large numbers, **UCBs' market share in the banking sector was low and declining at around 3%.** They accounted for **3.24% of deposits and 2.69% of advances.**

Note:

Minimum Export Price for Rice

Why in News?

India's production of both rice and wheat hit all-time highs in 2022, according to the Ministry of Agriculture and Farmers Welfare, yet the agricultural landscape has seen a wave of supply-side actions in the form of **export restrictions and trade controls**.

➢ The government set a **Minimum Export Price (MEP)** of USD 1,200 a tonne on basmati rice shipments in a move aimed at reining in domestic prices.

What Recent Measures has the Government taken to Curb the Export of Rice and Wheat?

➢ In May 2022, the government imposed a ban on the export of wheat.

➢ Prohibited the **exports of broken rice** and imposed a **20% duty** on all white (non-parboiled) non-basmati grain shipments in September, 2022.

➢ In July 2023, the **government banned exports of white non-basmati rice**, allowing only parboiled non-basmati and basmati rice exports.

➢ In August 2023, a 20% duty was introduced on all parboiled non-basmati rice exports "with immediate effect." This duty was implemented to curb the export of this type of rice.

➢ In August, 2023, the government directed the **Agricultural & Processed Food Products Exports Development Authority (APEDA)** not to issue registration-cum-allocation certificates for any basmati rice consignments contracted at a price of USD 1,200 per tonne.
   ○ This MEP was imposed to prevent **illegal exports of white non-basmati rice disguised as basmati rice.**

What is the Production of Rice and Wheat?

➢ **Rice Production:**
   ○ Rice production escalated from 124.37 million tonnes (mt) in 2020-21 to 129.47 mt in 2021-22, further reaching 135.54 mt in 2022-23.
   ○ However, counterintuitively, the **government undertook Export curbs** on rice.
      ● These measures included the **prohibition of broken rice exports and the imposition of a 20% duty** on white non-basmati grain shipments.:

➢ **Varied Wheat Production:**
   ○ Wheat production initially fell from 109.59 mt to 107.74 mt, rebounded to 112.74 mt in 2022-23.
   ○ The government introduced bans on wheat exports, reflecting its intention to manage domestic availability.

What are the Factors Influencing Export Restrictions?

➢ Despite record production, retail **Food Inflation** and open market prices surged.

➢ Retail rice and wheat prices **increased considerably, prompting the government to intervene** to stabilise domestic prices.

➢ The government's measures are **aimed at reducing or halting exports to bolster domestic grain availability** and mitigate rising food inflation.

➢ Asian rice prices surged to a nearly 15-year high in August 2023, driven by rising demand, **production disruptions in major growers** such as Thailand, and fears of possible adverse effects of **El Nino**.

What are the Challenges and Impacts of Export Controls?

➢ Selective controls such as the ones **imposed on rice are prone to evasion through misclassification.**
   ○ For instance, white non-basmati rice was **exported under the codes of parboiled and basmati rice.**

➢ Despite the export restrictions, open market prices remained high, indicating that these measures did not lead to the anticipated decline in prices.

What can be done to Streamline Exports and Stabilise Prices?

➢ Experts suggest implementing a uniform **MEP (Minimum Export Prices)** for all types of rice, regardless of **whether it is basmati, parboiled (Partially Boiled), or non-basmati.** This approach could help streamline exports and stabilise prices.
   ○ MEP is a price limit or floor price set by a government on certain exportable commodities or products. It is the minimum price at which these commodities can be exported from the country.

➢ A uniform MEP, set at an appropriate level such as USD 800 per tonne, could encourage the export of **various premium rice varieties,** benefiting both producers and the government's goal of maintaining domestic food security.

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What are the Key Facts About Rice and Wheat?

➢ **Rice:**
  ○ Rice is a **staple food for most** of the population in India.
  ○ It is a kharif crop which requires **high temperature (above 25°C)** and high humidity with annual rainfall above 100 cm.
    ● In the areas of less rainfall, i**t is grown with the help of irrigation.**
  ○ In southern states and West Bengal, the climatic conditions allow the **cultivation of two or three crops of rice** in an agricultural year.
    ● In West Bengal farmers grow three crops of rice called 'aus', 'aman' and 'boro'.
  ○ About one-fourth of the total cropped area in India is under rice cultivation.
    ● **Leading Producer States:** West Bengal, Uttar Pradesh, and Punjab.
    ● **High Yielding States:** Punjab, Tamil Nadu, Haryana, Andhra Pradesh, Telangana, West Bengal and Kerala.
  ○ India is the **second-largest producer of rice** after China.

➢ **Wheat:**
  ○ This is the second most important cereal crop in India after rice.
  ○ It is the main food crop, in **north and north-western part of the country.** Wheat is a rabi crop that requires a cool growing season and bright sunshine at the time of ripening.
    ● Success of the Green Revolution contributed to the **growth of Rabi crops, especially wheat.**
    ● Macro Management Mode of Agriculture, National Food Security Mission and Rashtriya Krishi Vikas Yojana are few government initiatives to support wheat cultivation.
  ○ **Temperature:** Between 10-15°C (Sowing time) and 21-26°C (Ripening & Harvesting) with bright sunlight. Rainfall: Around 75-100 cm.
  ○ **Soil Type:** Well-drained fertile loamy and clayey loam (Ganga-Satluj plains and black soil region of the Deccan).
  ○ **Top Wheat Producing States**: Uttar Pradesh , Madhya Pradesh, Punjab , Haryana, Rajasthan, Bihar, Gujarat.

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International Relations

Highlights

- *18th G20 Summit in New Delhi*
- *India's Socio Economic Performance in Comparison to G20 Nations*
- *Strengthening India-Saudi Arabia Strategic Partnership*
- *20th ASEAN-India Summit and the 18th East Asia Summit*
- *ASEAN Denies Myanmar's Chairmanship for 2026*
- *Negotiations to Revive Black Sea Grain Deal*

- *ADB Regional Conference and PM Gati Shakti*
- *Coup in Gabon*
- *India's Interests in Africa's RE Potential*
- *UN Concerns Over Eritrean Deportations from Israel*
- *Role of UPI in Shaping Foreign Policy*

18ᵗʰ G20 Summit in New Delhi

Why in News?

The **18ᵗʰ G20 Summit** was held in **New Delhi, India** on September 9ᵗʰ and 10ᵗʰ, 2023. The summit was the **first time India hosted the G20 Leaders' Summit.**

➢ The theme of the summit was **"Vasudhaiva Kutumbakam",** which means **"The world is one family"**.

➢ G20 Leaders' **New Delhi Declaration achieved unanimous consensus**, addressing diverse global issues, from **Russia-Ukraine** tensions to sustainable development, food security, and launching the Global Biofuel Alliance.

What are the Major Outcomes of G20 Summit 2023?

➢ **Admittance of the African Union (G20 now G21):**

  ○ The G20 leaders agreed to **admit the African Union as a permanent member** of the G20, which is a major step towards increasing the representation of developing countries in the forum.

  ○ The Impact of AU's Inclusion in G20:

  ● The AU's membership in the G20 offers an opportunity to reshape global trade, finance, and investment and would provide a greater voice to the Global South within the G20.

  ● It allows African interests and perspectives to be heard and recognized within the G20.

➢ **Global Biofuels Alliance (GBA):**

○ **About:**

  ● GBA is an **India-led initiative** that aims to develop an alliance of governments, international organizations, and industry to **promote the adoption of biofuels.**

  ● The initiative seeks to position biofuels as a key component of the **energy transition and contribute to job creation and economic growth.**

  ● It will help accelerate India's existing biofuels programs such as **PM-JIVANYojna, SATAT, and GOBARdhan scheme.**

    ■ As per IEA, there will be 3.5-5x biofuels growth potential by 2050 due to **Net Zero targets,** creating a huge opportunity for India.

○ **Formation and Founding Members:**

  ● The alliance was launched with nine initiating members: **India, the US, Brazil, Argentina, Bangladesh, Italy, Mauritius, South Africa, and the United Arab Emirates.**

    ■ GBA Members constitute major producers and consumers of biofuels. **USA (52%), Brazil (30%) and India (3%),** contribute about 85% share in production and about 81% in consumption of ethanol.

  ● 19 countries and 12 international organizations have already agreed to join.

  ● G20 Invited Countries supporting GBA:

    ■ Bangladesh, Singapore, Mauritius, UAE

  ● Non-G20 supporting GBA:

    ■ Iceland, Kenya, Guyana, Paraguay, Seychelles, Sri Lanka, Uganda, and Finland

G20

भारत 2023 INDIA

वसुधैव कुटुम्बकम्

ONE EARTH • ONE FAMILY • ONE FUTURE

Invitee Countries
- Bangladesh, Egypt, Mauritius, Netherlands, Nigeria, Oman, Singapore, Spain and UAE

India's Cultural Showcase
- **Bharat Mandapam** (inspired from **Anubhav Mandapam**)
- Bronze statue of **Lord Nataraja** (Chola style)
- **Konark Chakra** of Odisha's Sun Temple and Image of **Nalanda University** (used as iconic backdrops)
- **Thanjavur Paintings and Dhokra art**
- Brass statue of **Lord Buddha** sitting under Bodhi tree
- Diverse **musical heritage** (Hindustani, Folk, Carnatic, Devotional)

G20 Leaders' New Delhi Declaration
100% consensus on the Declaration

- Overcoming major differences on **Russia-Ukraine war**
  - Call for full implementation of **Black Sea Grain Initiative**
- Action Plan against **Fugitive Economic Offenders**
- Countering **terrorism** and **money laundering**
- Globally fair, sustainable, and modern **international tax system**
- Accelerating Progress on **SDGs**
- **Multilateral Institutions** (UNSC, Multilateral Development Banks etc)
- **Digital Public Infrastructure** (crypto, AI etc)
- **Gender equality** and women empowerment
- G20 Deccan **High-Level Principles on Food Security and Nutrition** 2023
- **Global Biofuel Alliance** formally launched

Other Major Outcomes

India- Middle East- Europe Economic Corridor
- Shipping & railway connectivity corridor (**India, UAE, Saudi, EU, France, Italy, Germany and US**) - part of Partnership for Global Infrastructure Investment

G20 now G21
- Permanent membership of **African Union** in G20 (in line with India as the **'Voice of the Global South'**)

Global Biofuel Alliance
- Led by **India, Brazil and US**
- Other Initiating Members - **Argentina, Bangladesh, Italy, Mauritius, S. Africa and UAE** (Canada and Singapore - observers)
- 19 countries and 12 int'l orgs agreed to join

Climate
- G20 **High-Level Principles on Lifestyles for Sustainable Development**
- Pledge to **3x RE capacity globally** by 2030
- **UK committed USD 2 bn** to Green Climate Fund

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- **International Organizations:**
  - World Bank, Asian Development Bank, World Economic Forum, World LPG Organization, UN-Energy for All, UNIDO, Biofutures Platform, International Civil Aviation Organization, International Energy Agency, International Energy Forum, International Renewable Energy Agency, World Biogas Association.
- **India – Middle East – Europe Economic Corridor (IMEC):**

Note:

○ A Memorandum of Understanding (MoU) was signed between the Governments of India, the US, Saudi Arabia, the European Union, the UAE, France, Germany and Italy to establish the IMEC.

○ IMEC is part of a broader initiative called the **Partnership for Global Infrastructure Investment (PGII).**

- The PGII was initially introduced during the **G7 summit** in the UK in June 2021.
  - PGII aims to **finance infrastructure projects in developing countries** through a combination of public and private investments.

○ IMEC is a significant infrastructure **project connecting India, the Middle East, and Europe.**

○ The project aims to **establish a network of transport corridors, including railways and sea lanes.**

○ IMEC is seen as a response to **China's Belt and Road Initiative (BRI),** providing an alternative infrastructure network.

➢ **G20 Global Partnership for Financial Inclusion Document:**

○ The G20 Global Partnership for **Financial Inclusion document** prepared by the **World Bank** has lauded the transformative **impact of India's Digital Public Infrastructure(DPI)** over the past decade under the Central Government.

○ The document emphasizes the following initiatives that played a greater role in shaping the DPI landscape:

- **Rapid Financial Inclusion:**
  - India's DPI approach achieved **47 years' worth of financial inclusion progress in just 6 years.**
  - **Jan Dhan-Aadhar-Mobile (JAM) Trinity** boosted the financial inclusion rate from **25% in 2008 to over 80% within 6 years.**
  - Regulatory frameworks, national policies, and **Aadhaar-based verification complemented DPIs.**

- **Pradhan Mantri Jan Dhan Yojna (PMJDY)** Success:
  - PMJDY accounts **tripled from 147.2 million (March 2015) to 462 million (June 2022).**
  - Women own 56% of these accounts, exceeding 260 million.
  - PMJDY drove savings among low-income women, attracting over 12 million customers by April 2023.

- **Government to Person (G2P) Payments:**
  - India's digital G2P architecture facilitated **USD 361 billion transfers to beneficiaries from 53 ministries via 312 schemes.**
  - Achieved total savings of **USD 33 billion by March 2022, equivalent to 1.14% of GDP.**

- **Unified Payments Interface (UPI) Dominance:**
  - May 2023 witnessed over **9.41 billion UPI transactions, valued at Rs 14.89 trillion.**
  - UPI transactions in FY 2022–23 neared **50% of India's nominal GDP.**

- **Private Sector Efficiency:**
  - DPI streamlined private organizations' operations, reducing complexity, costs, and time.
  - Some NBFCs achieved 8% higher SME lending conversion rates, 65% savings in depreciation costs, and 66% cost reduction in fraud detection.
  - Banks' customer onboarding costs in India dropped from USD 23 to USD 0.1 with DPI use.

- **Lower Compliance Costs for KYC:**
  - Reduced compliance costs from USD 0.12 to USD 0.06, making lower-income clients more attractive.

- **Cross-Border Payments:**
  - UPI-PayNow linkage enables faster and cheaper cross-border payments with Singapore.

- **Account Aggregator Framework:**
  - Enabled 1.13 billion accounts for data sharing with 13.46 million consents raised.

- **Data Empowerment and Protection Architecture (DEPA):**
  - Provides individuals control over their data, fostering innovation and competition.

What are the Other Key Highlights of G20 Summit 2023?

➢ **Tripling the Global Renewable Energy Capacity By 2030:**

○ G20 countries promised to work towards **tripling the global renewable energy capacity by 2030.**

- If met, this single step could avoid **carbon dioxide emissions by seven billion tonnes between now**

Note:

and 2030, according to an assessment by the **International Energy Agency (IEA).**

- Aligns with **global efforts to limit global warming to 1.5 degrees Celsius.**

○ Represents a significant shift away from **fossil fuels towards cleaner energy alternatives.**

○ The declaration acknowledges that current climate action is insufficient and highlights the need for trillions of dollars in financial resources to achieve the **objectives of the Paris Agreement.**

○ Expanding renewable energy capacity on this scale could avoid about 7 billion tonnes of CO2 emissions between 2023 and 2030.

➢ **Commitment to Global Food Security and Nutrition:**

○ The G20 leaders recognize the importance of **addressing rising commodity prices, including food and energy prices**, which contribute to **cost-of-living pressures.**

○ They aim to **eliminate hunger and malnutrition,** acknowledging that global challenges like **poverty, climate change, pandemics, and conflicts disproportionately** affect vulnerable populations, particularly women and children.

○ The G20 declaration highlights the human suffering and impacts of the war in **Ukraine on global food and energy security,** supply chains, inflation, and economic stability.

○ G20 leaders called for the full, timely **implementation of the Black Sea grain initiative.**

○ The agriculture working group during the G20 Presidency reached a historic consensus on two aspects: **Deccan G20 High-level principles on Food Security and Nutrition and the Millet initiative called MAHARISHI.**

- The seven principles under the high-level principles on food security and nutrition include **humanitarian assistance, increasing food production and food security net programs, climate-smart approaches, inclusivity of agriculture food systems, one health approach, digitalization of the agriculture sector, and scaling responsible public and private investment in agriculture.**

- MAHARISHI (Millets And OtHer Ancient Grains International ReSearcH Initiative) aims at advancing research collaborations and generating

awareness about millets and other ancient grains during International Years of Millets 2023 and after.

○ The G20 committed to promoting transparent, fair, and rule-based trade in agriculture, food, and fertilizer. They pledged not to impose export restrictions, reduce market distortions, and align with WTO rules.

○ The G20 leaders emphasize the importance of strengthening the **Agricultural Market Information System (AMIS)** and the **Group on Earth Observations Global Agricultural Monitoring (GEOGLAM)** for greater transparency.

- This includes expanding AMIS to include vegetable oils and enhancing collaboration with early warning systems to avoid food price volatility.

> **Note:**
>
> ➢ AMIS is an inter-agency platform to **enhance food market transparency and policy response for food security.**
>
> ○ It was launched in **2011 by the G20 Ministers of Agriculture following the global food price hikes in 2007/08 and 2010.**
>
> ➢ GEOGLAM enhances **market transparency and food security by providing timely agricultural information worldwide.**
>
> ○ The GEOGLAM policy mandate initially came from the Group of Twenty (G20) Agriculture Ministers during the French G20 Presidency in 2011.

➢ **Small Arms and Terrorist Safe Havens:**

○ The 2023 New Delhi Declaration builds upon previous G20 declarations, especially the **2015 Turkiye declaration,** which strongly denounced terrorism. Unlike the **2022 G20 Bali Leaders Declaration,** which primarily focused on the financing of terrorism and the strengthening of the **Financial Action Task Force (FATF),** the New Delhi Declaration e**ncompasses a wider range of concerns.**

○ The G20 leaders, in the **New Delhi Declaration, clearly condemn terrorism in all its forms and manifestations.**

○ The declaration supports the FATF's efforts to enhance global asset recovery networks and recover criminal proceeds.

Note:

- ➢ **Healthcare Resilience and Research:**
  - ○ The G20 New Delhi Leaders' Declaration places significant emphasis on healthcare and prioritizes the need to build a **resilient healthcare system.**
  - ○ It commits to strengthening the global health architecture to create more **resilient, equitable, sustainable, and inclusive health systems.** The **World Health Organization (WHO)** is at the core of this effort.
  - ○ The goal is to enhance primary healthcare, the health workforce, and essential health services to levels better than **pre-pandemic within the next two to three years.**
  - ○ In addition to addressing ongoing epidemics like tuberculosis and AIDS, the G20 recognizes the **importance of research on long Covid.**
  - ○ India's G20 presidency also pushed for the integration of evidence-based **traditional medicine practices** with modern medicine.
  - ○ There is an emphasis on adopting a **one-health approach,** which tracks **diseases in animals, plants, and humans within the same mechanism,** with a particular focus on tackling antimicrobial resistance.
- ➢ **Finance Track Agreements:**
  - ○ India's G-20 presidency has laid the foundation for a **coordinated and comprehensive policy and regulatory framework for cryptocurrencies.**
  - ○ The emergence of global consensus on **crypto asset regulation was emphasized.**
  - ○ G-20 leaders have recognized the pressing need for **more robust and effective Multilateral Development Banks (MDBs)** to address the high developmental demands globally.
  - ○ The **India Stack model of digital public infrastructure** for financial inclusion is acknowledged as a promising approach.
  - ○ The G-20 leaders' New Delhi Declaration underscores the **monitoring of risks associated with the rapid developments in the crypto-asset ecosystem.**
- ➢ **India-Mercosur Preferential Trade Agreement (PTA):**
  - ○ India and Brazil agreed to work together for the expansion of **India-Mercosur PTA** to promote economic ties.
    - ● Mercosur is a trading bloc in **Latin America, comprising Brazil, Argentina, Uruguay and Paraguay.**

  - ○ The India-Mercosur PTA came into effect on **June 1, 2009, aimed to eliminate customs duties on a limited number of goods agreed between India and the Mercosur bloc.**
- ➢ **Climate Financing Commitment:**
  - ○ The declaration emphasizes a **substantial increase in climate financing, calling for a "quantum jump" from billions of dollars to trillions of dollars.**
  - ○ It underscores the need for significant financial resources, including USD. 5.8-5.9 trillion in the pre-2030 period for developing countries and USD 4 trillion per year for **clean energy technologies by 2030** to **achieve net-zero emissions by 2050.**
- ➢ **India's Cultural Showcase:**
  - ○ **Bharat Mandapam** (inspired from **Anubhav Mandapam**).
  - ○ Bronze statue of **Lord Nataraja** (**Chola** style).
  - ○ **Konark Chakra of Odisha's Sun Temple** and Image of **Nalanda University** (used as iconic backdrops).
  - ○ **Thanjavur Paintings** and **Dhokra art .**
  - ○ Brass statue of **Lord Buddha** sitting under Bodhi tree.
  - ○ Diverse **musical heritage** (**Hindustani**, **Folk**, **Carnatic**, Devotional).
- ➢ **Transition of G20 Presidency:**
  - ○ Prime Minister of India handed over the customary gavel of the **G20 chair to Brazilian President Luiz Inacio Lula da Silva,** who will officially take over the presidency on December 1, 2023.

What are the Latest India-US Collaboration at G20 Summit 2023?

- ➢ India and the United States are strengthening their technology partnership, focusing on **resilient semiconductor supply chains,** and telecom infrastructure.
- ➢ India supports the US **'Rip and Replace' pilot project,** aligning with the removal of Chinese telecom equipment.
- ➢ India and the US reaffirmed their commitment to **deepen and diversify the India-US Major Defence Partnership** through expanded cooperation in new and emerging domains such as **space and artificial intelligence (AI).**
- ➢ **GE F-414 Jet Engine Agreement:**
  - ○ The US recently completed the notification process for a commercial agreement between **General**

Note:

Electric Aerospace and Hindustan Aeronautics Ltd. (HAL) to manufacture **GE F-414 jet engines** in India.

○ This agreement marks a significant step in defence cooperation between the U.S. and India, highlighting India's commitment to enhancing its domestic defence manufacturing capabilities.

India's Socio Economic Performance in Comparison to G20 Nations

Why in News?

Recently, India hosted the **18th G20 Summit** in New Delhi under the **theme 'One Earth, One Family, One Future.'**

➢ As **India handed over the G20 Presidency of 2024 to Brazil**, it was essential to evaluate its **socioeconomic performance in comparison to fellow G20 nations**. , Unfortunately, **India's recent performance** in key socioeconomic indicators **lagged behind its G20 counterparts.**

What is the Status of India's Progress on Various Metrics in Comparison to G20 Members?

➢ **Gross Domestic Product (GDP) per capita:**

○ **GDP per capita** is the **sum of gross value added by all resident producers in the economy divided by mid-year population.**

○ In 1970, India ranked 18th out of 19 regions analysed (Russia excluded), with a GDP per capita of USD 111.97.

● By 2022, **India's GDP per capita had increased to USD 2,388.62** but remained at the **bottom among the 19 regions.**

➢ **Human Development Index (HDI):**

○ **HDI** is a composite index that **measures average achievement in human development** taking into account four indicators:

● Life expectancy at birth (Sustainable Development Goal 3),

● Expected years of schooling (Sustainable Development Goal 4.3),

● Mean years of schooling (Sustainable Development Goal 4.4),

● Gross national income (GNI) (Sustainable Development Goal 8.5).

○ HDI is measured on a scale of 0 (worst) to 1 (best). The **HDI of 19 countries (European Union(EU) excluded)** between 1990 and 2021 is compared and India's HDI improved **from 0.43 in 1990 to 0.63 in 2021, reflecting progress in life expectancy, education, and living standards.**

● However, despite its progress in absolute terms, **India ranked at the bottom of the list.**

➢ **Health Metrics:**

○ **Life Expectancy:**

● India's average **life expectancy increased from 45.22 years in 1990 to 67.24 years in 2021**, surpassing South Africa but still lagging behind China.

○ **Infant Mortality:**

● In 1990, India ranked last with an infant mortality rate of 88.8. By 2021, the rate improved to 25.5, but **India ranked 19th out of 20 regions.**

➢ **Labour Force Participation Rate (LFPR):**

○ The **(LFPR)** above 15 years of age in the 20 regions was compared between 1990 and 2021-22.

● In 1990, with an LFPR of 54.2%, India ranked 18, above Italy (49.7%) and Saudi Arabia (53.3%).

● However, **by 2021-22, India's LFPR slipped to 19th place, only ahead of Italy, with a reduced LFPR of 49.5%.**

➢ **Women in Parliament:**

○ The share of **women in the Parliament** of 19 regions (Saudi Arabia excluded) was compared between 1998 and 2022.

● India's share of women in Parliament increased **from 8.1% in 1998 to 14.9% in 2022.**

● However, compared to other G20 countries and the EU, **India's rank declined from 15th in 1998 to 18th in 2022, just ahead of Japan.**

➢ **Environmental Performance:**

○ India has effectively curbed **carbon emissions** over the past three decades, consistently ranking as the lowest emitter among the 20 regions.

● However, India's progress in adopting eco-friendly energy sources has been relatively slow, with **just 5.36% of electricity generated from renewables in 2015, ranking 13th among the 20 regions.**

Note:

Falling behind

The charts are based on data collated from the World Bank Open Data and Our World in Data

The G20 comprises India (●); Australia, China, Indonesia, Japan, South Korea [East Asia and Pacific (●)]; France, Germany, Italy, Russia, Turkey, U.K., EU [Europe and Central Asia (●)]; Argentina, Brazil, Mexico [Latin America and the Caribbean (●)]; Canada, U.S. [North America (●)]; South Africa [Sub-Saharan Africa (●)]; and Saudi Arabia [West Asia and North Africa (○)].

Chart 1: The chart compares the GDP per capita (in $) of 19 regions (18 countries plus the EU) between 1970 and 2022

GDP per capita 1970
India

India's GDP per capita: $111.97

Indonesia　　China　　U.S.

GDP per capita 2022
China
India's GDP per capita: $2,388.62

India

Indonesia　　U.S.

*Data for Russia not available
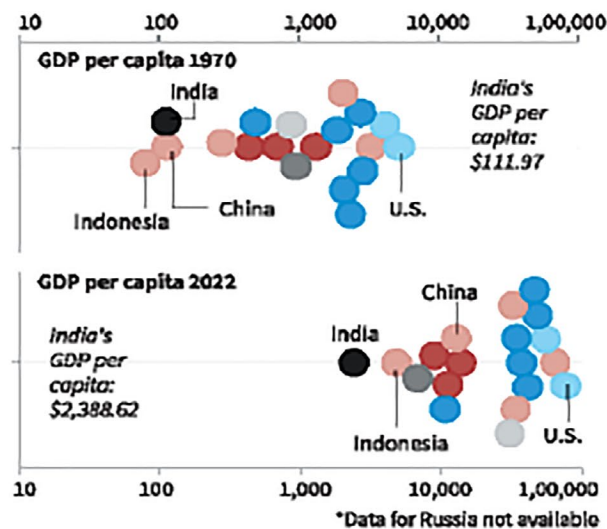
Chart 2: The chart compares the Human Development Index (HDI) of 19 countries between 1990 and 2021

HDI 1990
India's score in HDI: 0.43

U.K.
India
U.S.

S. Africa　　Japan

HDI 2021
Japan　　U.K.
India's score in HDI: 0.63
S. Africa
India
U.S.

*Data for EU not available
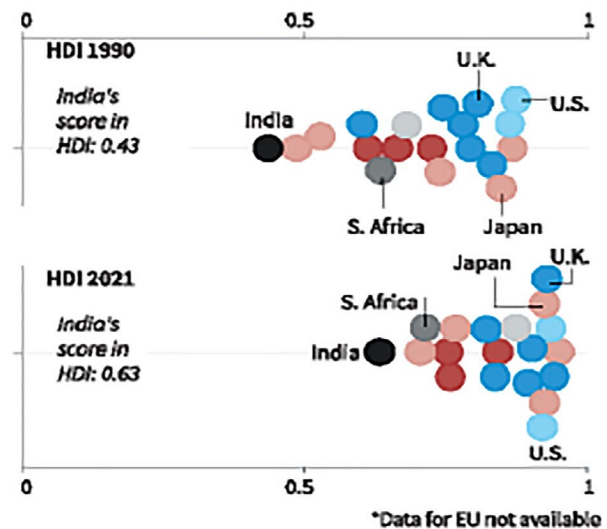
Chart 3: The chart compares LFPR in 20 regions between 1990 and 2021-22

LFPR 1990
Saudi Arabia　　Indonesia
Italy　　China
India　　Turkey　　Russia

LFPR 2021-22
Saudi Arabia　　Russia
Italy　　China
India
Turkey　　Indonesia

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Chart 4: The chart compares the share of women in Parliament of 19 regions (18 countries + EU) between 1998 and 2022

Women in Parliament 1970
India　　Germany
　　　　　　　　S. Africa
Japan　　Argentina
Turkey　　Mexico

Women in Parliament 1970
Germany　　S. Africa
India
Japan
Turkey　　Argentina　　Mexico

*Data for Saudi Arabia not available

Note:

Strengthening India-Saudi Arabia Strategic Partnership

Why in News?

Recently, after the launch of the **India-Middle East-Europe Economic Corridor**, the Prime Minister(PM) of India welcomed the Crown Prince of Saudi Arabia on a state visit.

➢ During this significant visit, the two nations discussed various aspects of their strategic partnership and agreed to set up a **joint task force to expedite the West Coast refinery project.**

What were the Outcomes and Agreements Resulting From the Visit?

➢ **Strategic Partnership Acknowledgment:**
  ○ The PM of India highlighted Saudi Arabia's pivotal role as **"one of the most important strategic partners of India."**
  ○ Both leaders emphasized the importance of their partnership, particularly as two rapidly growing nations contributing to regional stability.

➢ **India-Saudi Strategic Partnership Council (SPC):**
  ○ The PM of India and the Crown Prince of Saudi Arabia co-chaired the inaugural meeting of the **India-Saudi Strategic Partnership Council (SPC).**
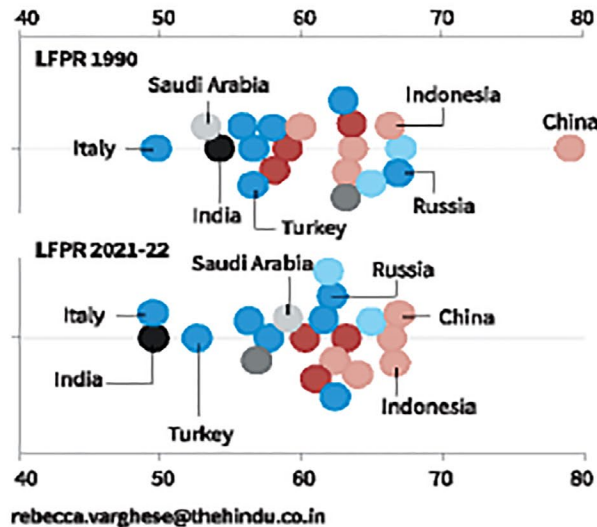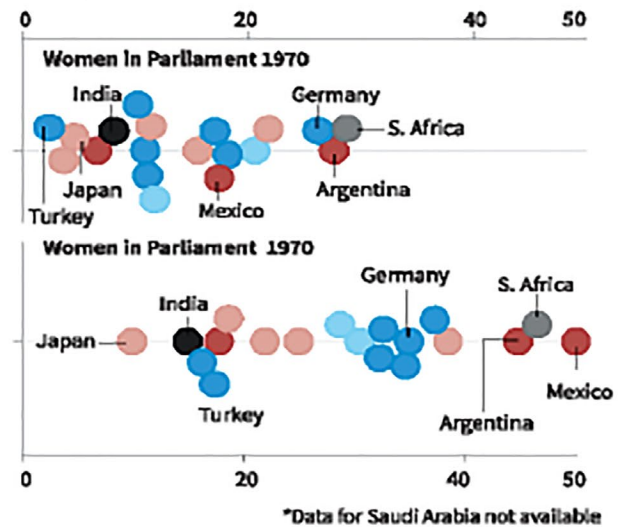 ○ Discussions covered a wide range of areas, including **defence, energy, security, education, technology, transportation, healthcare, tourism, culture, space, and semiconductors.**
    ● This reflects the comprehensive nature of the economic cooperation between India and Saudi Arabia.

➢ **West Coast Refinery Project Acceleration:**
  ○ This trilateral project, involving ARAMCO(oil company of Saudi Arabia), ADNOC(oil company of the United Arab Emirates) and **Indian Companies,** is set to receive a USD 50 billion investment.
  ○ A **joint task force** was established to expedite the West Coast refinery project.
  ○ The task force will work on channeling the promised USD 100 billion investment from Saudi Arabia for this project.
  ○ The West Coast refinery project is **India's first and largest greenfield refinery.**
    ● The project is located in **Ratnagiri, Maharashtra** and is expected to have a production capacity of **60 million tonnes per annum. When completed, it will be one of the world's largest refineries.**
    ● The project encompasses various critical facilities, including marine storage and port infrastructure, crude oil terminals, storage and blending plants, desalination plants, utilities, and more.

➢ **Bilateral Agreements and Cooperation:**
  ○ Eight agreements were signed during the visit, strengthening cooperation across various sectors.
    ● Notable agreements include **collaboration between the Central Vigilance Commission of India** and the **Saudi Oversight and Anti-Corruption Authority,** as well as cooperation in technology, education, and agriculture.
  ○ An agreement was signed between the **National Institute of Technology of India and the Saline Water Conversion Corporation of Saudi Arabia.**

➢ **Assurance of Crude Oil Supply:**
  ○ Saudi Arabia affirmed its commitment to being a **"reliable partner and exporter of crude oil supplies" to India**, ensuring energy security.

➢ **Defence and Anti-Terror Cooperation:**
  ○ Both nations pledged to enhance cooperation in **defence and anti-terrorism** efforts.
    ● A special emphasis was placed on preventing access to **"missiles and drones" for terrorist activities.**
    ● Plans were discussed to strengthen the tourism segment of bilateral relations, aligning with Saudi Arabia's ongoing reforms.

➢ **Geopolitical Significance:**

Note:

❍ The visit holds geopolitical significance as it occurred after Saudi Arabia ended hostilities with Iran through a deal negotiated by China.

❍ **Saudi Arabia's recent membership in the BRICS** (Brazil, Russia, India, China, and South Africa) further underscores its global engagement.

What is the India-Saudi Strategic Partnership Council (SPC)?

➢ **About:**

❍ The SPC is a **high-level mechanism established between India and Saudi Arabia in 2019,** to guide and enhance their bilateral relationship.

❍ It consists of two sub-committees, addressing various aspects of cooperation:

• Committee on Political, Security, Social, and Cultural Cooperation.

• Committee on Economy and Investments.

❍ India is the fourth country with which Saudi Arabia has formed such a strategic partnership, after the UK, France and China.

➢ **Operation:**

❍ **The SPC operates at four functional levels:**

• Summit level, involving the Prime Minister and Crown Prince.

• Ministerial-level engagements.

• Senior Officials Meetings.

• Joint Working Groups (JWGs) to facilitate detailed discussions and action plans.

➢ **Key Functions:**

❍ The SPC serves as a **comprehensive platform to foster collaboration across a wide range of sectors.**

❍ It facilitates in-depth discussions, policy formulation, and coordination at various levels to implement joint initiatives effectively.

❍ JWGs under each committee focus on specific areas of cooperation, ensuring a well-structured approach to bilateral relations.

How has India's Relations with Saudi Arabia been?

➢ **Oil and Gas:**

❍ Saudi Arabia is currently **India's second-largest supplier of crude oil** (Iraq has been India's top supplier).

• India **imports more than 18% of its crude oil requirement** and India imports most of its **Liquefied petroleum gas** from Saudi Arabia

➢ **Bilateral Trade:**

❍ Saudi Arabia is **India's fourth largest trade partner** (after the USA, China and UAE).

❍ Bilateral trade in FY22 was valued at USD 29.28 billion, with significant imports and exports.

➢ **Cultural Linkages:**

❍ **Hajj pilgrimage and digitization of Hajj processes** reflect the significant cultural ties.

❍ India participated as the **'Guest of Honour'** at the Saudi National Festival of Heritage and Culture in 2018.

➢ **Naval Exercise:**

❍ In 2021, India and Saudi Arabia started their first-ever Naval joint exercise called the **Al-Mohed Al-Hindi Exercise.**

➢ **Indian Community in Saudi Arabia:**

❍ The 2.6 million-strong Indian community in Saudi Arabia is the largest expatriate community in the Kingdom and is highly respected for its contributions to Saudi Arabia's development.

20ᵗʰ ASEAN-India Summit and the 18ᵗʰ East Asia Summit

Why in News?

Recently, the **Prime Minister (PM) of India attended the 20ᵗʰ Association of Southeast Asian Nations(ASEAN)-India Summit and the 18ᵗʰ East Asia Summit (EAS) in Jakarta, Indonesia.**

➢ The two summits were an opportunity for **India to strengthen its relationships with ASEAN countries** and reaffirm its commitment to a free, open, and rules-based **Indo-Pacific.**

What are the Key Highlights of the 20ᵗʰ ASEAN-India Summit?

➢ The PM of India presented a **12-point proposal for strengthening India – ASEAN cooperation** covering connectivity, digital transformation, trade and economic engagement, addressing contemporary challenges, people-to-people contacts, and deepening strategic engagement.

Note:

➢ **The 12-point proposal included the following:**

○ Establishing **multi-modal connectivity and economic corridor that links South-East Asia-India-West Asia-Europe.**

○ Offered to share **India's Digital Public Infrastructure Stack with ASEAN partners.**

○ Announced an ASEAN-India fund for **Digital Future focusing on cooperation in digital transformation and financial connectivity.**

○ Announced renewal of support to the **Economic and Research Institute of ASEAN and East Asia (ERIA)** to act as a knowledge partner for enhancing our engagement.

○ Called for collectively raising issues being faced by **Global South** in multilateral fora

○ Invited ASEAN countries to join the **Global Centre for Traditional Medicine being established by WHO in India.**

○ Called for **working together on Mission LiFE(Lifestyle for the Environment.**

○ Offered to share India's experience in providing affordable and quality medicines to people through **Jan-Aushadhi Kendras.**

○ Called for a collective fight **against terrorism, terror financing, and cyber-disinformation.**

○ Invited **ASEAN countries to join the Coalition for Disaster Resilient Infrastructure.** Called for cooperation in disaster management.

○ Called for enhanced cooperation on **maritime safety, security, and domain awareness.**

What are the Key Highlights of the 18th East Asia Summit?

➢ **Reaffirming Commitment to East Asia Summit:**

○ The PM of India emphasized the significance of the EAS mechanism and reaffirmed **India's support for further strengthening it.**

○ India's strong support for ASEAN centrality and called for ensuring a free, **open and rules-based Indo-Pacific.**

➢ **Quad's Vision and Global Challenges:**

○ Insights into the PM's discussion on the **Quad's vision** and the cooperative approach to address global challenges like terrorism, climate change, and resilient supply chains.

➢ **India's Initiatives in Climate Change:**

○ India's initiatives in climate change, including **ISA (International Solar Alliance),** CDRI (Coalition for Disaster Resilient Infrastructure), **LiFE (Mission LiFE),** and **OSOWOG (One Sun One World One Grid)** was highlighted.

East Asia Summit

➢ **About:**

○ The EAS was established in **2005 as an Association of Southeast Asian Nations (ASEAN)-led initiative.**

○ The EAS is the **only leader-led forum in the Indo-Pacific** that brings together all key partners to discuss political, security and economic issues of strategic importance.

○ The EAS operates on the principles of **openness, inclusiveness, respect for international law,** ASEAN centrality, and ASEAN's role as the driving force.

○ The idea of an East Asia Grouping was first proposed by then **Malaysian Prime Minister Mahathir Mohamad in 1991.**

● The first summit was held in **Kuala Lumpur, Malaysia on 14 December 2005.**

➢ **Members:**

○ The EAS comprises **18 members:** the **10 ASEAN countries** (Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam) and **eight dialogue partners** (Australia, China, India, Japan, New Zealand, Republic of Korea, Russia and the United States).

➢ **Six Priority Areas of Cooperation:**

○ Environment and energy, education, finance, global health issues and pandemic diseases, natural disaster management, and ASEAN Connectivity.

➢ **India and East Asia Summit:**

○ **India has been a founding member of the EAS since 2005** and has actively participated in all its meetings and activities.

○ India views the EAS as a key platform for enhancing its **Act East Policy** and strengthening its strategic partnership with ASEAN and other regional countries.

Note:

○ At the **East Asia Summit** in Bangkok **in November 2019**, India had unveiled India's **Indo-Pacific Oceans Initiative (IPOI)**, which is aimed at forging partnerships to create a secure and stable maritime domain.

○ India has contributed to the EAS cooperation in various fields, such as disaster management, renewable energy, education, health, connectivity, maritime security and counterterrorism.

ASEAN Denies Myanmar's Chairmanship for 2026

Why in News?

　　Association of Southeast Asian Nations (ASEAN) leaders have decided to deny Myanmar the opportunity to assume the rotating leadership of their regional bloc in 2026.

➢ This decision comes as a setback to Myanmar's ruling generals, who have been seeking international recognition after seizing power violently in 2021.

➢ The Philippines agreed to take over the **regional bloc's chairmanship in 2026** at the ASEAN summit hosted by Indonesia.

What are the Reasons for Myanmar's Exclusion from the ASEAN Leadership?

➢ ASEAN diplomats have suggested that **Myanmar's exclusion is related to ongoing civil strife** within the country.

➢ Additionally, there are concerns that ASEAN's relations with the United States and the **European Union**, among other international actors, **might be negatively** impacted due to their non-recognition of Myanmar's military-led government.

What is the Background and Concerns in Myanmar?

➢ **Background:**

○ In 2021, the Myanmar Army ousted Aung San Suu Kyi's democratically elected government, leading to widespread **condemnation and calls for her immediate release from detention**.

○ Western governments, led by the US, have been vocal in their opposition to the military-led government in Myanmar.

➢ **Issues:**

○ Since the military takeover in Myanmar, security forces have been accused of killing approximately 4,000 civilians and arresting over 24,000 others.

○ Myanmar's economy has collapsed with nearly half of the population now living below the **poverty line.**

○ Despite clear legal obligations for the military to protect civilians in the conduct of hostilities, there has been consistent disregard for the related rules of international law.

What is the Association of Southeast Asian Nations (ASEAN)?

➢ **About:**

○ It is a **regional grouping** that promotes economic, political, and security cooperation.

○ It was established in **August 1967 in Bangkok,** Thailand with the signing of the ASEAN Declaration (Bangkok Declaration) by the founding members of ASEAN, namely Indonesia, Malaysia, Philippines, Singapore and Thailand.

○ Its chairmanship rotates annually, based on the alphabetical order of the English names of Member States.

○ In 2022, the estimated total GDP of all ASEAN states amounted to approximately **USD 3.66 trillion.**

○ Commodity trade between India and ASEAN region has reached 98.39 billion in the period April 2021- February 2022. India's main trading ties are with Indonesia, Singapore, Malaysia, Vietnam and Thailand.

➢ **Members:**

○ ASEAN brings together ten Southeast Asian states – Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam – into one organisation.

Note:

ASEAN GROUPING

LAOS

VIETNAM

MYANMAR

THAILAND

CAMBODIA

MALAYSIA

PHILIPPINES

BRUNEI

SINGAPORE

INDONESIA

Negotiations to Revive Black Sea Grain Deal

Why in News?

Recently, the Turkish President has met with the Russian President in order to revive the **Black Sea Grain Deal**, which Russia had withdrawn from in July 2023.

What is the Black Sea Grain Initiative?

➢ **About:**

○ The Black Sea Grain initiative **endeavors to tackle escalating food prices emanating from supply chain disruptions** because of Russian actions in the world's 'breadbasket'.

○ The deal brokered by the **United Nations (UN) and Turkey,** was signed in Istanbul in July, 2022.

○ The Initiative specifically allows for commercial food and fertilizer (including ammonia) exports from three key Ukrainian ports in the Black Sea – **Odesa, Chornomorsk, Yuzhny/Pivdennyi.**

➢ **Objective**:

○ Initially stipulated for a period of 120 days, the deal was to provide for a s**afe maritime humanitarian corridor for Ukrainian exports** (particularly for food grains).

○ The central idea was to calm markets by **ensuring an adequate supply of grains**, thereby limiting food price inflation.

➢ **Role of Joint Coordination Centre (JCC):**

○ The JCC was established **to monitor the implementation of the Black Sea Grain Initiative.**

*Kyiv

Ukraine

Luhansk

Donbas

Moldova

*Chişinău

Donetsk

Russia

(Moscow)

Romania

Sea of Azov

*Bucharest

Crimea

Strait of Kerch

Bulgaria

*Sofia

Black Sea

Bosporus Strait

Georgia

*Tbilisi

Aegean Sea

*Ankara

Turkey

Dardanelles

Sea of Maramara

Mediterranean Sea

Note:

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- ❍ The JCC is hosted **in Istanbul and includes representatives from Russia, Türkiye, Ukraine and the UN.** The UN acts also as the Secretariat for the Centre.
- ❍ All commercial ships are required to register directly with the JCC to ensure **appropriate monitoring, inspection and safe passage.** Inbound and outbound ships (to the designated corridor) transit as per a schedule accorded by the JCC post-inspection.
  - ● This is done so as to ensure there is no **unauthorised cargo or personnel onboard.**
  - ● Following this, they are allowed to **sail onwards to Ukrainian ports** for loading through the designated corridor.

What are the Reasons Behind Russia's Exit from the Grain Deal?

- ➤ Russia claims that the **promises made to it under the deal have not been met,** and it is still facing **trouble exporting its own agricultural products** and fertilisers because of the many sanctions the West has slapped on it.
- ➤ While there is no direct restriction on Russia's agricultural products, the country says barriers on payment platforms, insurance, shipping and other logistics are hampering its exports.
- ➤ Russia has also said that it had agreed to the grain deal in order to help ensure global food security, but Ukraine has since exported mainly to **high-and middle-income countries.**
- ➤ Russia cited the failure to uphold a parallel agreement that promised to remove obstacles to its exports of food and fertilizer as the reason for its withdrawal.
- ➤ Russia claimed that shipping and insurance restrictions hindered its agricultural trade, despite its record-breaking wheat exports in recent years.

What is Turkey's Stake at Brokering the Deal?

- ➤ Turkey has played a crucial role in attempting to reinstate the grain deal. It has consistently pledged to **renew arrangements that helped prevent Food Crises** in various parts of Africa, the Middle East, and Asia.
- ➤ Both Ukraine and Russia are **significant suppliers of wheat, barley, sunflower oil,** and other essential goods for developing nations.
- ➤ Turkey's close ties with Putin during the 18-month Ukraine conflict have positioned it as a **vital trading partner and logistical hub for Russia's international trade.**
- ➤ Despite its **NATO (North Atlantic Treaty Organization)** membership, Turkey has refrained **from imposing Western sanctions on Russia** following its invasion of Ukraine, highlighting its unique diplomatic position.

Why is the Black Sea Grain Initiative Important?

- ➤ Ukraine is **among the largest exporters of wheat, maize, rapeseed**, sunflower seeds and sunflower oil, globally.
  - ❍ Its access to the deep-sea ports in the Black Sea enables it to **directly approach Russia and Europe along with grain importers** from the Middle East and North Africa.
- ➤ The initiative has also been **credited for having made a huge difference to the global cost of living crisis.**
  - ❍ This agreement facilitated the safe export of nearly 33 million metric tons (36 million tons) of grain and other commodities **from three Ukrainian ports despite Russia's Ongoing War.**
  - ❍ People hoarding the grain in the hope of selling it for a sizable profit owing to the supply crunch were now obligated to sell.
- ➤ Although the initiative alone cannot address global hunger, it can avert the **chances of the global food crisis spiralling** further, especially when the region is yet to scale prior year levels.

How are Russia, Ukraine Grain Exports Faring Amid the War?

- ➤ **Russia is consolidating its position as the world's top wheat exporter**, even as Ukraine's shipments are projected to more than halve from their peak and production plunge to a 11-year-low.
- ➤ The primary destinations for Russian wheat are the Middle East, North Africa and Central Asia, led by Egypt, Iran and Algeria.
  - ❍ While the Black Sea Grain Initiative helped Ukraine export 16.8 million tonnes in 2022-23, about 39% of its wheat actually moved via the land route to Eastern Europe.
- ➤ Ukraine's markets have **shifted dramatically from Asia and North Africa before the war to mainly Europe**, mostly due to ease of shipment.
  - ❍ In fact, glut of Ukrainian grain has led to protests from farmers in some Eastern European countries, who said the **price of their produce had crashed.**

Note:

ADB Regional Conference and PM Gati Shakti

Why in News?

Recently, the **2023 Regional Cooperation and Integration (RCI) Conference** was organised by the **Asian Development Bank (ADB)** at Tbilisi, Georgia where India showcased its **PM Gatishakti National Master Plan**.

What is the Asian Development Bank?

➢ **About:**
  ○ ADB is a **regional development bank established in 1966** with the objective of promoting social and economic development in Asia and the Pacific.
    ● It has **68 members**; 49 are from within Asia and the Pacific and 19 outside. **India is a founding member.**
  ○ ADB assists its members and partners by providing loans, technical assistance, grants, and equity investments to promote social and economic development.
  ○ As of 31st December 2022, **ADB's five largest shareholders** are **Japan** and **the US** (each with 15.6% of total shares), **China** (6.4%), **India** (6.3%), and **Australia** (5.8%).
  ○ It is headquartered in **Manila, Philippines.**
➢ **About ADB Conference:**
  ○ **Theme for 2023 Conference:**
    ● Strengthening Regional Cooperation and Integration through Economic Corridor Development (ECD).
  ○ **Objective:**
    ● Explore ways to integrate spatial transformation/area-centric approach with the ECD and strengthen regional cooperation through a broader approach.
    ● Knowledge sharing on application of the ECD framework and operational guidelines for investable projects.
  ○ **Participation:**
    ● The conference saw participation from more than 30 member countries.
  ○ **India's Role:**
    ● At the RCI Conference, **India offered its indigenously developed GIS-based technology**

through knowledge sharing to ADB and **South Asia Subregional Economic Cooperation (SASEC)** countries for enhancing socio-economic planning and regional cooperation.

What is PM GatiShakti National Master Plan for Multi-modal Connectivity?

➢ It is a **Made in India** initiative, a transformative 'whole-of-government' approach for i**ntegrated planning of multimodal infrastructure connectivity** to economic nodes and social infrastructure, thereby improving logistics efficiency.
  ○ PM Gati Shakti principles bring **socio-economic area-based development** as part of **regional connectivity.**
  ○ PM GatiShakti was launched in October 2021.
➢ The Gati Shakti scheme subsumed Rs. 110 lakh crore **National Infrastructure Pipeline** launched in 2019.
➢ PM Gatishakti National Master Plan is a **Geographic Information System (GIS)** data-based digital platform with over 1400 data layers and 50+ tools.
  ○ It provides visual representation of trunk and utility infrastructure, land use, existing structures, soil quality, habitation, tourism sites, forest sensitive areas etc.
➢ The initiative is also being implemented to enhance connectivity with regional partners as well. Some of the suitable examples are:
  ○ The **Indo-Nepal Haldia Access Controlled Corridor** project (eastern Indian states and Nepal)
  ○ **Regional Waterways Grid (RWG)** project for multimodal connectivity to growth centres and border points.

Government of India's Other Initiatives for Logistics Sector:

➢ **National Logistics Policy (NLP)**
➢ **Multimodal Transportation of Goods Act, 1993.**
➢ **Multi Modal Logistics Parks**
➢ **LEADS Report**
➢ **Dedicated Freight Corridor**
➢ **Sagarmala Projects**
➢ **Bharatmala Project**
➢ **Digital Initiatives:**
  ○ **Unified Logistics Interface Platform (ULIP)**
  ○ **Logistics Data Bank (LDB)**

Note:

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Coup in Gabon

Why in News?

 Gabon, **a Central African nation,** rich in oil but plagued by **poverty and political instability**, has witnessed another coup attempt by a **group of mutinous soldiers** who claimed to have seized power and placed the President of the country under house arrest.

➢ Coup attempt took place due to allegations of **election fraud and corruption against** Gabon's President Ali Bongo Ondimba, reflecting the growing discontent within the nation.

What are the Key Points About Gabon?

➢ **Geography:**
   ❍ Gabon, a country **surrounded by the Atlantic Ocean** in the west, is a former **French colony,** and retains strong ties to France and French language and culture. The capital is **Libreville.**
   ❍ It shares land borders with **Cameroon, Equatorial Guinea,** and the **Democratic Republic of Congo (DRC).**

❍ Gabon has a **population of 2.3 million (2021) and forests covering 88% of its territory.**
❍ Gabon is widely described as **'Africa's last Eden'**, the **Loango National Park is one of the country's best wildlife-watching spots.**
➢ **Urbanisation:**
   ❍ Gabon has one of the **highest urbanisation rates in Africa** with more than **four in five Gabonese citizens living in cities.**
➢ **Gabon's Economy:**
   ❍ Gabon is the **4th largest oil producer in Sub-Saharan Africa.**
   ❍ Strong economic growth over the **past decade was driven mainly by oil and manganese production.**
   ❍ In 2020, the oil sector accounted for **38.5% of Gross Domestic Product (GDP) and 70.5% of exports despite efforts to diversify the economy.**
   ❍ Gabon is a member of the **Organization of the Petroleum Exporting Countries (OPEC),** but its oil wealth is concentrated in the hands of a few — and nearly **40% of Gabonese aged 15 to 24 were out of work in 2020,** according to the **World Bank.**
➢ **Other Recent Upheavals in Africa:**
   ❍ **Coup in Niger (2023)**
   ❍ **Crisis in Sudan (2023 and 2021)**
   ❍ **Burkina Faso Coup (2022)**
   ❍ **Military Coup in Mali (2021, 2020)**

India's Interests in Africa's RE Potential

Why in News?

 Recently, the **International Solar Alliance (ISA) held its 5th regional meeting in Kigali, Rwanda. Nine solar power demonstration projects across three countries**: 4 in Uganda, 2 in Comoros and 3 in Mali, were virtually inaugurated in the meeting.

➢ During the meeting, a **report titled "Roadmap of Solar Energy for Universal Energy Access",** was unveiled.

Note:

INTERNATIONAL
Solar Alliance

Coming together to leverage solar energy as an efficient mechanism of cooperation

WHAT IS IT?

Coalition of 121 solar rich countries between the Tropics of Cancer and Capricorn

WHAT IS THE OBJECTIVE?

Promote green, clean and sustainable energy

Explore ways to mobilise USD 1000 billion investments needed by 2030

Ensure access to affordable, reliable, sustainable and modern energy for all

Demand aggregation

WHAT WILL THE ALLIANCE DO?

Boost investment in solar technologies

Foster solar applications through targeted projects and programmes

Develop innovative financial mechanisms to reduce capital cost

Build common knowledge e-portal

Facilitate capacity building

Promote and absorb new technologies among member countries

GOVERNMENT OF INDIA
MINISTRY OF NEW AND RENEWABLE ENERGY

What are the Key Highlights of the Report?

➢ The report outlines a strategic approach to effectively and economically tackle the **global energy access challenge using solar-powered solutions**. It encompasses **case studies, real-world examples, and innovative policies** aimed at bringing about a transformative shift in the implementation of solar mini-grids.

➢ The report's **conclusions hold significant relevance for Africa**, especially the **Sub-Saharan region** and rural areas. It identifies a range of electrification strategies centred on **solar energy**, particularly focusing on solar mini-grids and **Decentralised Renewable Energy solutions**.

   ○ These approaches offer **effective solutions to address diverse energy access challenges**.

   ○ Promoting these solutions **could encourage the emergence of local innovations and business models**, thereby advancing the adoption of solar energy generation within the country.

Note:

drishti

> **Note:**
> ➢ A decentralised energy system is **characterised by locating energy production facilities closer to the site of energy consumption**.
>   ○ This allows for **more optimal use of renewable energy (RE) as well as combined heat and power**, reduces **fossil fuel** use and **increases eco-efficiency**.

What is the Significance of Solar Power Projects?

➢ **Creating Solar Project Models that can be Replicated in Member Countries:**
  ○ The main objective of these projects is to **enhance the well-being of underserved communities**. The projects are not just limited to providing energy, but they **also serve as drivers of advancement and symbols of global cooperation**.

➢ **Promoting Solar Energy to Enable Sustainable Energy Transition:**
  ○ ISA is **partnering with the G20 Presidency of India** and **promoting solar energy as a means to achieve universal energy access** and enable a sustainable energy transition.

➢ **Tackling the Lack of Affordable Credit and Technical Expertise:**
  ○ The central idea behind these projects is **to highlight the substantial potential of solar technology applications in improving the quality of life** for individuals across the member nations.
  ○ ISA will address the critical lack of affordable funding and technical expertise in its member countries, **especially focusing on LDCs and Small Island Developing States (SIDS)**.

What is Africa's Potential in Global RE Transition?

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- ➢ **Africa holds the potential to emerge as a prominent force in renewable energy generation** and innovation on a global scale.

- ➢ Despite facing various obstacles**, the continent is endowed with a rich array of renewable energy sources**, including substantial solar capacity, wind resources, **geothermal areas**, **hydro energy**, and **green hydrogen** prospects.

- ➢ Furthermore, **Africa possesses over 40% of the world's crucial mineral reserves** crucial for renewable and low-carbon technologies.

- ➢ Leveraging these resources offers the opportunity for Africa to not only fulfil its energy requirements but also **to establish itself as a significant player in RE production and advancements worldwide**.
  - ○ However, there is a **need for collaboration among governments, private sector entities, and international organisations** to fully unlock the potential of solar energy across the continent.

What is the Importance of Africa for India?

- ➢ **Potential Market:** Africa is **home to over half a dozen of the fastest growing countries of this decade** such as Rwanda, Senegal, Tanzania, etc. making it one of the growth poles of the world.
  - ○ The African continent has a **population of over one billion with a combined GDP of 2.5 trillion dollars** making it a huge potential market with a wide range of opportunities **for economic growth, trade expansion, and strategic partnerships, benefiting both regions in various ways**.

- ➢ **Rich in Resource:** Africa is a **resource-rich nation dominated by commodities like** crude oil, gas, leather, gold and other metals, **all of which India lacks in sufficient quantities**.
  - ○ Namibia and Niger are **among the top ten global producers of uranium**.
  - ○ **South Africa is the world's largest producer of platinum and chromium**.
  - ○ India is seeking diversification of its oil supplies away from the Middle East and Africa can **play an important role in India's energy matrix**.

- ➢ **Indian Ocean Geopolitics:** Eastern African nations' geographical location, natural resources, security concerns, and regional engagements **collectively position them as key actors in the global geopolitics of the Indian Ocean Region (IOR)**, with significant implications for international trade, security, and diplomacy.
  - ○ Eastern African nations, such as Somalia, Kenya, Tanzania, and Mozambique, are strategically positioned along the eastern coast of Africa, which borders the Indian Ocean.
  - ○ This location gives them access to important sea lanes and trade routes in the IOR, making them critical players in maritime security and commerce.

- ➢ **Trade MoUs:** India **has signed MoUs with all African nations on the Indian Ocean Rim (IOR)** is evidence of increased defence engagement with African countries.
  - ○ Under the **Pan African e-Network Project (initiated in 2009)**, India has set up a **fibre-optic network to provide satellite connectivity**, tele-medicine and tele-education to countries of Africa.
  - ○ The subsequent phase, **e-VidyaBharti and e-ArogyaBharti (e-VBAB), introduced in 2019, focused on providing free tele-education to African students** and continuing medical education for healthcare professionals.

UN Concerns Over Eritrean Deportations from Israel

Why in News?

The **United Nations** has expressed its concern over the **possible mass deportations of Eritrean asylum seekers from Israel**, following violent clashes between rival factions of the Eritrean community in Tel Aviv.

- ➢ The UN refugee agency said that such an act of refoulement would **violate international law**.

What Prompted the UN's Concern?

- ➢ The **United Nations Refugee Agency (UNHCR)** said it was "deeply concerned" about clashes that occurred when a **demonstration against an Eritrean government event turned violent.**
  - ○ The **UNHCR** called for calm and urged all parties involved to avoid actions that could escalate the situation further.

Note:

UN Refugee Agency (UNHCR):
➢ The Office of the United Nations High Commissioner for Refugees (UNHCR) was **created in 1950**, during the aftermath of the Second World War, to **help millions of Europeans who had fled or lost their homes.**
➢ In 1954, UNHCR won the Nobel Peace Prize for its groundbreaking work in Europe. But it was not long before we faced our next major emergency.
➢ In **1981, it received a second Nobel Peace Prize** for what had become worldwide assistance to refugees.

What is International Law and Policy on Asylum and Deportation?

➢ **Eritrean Deportations and Breach of International Law:**
  ○ **Principle of non-refoulement:**
    ● The **principle of non-refoulement (1951 Refugee Convention and its 1967 Protocol)** is a well-established concept in international law, and in particular in the context of refugee law.
      ▪ Under **international human rights law**, the principle of non-refoulment guarantees that **no one should be returned to a country where they would face torture, cruel, inhuman, or degrading treatment or punishment, and other irreparable harm.**
    ● **Israel is a party to these treaties** and has an obligation to respect, protect, and fulfill the rights of refugees and asylum seekers within its territory or effective control.
      ▪ By expelling Eritreans, Israel would violate the principle of non-refoulement, as **Eritrea is considered one of the world's most authoritarian states, where human rights violations are widespread and severe.**
    ● Eritreans who are returned to their country of origin could face torture, ill-treatment, indefinite military service, political repression, or even death.
  ○ **Right to asylum:**
    ● The right to asylum is a fundamental human right that is recognized by the **Universal Declaration of Human Rights.**
    ● The right to asylum implies that **every person has the right to seek and enjoy protection from persecution in other countries.**

● By expelling Eritreans en masse, Israel would violate the right to asylum, as it would deny them the opportunity to seek and enjoy protection from persecution in Israel or in other safe countries.

Note:
➢ India is **not a party to the 1951 Refugee Convention and its 1967 Protocol,** the key legal documents pertaining to refugee protection under International Law.
  ○ Further, Article 21 of the Constitution encompasses the right of non-refoulement.
➢ India does not have national asylum legislation.
  ○ However, **The Refugee and Asylum Bill, 2019**, was introduced in Rajya Sabha but has yet to be passed by the Parliament.

International Law:
➢ **About:**
  ○ Coined by **Jeremy Bentham in 1780.**
  ○ Governs relations between countries (states).
  ○ Aims to **benefit citizens and promote friendly relations.**
  ○ Resolves international problems through cooperation and peaceful means.
➢ **Aims:**
  ○ Protect **fundamental humanitarian rights.**
  ○ Aims to **benefit citizens and promote friendly relations.**
  ○ Resolves international problems through cooperation and peaceful means
➢ **Subjects of International Law:**
  ○ **Individuals**: Common people of any state.
  ○ **International Organizations:** e.g. **United Nations.**
  ○ **Multinational Companies**: Operate in multiple countries.

Key Facts About Eritrea:
➢ Eritrea is a country in the Horn of Africa, located on the **Red Sea Coast.**
➢ Capital: **Asmara.**
➢ It shares borders with **Ethiopia, Sudan, and Djibouti.**
➢ The country also shares **maritime borders with Saudi Arabia and Yemen.**
➢ It is a former Italian colony that became part of a federation with Ethiopia in 1947, In 1952 Eritrea was annexed by Ethiopia. The country became independent in 1993.

Note:

Role of UPI in Shaping Foreign Policy

Why in News?

India's digital strength has reached new heights with the **United Payments Interface (UPI) surpassing 10 billion transactions**, signifying not only domestic **success but also its vital role in foreign policy.**

➤ Transactions on UPI have grown by over 50% year-on-year. **UPI crossed 1 billion monthly transactions for the first time in October 2019.**

How does UPI Contribute to India's Foreign Policy?

➤ **Digital Diplomacy:**

○ India aims to assume a leadership role in the **Global South** by pioneering **digital governance.**

○ India's **digital public infrastructure (DPI)** push is a differentiator from China's focus on physical infrastructure development in developing countries.

○ **International Expansion:**

● Since June 2023, India has signed agreements with countries like **Armenia, Sierra Leone, Suriname, Antigua & Barbuda and Papua New Guinea** to **share India Stack**.

● Similarly, UPI has also been taken to international markets such as France, UAE, Singapore and Sri Lanka, with countries like Japan, Mauritius, and Saudi Arabia having shown an interest in adopting the payment system.

Note:

- ➢ **Global Digital Public Infrastructure Repository (GDPIR):**
  - ❍ India plans to establish the **GDPIR to share DPI practices globally.**
  - ❍ The GDPIR aims to **facilitate the exchange of tools and resources related to DPI among G20 members and beyond.**
- ➢ **Economic Diplomacy:**
  - ❍ UPI's success attracts **foreign investments and partnerships,** contributing to **India's economic diplomacy efforts and strengthening bilateral relations.**

What is India Stack?

- ➢ India Stack is a **set of APIs (Application programming interfaces)** that allows governments, businesses, startups, and developers to utilize a unique digital Infrastructure to solve India's hard problems towards **presence-less, paperless, and cashless service delivery.**
- ➢ India Stack is a **government-led initiative that focuses on building a robust digital infrastructure** to enable various digital services across different sectors.
  - ❍ The components of this collection are **owned and maintained by different agencies.**
- ➢ INDIA STACK aims to streamline and enhance **identity verification, data exchange, and digital payment processes to make them more accessible and efficient for citizens.**
- ➢ It includes digital public goods, which are digital resources and tools made available to the public to support various digital services and initiatives.
- ➢ The India Stack comprises three key layers: **identity, payments, and data management.**
  - ❍ **Identity Layer (Aadhaar):**
    - • **Aadhaar** serves as the cornerstone of India Stack, offering digital identity products.
    - • It is issued by the **Unique Identification Authority of India (UIDAI)** under the Ministry of Electronics and Information Technology.
    - • Aadhaar is considered a **proof of residence and not a proof of citizenship**, and **it does not grant any rights to domicile in India.**
  - ❍ **Payments Layer (UPI):**
    - • UPI forms the second layer, ensuring **interoperability among money custodians, payment rails, and front-end payment applications**.
    - • Managed by the **National Payments Corporation of India (NPCI),** UPI is licensed to **third-party private entities like PhonePe, Google Pay, and Paytm.**
  - ❍ **Data Governance Layer**:
    - • Digital Locker is built on **Data Empowerment and Protection Architecture(DEPA)** ; it incorporates a consent management system, enabling the secure sharing of information for better financial, health, and telecom-related products and services.
    - • It consists of a set of **digital identity products centered around Aadhaar**. It can be used to **remotely authenticate via two-factor or biometric authentication,** receive digitally signed records such as driver's licenses, educational diplomas, and insurance policies, and sign documents or messages using a government-backed digital signature service.
- ➢ Aside from UPI, a number of digital solutions that the Indian government has rolled out in the last few years, including **CoWin, DigiLocker, Aarogya Setu, and Government e-Marketplace (GeM),** all utilize the three fundamental layers of the Indian Stack.
- ➢ The **vision of India Stack is not limited to one country (India); it can be applied to any nation,** be it a developed one or an emerging one.

■■■

Note:

Social Issues

Highlights

- Maratha Quota
- Global Fund Secures Deal to Slash HIV Treatment Price
- State of Food Security and Nutrition in the World (SOFI) 2023

Maratha Quota

Why in News?

Recently, in Maharashtra, the demand for **reservations in educational institutions and government jobs by the Maratha community** has once again taken center stage.

What is the History and Status of the Maratha Reservation Demand?

➤ **History:**
  - The Marathas are a group of castes comprising peasants and landowners among others **constituting nearly 33% of the state's population**.
    - While most Marathas are Marathi-speaking, not all Marathi-speaking people belong to the Maratha community.
  - Historically, they have been identified as a **'warrior' caste with large land holdings.**
  - However, over the years, due to factors such as land fragmentation, agrarian distress, unemployment and lack of educational opportunities, many Marathas have faced social and economic backwardness. The community still plays an important role in the rural economy.
    - Therefore, they have been demanding reservation in **government jobs and educational institutions under the category of Socially and Educationally Backward Classes (SEBC).**

➤ **Status of the Maratha Reservation Demand:**
  - **2017:**
    - A 11-member **commission headed by Retired Justice N G Gaikwad** recommended **Marathas should be given reservation** under **Socially and Educationally Backward Class (SEBC).**
  - **2018:**
    - Maharashtra Assembly passed a Bill proposing **16% reservation for Maratha community.**
  - **2018:**
    - The Bombay High Court while upholding the reservation pointed out that instead of 16% it should be **reduced to 12% in education and 13% in jobs.**
  - **2020:**
    - The **Supreme Court of India** stayed its implementation and **referred the case to the Chief Justice of India for a larger bench.**
  - **2021:**
    - Supreme Court struck down the Maratha reservation in 2021 citing the 50% cap on total reservations it had set in 1992.
      - The Maratha reservation of 12% and 13% (in education and jobs) had increased the overall reservation ceiling to 64% and 65%, respectively.
    - In the **Indira Sawhney judgment** 1992, SC had categorically said **50% shall be the rule,** only in certain exceptional and extraordinary situations for bringing far-flung and remote areas' population into mainstream said 50% rule can be relaxed.
    - The Supreme Court said that there were no "exceptional circumstances" or an "extraordinary situation" in Maharashtra for the state government to breach the limit.
      - In addition, the court ruled that the state had no authority to accord socially and economically backward status to a community: **only the president can tweak the central list of socially and backward classes, said the court. States can only make "suggestions".**

Note:

- The Bench unanimously **upheld the constitutional validity** of the **102ⁿᵈ Constitution Amendment** but differed on the question of whether it affected the power of states to identify SEBCs.
- The Supreme Court highlighted that a separate reservation for the Maratha community violates Articles 14 (right to equality) and 21 (due process of law).
  ○ **2022:**
  - In November 2022, after the **SC upheld the 10% quota for the Economically Weaker Sections**, the state government said that until the issue of Maratha reservation is resolved, economically weaker members of the community **can benefit from the EWS quota.**

102ⁿᵈ Amendment Act of 2018
➤ It introduced Articles 338B and 342A in the Constitution.
➤ Article 338B deals with the newly established National Commission for Backward Classes.
➤ Article 342A empowers the President to specify the socially and educationally backward communities in a State.
  ○ It says that it is for the Parliament to include a community in the Central List for socially and backward classes for grant of reservation benefits.

Global Fund Secures Deal to Slash HIV Treatment Price

Why in News?

The price of a cutting-edge **Human Immunodeficiency Virus (HIV)** drug, Tenofovir disoproxil, Lamivudine and Dolutegravir (TLD), will be slashed as the Global Fund announced a deal with generic pharmaceutical manufacturers.

What are the Key Highlights of the Deal?

➤ **Reduction in Cost:**
  ○ It is possible to provide the advanced pill known as TLD for under USD 45 per person per year with a price reduction of 25%
➤ **Impact of Deal:**
  ○ Reduced pricing for TLD means governments and other implementers of Global Fund grants can

expand treatment programmes to reach around 19 million more people are living with HIV in resource-constrained settings.

What is Global Fund?

➤ **About:**
  ○ The Global Fund is a worldwide movement established in 2002 to defeat HIV, **tuberclosis (TB)** and **Malaria** and ensure a healthier, safer, more equitable future for all.
  ○ The Global Fund raises funds on a three-year cycle, bringing longer term predictability in the fight against AIDS, TB and malaria.
  ○ Governments, the private sector and nongovernmental organizations pledge funds to support their mission.
➤ **Mission:**
  ○ Raise and invest USD 4 billion a year to fight the deadliest infectious diseases, challenge the injustice that fuels them and strengthen health systems in more than 100 countries.
➤ **Global Fund Strategy (2023-2028):**
  ○ Fighting Pandemics and Building a Healthier and More Equitable World:
  - Strategy's primary goal is to end AIDS, tuberculosis and malaria, with a particular focus on making catalytic investments and leveraging innovations to spur faster progress in reducing new infections.

What is a TLD?

➤ The mainstay of treatment for more than 85% HIV is Tablet TLD (a fixed-dose combination of three antiretroviral drugs, namely, Tenofovir+Lamivudine +Dolutegravir.)
➤ The World Health Organization has recommended it as the preferred **first-line HIV treatment for adults and adolescents** since it rapidly suppresses the virus that causes AIDS, has fewer side effects and is easy to take.

What is HIV?
➤ **About:**
  ○ HIV stands for **Human Immunodeficiency Virus**, which is a virus that attacks the **immune system** in the human body.
  ○ It primarily **targets and damages CD4 immune cells**, which are essential for the **body's ability to fight infections and diseases.**

Note:

- Over time, HIV weakens the immune system, leaving the body **vulnerable to opportunistic infections and cancers.**
- **Transmission:**
  - HIV is primarily spread through the exchange of certain bodily fluids such as **blood, semen, vaginal fluids, and breast milk.**
- **Severity:**
  - If left untreated, the virus destroys a person's immune system and they are said to be in the **Acquired Immunodeficiency Syndrome stage (AIDS)** where they get **several opportunistic infections that may result in death.**
- **Cure:**
  - Although there are **no cures for the infection at present,** the disease can be managed using **antiretroviral therapy.**
    - These medicines suppress the replication of the virus within the body, **allowing the number of CD4 immune cells to bounce back.**

What are India's Initiatives to Curb AIDS Disease?

- **HIV and AIDS (Prevention and Control) Act, 2017:** According to this act, the central and state governments shall take measures to prevent the spread of HIV or AIDS.
- **Access to ART:** India has made Antiretroviral Therapy (ART) affordable and accessible to over 90% of people living with HIV in the world.
- **Project Sunrise: Project Sunrise** was launched by the Ministry of Health and Family Welfare in 2016, to tackle the rising HIV prevalence in north-eastern states in India, especially among people injecting drugs.

State of Food Security and Nutrition in the World (SOFI) 2023

Why in News?

'State of Food Security and Nutrition in the World' (SOFI) 2023, a report by the **United Nations Food and Agriculture Organization (FAO)**, has shed light on a concerning issue in India.

- It highlights the growing disparity between the cost of a nutritious meal and the economic realities faced by a significant portion of the Indian population.

What are the Key Highlights of the Report?

- **Global Hunger:** While global hunger numbers have remained stagnant between 2021 and 2022, the number of people facing hunger worldwide **has increased by over 122 million since 2019 due to the pandemic**, repeated weather shocks, and conflicts, including the war in Ukraine.
- **Nutritional Access:** Approximately 2.4 billion individuals, largely women, and residents of rural areas, did not have consistent access to nutritious, safe, and sufficient food in 2022.
- **Child Malnutrition:** Child malnutrition is still alarmingly high. In 2021, 22.3% (148.1 million) children were stunted, 6.8% (45 million) were wasted, and 5.6% (37 million) were overweight.
- **Urbanization's Impact on Diet:** As urbanization accelerates, there is **a noticeable increase in the consumption of processed and convenience foods**, leading to a spike in overweight and obesity rates across urban, peri-urban, and rural areas.
- **Rural Dependence on Global Markets:** Previously self-sustaining rural regions, especially in Africa and Asia, are now found to be increasingly dependent on national and global food markets.
- **Regional Trends:** The SOFI report also tracks changes in the cost of a healthy diet and affordability across regions.
  - Between 2019 and 2021, Asia witnessed the highest increase in the cost of maintaining a healthy diet, **rising by almost 9%.**
  - The growth in the number of people unable to afford a nutritious diet was highest in Asia and Africa, with South Asia and Eastern and Western Africa facing the greatest challenges.
- **South Asia's Struggle:** South Asia, with 1.4 billion people, recorded the highest number (72%) of individuals unable to afford a healthy diet.
- **Africa's Challenge:** In Africa, Eastern and Western Africa were particularly affected, with 85% of the population unable to afford a healthy diet. These two continents (Asia and Africa) accounted for 92% of the global increase in this statistic, underscoring the severity of the issue on the African continent.

Note:

PHOTO: R. V. MOORTHY

Not enough on the plate

The data for the charts were sourced from a blog published by the World Bank titled, 'Over 3.1 billion people could not afford a healthy diet in 2021, an increase of 134 million since the start of COVID-19,' and the 'State of Food Security and Nutrition in the World (SOFI) 2023'

Chart 1: The chart shows the cost of a healthy diet in terms of PPP dollars per person per day in 2021, the latest year with comparable data

Chart 3: The chart shows the change (in %) in the cost of a healthy diet over the years across regions

Legend: 2017-2018 2018-2019 2019-2020 2020-2021 2019-2021

World: 6.7% Africa: 7.9% Asia: 9.1% Latin America: 8.1% N. America: 1.2% Oceania: 8.1%
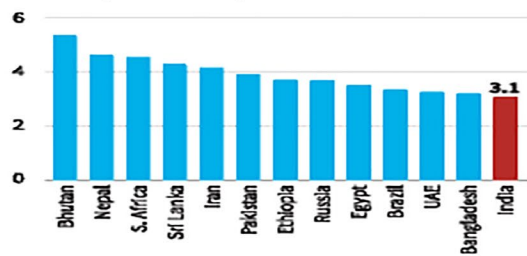
Chart 2: The chart shows the share of the population that is unable to afford a healthy diet in 2021. For instance, in India, 74% were not able to afford a healthy diet
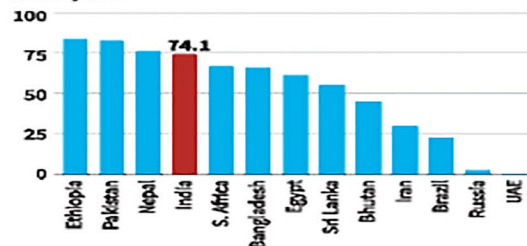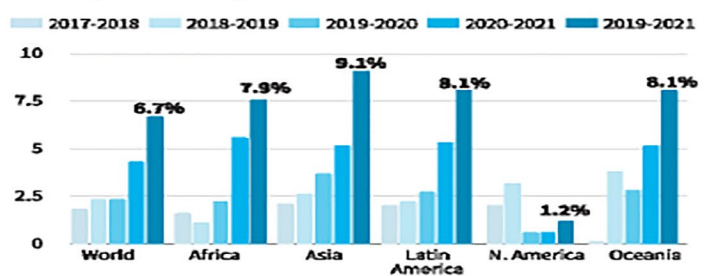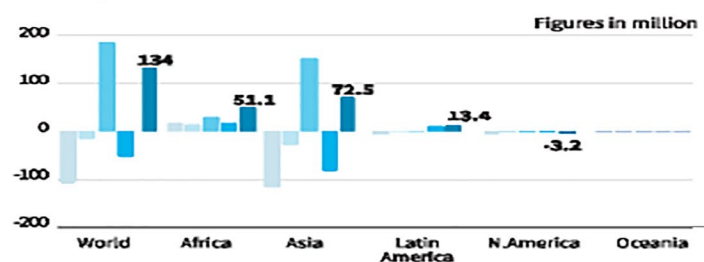
India: 74.1

Chart 4: The chart shows the change in the number of people (in million) who were unable to afford a healthy diet over the years across regions

Figures in million

World: 134 Africa: 51.1 Asia: 72.5 Latin America N.America: 13.4 Oceania: -3.2

➤ **Future Outlook:** By 2050, it's projected that 70% of the global population will reside in cities. This significant demographic shift necessitates a reorientation of food systems to cater to these new urban populations and eradicate hunger, food insecurity, and malnutrition.

What are the Key Highlights related to the Report on India?

➤ **Cost of a Healthy Diet in India:** According to the SOFI report, India has the lowest cost of a healthy diet among **BRICS nations** and its neighbours. In 2021, a healthy diet in India costs approximately 3.066

Purchasing Power Parity (PPP) per person per day, making it seemingly affordable on the surface.

❍ A diet is considered unaffordable if it costs more than 52% of a nation's average income. India has a low average income compared to other countries.

❍ This makes it difficult for a substantial portion of the population to afford the recommended diet.

➤ **The Mumbai Case Study:** The report also highlights a specific case study in Mumbai, where the **cost of meals has risen by a staggering 65% in just five years.** In contrast, salaries and wages have only increased by 28%-37% during the same period.

Note:

○ Mumbai, chosen for its consistent data availability, serves as a stark example of the challenges faced by urban populations in India.

➢ **Global Comparisons:** Comparing India to other countries in the report, it becomes evident that while the cost of a healthy diet in India remains relatively low, it remains unattainable for a substantial portion of the population due to income disparities.

○ In 2021, 74% of Indians could not afford a healthy diet, ranking India fourth among the nations considered.

Why is Ensuring Food Security Important for India?

➢ **Meeting the Nutritional Needs of the Population:**

○ **India is home to a significant population that is malnourished or undernourished,** which affects their physical and mental growth.

● According to the **Global Food Security Index 2022, India has a prevalence of undernutrition of 16.3%**. Further, **30.9% of children in India are stunted, 33.4% are underweight**, and 3.8% are obese.

➢ **Supporting Economic Growth:**

○ **Agriculture is a crucial sector that contributes significantly** to India's economy. By ensuring food security, the government can support farmers and increase their income, which can help drive economic growth.

● With over **70% of the population engaged in agriculture-related activities**, it is the backbone of India's economy.

➢ **Reducing Poverty:**

○ **Food security can play a vital role in reducing poverty levels.** By providing access to affordable and nutritious food, people can better manage their expenses, reduce their healthcare costs, and improve their overall quality of life.

● According to the **Global Multidimensional Poverty Index MPI 2023,** India still has more than 230 million people who are poor.

➢ **Ensuring National Security:**

○ **Food security is also essential for India's national security.** A stable food supply can prevent social unrest and political instability, which can threaten national security.

➢ **Combating Climate Change:**

○ Climate change poses a significant threat to India's food security. By adopting sustainable farming practices and investing in climate-resilient crops, **India can better adapt to the changing climate and ensure food security** for its population.

● The International Food Security Assessment for 2022-2032 indicates that **India's large population has a significant impact on food insecurity trends.** It is projected that around 333.5 million people will be affected in India during 2022-23.

What are the Related Initiatives Taken?

➢ **National Food Security Act (NFSA) 2013**

➢ **National Food Security Mission**

➢ **National Agriculture Market (e-NAM) Platform**

■■■

Note:

Science & Technology

Highlights

- Aditya-L1 Mission
- Picoflare Jets
- Shanti Swarup Bhatnagar Awards 2022
- Enhancing Mosquito Control through Genetic Engineering
- Lab-Grown Human Embryo Model
- String of Pearls Supernova
- The Bottleneck in Human Evolution

- New Method to Determine Hubble Constant
- Minimal-Genome Cells Evolve as Fast as Normal Cells
- CSIR PRIMA ET11and Simplified Tractor Testing Process
- Super Blue Moon
- Electrified Flex Fuel Vehicle
- Nipah Virus

Aditya-L1 Mission

Why in News?

Recently, the **Indian Space Research Organisation (ISRO)** has accomplished the launch of **Aditya-L1**, its **inaugural Solar Mission.**
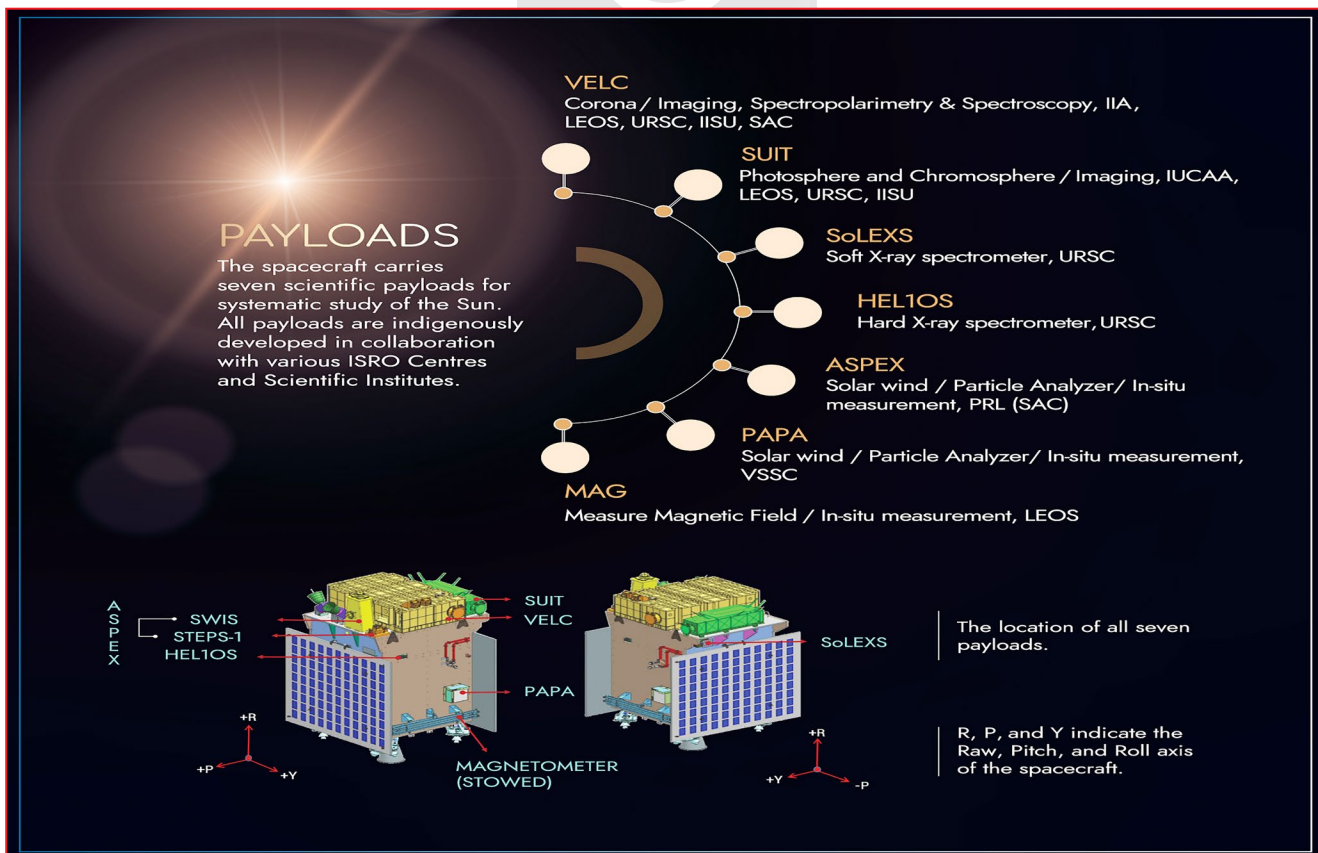
➢ The launch was conducted using the **PSLV-C57 rocket.** The PSLV's **fourth stage was fired twice,** a first in ISRO's history, to **precisely insert the spacecraft into its elliptical orbit.**

What is Aditya-L1 Mission?

➢ **About**:

○ **Aditya-L1** is the first space based observatory class Indian solar mission to study the Sun from a substantial distance of **1.5 million kilometers**. It will take approximately **125 days** to reach the L1 point.

VELC
Corona / Imaging, Spectropolarimetry & Spectroscopy, IIA, LEOS, URSC, IISU, SAC

SUIT
Photosphere and Chromosphere / Imaging, IUCAA, LEOS, URSC, IISU

SoLEXS
Soft X-ray spectrometer, URSC

HEL1OS
Hard X-ray spectrometer, URSC

ASPEX
Solar wind / Particle Analyzer/ In-situ measurement, PRL (SAC)

PAPA
Solar wind / Particle Analyzer/ In-situ measurement, VSSC

MAG
Measure Magnetic Field / In-situ measurement, LEOS

PAYLOADS
The spacecraft carries seven scientific payloads for systematic study of the Sun. All payloads are indigenously developed in collaboration with various ISRO Centres and Scientific Institutes.

ASPEX — SWIS, STEPS-1, HEL1OS

SUIT VELC

PAPA

MAGNETOMETER (STOWED)

SoLEXS

The location of all seven payloads.

R, P, and Y indicate the Raw, Pitch, and Roll axis of the spacecraft.

Note:

- Aditya-L1 is also ISRO's second astronomy observatory-class mission after **AstroSat (2015).**
- The mission's journey is notably shorter than India's previous **Mars orbiter mission, Mangalyaan.**
  - The spacecraft is planned to be **placed in a halo orbit** around the **Lagrangian point 1 (L1) of the Sun-Earth system.**

➢ **Payloads**:

➢ **Objective:**
  - The mission aims to provide valuable insights into the **solar corona, photosphere, chromosphere, and solar wind.**
  - The primary objective of Aditya-L1 is to gain a deeper understanding of the Sun's behavior, including its **radiation, heat, particle flow, and magnetic fields,** and how they impact Earth.

What are Lagrange Points?

➢ **About:**
  - **Lagrange points** are special positions in space where the **gravitational forces of two large orbiting bodies**, such as the **Sun and the Earth,** balance each other out.
    - This means that a small object, such as a **spacecraft**, can stay at these points without using much fuel to maintain its orbit.
  - There are **five Lagrange Points**, each with distinct characteristics. These points enable a small mass to orbit in a stable pattern amid two larger masses.

➢ **Lagrange Points in the Sun-Earth System:**
  - **L1**: L1 is considered the most significant of the Lagrange points for solar observations. A satellite placed in the **halo orbit around the L1 has the major advantage of continuously viewing the Sun** without any occultation/ eclipses.
    - It is currently home to the **Solar and Heliospheric Observatory Satellite (SOHO).**
  - **L2:** Positioned directly '**behind' Earth as viewed from the Sun**, L2 is excellent for **observing the larger Universe without Earth's shadow interference.**
    - The **James Webb Space Telescope** orbits the Sun near L2.

  - **L3:** Positioned behind the Sun, opposite Earth, and just beyond Earth's orbit, it offers **potential observations of the far side of the Sun.**
  - **L4 and L5:** Objects at L4 and L5 maintain stable positions, forming an **equilateral triangle with the two larger bodies.**
    - They are often used for space observatories, such as those studying **asteroids.**
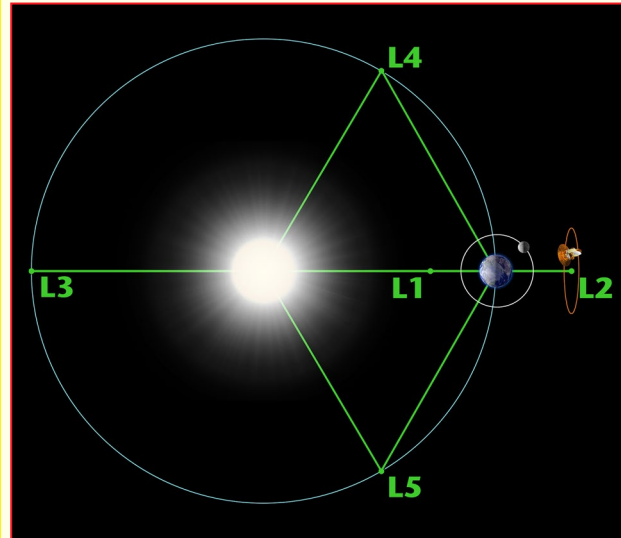
Note: L1, L2, and L3 points are unstable, meaning that a small perturbation can cause an object to drift away from them. Therefore, **satellites orbiting these points need regular course corrections to maintain their positions**

What is the Significance of Exploring the Sun?

➢ **Understanding Our Solar System:** The Sun is the **center of our solar system**, and its characteristics greatly influence the behavior of all other celestial bodies. Studying the Sun enhances our understanding of the dynamics of our solar neighborhood.

➢ **Space Weather Prediction:** Solar activities, such as **solar flares** and **coronal mass ejections**, can impact Earth's space environment.
  - Understanding these phenomena is crucial for **predicting and mitigating potential disruptions to communication systems**, navigation, and power grids.

➢ **Advancing Solar Physics:** Exploring the Sun's complex behavior, including its **magnetic fields,** heating mechanisms, and plasma dynamics, contributes to advances in **fundamental physics and astrophysics**.

Note:

> **Enhancing Energy Research:** The Sun is a **natural fusion reactor.** Insights gained from studying its core and nuclear reactions can **inform our pursuit of clean and sustainable fusion energy on Earth.**

> **Improving Satellite Operations**: Solar radiation and solar wind affect the functioning of satellites and spacecraft. Understanding these solar interactions **allows for better spacecraft design and operation.**
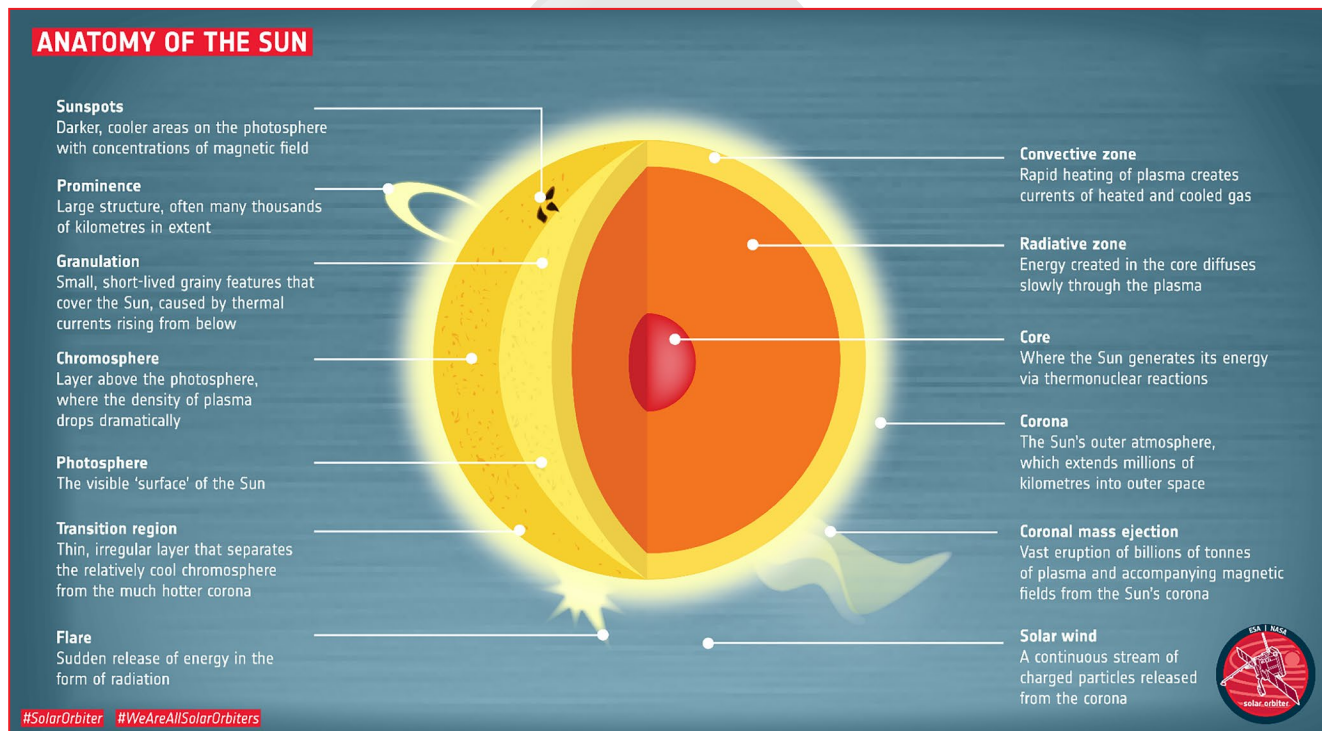
Picoflare Jets

Why in News?

The **Solar Orbiter** has recently captured extreme **ultraviolet images of the Sun**, revealing a multitude of small-scale jets known as **"picoflare" jets** within a **coronal hole**, raising questions about their role in powering the solar wind and impacting space weather.

What is Solar Orbiter?

> The Solar Orbiter is a collaborative mission between the **European Space Agency (ESA) and NASA** that aims to investigate the **Sun's magnetic fields, energetic particles, and plasma** in their pristine state before they are altered during their journey.

> The mission was launched in February 2020.

ANATOMY OF THE SUN

Sunspots
Darker, cooler areas on the photosphere with concentrations of magnetic field

Prominence
Large structure, often many thousands of kilometres in extent

Granulation
Small, short-lived grainy features that cover the Sun, caused by thermal currents rising from below

Chromosphere
Layer above the photosphere, where the density of plasma drops dramatically

Photosphere
The visible 'surface' of the Sun

Transition region
Thin, irregular layer that separates the relatively cool chromosphere from the much hotter corona

Flare
Sudden release of energy in the form of radiation

Convective zone
Rapid heating of plasma creates currents of heated and cooled gas

Radiative zone
Energy created in the core diffuses slowly through the plasma

Core
Where the Sun generates its energy via thermonuclear reactions

Corona
The Sun's outer atmosphere, which extends millions of kilometres into outer space

Coronal mass ejection
Vast eruption of billions of tonnes of plasma and accompanying magnetic fields from the Sun's corona

Solar wind
A continuous stream of charged particles released from the corona

#SolarOrbiter   #WeAreAllSolarOrbiters

What are Picoflare Jets?

> **Picoflare jets** are **small-scale phenomena on the sun** that release a significant amount of energy in a short period, typically lasting only a few dozen seconds.

> ○ These jets, named as pico, as they **carried approximately one-trillionth as much energy as the largest flares that the sun is believed to be able to produce**.

• **'Pico'** is an order of magnitude that **denotes 10^{12}, or one trillionth of a unit.**

> The phenomenon responsible for creating these jets in the sun's coronal holes is **likely magnetic reconnection.**

> ○ Magnetic reconnection involves the **breaking and reconnecting of magnetic field lines**, which releases a substantial amount of stored energy.

Note:

What are Solar Winds?

➤ The solar wind is created by the **outward expansion of plasma** (a collection of charged particles) from the **Sun's corona** (outermost atmosphere).

   ○ This plasma is continually heated to the point that the **Sun's gravity cannot hold it** down. It then travels along the Sun's magnetic field lines that extend radially outward.

➤ As the **Sun rotates (once every 27 days)**, it winds up its magnetic field lines above its polar regions into a large **rotating spiral,** creating a **constant stream of "wind."**

   ○ These winds, known as "**streamers,**" originate from areas on the Sun's surface called **"coronal holes,"** which are **bright patches in the corona.**

➤ As the solar wind moves away from the Sun, it **forms a vast region around it called the "heliosphere."** This bubble extends well beyond the orbits of most planets in our solar system.

> **Note:** When the solar wind reaches Earth, it is **deflected by our planet's magnetic field,** causing most of its energetic particles to flow around and past us. This protective region where the solar wind is blocked is called the **"magnetosphere."**

Shanti Swarup Bhatnagar Awards 2022

Why in News?

Recently, at the inaugural session of the **One Week One Lab (OWOL) program of** the **Council of Scientific and Industrial Research (CSIR)-National Institute of Science Communication and Policy Research (CSIR-NIScPR),** the **CSIR** announced the list of awardees for the **Shanti Swarup Bhatnagar (SSB) awards for 2022.**

➤ There were no female scientists chosen for the SSB Awards 2022.

> **Note:**
> ➤ OWOL, a theme-based campaign of the CSIR is being organized to **ignite the minds of young innovators, students, start-ups, academia, and industry** to look for opportunities through deep tech ventures.
>   ○ Under this program **various Institutes of CSIR,** one after the other in every successive week, will showcase their **exclusive innovations and technological breakthroughs to the people of India.**

What are the Key Facts About the Shanti Swarup Bhatnagar Awards?

➤ **About:**

   ○ The Shanti Swarup Bhatnagar Awards are the **highest multidisciplinary science awards in India.**

     ● They are named after **Shanti Swarup Bhatnagar, the founder and director of the CSIR,** who was also a renowned chemist and visionary.

➤ **Purpose:**

   ○ Recognition of outstanding Indian work in science and technology.

➤ **Nature of the Prize:**

   ○ SSB Prizes, **each of the value of Rs 5,00,000 (Rupees five lakh only),** are awarded annually for notable and outstanding research applied or fundamental, in the following disciplines: (i) Biological Sciences, (ii) Chemical Sciences, (iii) Earth, Atmosphere, Ocean and Planetary Sciences, (iv) Engineering Sciences, (v) Mathematical Sciences, (vi) Medical Sciences and (vii) Physical Sciences.

➤ **Eligibility:**

   ○ **Any citizen of India engaged in research in any field of science and technology up to the age of 45 years** as reckoned on 31st December of the year preceding the year of the Prize.

     ● **Overseas citizens of India (OCI)** and **Persons of Indian Origin** (PIO) working in India are **also eligible.**

     ● The Prize is awarded on the **basis of contributions made through work done primarily in India** during the five years preceding the year of the Prize.

> **Council of Scientific and Industrial Research (CSIR)**
> ➤ **CSIR** is the **largest research and development (R&D) organization in India,** established in 1942, with its **headquarters in New Delhi.**
> ➤ CSIR has a dynamic network of 37 national laboratories, 39 outreach centers, 1 Innovation Complex, and three units with a pan-India presence.
> ➤ CSIR is **funded by the Ministry of Science and Technology** and it operates as an **autonomous body through the Societies Registration Act, 1860.**
> ➤ CSIR's organizational structure includes the **Prime Minister of India as President**, the **Union Minister of Science and Technology as Vice President**, with the Director-General heading the governing body along with the finance secretary (expenditures).

Note:

Enhancing Mosquito Control through Genetic Engineering

Why in News?

The rapid **urbanization** of the world's populations, especially in **many large and economically developing countries** like India, has led to annual **surges in mosquito-borne illnesses**.

➢ One of the emerging innovative methods of mosquito control is **genetic engineering**, which involves altering the traits or behavior of mosquitoes.

Why the Need for Innovative Mosquito Control Approaches?

➢ **About:**
   ○ Mosquitoes are **small, flying insects belonging to the family Culicidae**. They are known for their distinctive **buzzing** sound and are **notorious for their role in transmitting diseases to humans and animals**.
      ● They can transmit deadly diseases such as **Malaria**, **Dengue**, **Zika**, **and Yellow fever,** affecting millions of people every year.

➢ **Changing Landscape of Mosquito-Borne Diseases:**
   ○ **Urbanization and Climate Change:** The rapid urbanization of the global population, particularly in developing countries like **India,** has contributed to annual surges in mosquito-borne diseases like dengue.
      ● Additionally, **climate change has expanded the territories where these diseases are prevalent,** exemplified by **indigenous cases of dengue in France.**
   ○ **Current Control Measures:** In the ongoing battle against mosquitoes, a range of tools has been employed, including **mosquito nets, insecticides, and the use of symbionts like Wolbachia**.
      ● Despite the availability of a first-generation malaria vaccine, insecticide resistance in mosquitoes is a growing concern, **necessitating the exploration of new control approaches.**

How can Genetic Engineering be Harnessed for Mosquito Control?

➢ **Genome Sequencing:** Recent advancements in **next-generation sequencing** techniques have enabled researchers to obtain whole genome sequences for various mosquito species.
   ○ Notably, research institutions like the **University of California and institutes in Bengaluru, India**, have contributed to **high-quality reference genomes for Anopheles stephensi, a major malaria vector.**
   ○ The availability of mosquito genome sequences and our capacity to genetically manipulate them offer unprecedented opportunities for mosquito control.

➢ **Gene Drive Technology:** Gene-drive technology, developed by **Austin Burt** (Professor at Imperial College London) **in 2003,** aims to manage mosquito populations by **changing how they inherit certain genes**, **breaking the usual genetic rules explained by Mendel.**
   ○ This technology uses **special proteins to edit mosquito DNA.** When these proteins cut the mosquito's DNA, the **cell fixes it by adding a specific genetic sequence.**
   ○ This **change affects the mosquito's ability to have offspring and stops the malaria parasite from multiplying inside them**, making the mosquitoes unable to spread the disease.
   ○ Researchers at Imperial College London genetically enhanced a gene in mosquitoes to secrete **antimicrobial substances**, **disrupting the Plasmodium parasite's development** and reducing mosquito lifespan.

➢ **OX5034 Mosquito:** The US Environmental Protection Agency authorized the release of the **genetically modified OX5034 mosquito in Florida and Texas** in 2020.
   ○ This mosquito is developed with a gene sensitive to an antibiotic, **tetracycline.**
   ○ It carries a **self-limiting gene** that **prevents female offspring from surviving**, leading to a reduction in mosquito populations.

What are the Benefits and Risks of Genetic Engineering for Mosquito Control?

➢ **Benefits of Genetic Engineering for Mosquito Control:**
   ○ **Targeted Mosquito Control:** Genetic engineering allows for the precise modification of mosquito populations, focusing on disease-carrying species.
      ● This targeted approach **reduces the need for broad-spectrum insecticides,** minimizing harm to non-target species.

Note:

- **Reduced Environmental Impact:** Compared to traditional insecticides, genetic engineering may have a lower environmental impact because it **does not involve chemical pollution of ecosystems.**
  - This can help protect other beneficial insects and **aquatic life**.
- **Sustainability:** Once released, genetically modified mosquitoes can continue to pass on their modified genes, **providing a sustainable and self-perpetuating method of mosquito control** without the need for frequent reapplications.
- **Public Health:** By reducing mosquito-borne diseases, genetic engineering can have a significant positive impact on public health, potentially **saving countless lives and reducing healthcare costs** associated with treating these diseases.

➢ **Risks and Concerns of Genetic Engineering for Mosquito Control:**
- **Unintended Consequences:** Genetic modifications can have **unforeseen consequences in ecosystems.**
  - Altered mosquito populations may **disrupt food chains or create ecological imbalances**, impacting other species in unintended ways.
- **Ethical Concerns:** Critics have **ethical objections to manipulating the genes of organisms**, particularly when it involves altering the genetics of wild populations. **Questions of ecological responsibility arise.**
- **Risk of Invasion:** Genetically modified mosquitoes may unintentionally **acquire traits that enhance their ability to invade new habitats,** potentially causing unforeseen ecological disruptions in regions outside their natural range.

Lab-Grown Human Embryo Model

Why in News?

Recently, Scientists have achieved a remarkable feat by creating a **lab-grown "human embryo" model** using **stem cells and chemicals, without using an egg or sperm**, shedding light on **early embryo development.**

How Was the Embryo Model Created?

➢ Researchers from Israel utilized a combination of **stem cells and chemicals to create a model of a 14-day-old human embryo.**

- This mix of stem cells and chemicals was a **crucial starting point for creating an embryo-like structure.**

➢ The Israeli researchers' model was able to spontaneously assemble into different types of cells that **form the fetus**, provide nutrients to the fetus, lay out the **plan for body development, and create structures like the placenta and umbilical cord to support the fetus.**

➢ A challenge faced was that only **1% of the mixture came together on its own, showing a need for better efficiency.**

What Have These Models Revealed About Early Development?

➢ Models help uncover errors in **Deoxyribonucleic acid(DNA) duplication and chromosome distribution.**
- Researchers found that DNA duplication abnormalities occur early in the process, affecting cell division.

➢ These models enable the study of **gene functions** and their roles in fetal development.

Why Are Embryo Models and Research Important?

➢ Studying early embryo development is ethically challenging once implantation in the uterus occurs.

➢ Research during these initial stages is vital as **most miscarriages and birth defects happen in this period.**

➢ Understanding normal embryo development and genetic factors can improve **invitro fertilization outcomes.**

➢ It helps researchers **grasp genetic, epigenetic, and environmental influences on embryonic development.**

Can Lab-Grown Embryos Be Used for Pregnancy?

➢ **No,** these models are intended **solely for studying early fetal development.**

➢ They are generally destroyed after 14 days, and implantation is not permitted.
- The **14-day limit was proposed in 1979 in the UK, equivalent to when natural embryo implantation finishes.**
  - It marks the point when **cells begin forming an "individual," and breaking off into a twin is not possible.**

Note:

❍ Ethical considerations change as embryos transition from cell clusters to individuals.

➢ The ethical considerations become different when it is a clump of cells and when it becomes an individual, often related to what is referred to as **the Primitive Streak.**

❍ Primitive Streak is a **linear structure** that appears in the embryo that marks its **transition from having a radial symmetry (like an egg) to the bilateral symmetry of our bodies** (marked by left and right hands and legs).

Type of Stem Cell	Source of the Stem Cells	Stem Cell Potential	Use in Medicine	Ethical Considerations
Embryonic - Totipotent	After zygote has gone through 3 cycles of division, it consists of 8 identical cells.	Each cell can develop into a complete human being.	Do not reproduce after 8 cells. Cannot be kept in lab as cell culture.	Not used often.
Embryonic - Pluripotent	Inner cell mass of the blastocyst (50 cells that would usually form embryo). Spare embryos from in vitro fertilsation clinics.	Can develop intp most cell types but not an entire human being.	Develop tissues for transplantation. (Possible IS rejection)	See table on next page.
Adult – Mulitpotent	Neural stem cells from CNS. Blood stem cells from bone marrow.	Cells have become differentiated. Neural stem cells become different neurones	Limited. Less valuable for reaserch because differentiated.	No ethical considerations.

Human Embryo:
➢ A human embryo is a **developing human being from the moment of fertilization until the end of the eighth week of gestation.**
➢ A human embryo has three main stages of development: **the pre-implantation stage, the implantation stage, and the organogenesis stage.**

Note:

drishti

➢ A human embryo is composed of different types of cells that differentiate into various tissues and organs.

➢ A human embryo is normally created by the fertilization of a **human egg (oocyte) by a human sperm in the female reproductive tract or in a laboratory.**

Stem Cell:

➢ A stem cell is a cell with the unique **ability to develop into specialized cell types in the body.**

  ❍ In the future they may be **used to replace cells and tissues that have been damaged or lost due to disease.**

➢ They have two unique properties that enable them to do this:

  ❍ They **can divide over and over again to produce new cells.**

  ❍ As they divide, they **can change into the other types of cell that make up the body.**

Type of Stem Cell	Source	Potential of the Stem Cell
Embryonic Totipotent Stem Cells	These stem cells are found in the very early stages of a fertilized embryo, typically within the first few days after fertilization.	Can become any cell in the body even form the placenta(an organ in the uterus during pregnancy that provides oxygen and nutrients to the growing baby)
Embryonic Pluripotent Stem Cells	Derived from the inner cell mass of a slightly more developed embryo (around 4-5 days after fertilization).	Can become many different cell types in the body but cannot form the placenta.
Adult Multipotent Stem Cells	Found in various tissues in the human body, like bone marrow or skin.	Multipotent stem cells are more specialized.They can only differentiate into a limited range of cell types specific to the tissue they are found in. For example, bone marrow stem cells can develop into different blood cell types, but not into skin cells.

String of Pearls Supernova

Why in News?

The **James Webb Space Telescope (JWST)** captured an image of **SN1987A**, a **supernova** that **exploded decades ago**, offering new insights into its history and evolution.

What is SN1987A Supernova?

➢ **About:**

  ❍ SN1987A exploded in **1987**, becoming the **nearest and brightest supernova** visible from earth in nearly four centuries.

    ● SN1987A is situated **170,000 light-years away** from Earth in the **Large Magellanic Cloud.**

  ❍ Now, the JWST is revealing intricate details of this cosmic event that have remained hidden until now.

➢ **Alias 'String of Pearls':**

  ❍ SN1987A is often referred to as a **"string of pearls"** as it showcases a series of luminous rings composed of gases and dust expelled by the dying star in its various phases of collapse and explosion.

  ❍ This string of pearls comprises material ejected about 20,000 years before the supernova event, offering insights into the star's history and evolution.

➢ **Unusual Facts about SN1987A:**

  ❍ The star exploded when it was a **blue supergiant** (contrary to the theories as per which **only red supergiant stars could explode**).

  ❍ **Emission of molecular hydrogen** in the ring was not necessarily expected (also it couldn't have been revealed without JWST).

Note:

Note:

➢ The **Magellanic Clouds** are two **irregular, satellite galaxies** that orbit the Milky Way.

❍ One is the Large Magellanic Cloud (LMC) and another is the Small Magellanic Cloud (SMC).

➢ While the Magellanic Clouds are **visible to the unaided eye in the Southern Hemisphere,** they cannot be observed from most northern latitudes.

➢ They serve as excellent laboratories for the **study of very active stellar formation and evolution.**

What is JWST?

➢ Considered a successor of the **Hubble Telescope**, it is the most powerful infrared telescope of **NASA**.

➢ It is an international collaboration between NASA, the European and Canadian Space Agencies.

➢ In 2022, **NASA released a set of images taken with the JWST** which were the deepest and finest infrared image of some of the most distant and oldest galaxies ever discovered.

OBJECTS IN SPACE

QUASAR

◉ Short for "quasi-stellar radio source"

◉ Extremely bright objects powered by supermassive black holes releasing enormous energy

◉ Believably, the most distant objects yet detected in Universe

SUPERNOVA

◉ Extremely powerful explosion; happens when a star at least 5x the mass of Sun dies

◉ The massive star collapses when it runs out of fuel and its pressure drops and the gravity exerted is more

◉ Can be so bright they outshine their entire galaxies for a few days or months

What holds a star together?

Gravity

Heat

Core

Pressure
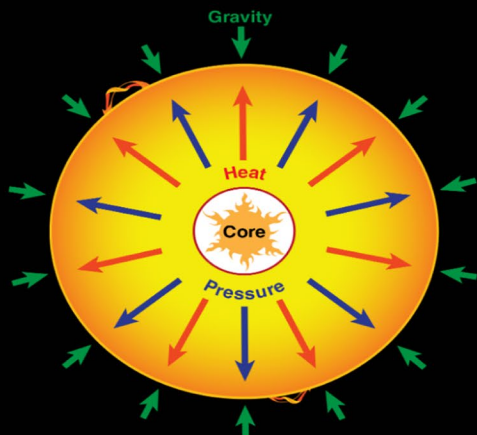
Supernova of a star 10x the Sun's size creates a stellar-mass black hole as its core

NEBULA
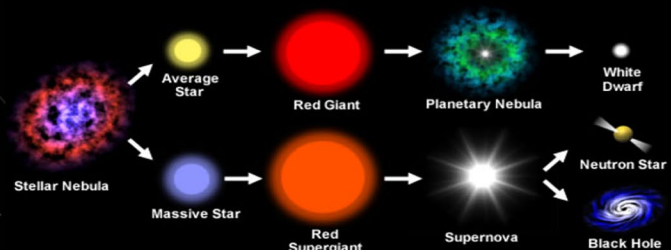
◉ A giant cloud of dust and gas (mostly hydrogen, helium) in space

◉ Forms when a star dies (supernova) or when new stars are forming

◉ Closest known nebula to Earth – Helix Nebula (remnant of a dying star ~700 LYs away from Earth)

NEUTRON STAR

◉ Formed when the core of a star collapses, crushing together every proton and electron into a neutron

● If the star is not massive enough to produce a black hole, the neutrons stop the collapse, and a neutron star is formed

◉ Can be found scattered throughout the galaxy

A "kilonova" is a powerful event that happens when two neutron stars merge

Life Cycle of a Star

Average Star → Red Giant → Planetary Nebula → White Dwarf

Stellar Nebula

Massive Star → Red Supergiant → Supernova → Neutron Star / Black Hole

PULSAR

◉ A rotating neutron star having pulses of radiation at very regular intervals

◉ Most neutron stars are pulsars

◉ Produces strong magnetic fields and strong beams of light

MAGNETAR

◉ Another type of neutron star

◉ Magnetic field of a neutron star – 10^{12} times that of Earth's

● Magnetic field of a Magnetar – 1000x that of neutron star's

Drishti IAS

Note:

drishti

The Bottleneck in Human Evolution

Why in News?

Recently, a study published in *Science* sheds light on a crucial period in human evolution marked by a **population bottleneck**, providing insights into the challenges our early ancestors faced and the genetic changes that shaped modern humans.

➢ Researchers from China, Italy, and the U.S. used a novel genomic analysis technique called **Fast Infinitesimal Time Coalescent Process (FitCoal)** to examine this bottleneck.

FitCoal:

➢ It is a method of inferring ancient population size and demographic history by using modern-day human **genomic sequences** and calculates the composite likelihood for the **site frequency spectrum (SFS), which is the distribution of allele frequencies in the sequences.**

➢ FitCoal can detect severe bottlenecks and speciation events in human evolutionary history that are otherwise difficult to observe from the fossil record.

Genome Sequencing:

➢ Genome sequencing is **figuring out the order of DNA nucleotides, or bases,** in a genome—the order of Adenine, Cytosine, Guanines, and Thymine that make up an organism's DNA.

➢ The genome sequence will represent a **valuable shortcut, helping scientists find genes much more easily and quickly.**

   ○ A genome sequence does contain **some clues about where genes are, even though scientists are just learning to interpret these clues.**

What are the Key Highlights of the Study?

➢ **Population Bottleneck:**

   ○ A population bottleneck is a **sharp reduction in the size of a population due to environmental events or human activities** that kill or prevent the reproduction of a large percentage of the population.

      ● This **reduces the genetic diversity** and the ability to adapt to changing conditions of the remaining population.

   ○ The study reveals that a **severe population bottleneck** occurred between 800,000 to 900,000 years ago, nearly driving the **human species to the brink of extinction.**

      ● During this bottleneck, **only approximately 1,280 breeding individuals sustained the entire human population, and this situation persisted for about 117,000 years.**

➢ **Causes of Bottleneck:**

   ○ **Environmental Factors:**

      ● **Glaciation events, changes in temperature, and severe droughts** were suggested as reasons for the downturn in the size of the human ancestral population.

         ■ The study suggests that humans persisted in presumably dangerous conditions during the bottleneck period, around **930,000-813,000 years ago.**

      ● Loss of other species, **potentially food sources for ancestral humans,** also contributed to the bottleneck.

   ○ **Loss of Genetic Diversity:**

      ● Early human ancestors experienced significant loss of life during the bottleneck period.

      ● This resulted in a substantial loss of genetic diversity, with an **estimated 65.85% of humans' current genetic diversity potentially lost during the early to middle Pleistocene era** (from two million to 11,000 years ago).

➢ **Speciation Event:**

   ○ The bottleneck event in human evolution resulted in the fusion of **two ancestral chromosomes,** forming **chromosome 2 in modern humans**, a **distinct trait not found in other primates.**
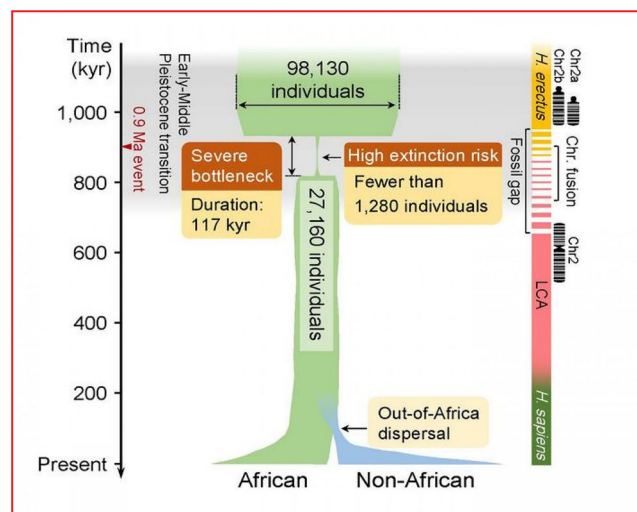
Note:

New Method to Determine Hubble Constant

Why in News?

Recently, some researchers from India and the US have **proposed a novel method to determine the Hubble constant** and the Rate of Expansion of the Universe.

> **Note:** About 13.8 billion years ago, a really small, really dense, and really hot spot lying beyond spacetime began to expand. Its expansion and cooling – in an event that scientists have called the **Big Bang** – **produced the universe as we know it.** The universe continued to expand, at first really rapidly before slowing down to a great degree. Then, about f**ive or six billion years ago, dark energy** – an unknown and largely uncharacterised form of energy – accelerated its expansion again.

What is Hubble Constant?

➤ **About:**
- ❍ In 1929, Edwin Hubble formulated Hubble's law, providing the f**irst mathematical description of the universe's expansion.**
- ❍ The precise rate of this expansion, termed the Hubble constant, remains a contentious issue in cosmology.

➤ **Measurement:**
- ❍ Two details are required to calculate the value of the Hubble constant:
  - The distance between the observer and astronomical objects,
  - The velocity at which these objects are moving away from the **observer as a result of the expansion of the universe.**
- ❍ So far, scientists have used **three methods to get these details:**
  - They compare the observed brightness of a stellar explosion, called a supernova, with its **expected brightness to figure how far away it** could be. Then they measure how much the wavelength of the light from the star has been **stretched by the expansion of the universe** – i.e. the redshift – to figure how much it's moving away.

- They use changes **to the Cosmic Microwave Background (CMB)** – radiation leftover from the Big Bang event – to estimate the Hubble constant.
  - The CMB is a faint, nearly uniform glow of microwave radiation that fills the observable universe. It is often referred to as the "**afterglow" of the Big Bang.**
- They use gravitational **waves, ripples in spacetime produced** when massive astronomical objects – like neutron stars or black holes – collide with each other. Detectors that observe **gravitational waves record the data in the form of curves.**
- ❍ Using the shape of these curves, astronomers can calculate the amount of energy that the collision released. Comparing this with the amount of energy the waves had when they reached earth **allows researchers to estimate the distance between these objects and earth**.
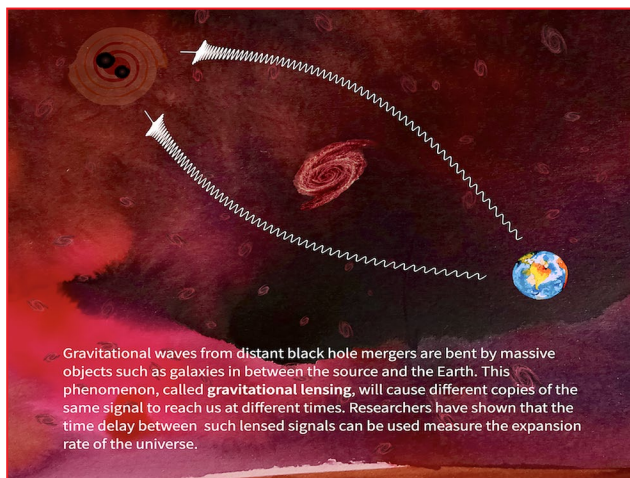
➤ **Discrepancy in Measurement:**
- ❍ Measurements from the first method have reported a Hubble constant about two units higher than the one derived by the second method; the third method **hasn't yet matured enough to provide a precise measurement.**
- ❍ The discrepancy **could be due to a mistake in the methods used** – or it could indicate that the Hubble constant is itself evolving with time.
- ❍ This possibility arises because the three methods estimate the Hubble constant today based on information from different stages of the universe.
- ❍ The CMB way is based on a much younger universe while the other two are based on an older universe (i.e. closer to the one today).

What is the New Approach for Estimation of Hubble Constant?

➤ Researchers proposed analyzing a **collection of lensed gravitational waves** and their time delays to derive information **about the universe's rate of expansion.**
- ❍ Gravitational lensing is a phenomenon in which the gravitational field of a massive object, such as a galaxy or a cluster of galaxies, bends and distorts the light from objects located behind it.

Note:

➢ This method offers an independent **estimation of the Hubble constant** and could help determine other cosmological parameters such as matter density.

　○ Experts in the field find the study **fascinating and see it as a significant cosmological application** of gravitational waves.

Gravitational waves from distant black hole mergers are bent by massive objects such as galaxies in between the source and the Earth. This phenomenon, called **gravitational lensing**, will cause different copies of the same signal to reach us at different times. Researchers have shown that the time delay between such lensed signals can be used measure the expansion rate of the universe.

Minimal-Genome Cells Evolve as Fast as Normal Cells

Why in News?

Researchers from Indiana University, Bloomington, shed light on the **evolutionary potential of cells with minimal genes** (smallest set of genes that are **essential for the survival and reproduction of an organism).**

➢ Their study, published in the *journal Nature*, explores how **cells stripped down to only essential genes can adapt and evolve**, challenging conventional **notions of genetic flexibility and mutation rates.**

What are the Key Findings from the Study?

➢ The study concentrated on a synthetic minimal-cell version of **Mycoplasma mycoides,** a **bacterial species** that can cause respiratory disease in goats and cattle.

　○ This minimal version **has only 493 essential genes,** in contrast to the non-minimal strain with 901 genes, and the study spanned over 300 days.

　○ **Mycoplasma mycoides has the highest recorded mutation rate for any cellular organism.**

➢ Cells with minimal essential genes can adapt and evolve at a rate comparable to normal cells.

➢ Minimal cells exhibited **mutation rates similar to non-minimal cells,** despite their reduced genetic material.

　○ Genome minimization **did not hinder the rate of adaptation in minimal cells.**

➢ Understanding the evolution of minimal cells has implications for fields like **synthetic biology,** where researchers **employ engineering principles** to design organisms for applications in **medicine and fuel production**.

　○ This study reveals that **engineered cells are not static; they undergo evolution,** shedding light on how **synthetic organisms might adapt when facing the inevitable forces of evolution.**

➢ **Gene:**

　○ A gene is a **segment of Deoxyribonucleic acid (DNA)** that codes for a specific protein or function. Genes are the **basic units of heredity** and can be **inherited from parents or mutated by environmental factors.**

➢ **Gene Mutation:**

　○ A gene mutation is a **change in the DNA sequence of a gene** that may affect its function or expression.

　○ Gene mutations can be caused by errors during **DNA replication, exposure to radiation or chemicals, or other factors.**

➢ **Genome:**

　○ A genome is the **complete set of genetic information of an organism** or a virus.

➢ Genetic Sequencing:

　○ It is the process of determining the **order of nucleotides or bases (A, G, C, and T) in a DNA or RNA molecule**

➢ **Genome Editing:**

　○ It is a type of genetic engineering in which DNA is **inserted, deleted, modified or replaced** in the genome of a living organism.

➢ **Genetic Modification:**

　○ It is the **process of changing the DNA of an organism**, such as a bacterium, plant or animal, **by introducing elements of DNA from a different organism.**

Note:

CSIR PRIMA ET11 and Simplified Tractor Testing Process

Why in News?

Recently, **CSIR's Central Mechanical Engineering Research Institute (CSIR-CMERI)** has indigenously designed and developed compact **100% Pure Electric Tractor** named **CSIR PRIMA ET11** mainly to cater **small** and **marginal farmers** of **India**.

➢ Additionally, in a major step towards encouraging **Ease of Doing Business** and **promoting trust-based governance**, the Government has simplified the **process of testing tractors** for **performance evaluation.**

What are the Important Features of CSIR PRIMA ET11?

➢ **About:** The introduction of the **CSIR PRIMA ET11,** a **100% Pure Electric Tractor,** underscores India's commitment to **sustainable agriculture**.
  ❍ The **entire tractor** has been **designed** and **manufactured** with **indigenous components** and **technologies** and to cater the demand of agriculture field application.

➢ **Features:** The **developed technology** is designed to be **user-friendly**, with particular consideration for the convenience and ease of use by women.
  ❍ The tractor is provided with a port called **V2L i.e. vehicle to load**, This means when the tractor is not in operation, its battery power can be utilised for other secondary applications like pump and irrigation etc.

➢ **Significance:**
  ❍ Traditionally tractors use diesel, thus contributing significantly to the environmental pollution.
    ● According to an estimate they **consume about 7.4% of our country's annual diesel usage** and account for **60% of total agricultural fuel usage.**
    ● Also their **PM2.5** and **NOx emissions are likely to increase 4-5 times** the current level in next two decades.
  ❍ Global carbon footprint reduction strategy necessitates rapid transition of this sector towards electrification.
    ● Therefore, **electrification of tractors is a necessary step** that aids our country in achieving climate related targets.

Note:

➢ **The CSIR-CMERI** is a premier research institute located in **Durgapur, West Bengal.** It was established in 1958 under the CSIR

➢ CSIR CMERI has a long history in design and development tractors of various ranges and capacities; the **very first indigenously developed being SWARAJ Tractor** in 1965, followed by **35hp Sonalika tractor** in 2000 and then **Small diesel tractor of 12hp Krishishakti** in 2009 for small and marginal farmers demand.

What is the Simplified Procedure for Tractor Testing?

➢ Tractor manufacturers shall now be allowed to participate in the **subsidy scheme** on the basis of **CMVR/Conformity of Production (COP) certificates** and a **self-declaration** to be given by the company that the tractor proposed for inclusion under subsidy conforms to the benchmark specifications given by **Department of Agriculture & Farmers' Welfare.**

➢ The manufacturers shall give a **minimum of three years warranty** on the **tractor** to be supplied under subsid.

➢ The tractor testing process will follow the some mandatory tests i.e., **Drawbar Performance Test, PTO Performance and Hydraulic Performance Test** and **Brake Performance.**
  ❍ All these tests will be done through the use of load cars Central Farm Machinery Training and Testing Institute (CFMTTI) or at Mahindra Research Valley (MRV) or any other Government authorised institute or at their own facilities provided.

➢ **Brake Performance Test** shall be done as per the requirements under **Central Motor Vehicles Rules (CMVR).**

Super Blue Moon

Why in News?

On August 30, 2023, the night sky was illuminated by a **rare phenomenon: a super blue moon.** However, despite its name, this **full moon was neither blue in colour nor super in size**.

➢ The last blue supermoon was in 2009, according to the **National Aeronautics and Space Administration (NASA)**, and the next is not expected until 2037.

Note:

What is a Super Blue Moon?

➢ A super blue moon combines a **supermoon and a blue moon**.

➢ A supermoon occurs when the **moon aligns closely with Earth during its orbit, making it appear larger and brighter**.

  ○ This alignment, called **perigee, contrasts with apogee, when the moon is farthest** in its elliptical orbit around earth**.** While the difference is subtle, near the horizon, an **optical illusion can make it seem larger.**

  ○ The term **"supermoon" was coined in 1979 by astrologer Richard Nolle.**

➢ A blue moon is the **second full moon in a month**. Despite its name, **a blue moon isn't blue**; it's the traditional name for the second full moon in a month.

  ○ Sometimes, smoke or dust in the air can scatter red wavelengths of light, as a result of which the moon may, in certain places, appear more blue than usual, but this has **nothing to do with the name "blue" moon.**

Perigee (225,804 miles)   Apogee (251,968 miles)
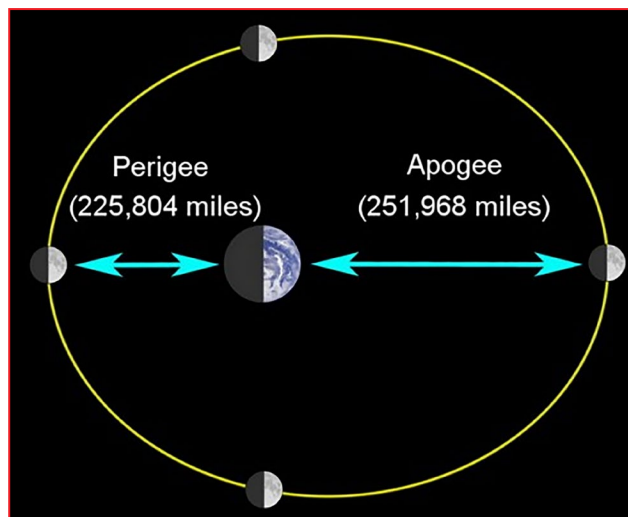
➢ **Effect:**

  ○ The moon's gravitational pull during a supermoon slightly affects tides, causing minor fluctuations in coastal high and low tides. However, the difference is **usually not significant enough to cause major disruptions.**

THE RAREST FULL MOONS

Supermoon
Supermoons look ~30% larger than regular full moons. They happen when the moon is both full and is also orbiting within 90% of perigee (the part of the Moon's orbit closest to Earth).

Blood Moon
Occurs during a total lunar eclipse when the Earth is between moon and sun. During this time, the Moon is lit only by the edges of the Earth's atmosphere which scatters blue but not red light.

Super Flower Blood Moon
The Flower Moon is the second full moon of spring and May's full moon. When it also meets both "supermoon" and "blood moon" criteria, it becomes the Super Flower Blood Moon.

Ring of Fire Eclipse
Occurs during a solar eclipse when the moon is between Earth and Sun and when the Moon is also further away in its orbit so that it only partially blocks the Sun, leaving a "ring of fire."

Micro Moon
A full Moon that happens at the same time that the Moon is furthest from Earth in its orbit. This makes the Moon look smaller and dimmer than usual.

Blue Moon
The second full moon in a month. Full moons are 29 days apart, but most months are 30-31 days, so sometimes two full moons will happen within the same month.

Harvest Moon
The full, bright Moon that happens closest to the start of autumn. It got its name because the extra light was used by farmers to harvest crops for fall.

Cold Moon
Also called "The Long Night Moon," this is the full moon that occurs in December closest to the winter solstice - the longest night of the year.

Note:

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Electrified Flex Fuel Vehicle

Why in News?

Recently, the Prototype of **the world's 1st Bharat Stage-6 (BS6)** Stage-II, **Electrified Flex fuel vehicle**, developed by Toyota Kirloskar Motor was unveiled.

➢ This vehicle is capable of **running on up to 85% ethanol blended petrol** and features an **electric powertrain.**

➢ The Ministry of Petroleum & Natural Gas has also highlighted flex-fuel vehicles' potential to substitute petrol with higher **ethanol blends** beyond 20%.

> **Note:**
> ➢ **Flex-fuel vehicles (FFV):** They have engines that can run on flexible fuel - **a combination of Petrol/ Diesel/Electric and ethanol, which can include up to 100% ethanol.**

What are the Electrified Flex Fuel Vehicles?

➢ **About:**
  ○ Electrified Flex Fuel Vehicle integrates both a **Flex Fuel engine** and an **electric powertrain**, offering the dual benefit of **higher ethanol use and improved fuel efficiency.**
  ○ Flex Fuel Strong Hybrid Electric Vehicles (FFV-SHEV): When FFV is integrated along with **strong hybrid electric technology, it is referred as FFV-SHEVs.**
    ● Strong hybrid is another term for full hybrid vehicles, which have the capability to **run solely on either electric or petrol modes.**
    ● In contrast, **mild hybrids cannot run purely on one of these modes and use the secondary mode merely as a supplement** to the main mode of propulsion.

➢ **Significance:**
  ○ The integration of an electric powertrain **reduces reliance on conventional fuels,** contributing towards **sustainable transportation** and India's **'Aatmnirbhar Bharat' initiative** as production of **ethanol** increases.
  ○ Similar to **SHEVs,** this vehicle can achieve significantly **higher fuel efficiency, optimizing the use of ethanol and electricity.**
  ○ By promoting the use of FFVs, India can capitalize on its abundant **ethanol potential, reducing petrol consumption.**

○ The vehicle represents a significant stride towards **decarbonization and greener mobility, aligning with global efforts to combat climate change.**

What are BS6 (Stage II) Norms?

➢ **BS6 Norms:** The Bharat Stage (BS) norms are emission standards instituted by the Government of India to regulate the output of air pollutants from motor vehicles.
  ○ The BS regulations are **based on the European emission standards** and the **Central Pollution Control Board** implements these standards.
  ○ Presently, every newly sold and registered vehicle in India is required to adhere to the **BS-VI version of emission regulations.**

➢ **BS6 Stage II:** BS6(Stage II) has even **stricter emission limits compared to the initial BS6 norms.**
  ○ BS6 (Stage II) incorporates **Real Driving Emissions (RDE)** and **Corporate Average Fuel Economy (CAFE 2)** and On-Board Diagnostics.
  ○ The new RDE test figures will provide a more realistic estimation of the amount of emissions likely to be produced by vehicles in real traffic conditions with frequent changes in speed, acceleration, and deceleration.
  ○ Onboard diagnostic (OBD) systems monitor and report the status and performance of various vehicle subsystems and sensors.

> **Ethanol Blending:**
> ➢ **About:**
>   ○ **Ethanol,** a key **biofuel** produced through fermentation of sugars by yeasts or petrochemical methods.
>   ○ The **Ethanol Blending Programme (EBP)** in India aims to decrease oil imports, curb emissions, achieve energy self-sufficiency, and **doubling farmers' income,** transitioning them to **'urjadata' while remaining 'annadata',** and contributing to environmental improvement.
>   ○ The Government of India has advanced the **target for 20% ethanol blending in petrol (also called E20) to 2025 from 2030.**
>   ● India has been increasing its ethanol blending in petrol from 1.53% in 2013-14 to **11.8% in August, 2023.**

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> ➤ **Other Initiatives to Promote Ethanol Blending in India:**
>   - ❍ **National Policy on Biofuels 2018**
>   - ❍ **E100 Pilot project**
>   - ❍ **Pradhan Mantri JI-VAN Yojana 2019**
>   - ❍ **Repurpose Used Cooking Oil (RUCO)**

Nipah Virus

Why in News?

The **Nipah Virus** has made a resurgence in Kerala, India, with two fatalities.

➤ This marks the first **Nipah Virus outbreak in India since 2021 when a case was reported in Kozhikode during the Covid-19 pandemic.**

What is Nipah Virus?

➤ **About:**
  - ❍ It is a **zoonotic virus** (it is transmitted from animals to humans).
  - ❍ The organism that causes Nipah Virus encephalitis is an RNA or **Ribonucleic acid virus** of the family Paramyxoviridae, genus Henipavirus, and is closely related to Hendra virus.

  - ● **Hendra virus (HeV) infection** is a rare emerging zoonosis that causes severe and often fatal diseases in both infected horses and humans.
  - ❍ It **first broke out in Malaysia and Singapore** in 1998 and 1999.
  - ❍ The disease is named after a village in Malaysia, Sungai Nipah, where it was first detected.
  - ❍ It **first appeared in domestic pigs** and has been found among several species of domestic animals including dogs, cats, goats, horses and sheep.

➤ **Transmission:**
  - ❍ The disease spreads through **fruit bats** or 'flying foxes,' of the genus Pteropus, who are natural reservoir hosts of the Nipah and Hendra viruses.
  - ❍ The **virus is present in bat urine** and potentially, bat faeces, saliva, and birthing fluids.

➤ **Symptoms:**
  - ❍ The human infection presents as an **encephalitic syndrome** marked by fever, headache, drowsiness, disorientation, mental confusion, coma, and potentially death.

➤ **Prevention:**
  - ❍ Currently, there are **no vaccines for both humans and animals.** Intensive supportive care is given to humans infected by the Nipah virus.

■■■

Note:

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Environment & Ecology

Highlights

- *Fthanol AS A Fuel*
- *Marine Light Pollution*
- *Leopard Sterilisation*
- *Global Stocktake Report*
- *2nd Berlin Forum on Chemicals and Sustainability*
- *E-Waste Management in India*
- *European Honeybees as Biomonitoring Agents for AMR*
- *Advanced Biodegradable Nanocomposite Film*
- *Global Push to Criminalize Ecocide*
- *Marine Sand Extraction*
- *Forest Conservation and Tribal Rights in Northeast India*
- *Invasive Alien Species*
- *Hollongapar Gibbon Sanctuary*
- *Red Sand Boa*
- *Flora Fauna and 'Funga'*

Marine Light Pollution

Why in News?

The impact of **artificial lighting** on land-based life (humans, fireflies, and birds) has been known for quite some time.

➢ However, a recent US-based study has argued to consider light pollution's influence on coastal **marine organisms** as well which affects everything from **whales to fish, corals, and plankton.**

What is Artificial Lighting in the Marine Environment?

➢ **About:**
  ○ Artificial lighting refers to the light that is produced from **artificial sources such as candles, fire, electricity, etc.**
    ● Ecologists and biologists have long recognized that artificial light at night can have adverse effects on the health of humans and terrestrial wildlife.
  ○ Recent research is showing that **marine life is also sensitive to artificial light,** including extremely low levels and certain wavelengths, **particularly blue and green light.**

➢ **Marine Light Pollution:** When this **artificial light is used excessively or poorly**, it becomes **light pollution** and disrupts the natural patterns of wildlife, contributing to the **increase in carbon dioxide (CO_2)** in the atmosphere.
  ○ The scientists found that 1.9 million km^2 of the ocean experience biologically significant amounts of artificial light pollution to a depth of 1 metre.
    ● This represents about **3% of the world's Exclusive Economic Zones (EEZs).**
  ○ Significant areas of the ocean are seeing **light exposures to depths of 10 metres, 20 metres, or more.**
    ● In areas with very clear water, the light at night can reach depths of more than 40 metres.

➢ **Sources:**
  ○ **Coastal development** (e.g., buildings, streetlights, billboards, ports, piers, docks and, light house).
  ○ **Vessels** (e.g., fishing and merchant marine vessels), harbours and offshore infrastructure such as oil rigs.
  ○ Some of the common types of artificial lights in the marine environment are **LED, fluorescent, metal halide, and plasma lamps**.
    ● **White LEDs produce broad spectrum light that is sensed by a wide range of organisms** and have a peak at short wavelengths (blue and green light) to which many marine organisms are particularly sensitive.

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Note:

➤ The **Earth is getting artificially brighter, at a rate of 2.2% per year.** As a result of these brighter nights, the impacts of **artificial light at night (ALAN)** have become an increasing focus in terrestrial ecology.

  ○ As per studies, **non-natural light increased the brightness of Skyglow**, by 9.2-10% every year between 2011 and 2022

➤ Research has shown that **ALAN is a major form of anthropogenic pollution** that can affect a wide range of biotic processes, including physiology, behaviour, animal movements, species interactions, community structure and reproduction.

LIGHT POLLUTION DEVASTATES WILDLIFE.

Plants and animals depend on Earth's daily light and dark cycle to govern life-sustaining behaviors. Research shows that artificial light at night has adverse and even deadly effects on many species.

LIGHT POLLUTION WASTES ENERGY AND MONEY.

As much as 50% of outdoor lighting is wasted, which increases greenhouse gas emissions, contributes to climate change, and renders us all more energy-dependent.

LIGHT POLLUTION CAN MAKE YOU LESS SAFE.

There is no clear scientific evidence that increased outdoor lighting deters crime. Poor outdoor lighting can decrease personal safety by making victims and property more visible to criminals.

LIGHT POLLUTION MAY HARM YOUR HEALTH.

Studies suggest that artificial light at night negatively affects human health by increasing our risks for obesity, sleep disorders, depression, diabetes, breast cancer, and more.

LIGHT POLLUTION ROBS US OF OUR HERITAGE.

Our ancestors experienced a night sky that inspired science, religion, philosophy, art, and literature. Now, millions of children across the globe will never know the wonder of the Milky Way.

How does Artificial Lightning Affect the Marine Ecosystem?

➤ **Disruption of Normal Cycles:** As per the study, it already took marine organisms an **evolution of over millions of years to adapt to natural light** and now the threat of ever-increasing anthropogenic light pollution has been posing several threats to them.

  ○ Artificial light can easily **wash out the glow of moonlight and starlight** consequently **disrupting their hormonal cycles, inter-species behaviour, and reproduction cycles.**

➤ **Illustration:** For instance, to lay their eggs, **female sea turtles** try to find a quiet, dark spot and avoid light. However, due to artificial lightning, they may end up not coming ashore at all.

  ○ Moreover, their hatchlings head toward inland lights instead of moonlight on the water and then die of dehydration or starvation.

➤ **LEDs Worsening the Impact:** The ever-growing usage of LED lighting is also altering the very nature of artificial light.

➤ **Suggestion:**

  ○ Encouraging land-based **Lights Out efforts** (local, state, and regional campaigns to darken skies) to help **migrating birds** that are drawn to light at night. It will also benefit marine systems near coastal cities.

  ○ **Increasing the usage of red light in coastal areas** as much as possible and **putting up barriers to shield the coastline from artificial light.**

    ● Red light, having the longest wavelength in the visible spectrum, doesn't penetrate as far into the water.

Note:

Fthanol AS A Fuel
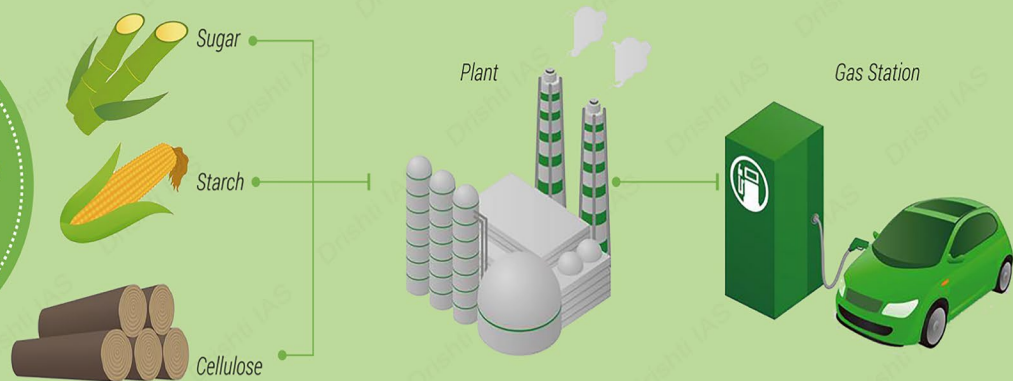

ETHANOL AS A FUEL

About Ethanol
- One of the principal biofuels
- Also called ethyl alcohol (C2H5OH)

Produced
- Naturally by fermentation of sugar (or corn, rice etc)
- By petrochemical processes (ethylene hydration)

World Biofuel Day is celebrated on 10 August to raise awareness about the importance of non-fossil fuels.

Sugar
Starch
Cellulose

Plant

Gas Station

Ethanol Blending

Blending ethanol with petrol to burn less fossil fuel while running vehicles.

Blending Target
- 20% ethanol blending in petrol (E20) by 2025

  Currently, ethanol makes up 10% of the petrol used in vehicles.

Significance
- Reduce oil imports
- Equivalent efficiency at a lower cost than petrol
- Burns completely and cleaner than petrol
- Ethanol produced from farm residue to boost farmers' income

Challenges in Success
- **High land requirement** for sugarcane (+ consequent food prices issue)
- **High water requirement** of biofuel crops

Related Initiatives
- Roadmap for Ethanol Blending in India (Report by NITI Aayog) (2021)
- **E100** Pilot Project (Network for production and distribution of ethanol) (2021)
- Pradhan Mantri **JI-VAN** Yojana (to boost 2G ethanol projects) (2019)
- The National Policy on Biofuels (2018)

Note:

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Leopard Sterilisation

Why in News?

Recently, the Maharashtra Government has decided **to sterilize Leopards for the sustainable management of population for leopards** in the State.

➢ Gujarat's forest department has also proposed sterilisation of leopards, especially in and around **Gir National Park.**

What is the Need for Sterilizing Leopards and Concerns?

➢ **Need:**
  ○ In 2019-20 alone, Maharashtra saw **58 human deaths due to leopards**—over half the 97 casualties in 2010-18.
  ○ Maharashtra has decided to sterilize leopards as a response to the increasing **leopard-human conflicts**, rising leopard population, and the need to protect both leopards and human communities.
  ○ The proposed sterilisation program aims to address these challenges while complying with environmental conservation laws and regulations.

➢ **Concerns:**
  ○ Concerns about the sterilisation of leopards include **doubts about its effectiveness,** the need for comprehensive scientific research, veterinary skill development, potential stress on leopards, challenges with traditional methods, and alternative contraception options.
  ○ There is also an emphasis on **addressing conflicts and gaining community support for conservation efforts.**

What are the Key Points Related to Leopards?

➢ **Scientific Name:** *Panthera pardus*

➢ **About:**
  ○ The leopard is the smallest of the Big Cats (Of genus Panthera namely the **Tiger, Lion, Jaguar, Leopard, and Snow Leopard),** and known for its ability to adapt in a variety of habitats.
  ○ A nocturnal animal, the leopard hunts by night.
  ○ It feeds on smaller species of herbivores found in its range, such as the chital, hog deer and wild boar.

  ○ Melanism is a common occurrence in leopards, wherein the entire skin of the animal is black in colour, including its spots.
    ● A melanistic leopard is often called **black panther** and mistakenly thought to be a different species.

➢ **Habitat:**
  ○ It occurs in a wide range in sub-Saharan Africa, in small parts of Western and Central Asia, on the Indian subcontinent to Southeast and East Asia.
    ● The Indian leopard (*Panthera pardus fusca*) is a leopard widely distributed on the Indian subcontinent.

➢ **Population in India:**
  ○ As per a recent report **'Status of leopards in India, 2018'** released by the Ministry of Environment, Forest and Climate Change, there has been a "60% increase in the population count of leopards in India from 2014 estimates''.
    ● The 2014 estimates placed the population of leopards at nearly 8,000 which has increased to 12,852.
  ○ The largest number of leopards have been estimated in **Madhya Pradesh (3,421) followed by Karnataka (1,783) and Maharashtra (1,690).**

➢ **Threats:**
  ○ Poaching for the illegal trade of skins and body parts.
  ○ Habitat loss and fragmentation
  ○ Human-Leopard conflict

➢ **Conservation Status:**
  ○ **IUCN Red List:** Vulnerable
  ○ **CITES:** Appendix-I
  ○ **Indian Wildlife (Protection) Act, 1972:** Schedule-I

Note:

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Global Stocktake Report

Why in News?

Recently, the synthesis report of the first **Global Stocktake** released by the **United Nations Framework Convention on Climate Change (UNFCCC)** ahead of the **18th G-20 summit** in New Delhi.

➤ The synthesis report presents **17 key findings**, painting a concerning picture of the world's progress towards **Paris Agreement targets**. While there is a limited window for corrective action, the report echoes **previous warnings that global efforts** are falling short.

What is Global Stocktake?

➤ The Global Stocktake is a **periodic review mechanism** established under the **Paris Agreement in 2015.**
  ○ The stocktake **takes place every five years,** with the first-ever stocktake scheduled to conclude at the UN Climate Change Conference (COP28) at the end of 2023.

➤ Its primary objectives **are to assess individual countries' efforts** to reduce **Greenhouse Gas (GHG)** emissions and transition to renewable energy sources.

➤ The stocktake is **designed to keep countries accountable and encourage** them to increase their climate ambitions over time.
  ○ In 2015, when countries committed in Paris **to keep global temperatures from rising beyond 2 degrees Celsius by the end of the century** and "as far as possible" below 1.5 degrees Celsius, they also agreed to **periodically review, or take stock of efforts,** made by individual countries in containing greenhouse gasses.

➤ While countries have laid out their **Nationally Determined Contributions (NDC)**, they are expected to — but not obliged to — increase their ambitions every five years.

➤ While the latest NDC were submitted in 2020, a stocktake also aims to push countries to set higher targets before the next **NDCs are published in 2025.**

What are the Key Recommendations of the Report?

➤ **Galvanizing Effect of Paris Agreement:**
  ○ The Paris Agreement has galvanised countries into **setting goals and signalling the urgency of the climate crisis**.

○ Governments need to support ways to transition their economies away from fossil fuel businesses and that states and communities must strengthen efforts.

➤ **Equitable Economic Transition:**
  ○ While rapid change could be "disruptive," countries should work on ensuring that the **economic transition is equitable** and **inclusive.**
  ○ Much more ambition is needed to reduce global GHG emissions by **43% by 2030 and further by 60% in 2035** and reach net zero CO_2 emissions by 2050 globally.
  ○ Rapid change should prioritize equitable and inclusive economic transitions.

➤ **Scaling Up Renewable Energy and Halting Deforestation:**
  ○ Renewable energy has to be scaled up and all 'unabated fossil fuels are to be **rapidly eliminated.**
  ○ Deforestation and land-degradation **have to be halted and reversed and agricultural practices** critical to reducing emissions and conserving and enhancing carbon sinks have to be encouraged.

➤ **Fragmented Adaptation Efforts:**
  ○ While the world, as a whole, has committed to scale up **steps to help adapt to the unfolding and future impacts of climate change**, most efforts were "fragmented, incremental, sector-specific and unequally distributed across regions."
  ○ Transparent reporting on **adaptation could facilitate and enhance understanding**, implementation and international cooperation.

➤ **Addressing Loss and Damage:**
  ○ Averting, **minimising and addressing 'loss and damage,'** requires urgent action across climate and development policies to manage risks comprehensively and provide support to impacted communities.
  ○ Support for adaptation and funding **arrangements for averting, minimising and addressing loss and damage**, from the impact of climate change, needed to be rapidly scaled up from expanded and innovative sources.

➤ **Enhancing Climate Finance Access:**
  ○ Financial flows **needed to be made consistent** with climate-resilient development to meet urgent and increasing needs.

Note:

○ A substantial shift in financial flows is **essential to support low greenhouse gas emission**s and climate-resilient development.

What is the Impact of Global Stocktake Report?

➢ The global stocktake report influenced the **G20 Leaders Declaration**, a significant outcome of the summit. For the first time, the declaration formally recognized the substantial financial requirements for transitioning to renewable energy.

➢ It noted the need for USD 5.8-5.9 trillion in the pre-2030 period for developing countries and USD 4 trillion per year for clean energy technologies by 2030 to achieve **Net-Zero emissions by 2050.**

2nd Berlin Forum on Chemicals and Sustainability

Why in News?

Recently, the **Union Minister for Environment, Forest, and Climate Change** participated in the virtual '**High Level Dialogue on Human Health and Environment'** convened under the **2nd Berlin Forum on Chemicals and Sustainability**- Just Transition Towards a Pollution-free Planet.

➢ The summit aims to foster a **shared global understanding of critical issues in chemical and waste management** while providing crucial political direction.

What is the 2nd Berlin Forum on Chemicals and Sustainability?

➢ The 2nd Berlin Forum on Chemicals and Sustainability is a high-level event that aims to provide political guidance and momentum on key international issues and priorities regarding **sound management of chemicals and waste**.

○ It was organized by the **German Federal Ministry for the Nature, Nature Conservation, Nuclear Safety, and Consumer Protection (BMU).**

○ It also aimed to garner support and ensure a high level of ambition of the '**SAICM Beyond 2020**' during the upcoming **5th meeting of the International Conference on Chemicals Management (ICCM5).**

○ The **First Berlin Forum on Chemicals and Sustainability** highlighted the **need for a science-policy interface (SPI) on chemicals and wastes.**

What is SAICM Beyond 2020?

➢ The **Strategic Approach to International Chemicals Management (SAICM), adopted in 2006**, is a policy framework to promote chemical safety worldwide.

○ The initial objective was to achieve **"the sound management of chemicals throughout their life cycle so that by the year 2020**, chemicals are produced and used in ways that minimize significant adverse impacts on the environment and human health."

○ The scope of SAICM is nearly unlimited, **it includes both toxic chemicals and hazardous industrial activities**. However, **SAICM imposes no binding obligations on countries.**

➢ As the **mandate of SAICM ended in 2020** and the goal of a sustainable chemicals management has not been achieved, the parties agreed on developing a follow up process – **SAICM Beyond 2020** – which was supposed to be adopted in 2020 at ICCM 5.

○ Since in-person meetings have been suspended due to the Covid-19 pandemic, the 5th session of the ICCM5, **organized by UNEP under the presidency of the government of Germany**, will take place from **25 to 29 September 2023** at the **World Conference Center Bonn (WCCB), Germany.**

Why is Sound Management of Chemicals and Waste Important?

➢ **About:**

○ **Chemicals** are essential for various sectors of the economy, such as **agriculture, industry, health, and consumer goods.** However, they also pose significant risks to human health and environment if not managed properly.

○ A **WHO 2021 Report** estimated that **2 million lives and 53 million disability-adjusted life-years** were lost in 2019 due to exposures to selected chemicals.

● Nearly half of deaths attributable to chemical exposures in 2019 were due to **lead exposure** and resulting **cardiovascular diseases**.

➢ **Sound Management of Chemicals and Waste is Crucial for:**

○ **Human Health Protection:** Proper management helps **minimize exposure to hazardous chemicals,** reducing the risk of acute and chronic health problems.

- It prevents the **contamination of air, water, and soil** with harmful chemicals that can harm human health through **ingestion, inhalation, or skin contact.**

○ **Environmental Conservation:** The release of certain waste products, such as greenhouse gases, can **contribute to climate change,** making **proper** waste management essential for mitigating environmental impacts.

○ **Resource Efficiency:** Proper waste management **allows for the recovery and recycling of valuable materials**, conserving natural resources and reducing the need for resource extraction.

- Recycling and proper waste disposal can lead to **energy savings compared to the production of new materials** from raw resources.

○ **Economic Benefits:** The waste management and recycling industries **create jobs and stimulate economic growth.**

- Proper chemical management also **reduces the cost of treating health problems** caused by hazardous substances.

○ **Global Cooperation:** Chemicals and waste can cross borders, necessitating **international cooperation to address global challenges effectively.**

- For instance, the recent **waste water release of the** Fukushima nuclear power plant (**with traces of tritium)** raised concerns across the globe.

- There is a need for collaborative efforts to promote **shared responsibility for the management of chemicals** and waste on a global scale.
  - The **Stockholm Convention** serves as a prominent example.

○ **Long-Term Sustainability:** Responsible management ensures a **cleaner and safer environment for future generations** by reducing pollution and minimizing the impact of chemicals and waste on ecosystems.

- It is also crucial for achieving the **Sustainable Development Goals (SDGs)** and protecting the planet and its people.

Note:

➢ The **Stockholm Convention** is a global treaty aimed at **safeguarding human health and the environment from persistent organic pollutants (POPs)**, which are long-lasting, **widespread chemicals** that pose risks to both people and wildlife.

○ India **ratified the convention in 2006,** which allows it to maintain a **default "opt-out"** status, meaning that amendments to convention Annexes do not apply to India unless it **explicitly deposits a ratification, acceptance, approval, or accession instrument** with the UN depositary.

➢ Other Conventions Related to Chemicals are: **Basel Convention (on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal),** Minamata Convention (mercury), **Rotterdam Convention** (on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade)**.**

E-Waste Management in India

Why in News?

The Indian Cellular and Electronics Association (ICEA) has released a comprehensive report titled **'Pathways to** Circular Economy **in the Indian Electronics Sector.'**

➢ This report highlights the urgent need to **rethink** e-waste management **and explore opportunities to harness its potential.**

➢ The report suggests that this transformation could unlock an additional **USD 7 billion market opportunity.**

What are the Major Highlights of the Report?

➢ **The E-Waste Landscape in India:**

○ According to the ICEA report, **e-waste management in India is predominantly informal**, with approximately **90% of e-waste collection and 70% of recycling being managed by a competitive informal sector.**

- The informal sector excels at salvaging older electronic devices for spare parts and profitably carrying out repairs.

○ Industrial hubs like Moradabad specialize in **processing** printed circuit boards (PCBs) **to extract valuable materials like gold and silver.**

➢ **Circular Economy Principles:**

Note:

○ The report emphasizes the **need to shift the outlook on e-waste management towards establishing a circular economy.**

- China serves as an example, **targeting to use 35% of secondary raw materials in the manufacturing of new products by 2030**, reflecting a circular economy approach.

○ **Proposed Strategies for a Circular Economy in E-Waste:** The ICEA report outlines several key strategies to usher in a circular economy for e-waste in India:

- **Public-Private Partnerships (PPP)**: Collaboration between **government bodies and private enterprises** is essential to distribute the costs of setting up a reverse supply chain.
  - This complex endeavor involves collecting devices from users, erasing personal data, and channeling them for further processing and recycling.

- **Auditable Database:** The creation of a **transparent and auditable database of materials** collected through the reverse supply chain process can enhance accountability and traceability.

- **Geographical Clusters:** Establishing **geographical clusters where discarded devices are gathered and dismantled** can optimize the recycling process, making it more efficient and cost-effective.

- **Incentivizing 'High-Yield' Recycling Centers:** Encouraging the development of high-yield recycling facilities can help **maximize the value extraction from electronic products,** including rare earth metals in **semiconductors**.

- **Promoting Repair and Product Longevity:** Policy recommendations include **encouraging repair and making products last longer.**
  - This could involve supporting a **user's right to repair,** reducing the environmental burden of electronic waste.

> **Note**: In a circular economy, **discarded electronics can be given a new life,** either as **standalone devices or by reintroducing their components** and precious metals into new hardware.
>
> ➤ It views all materials produced on Earth as valuable resources rather than waste.

What is the Status of E-Waste Management in India?

➤ **About E-Waste:**

○ **Electronic waste (e-waste),** is a generic term used to describe all types of **old, end-of-life or discarded electrical and electronic equipment,** such as household appliances, office information and communications equipment etc.

- E-waste contains numerous toxic chemicals including metals such as **lead, cadmium, mercury, and nickel.**

○ India currently ranks **third among the largest generators of e-waste globally,** behind only China and the US.

- The volume of e-waste in India has witnessed a significant surge to **1.6 million tonnes in 2021-22.**

- The **65 cities in India generate more than 60% of the total generated e-waste**, whereas 10 states generate 70% of the total e-waste.

➤ **E-Waste Management in India:**

○ In India, the management of electronic waste was addressed within the framework of the **Environment and Forests Hazardous Wastes (Management and Handling) Regulations of 2008.**

○ In 2011, a significant notice pertaining to the **E-waste (Management and Handling) Regulations of 2010**, governed by the **Environment (Protection) Act of 1986**, was issued.

- **Extended producer's responsibility (EPR)** was its main feature.

○ **E-waste (Management) Rules, 2016** was enacted in 2017, with over **21 products (Schedule-I)** included under the purview of the rule. It included **Compact Fluorescent Lamp (CFL) and other mercury containing lamps**, as well as other such equipment.

○ In 2018, the 2016 rules underwent an amendment that broadened their scope to emphasize the promotion of **authorization and product stewardship.**

- **Product stewardship** is a concept and approach that emphasizes the responsibility of **producers, manufacturers, and other stakeholders** for the entire life cycle of a product, from its creation to its disposal or recycling

Note:

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○ Government of India notified **E-Waste (Management) Rules, 2022** with a major aim to **digitize the e-waste management process** and enhance visibility.

- It also restricts the use of **hazardous substances (such as lead, mercury, and cadmium)** in **manufacturing electrical and electronic equipment** that have an adverse impact on human health and the environment.

How can India Work Towards Reducing and Recycling E-Waste More Effectively?

➤ **Formalizing E-waste Collection:** There is a need to create a **comprehensive regulatory framework for e-waste collection,** incorporating **mandatory registration and licensing of collection centers** and recyclers to formalize and standardize the process.

➤ **E-Waste Tax Credits for Manufacturers**: Implementing a tax credit system that provides incentives to electronics manufacturers for designing products with **extended lifespans and repairability features.**

- ○ This approach aims to **promote eco-friendly design practices while discouraging planned obsolescence.**

➤ **E-Waste ATMs:** Installing E-Waste ATMs in public places, where individuals can deposit old electronic devices, and in return, **receive small financial incentives or vouchers for public transportation or essential goods.**

- ○ These ATMs could also **feature educational displays to raise awareness about e-waste recycling.**

➤ **E-Waste Tracking and Certification**: Establishing a **blockchain-based system** to track the entire lifecycle of electronic devices**.

- ○ Each device could have a digital certificate that records its manufacturing, ownership, and disposal history.
- ○ This would make it **easier to trace and hold responsible parties accountable** for improper disposal.

➤ **E-Waste Art and Awareness:** Promoting awareness through **art installations made from e-waste.** Encouraging artists to create sculptures or exhibits in public spaces to visually depict the magnitude of the e-waste problem and raise awareness about proper disposal.

European Honeybees as Biomonitoring Agents for AMR

Why in News?

A recent study has revealed an unconventional yet efficient method for **monitoring the proliferation of antimicrobial resistance (AMR) in urban areas**: the utilization of **European honeybees** as biomonitoring agents.

What are the Major Highlights of the Research?

➤ **European honeybees** serve as a unique **environmental proxy,** effectively **"crowdsourcing" data as they interact with contaminants** in various urban elements such as soil, dust, air, water, and pollen during their foraging activities.

- ○ **Their short lifespan, around 4 weeks,** allows them to provide real-time data on the state of the environment concerning antimicrobial resistance.

➤ Researchers have shed light on the significance of these bees in assessing pollution that may pose risks to human health. They analyzed the **gut bacteria of 144 bees and identified Class 1 integrons (intI1)** as a universal marker for **tracking AMR.**

- ○ Surprisingly, around **52% of the bees carried intI1 in urban areas.**
- ○ **Integron** is a mobile DNA element that can capture and carry genes, particularly those responsible for antibiotic resistance.

➤ Furthermore, the **researchers examined eight bees from each of the 18 hives** owned by citizen-scientist beekeepers in Greater Sydney, Australia.

- ○ 80% of these bees across all hives **tested positive for one or more AMR targets.**
- ○ Higher concentrations were observed near bodies of water like dams and lakes.

What are European Honeybees?

➤ **About:**

- ○ European honeybees (*Apis mellifera*) commonly referred to as the **Western honey bee**, possess two pairs of wings and usually display **black or brown coloring with distinctive yellow stripes on its abdomen.**

Note:

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- They prefer to **nest in a cavity such as a hollow tree or house wall.**
  ○ They are assessed as "**Data Deficient**" on the **IUCN Red List.**
- **Distribution:**
  ○ The species lives predominantly in managed bee colonies **throughout Europe**, although there are potentially feral and **wild bee colonies found in a wide range of habitats.**
    - Generally, the species can be found to **inhabit temperate forests, grasslands and even semi-deserts.**

What is the Social Structure and Behaviour of Honeybee?

- **Social Structure:**
  ○ Among them, **queen bees, the fertile females,** develop into the largest individuals.

What is Antimicrobial Resistance?

- **Drones, which are the males**, have a medium build and notably larger eyes compared to females.
- **Worker bees, smaller sterile females,** are equipped with **barbed stingers and possess unique hind legs utilized as pollen baskets.**
- **Behavior:**
  ○ **Communication:** They communicate through a complex system of dance called "**waggle dance**" to relay information about food sources and hive conditions.
  ○ **Hive Construction:** Bees construct intricate **hexagonal honeycomb structures** made of beeswax to store honey, **pollen**, and raise brood.
  ○ **Pollination:** While foraging for nectar and pollen, honeybees unintentionally **pollinate many plant species, aiding in plant reproduction.**

Note:

Note: A **United Nations Environment Programme** report in February 2023 warned that the unchecked rise of AMR could lead to up to **10 million deaths annually by 2050**.

Advanced Biodegradable Nanocomposite Film

Why in News?

Recently, researchers from the **Institute of Advanced Study in Science and Technology (IASST), Guwahati**, have successfully fabricated a **biodegradable nanocomposite film** with **optical and mechanical properties**.

What are the Major Highlights of the Research?

➢ The research encompasses the **utilization of polymers**, which have become essential in various industries due to their **adaptability and versatility,** spanning from **packaging to medical equipment.**
  - ❍ However, advanced applications like flexible displays and **organic LED technology** necessitate highly flexible and optically active polymers.
  - ❍ To attain these desired properties, **researchers have delved into the incorporation of nanomaterials**.
➢ Among the selection of synthetic **biodegradable polymers,** polyvinyl alcohol (PVA) has emerged as a standout choice. PVA boasts exceptional **film-forming capabilities** and robust mechanical properties.
  - ❍ Furthermore, it can be **tailored for optical and mechanical attributes** by introducing suitable nanomaterials.
  - ❍ The research team successfully **created a biodegradable PVA-CuO nanocomposite film** using a **straightforward solution casting technique**, where **copper salt** served as a precursor for the in-situ formation of CuO nanoparticles under varying heat treatment conditions.
➢ This nanocomposite film demonstrated **superior optical, mechanical, and antimicrobial features** when compared to pure PVA films.
  - ❍ The existence of CuO nanoparticles within the polymer matrix was verified through a range of **spectroscopic and microscopic techniques.**

➢ **Polymers:**
  - ❍ **Polymers** are **large molecules composed of repeating subunits called monomers.** These molecules are essential in various fields, including **chemistry, materials science, and industry.**
    - ● They have a wide range of properties and are used in everyday products, such as **plastics, rubber, and fibers.**
    - ● **Biodegradable polymer**s are a type of polymer that can **break down naturally into environmentally friendly substances** over time.
➢ **Nanomaterials:**
  - ❍ Nanomaterials are engineered at the **nanoscale, with a particle size of less than 100 nm in at least one of its dimensions.**
    - ● Their structures and properties are significantly different from those of bulk materials due to their small size.
➢ Nanocomposite Film:
  - ❍ A nanocomposite film is a **thin, layered material** consisting of a polymer matrix integrated with nanoparticles or nanomaterials.
    - ● These films are designed to **combine the unique properties of nanomaterials with the advantages of the polymer matrix** to achieve specific desired characteristics.

Global Push to Criminalize Ecocide

Why in News?

The controversial **Maya** train project in Mexico aims to link tourists with historic **Maya sites,** sparking concerns over its potential environmental and cultural impact.

➢ The debate surrounding this project brings into focus the **concept of "ecocide"** and the growing **global movement to criminalize environmental destruction**.

What is an Ecocide?

➢ **About:**
  - ❍ **Ecocide,** derived from Greek and Latin, translates to **'killing one's home' or 'environment'.**
  - ❍ Although there is currently **no universally recognized legal description of ecocide,** a group of lawyers convened by an NGO named **Stop Ecocide**

Foundation in June 2021 crafted a definition that **would place environmental devastation within the same realm as crimes against humanity.**

- According to their proposal, ecocide is defined as **"unlawful or reckless actions carried out with the awareness that there exists a substantial probability of causing severe and either extensive or enduring harm to the environment**."

➢ **Historical Context:**

- In 1970, biologist **Arthur Galston** was the first to draw a **connection between environmental devastation and genocide** (which is recognised as an **international crime**).
  - He made this link when addressing the U.S. military's utilization of **Agent Orange, an herbicide, during the Vietnam War.**
- **Swedish Prime Minister** Olof Palme also used this concept in a speech at the **United Nations.**
  - He cautioned that **uncontrolled industrialization** could lead to irreversible harm to the environment.
- In 2010, a British lawyer played a pivotal role by urging the **United Nations' International Criminal Court (ICC)** to officially acknowledge ecocide as an **international crime.**
  - Currently, the **Rome Statute of the ICC** addresses four major offenses: **genocide, crimes against humanity, war crimes, and the crime of aggression as a international crime.**
  - The provision related to **war crimes is the sole statute** that can hold a **wrongdoer accountable for environmental destruction,** but only if it is intentionally caused during times of armed conflict.

What is the Present Status of Ecocide Acknowledgment in India?

➢ India has **neither signed nor ratified the Rome Statute of the International Criminal Court** and has **not expressed any official position on the proposal to criminalize ecocide at the international level.**

- However, India has ratified several **international environmental treaties** and conventions, such as the **Convention on Biological Diversity, the United Nations Framework Convention on Climate Change** and **Convention on International Trade in Endangered Species of Wild Fauna and Flora**.

➢ India has also enacted various **national laws and policies** to protect and conserve its environment, such as the **Environment Protection Act 1986,** the **Wildlife Protection Act 1972**, and **Compensatory Afforestation Fund Act, 2016 (CAMPA).**

➢ While some Indian court judgments have casually used the **term 'ecocide,'** the concept **has not been formally integrated into Indian law.**

- In the case of **Chandra CFS and Terminal Operators Pvt. Ltd. v. The Commissioner of Customs and Ors, 2015,** the **Madras High Court** noted the continuous and unbridled activities of ecocide related to the removal of valuable timbers.
- The **T.N. Godavarman Thirumulpad vs Union Of India & Ors, 1995** case in the **Supreme Court** drew attention to the need to shift from an **anthropocentric approach to an ecocentric approach for achieving environmental justice.**

What are the Arguments in Favour of Criminalising Ecocide?

➢ **Protecting the Environment as an End in Itself:** Ecosystems are **intricate networks of species and interactions that have evolved over millions of years.**

- Protecting the environment as an end in itself recognizes the **importance of preserving these ecosystems in their natural state** to maintain their integrity and evolutionary potential.
- Ecocide laws fill a gap in environmental protection, recognizing the environment as an **entity worthy of safeguarding.**

➢ **Intergenerational Justice:** Advocates argue that ecocide can be seen as **accumulating a "biodiversity debt"** that future generations must repay.

- By recognizing ecocide as a crime, **society acknowledges its obligation to leave a sustainable and habitable planet for posterity.**

➢ **Climate Change Mitigation:** Addressing ecocide through criminal law serves as a vital complement to **international climate agreements by directly targeting the root causes of climate change.**

- **Large-scale deforestation and uncontrolled fossil fuel extraction**, all considered as ecocidal activities.
- Criminalizing ecocide adds a **strong legal dimension to environmental protection,** holding individuals and entities accountable for actions that harm the climate.

Note:

Note: In March 2023, the **Intergovernmental Panel on Climate Change (IPCC)** emphasized that **global climate action remains inadequate**. Activities such as widespread fossil fuel combustion, **pollution** through plastics and fertilizers in terrestrial and aquatic environments, and the loss of species collectively indicate a new geological epoch known as the **Anthropocene**.

➢ **Expanding Global Recognition and Legal Action:** Ecocide is already considered a crime in **11 countries,** with **27 more contemplating similar legislation.**

○ Ecocide laws can also serve as powerful calls for justice, **especially for low- and middle-income countries** bearing the brunt of extreme weather events.

● Small nations like **Vanuatu and Barbuda** are urging the ICC to **classify environmental crimes as international law violations.**

What are the Arguments Against Criminalising Ecocide?

➢ **Development vs. Environmental Protection:** One key argument against criminalizing ecocide revolves around the **tension between development and environmental protection.**

○ Critics argue that defining ecocide may inadvertently pit development goals against environmental conservation.

○ For instance, the **Great Nicobar Project in India** faced criticism for potentially harming indigenous communities and biodiversity, **while the government defended it as an initiative for "holistic development."**

➢ **Interference with Sovereignty**: Some argue that criminalizing ecocide may infringe upon a nation's sovereignty.

○ Countries may view such laws as **encroachments on their ability to manage their own environmental policies and resources,** leading to resistance or non-compliance.

➢ **Chilling Effect on Scientific Research:** Scientists and researchers could be **deterred from conducting studies that involve environmental manipulation or experimentation** due to the fear of potential legal repercussions.

○ This could impede scientific progress and understanding of complex **ecological systems.**

➢ **Efficacy and Enforcement Challenges:** Critics question the **effectiveness of criminalizing ecocide** in deterring environmental harm.

○ They argue that **existing environmental regulations, when enforced rigorously, can be more effective** than creating a new criminal framework that may be challenging to enforce.

Marine Sand Extraction

Why in News?

Recently, a newly launched data platform called **"Marine Sand Watch"** sheds light on this critical issue, revealing the **scale of sand extraction** and its far-reaching consequences.

➢ The relentless extraction of sand from the world's oceans is posing a severe threat to **marine ecosystems and coastal communities.**

What is Marine Sand Extraction?

➢ **About:**

○ Marine sand extraction is the process of **removing sand from the seabed or the coastal zone** for various purposes, such as **construction, land reclamation, beach nourishment, or mining.**

➢ **Process:**

○ **Dredging:**

● Dredging is the most common method of marine sand extraction. It **involves using a vessel equipped with a suction pipe or a mechanical grab to scoop up the sand** from the seabed and transport it to the shore or another location.

○ **Mining:**

● Mining is another method of marine sand extraction. It involves using specialized equipment, such as drills, cutters, or jets, to break up the sand deposits and extract the minerals or metals from them.

○ **Harvesting:**

● Harvesting is a less common method of marine sand extraction. It involves using natural forces, such as waves, currents, or tides, to collect the sand from the coastal zone and deposit it onshore.

Note:

➢ **Extraction Estimates:**
  ❍ The platform has estimated that **between four and eight billion tonnes of sand** are being dredged from the **ocean floor** every year.
    ● Marine sand extraction is **expected to rise to 10 to 16 billion tonnes** per year, which is the **natural replenishment rate** or the amount that rivers need to maintain coastal and marine ecosystem structure and function.

Marine Sand Watch:
➢ It is a data platform developed by **a Centre for Analytics within the United Nations Environment Programme (UNEP).**
➢ The platform will **track and monitor dredging (removal) activities** of sand, clay, silt, gravel, and rock in the world's marine environment.
➢ It will provide information on areas used for sand extraction , areas of capital and maintenance dredging, sand trading ports/hubs, number of vessels and operators, and extraction of sediment and other types of activities by countries with **Exclusive Economic Zones.**

What is the Impact of Marine Sand Extraction?

➢ **Environmental Impact:**
  ❍ **Turbidity of Water: Sand extraction increases water turbidity** (the measure of relative clarity of a liquid), reducing water clarity and affecting aquatic ecosystems.
  ❍ **Nutrient Alteration:** It disrupts **nutrient availability, potentially harming marine flora and fauna.**
  ❍ **Noise Pollution:** The extraction process generates **noise pollution, which can disturb marine organisms and their habitats.**
➢ **Community and Infrastructure Impact:**
  ❍ **Coastal Community Vulnerability:** Coastal communities face risks as **sand is needed for coastal defence structures,** critical in **mitigating rising sea levels and storms.**
  ❍ **Infrastructure Support:** Marine sand is crucial for **building offshore infrastructure,** including wind and wave turbines.
  ❍ **Salinization Risk:** Coastal or near-shore extraction can lead to the **salinization of aquifers, impacting freshwater resources.**

  ❍ **Tourism Development:** Sand extraction can hinder future **tourist development in coastal areas**, affecting local economies.

What are the Responses to Marine Sand Extraction?

➢ **Sand Mining in India:**
  ❍ **Sand** is classified as a **"minor mineral"**, under the **Mines and Minerals (Development and Regulations) Act, 1957 (MMDR Act)** and administrative control over minor minerals vests with the State Governments.
    ● **Rivers and coastal areas** are the main sources of sand, and the demand for it has increased significantly in recent years due to the construction and infrastructure development boom in the country.
  ❍ The **Ministry of Environment, Forests, and Climate Change (MoEFCC)** has issued **"Sustainable Sand Mining Management Guidelines 2016"** to promote **scientific sand mining** and environmentally friendly management practices.
➢ **Global Responses:**
  ❍ Some countries like Indonesia, Thailand, Malaysia, Vietnam, and Cambodia have banned marine sand exports in the last two decades.
➢ **UNEP Recommendations:**
  ❍ The UNEP advocates for better monitoring of sand extraction and use.
  ❍ UNEP calls for the establishment of international standards for sand extraction in the marine environment.
➢ **International Seabed Authority (ISA):**
  ❍ The **ISA** is an **intergovernmental organization that regulates deep-sea mining and exploration in international waters.**
  ❍ The ISA was established in 1982 under the **United Nations Convention on the Law of the Sea (UNCLOS).**

Forest Conservation and Tribal Rights in Northeast India

Why in News?

Recently, The Mizoram Assembly has passed a resolution opposing the **Forest (Conservation)**

Amendment Act (FCA), 2023, highlighting the ongoing challenges in forest conservation and tribal rights in Northeast India.

What are the Concerns Raised by the North Eastern States Against FCA?

➤ **Amendment's Impact on Northeast India**:

○ The Forest (Conservation) Amendment Act of 2023 allows for forest land diversion for projects located within 100 km of India's international borders **without requiring forest clearance under the Forest (Conservation) Act of 1980.**

○ Most of Northeast India falls within the 100 km range, raising concerns about the environmental impact and infringement on tribal rights.

➤ **Forests Not Officially Classified are not Protected:**

○ **Until 1996, the provisions of the FCA were only applied** to forests that had been **declared or notified as a forest, and to forests recorded in government records on or after 25th October 1980.**

○ The **areas not officially classified as forests** in a government record, even if they are standing forests, will **not be protected from commercial exploitation** or any other kind of diversion.

   ● This overturns a **1996 Supreme Court order in** *the Godavarman case* which ruled that any area resembling a forest's dictionary meaning would be **protected under conservation laws.**

➤ **State Opposition:**

○ Mizoram and Tripura have passed resolutions opposing the amendment, expressing their **commitment to protecting the rights and interests of their people.**

○ Nagaland faces demands to follow suit, and Sikkim has also opposed the 100 km exemption clause.

➤ **Significant Area is Unclassed Forest:**

○ A huge portion of forests in the North East are privately owned: either by individuals, or **clans or village councils, or communities,** enabled by special privileges that the Constitution guarantees **to tribal communities.**

○ More than 50% of the Recorded Forest Areas (RFA) in the North East falls **under "unclassed forests"** — forests which are not notified under any law.

   ● For example, 97.3% of RFA in Nagaland, 88.2% in Meghalaya, 76% in Manipur, 53% in Arunachal Pradesh, 43% in Tripura, 33% in Assam, and 15.5% of Mizoram fall **under unclassed forests category.**

○ This means that these large areas of unclassed forests **would be excluded from this Act** unless they are included in government records.

How are Forests Protected in North East India?

➤ **Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA) 2006:**

○ Forest Land includes unclassified forests, un-demarcated forests, existing or deemed forests, protected forests, reserved forests, Sanctuaries, and National Parks.

○ This complied with the **1996 Supreme Court redefinition.**

➤ **Article 371A and 371G**:

○ Special Constitutional protections in **Article 371A (Nagaland)** and **371G** (Mizoram) prohibit the **application of laws that impinge on tribal customary law**, land ownership, and transfer without the **State Legislative Assemblies' resolutions.**

   ● Mizoram, unlike Nagaland, falls under the purview of FCA due to its status as a State. The amendment **affects 84.53% of its forest areas.**

   ● Mizoram from the **Union Territory** became a State with the Constitution **(Fifty-Third Amendment) Act 1986,** adding **Article 371G** to the Constitution, stipulating that **all Central Acts in force before 1986 are extended to the State, including the FCA.**

➤ **Forest Rights Act (FRA) 2006:**

○ FRA recognizes traditional forest rights in various forest types, including unclassed forests, providing an additional layer of protection for tribal communities.

   ● The potential benefits, most Northeastern states, **except Assam and Tripura, have not implemented FRA**, citing reasons such as land ownership patterns and lack of forest-dependent communities.

Note:

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What are the Constitutional Articles that Provide Exemptions to the Northeastern States?

Article (Amendment)	State	Provision
Article 371A (13th Amendment Act, 1962)	Nagaland	**Parliament cannot legislate in matters of Naga religion** or social practices, Naga customary law and procedure, administration of civil and criminal justice involving decisions according to Naga customary law, and ownership and transfer of land without the concurrence of the state Assembly.
Article 371G (53rd Amendment Act, 1986)	Mizoram	Parliament cannot make laws on "religious or social practices of the Mizos, Mizo customary law and procedure, administration of civil and criminal justice involving decisions according to Mizo customary law, **ownership and transfer of land** unless the Assembly decides.

Invasive Alien Species

Why in News?

The **Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)** has recently released an "**Assessment Report on Invasive Alien Species and their Control.**"

➢ This comprehensive study sheds light on the **alarming proliferation of invasive alien species worldwide** and their **devastating impact on global biodiversity.**

What are the Major Highlights of the Report?

➢ **The scale of the Problem of Invasion of Alien Species:**
  ❍ The report reveals the **presence of approximately 37,000 alien species,** introduced by **human activities,** across various regions and biomes.
  ❍ Of these, more than **3,500 are classified as invasive alien species**, posing severe threats to local ecosystems.
    ● About **6% of alien plants, 22% of alien invertebrates, 14% of alien vertebrates,** and 11% of alien microbes are known to be invasive.

➢ **Leading Invasive Species:**
  ❍ The **water hyacinth** ranks as the world's most **widespread invasive alien species** on land.
  ❍ **Lantana, a flowering shrub,** and the **black rat** hold the second and third positions on the global invasion scale.
  ❍ The **brown rat and house mouse** are also widespread invaders.

➢ **Perceived Benefits vs. Negative Impacts:**
  ❍ Many invasive alien species were intentionally introduced for perceived benefits in sectors such as **forestry, agriculture, horticulture, aquaculture, and as pets.**
  ❍ However, their **negative impacts on biodiversity and local ecosystems** were often not considered.
    ● Invasive alien species have played a **significant role in 60% of documented global plant and animal extinctions.**
    ● These species are now recognized as **one of the five primary drivers of biodiversity loss**, alongside **land and sea use change, direct exploitation of organisms, climate change, and pollution.**
    ● **Nearly 80% of the documented impacts of invasive species** on nature's contribution to people **are negative**.

➢ **Regional Distribution: 34% of the impacts of biological invasions were reported from the Americas**, 31% from Europe and Central Asia, 25% from Asia and the Pacific, and about 7% from Africa.
  ❍ The majority of negative impacts occur on land, especially in forests, woodlands, and cultivated areas.
  ❍ **Invasive alien species are most damaging on islands.** On more than 25% of all islands, the number of alien plants now exceeds the native plants.
  ❍ 85% of the impacts of biological invasions on native species are negative.

Note:

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What are Invasive Alien Species?

- **About**:
  - Invasive alien species, also known as **invasive exotic species or non-native species,** refer to organisms that have been introduced to regions or ecosystems outside of their native range and **have established self-sustaining populations.**
  - These species often **outcompete native species** and **disrupt the balance of ecosystems**, leading to a range of negative impacts.
- **Factors Responsible for Rising Invasive Species:**
  - **Globalization of Trade and Travel:** Increased international trade and travel have facilitated the **unintentional movement of species across borders**.
    - **Cargo ships, airplanes, and vehicles** can inadvertently carry invasive species within **cargo, through ballast water,** or attached to their surfaces, facilitating their unintentional spread.
      - Introduced to Australia in the late 1800s via **shipwrecks and the pearling** industry, the **Black Rat is regarded as one of the "World's Worst" invasive species** by the **IUCN.**
  - **Climate Change**: Elevated temperatures and shifts in precipitation patterns promote **environments conducive to the colonization and proliferation of invasive species.**
    - **Shifts in the timing of seasons can disrupt the life cycles of native species,** making them more susceptible to invasive competitors and predators.
  - **Human Introduction of Exotic Species:** Deliberate introduction of non-native species for purposes like **gardening, landscaping, and pest control** can lead to invasions when these species escape cultivation.
- **Impacts of Invasive Alien Species:**
  - **Ecological Impacts:** Invasive species can outcompete native species for resources such as **food, water, and habitat,** leading to a decline or extinction of native species.
    - Some invasive species may become **predators of native species**, causing declines in prey populations.
    - These disruptions can have far-reaching consequences for ecosystem stability and resilience.
- **Economic Impacts:** The annual costs of invasive alien species have **quadrupled every decade since 1970.** In 2019, the global economic cost of these species exceeded a staggering **USD 423 billion annually.**
    - Species like **Zebra mussels** can **clog water pipes and infrastructure,** leading to expensive repairs and maintenance.
  - **Impact on Food Supply:** The reduction of food supply is the most common consequence of alien invasive species.
  - Examples include the **Caribbean false mussel damaging fisheries in Kerala.**
- **Health Implications:** Invasive species like **Aedes albopictus and Aedes Aegyptii** spread diseases like **malaria, Zika, and West Nile Fever,** impacting human health.
  - **Water hyacinth in Lake Victoria** led to the depletion of **tilapia(fish)**, impacting local fisheries.
- **International Instruments and Programmes on Invasive Species:**
  - **Kunming-Montreal Global Biodiversity Framework (2022):** Governments have committed to reducing the rate of introduction and establishment of invasive alien species **by at least 50% by 2030.**
  - **Convention on Biological Diversity** (CBD - 1992): Adopted at the **1992 Earth Summit in Rio de Janeiro**, it recognizes invasive alien species as a major threat to the environment, second only to habitat destruction.
  - **Convention on the Conservation of Migratory Species** (CMS - 1979): This intergovernmental treaty aims to **conserve migratory species** and includes measures to control or eliminate invasive alien species already present.
  - **Convention on International Trade in Endangered Species of Wild Fauna and Flora** (CITES - 1975): Focuses on ensuring **international trade does not threaten the survival of wild animals and plants;** it also considers the impact of invasive species involved in trade.

Hollongapar Gibbon Sanctuary

Why in News?

Primatologists have suggested rerouting a 1.65-km-long railway track that has divided the Hollongapar **Gibbon Sanctuary**, in eastern Assam dedicated to the **western hoolock gibbon** into two unequal parts.

Note:

What are the Key Facts About Hoolock Gibbons?

➤ **About:**
  ○ Hoolock Gibbons, known as the **smallest and fastest of all apes, inhabit tropical and subtropical forests in Southeast Asia.**
  ○ They have high intelligence, distinct personalities, and strong family bonds similar to other apes.
  ○ They represent one of the 20 gibbon species found worldwide.
  ○ Hoolock Gibbons are India's only ape species.
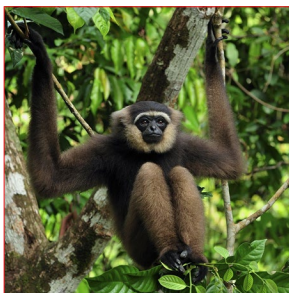
➤ **Gibbon Species in India:**
  ○ **Western Hoolock Gibbon** *(Hoolock hoolock)*:
    ● It inhibits in **all the states of the north-east,** restricted **between the south of the Brahmaputra River and east of the Dibang River**. Outside India, it is found in **eastern Bangladesh and north-west Myanmar.**
    ● **International Union for Conservation of Nature's Red List (IUCN):** Endangered
  ○ **Eastern Hoolock Gibbon** *(Hoolock leuconedys)*:
    ● It inhabits specific pockets of **Arunachal Pradesh and Assam in India,** and in **southern China and north-east Myanmar outside India.**
    ● IUCN Red List: Vulnerable
  ○ In India, both species are listed on **Schedule 1 of the Indian (Wildlife) Protection Act 1972.**

➤ **Characteristics:**
  ○ They are known for their **distinct white eyebrows, long arms, and a throat sac used for vocalizations.**

➤ **Arboreal Lifestyle:**
  ○ Gibbons are exclusively **arboreal, spending their lives in the treetops of tropical forests.**

➤ **Challenges:**
  ○ Hoolock gibbons are particularly sensitive to habitat disruptions, such as canopy gaps.
  ○ Fragmentation of their habitat can lead to genetic isolation and threaten their populations.

➤ **Conservation Efforts:**
  ○ Initiatives like **artificial canopy bridges aim to facilitate their movement and preserve genetic diversity.**

○ Gibbons play a vital role in forest ecosystems by dispersing seeds as they travel through the canopy.
    ● Their conservation is essential for maintaining the health and biodiversity of their habitats.

Gibbon Sanctuary:
➤ Hoollongapar Gibbon Sanctuary, formerly known as **Gibbon Wildlife Sanctuary**, is located in Assam's Jorhat district, India.
➤ Established in 1997, it boasts a **rich biodiversity, housing India's only gibbons,** the **western Hoolock hoolock,** and the Bengal slow loris, the sole nocturnal primate in Northeastern India.

Red Sand Boa

Why in News?

Recently, a report by the **Wildlife Conservation Society (WCS)-India** titled **'Illegal Trade of Red Sand Boa in India 2016-2021'** has exposed the trade of red sand boa.

➤ This alarming revelation underscores the pressing concern about the illegal trade of Red Sand Boas and the urgency for conservation efforts.

What are the Key Highlights of the Report?

➤ The report documents a total of **172 incidents of seizures involving red sand boas between 2016 and 2021,** revealing the alarming extent of illegal trade.

➤ Illegal trade spans **18 Indian states, 1 Union Territory, and 87 districts; Maharashtra and UP record the highest incidents.**
  ○ **Maharashtra dominates with 59 cases**, including urban areas like Pune, Thane, Mumbai Suburban.
  ○ Uttar Pradesh closely follows 33 incidents, often near Nepal's border in districts like Bahraich, and Lakhimpur-Kheri.

➤ Social media, especially **YouTube, aids illegal trade, with 200 sales-promoting videos in 2021.**

➤ The report's findings underscore the urgent need for **conservation efforts to prevent the further decline of the red sand boa** population and protect India's biodiversity.

Note:

What are the Key Facts About Red Sand Boa?

➤ **About:**
  ○ The Red Sand Boa **(Eryx johnii)**, commonly called the **Indian Sand Boa**, is a **non-venomous species**.

  ○ It is a primarily **reddish-brown and thick-set snake that grows to an average length of 75 cm**.

  ○ Unlike most snakes, the tail is almost as thick as the body and gives the reptile the appearance of being **"double-headed".**

  ○ The Red Sand Boa is the largest of the sand boa in the world. Nocturnal and spends the majority of its time under the ground.

➤ **Distribution:**
  ○ Found in the whole of India **excluding North-east states** and **North-Bengal;** also not found in **Indian islands.**

➤ **Status:**
  ○ **IUCN Red List: Near Threatened**
  ○ **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES): Appendix II.**
  ○ **Indian Wildlife (Protection) Act of 1972: Schedule IV.**

➤ **Threats to Red Sand Boa:**
  ○ Expansion of human settlements and activities.
  ○ Demand upsurge in pet trade, as well as for use in **black magic.**
  ○ Poached for perceived medicinal benefits.

Wildlife Conservation Society (WCS)-India:

➤ **WCS-India** is a Section 25 (association having objects to promote commerce, art, science, religion, charity or any other useful purpose and not having any profit motive) **non-profit organization in India,** demonstrates a strong commitment to conservation.

➤ It operates in full compliance with Indian regulations, emphasizing its dedication to preserving the country's natural environment and its rich biodiversity.

Flora Fauna and 'Funga'

Why in News?

Recently, **United Nations Biodiversity** has urged people globally to use the word **'funga'** whenever they say **'flora and fauna',** in order to **highlight** the **importance of fungi.**
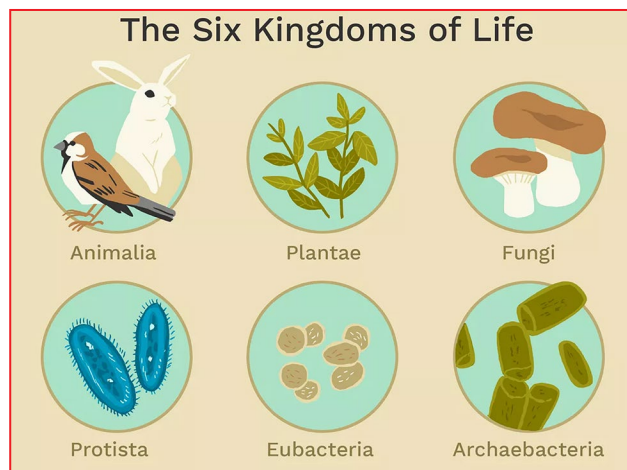
Why has the UN Biodiversity urged to use the word 'Funga'?

➤ According to **UN Biodiversity** "It is time for **fungi** to be recognised and protected on an equal footing with **animals** and **plants** in **legal conservation frameworks.**

➤ This is not the first time when a request has been made to include **fungi** along with **flora and fauna.**
  ○ Earlier, the **Species Survival Commission (SSC)** of the **IUCN** announced that it would use **"mycologically inclusive"** language in its internal and public-facing communications and to incorporate **fungi** in **conservation strategies** with **rare** and **endangered plants** and **animals.**

➤ There would be **no life on Earth** without **fungi, the yeasts, molds** and **mushrooms** as they are critical to **decomposition and forest regeneration, mammalian digestion, carbon sequestration,** the **global nutrient cycle** and **antibiotic medication**.

What is Fungi?

➤ **About:**
  ○ **Fungi or fungus** are a diverse group of **eukaryotic microorganisms or macroscopic organisms** that belong to their own **biological kingdom**, distinct from **plants, animals**, and **bacteria**.

The Six Kingdoms of Life

Animalia   Plantae   Fungi   Protista   Eubacteria   Archaebacteria

➤ **Characteristics:**
  ○ **Eukaryotic:** Like **plants, animals,** and **protists, fungi** have complex, **membrane-bound cell organelles** and a **true nucleus.**

Note:

○ **Heterotrophic: Fungi** are primarily **decomposers** or **saprophytes**, meaning they obtain nutrients by **absorbing organic matter** from their **surroundings**.

○ **Secrete Enzymes:** Fungi secrete enzymes to **break down complex organic compounds** into simpler substances, **which they can then absorb.**

➢ **Benefits:**

○ **Nutrient Cycling**

● **Fungi** can convert nutrients to make them accessible to **plants**, acting as **decomposers** by **breaking down organic matter**, thereby enhancing **nutrient cycling** and **soil fertility**.

○ **Carbon Cycling and Climate regulation:**

● **Fungi** play a vital role in **soil carbon storage** by participating in the **carbon cycle**. They decompose **organic matter, cycling carbon** from **dead plants**, and form **symbiotic relationships** with **plant roots**.

● **Mycorrhizal fungi** form **symbiotic relationships** with **plant roots,** aiding in nutrient uptake.

○ **Fungi as Food:**

● It has **numerous beneficial applications. Yeasts**, for instance, are used in **baking** and **brewing**. **Fungi** also produce **antibiotics** like **penicillin**.

● Some **fungi**, like **mushrooms and truffles**, are **edible** and **prized in cuisine**. Others, like **molds**, are used in **cheese production.**

○ **Environmental Protection:**

● **Fungi** have been found to help degrade **various pollutants** from the **environment,** such as **plastic** and other **petroleum-based products,** pharmaceuticals and personal care products, **and oil.**

➢ **Harmful Effects of Fungi:**

○ **Human and Animal Diseases:**

● **Fungi** can cause a variety of diseases in **humans** and **animals. Examples** include **athlete's foot (caused by dermatophytes), ringworm, histoplasmosis,** and **aspergillosis.**

● Some fungi produce **toxic compounds** known as **mycotoxins,** which can **contaminate food** and lead to **health problems when consumed.**

○ **Crop and Plant Diseases:**

● **Fungal pathogens** can infect and damage **crops** and **plants**, leading to **significant economic losses** in agriculture.

● **Examples** include **rusts, powdery mildews,** and various types of **fungal blights.**

○ **Allergic Reactions:**

● Exposure to **fungal spores**, especially in **indoor environments** with **high humidity**, can **trigger allergies** and **respiratory problems** in some individuals.

● Conditions like **allergic rhinitis** and **allergic bronchopulmonary aspergillosis** are associated with **fungal allergens.**

○ Biodegradation of Materials:

● **Fungi** can **break down** materials such as **textiles, leather,** and **paper,** which can be detrimental if these materials are not properly preserved or stored.

■■■

Note:

Art and Culture

Highlights

- TRIFED Showcases India's Tribal Craftsmanship at G20 Summit
- Indian Gifts to G-20 Leaders Full of Rich Crafts
- Konark Wheel Shines at G-20 Summit Venue
- Nataraja Artistry of Lord Shiva
- Adopt a Heritage 2.0 and e-Permission Portal

TRIFED Showcases India's Tribal Craftsmanship at G20 Summit

Why in News?

The recent **18th G20 Summit** witnessed a captivating display of **India's rich tribal heritage and craftsmanship**, curated and presented by the **Tribal Cooperative Marketing Development Federation of India(TRIFED),** Ministry of Tribal Affairs.

What Artifacts and Products did TRIFED Display at the G20 Summit?

- ➢ **Longpi Pottery:**
  - ○ Originating from the village of **Longpi in Manipur,** the **Tangkhul Naga tribes** practise this unique pottery style.
  - ○ Longpi pottery stands out as it **doesn't rely on the potter's wheel; everything is hand-shaped or moulded.**
  - ○ The distinct grey-black cooking pots, sturdy kettles, and charming bowls are Longpi's trademarks, but new design elements are being introduced.
- ➢ **Chhattisgarh Wind Flutes:**
  - ○ **'Sulur' bamboo wind flute** is a unique musical creation curated by the **Gond Tribe** of Bastar in **Chhattisgarh.**
    - It produces melodies through a simple one-handed twirl and has fish emblems, geometric lines, and triangles etched on its surface.

- ○ The 'Sulur' serves utilitarian purposes, helping **tribal men ward off animals and guide cattle through jungles.**
- ○ It showcases the Gond Tribe's ingenious craftsmanship, which is a **harmonious blend of artistry and functionality.**
- ➢ **Gond Paintings:**

  - ○ Gond paintings reflect their **deep connection to nature and tradition.**
  - ○ They **start with dots, calculating image volume**, which they **then connect to form outer shapes filled with vibrant colours.**
  - ○ These artworks are deeply influenced by their social environment and they stand as a testament to the tribe's artistic ingenuity.
- ➢ **Gujarat Hangings:**

  - ○ Curated by the **Bhil & Patelia Tribe in Dahod, Gujarat,** these wall hangings are rooted in ancient Gujarat art.
  - ○ Initially, the hangings were **dolls and cradle birds made of cotton cloth and recycled materials.**
    - The hangings now include mirror work, zari, stones, and beads, blending tradition with contemporary fashion.
- ➢ **Sheep Wool Stoles:**
  - ○ Crafted by the **Bodh, Bhutia, and Gujjar Bakarwal tribes from Himachal Pradesh/Jammu & Kashmir.**

Note:

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- They use **pure sheep wool** clothing, including jackets, shawls, and stoles.

- Originally featuring monochromatic schemes of white, black, and grey, Tribal craftsmanship is undergoing a transformation with dual-coloured designs becoming popular.

➢ **Rajasthan Artistry:**

○ **Mosaic Lamps:**

- Captures the **mosaic art style** and is crafted into lampshades and candle holders. When illuminated, they unleash a kaleidoscope of colours, adding vibrancy to any space.

○ **Ambabari Metalwork:**

- It is curated by the **Meena Tribe** and also embraces enamelling, a meticulous process that elevates metal decoration.

➢ Today, it extends beyond gold to metals like silver and copper.

○ **Meenakari Crafts:**

- Meenakari crafts involve decorating metal surfaces with vibrant minerals, a tradition demanding exceptional skill, introduced by the Mughals.

  ■ This tradition demands exceptional skills as delicate designs are etched onto metal, creating grooves for colours to nestle in.

Tribal Cooperative Marketing Development Federation of India(TRIFED):

➢ TRIFED came into existence in 1987. It is a national-level apex organisation functioning under the administrative control of the Ministry of Tribal Affairs.

➢ The objective of TRIFED is the **socio-economic development of tribal people** in the country by way of **marketing development of the tribal products** such as metal craft, tribal textiles, pottery, tribal paintings and pottery on which the tribals depend heavily for a major portion of their income.

➢ TRIFED acts as a **facilitator and service provider for tribes to sell their product.**

➢ The approach by TRIFED aims to **empower tribal people** with knowledge, tools and a pool of information so that they can undertake their operations in a more systematic and scientific manner.

➢ It also involves capacity building of the tribal people through sensitization, formation of **Self Help Groups (SHGs)** and imparting training to them for undertaking a particular activity.

➢ TRIFED has its Head Office located in New Delhi and has a network of 13 Regional Offices located at various places in the country.

Indian Gifts to G-20 Leaders Full of Rich Crafts

Why in News?

The **G20 Summit** 2023 held in Delhi recently served as a platform for world leaders to experience India's rich traditions and cultural diversity through a curated selection of handcrafted gifts.

➢ These gifts included a **variety of handcrafted items** sourced from different regions of India, showcasing Bharat's cultural and artisanal heritage.

What are the Gifts Presented to the Leaders?

➢ **Sandook:**

○ All the Gift items were meticulously packaged in a **Sandook (chest)** adorned with i**ntricate brass detailing**.

○ This chest was handcrafted using **Sheesham (Indian rosewood)**, known for its durability and distinctive grain pattern.

➢ **Aromatic and Culinary Delights:**
  ○ The gift hamper included a pack of **Saffron from Jammu and Kashmir**, renowned as the world's **most expensive spice**, celebrated for its culinary and medicinal properties.

➢ **The Champagne Of Teas:**
  ○ Pekoe Darjeeling and Nilgiri Tea are two illustrious gems from **India's tea tapestry,** epitomizing the delicate art of tea cultivation and infusion.
    ● **Darjeeling Tea** is the most valued tea in the world, located on the misty hills of West Bengal at altitudes of 3,000-5,000 feet. The soil's unique character gets reflected in a **highly aromatic and invigorating cup of tea.**
    ● **Nilgiri Tea** comes from the most spectacular mountain range in south India. Cultivated amidst the mountains' lush terrain at an elevation of 1,000-3,000 ft, **the tea is relatively mild.**

➢ **Araku Coffee:**
  ○ Araku Coffee is the **world's first terroir-mapped coffee**, grown on organic and sustainable plantations in the **Araku Valley of Andhra Pradesh.**
  ○ Farmers work by hand in small farms and **grow the coffee naturally**, without the use of machines or chemicals.

➢ **Traditional Honey from the Sundarbans:**
  ○ From the **Sundarbans**, the largest mangrove forest globally, located in the Bay of Bengal, **came a special honey harvested** by traditional honey collectors.
  ○ Besides being 100% natural and pure, Sundarban honey is also **high in flavonoids** (various compounds found naturally in many fruits and vegetables) and provides valuable health benefits.

➢ **Perfume from Kannauj:**
  ○ The Zighrana Ittar from Kannauj in Uttar Pradesh showcased India's **centuries-old tradition of crafting exquisite perfumes**, adding a sensory dimension **to the gifts.**

➢ **Exquisite Shawls from Kashmir:**
  ○ The gift package also featured a **Kashmiri Pashmina shawl** sourced from **the Changthangi goat**, found only at elevations of 14,000 feet above sea level.
  ○ The wool is collected by combing (and not shearing) the undercoat of this goat.

➢ **Khadi Scarves:**
  ○ The Khadi scarf, personally presented to each leader during their visit to the Rajghat, held immense symbolic value.
  ○ Khadi, with its origins in India's independence movement and its evolution into a symbol of sustainable **fashion, epitomizes high-quality and eco-conscious clothing.**

➢ **Commemorative Coins and Stamps:**
  ○ In July 2023, the Prime Minister of India released **special coins and stamps to commemorate India's G20 Presidency** during the inauguration of Bharat Mandapam.
  ○ These designs drew inspiration from India's G20 logo and the theme of 'Vasudhaiva Kutumbakam.'
  ○ One of the postage stamps, rendered in gold color, took inspiration from the lotus, **India's national flower,** as represented in the G20 Presidency logo.

Konark Wheel Shines at G-20 Summit Venue

Why in News?

The **18ᵗʰ G20 Summit** was held in New Delhi, for the first time on 9ᵗʰ-10ᵗʰ September 2023, under the theme **'One Earth, One Family, One Future'.**

➢ The venue of the summit was the **Bharat Mandapam Convention Centre in Pragati Maidan, New Delhi**. As part of showcasing India's cultural diversity and heritage, a wall depicting the **mural** of the **historic Konark Wheel of Odisha's Sun Temple** is placed as the backdrop for welcoming world leaders at the summit venue.

Note:

What are the Key Facts About Konark Sun Temple?

➢ **About:**
- ❍ The Konark Sun Temple is a **13th-century CE Sun temple at Konark**, on the coastline in Puri district, Odisha, India.
- ❍ The temple is attributed to **King Narasimhadeva I of the Eastern Ganga dynasty about 1250 CE.**
- ❍ Dedicated to the **Hindu Sun God Surya**, the temple complex has the appearance of a **100-foot-high chariot with immense wheels and horses, all carved from stone.**
- ❍ The temple is also a **UNESCO World Heritage Site** and a major pilgrimage site for Hindus and is depicted on the reverse side of the Indian currency note of 10 rupees.
- ❍ The Sun Temple is the **culmination of Kalinga temple architecture.**
- ❍ The temple was also called the **"Black Pagoda"** by European sailors as early as 1676 because it looked like a great tiered tower that appeared black. Similarly, the Jagannath Temple in Puri was called the **"White Pagoda."**

➢ **Key Features:**
- ❍ The temple represents a chariot of the **Sun God, with twelve pairs of wheels drawn by seven horses evoking its movement across the heavens.**
  - ● The wheels have **24 spokes that symbolize the 24 hours in a day.** The **wheels also function as sundials,** as the shadows cast by the spokes indicate the time of the day.
- ❍ The temple comprises several distinct and well-organized spatial units.
  - ● The vimana (principal sanctuary) was surmounted by a high tower with a **shikhara (crowning cap) also known as Rekha deul,** which was razed in the 19th century.
  - ● To the east, the **jahamogana (audience hall or Mandap)** dominates the ruins with its pyramidal mass.
  - ● Farther to the east, the **natmandir (dance hall),** today unroofed, rises on a high platform.

Nataraja Artistry of Lord Shiva

Why in News?

Recently, The **G20 Leaders' Summit** at Bharat Mandapam, New Delhi, featured a stunning **27-foot Nataraja sculpture**, the **world's tallest representation of Lord Shiva in his dancing form.**

What are the Key Highlights of the Nataraja Statue in Bharat Mandapam?

➢ This remarkable Nataraja statue, crafted from an **ashtadhatu (eight-metal alloy) by artisans from Tamil Nadu, weighs 18 tonnes.**

➢ The statue is sculpted by the renowned sculptor **Radhakrishnan Sthapaty** of Swami Malai in Tamil Nadu.

➢ The design of this Nataraja statue draws inspiration from three revered Nataraja idols: the **Thillai Nataraja Temple in Chidambaram**, the **Uma Maheswarar Temple in Konerirajapuram**, and **the Brihadeeswara (Big) Temple**, a **UNESCO World Heritage Site, in Thanjavur.** This offers a deep insight into the **history and religious symbolism of Lord Shiva's dancing form.**

➢ The Nataraja sculpture at Bharat Mandapam is made using the **lost wax method.**

What is the History and Religious Symbolism of Lord Shiva's Dancing Form?

➢ **Ancient Origins of Shiva:**
- ❍ Shiva, one of the principal deities in Hinduism, has ancient roots that trace back to the **Vedic period.**
- ❍ In Vedic scriptures, **Shiva's precursor is Rudra**, a deity associated with **natural elements, particularly storms, thunder, and the wild forces of nature.**
- ❍ Rudra was initially a fierce and fearsome deity, embodying the destructive aspects of nature.

Note:

➢ **Emergence of Nataraja Form:**
- ○ The concept of Shiva as a dancer, known as Nataraja, began to take shape around the **5th century AD.**
- ○ Early depictions of Shiva's dance laid the foundation for the multifaceted symbolism associated with the Nataraja form.

➢ **Shiva Under the Cholas:**
- ○ During the reign of the **Chola dynasty (9th-11th centuries AD),** Shiva's Nataraja form underwent significant development.
- ○ The Cholas, known for their **patronage of art and culture,** played a pivotal role in **shaping Nataraja's cultural significance.**
- ○ The Cholas were devout Shaivites, emphasizing the worship of Lord Shiva.
  - They constructed grand Shiva temples throughout their territories, with the **Brihadeeswara Temple in Thanjavur being a prominent example.** with a particular focus on Shaiva figures in their sculptures.

➢ **Evolution of Nataraja Iconography:**
- ○ Nataraja's symbolism grew more complex under the Cholas.
- ○ Lord Shiva is a complex deity in the Puranic pantheon, embodying **both destructive and ascetic qualities.**
- ○ Nataraja, the 'Lord of Dance,' is celebrated for his invention of 108 diverse dances. The dancing Shiva became associated with both **creation and destruction, embodying the dualities of life.**
- ○ The dance was seen as a cosmic dance, with Shiva as the **cosmic dancer, and the world as the stage.**
- ○ **Iconic Elements of Nataraja**
  - In iconic representations, Nataraja is depicted within a **flaming aureole or halo, symbolizing the circle of the world.**
  - His long, flowing dreadlocks signify the **energy and dynamism of his dance.**
    - Nataraja is typically shown with four arms, each holding symbolic objects that convey deeper meanings.
- ○ **Symbolism in Nataraja's Attributes:**
  - Nataraja holds a **damru (hand drum) in his upper right hand**, which **draws all creatures into his rhythmic motion**, and in his **upper left arm, he wields Agni (fire), symbolizing his power to destroy the universe.**

- Beneath one of Nataraja's feet lies a crushed dwarf-like figure, representing illusion and worldly distractions.
- In ornamentation, one ear of Shiva has a **male earring while the other has a female.**
  - This represents the fusion of male and female and is often referred to as **Ardhanarishwar.**
- A snake is twisted around the arm of Shiva. The snake symbolises the **kundalini power,** which resides in the **human spine in the dormant stage. If aroused, one can attain true consciousness.**

○ **Nataraja as Protector and Reassurer:**
- Despite the formidable symbolism associated with Nataraja, he also serves as a protector.
- The **'abhayamudra' (fear-allaying gesture) made with his front right hand reassures devotees**, offering protection from fear and doubt.
- Nataraja's raised feet and his gesture with his front left-hand point to his feet, inviting devotees to seek refuge in him.

○ **Nataraja's Smile:**
- One of the distinctive features of Nataraja's iconography is his almost always present broad smile.
- The French historian Renee Grousset beautifully described Nataraja's smile as representing both "death and life, both joy and pain."

Note:

What is the Lost Wax Method?

➢ Sculptors who created the Nataraja statue which is placed at the Bharat Mandapam, New Delhi, trace their lineage **34 generations back to the Cholas.**

➢ The crafting process used is the **traditional 'lost-wax' casting method, indigenous to the Chola era.**

  ○ The lost-wax method dates back at least 6,000 years, **a copper amulet** crafted using this method at a neolithic site in **Mehrgarh, Balochistan (present day Pakistan) is dated to circa 4,000 BC.**

    ● Notably, the **Dancing Girl of Mohenjo Daro was also crafted using this technique.**

➢ This method involves creating a **detailed wax model, coating it with alluvial soil, heating to burn away the wax, and filling the mold with molten metal.**

➢ The Cholas excelled in the lost wax method for producing elaborate metallic sculptures.

➢ This technique was used to create intricate sculptures for millennia.

Adopt a Heritage 2.0 and e-Permission Portal

Why in News?

    Archaeological Survey of India (ASI) launched **the "Adopt a Heritage 2.0"** program to come forward and help in better upkeep and rejuvenation of India's rich cultural heritage, in line with the vision of **'Virasat Bhi, Vikas Bhi'.**

➢ An easy-to-use mobile application called **'Indian Heritage'** has been introduced, alongside the launch of an **e-permission portal.**

What is the Indian Heritage App and e-Permission Portal?

➢ **Indian Heritage App:**

  ○ It will showcase the heritage monuments of India.

  ○ The app will feature state-wise details of monuments along with photographs, a list of public amenities available, geo-tagged locations, and feedback mechanism for citizens.

➢ **e-Permission Portal:**

  ○ An e-permission portal is for obtaining permission for photography, filming, and developmental projects on monuments.

  ○ The portal will fast-track the process of obtaining various permissions and solve operational and logistical bottlenecks.

What is the Adopt a Heritage 2.0 Programme?

➢ The programme is a revamped version of the earlier scheme (Adopt a Heritage Scheme) launched in 2017 and clearly defines the amenities sought for different monuments as per the **Ancient Monuments and Archaeological Sites and Remains Act (AMASR), 1958.**

➢ The stakeholders can apply for adopting a monument or specific amenities at a monument through a dedicated web portal that contains details of monuments sought for adoption.

➢ Adopt a Heritage 2.0 programme seeks to **foster collaboration with corporate stakeholders through which they can contribute to the preservation of these monuments** for the next generations.

  ○ The term of the appointment will be for a period of five years initially, which may be further extended up to five years.

What is the Adopt a Heritage Scheme?

➢ **About:**

  ○ It is a collaborative effort between the Ministry of Tourism, Ministry of Culture ASI, and State/UTs governments.

  ○ It was launched on **27 September 2017 (World Tourism Day)** by the President of India.

➢ **Aim:**

  ○ The Project aims to develop synergy among all partners to effectively promote 'responsible tourism'.

  ○ It aims to involve public sector companies, private sector companies, and corporate citizens/individuals to take up **the responsibility for making our heritage and tourism more sustainable.**

  ○ It is to be done through the development, operation, and maintenance of **world-class tourist infrastructure and amenities at ASI/ State heritage sites** and other important tourist sites in India.

➢ **Monument Mitras:**

  ○ Agencies/Companies would become **'Monument Mitras'** through the innovative concept of 'Vision Bidding', where the agency with the best vision for the heritage site will be given an opportunity to associate pride with their **CSR (Corporate Social Responsibility)** activities.

➢ **Rationale Behind 'Adopt a Heritage:**
   ○ The heritage sites are facing common challenges primarily related to the operations and maintenance of the various infrastructural as well as service assets.
   ○ There is a need to develop a robust mechanism for the provision of basic amenities on an immediate basis and advanced amenities on a long-term basis.

What are the Previous Attempts for Corporate Involvement in Heritage Management?

➢ **National Culture Fund:** The government of India in 1996 formed a National Culture Fund. Since then, 34 projects have been completed under it through public-private partnerships.

➢ **Campaign Clean India:** 'Campaign Clean India,' in which the government had identified 120 monuments/destinations.
   ○ Under this scheme, the India Tourism Development Corporation (ITDC) adopted Qutab Minar as a pilot project in 2012, while ONGC adopted six monuments — Ellora Caves, Elephanta Caves, Golkonda Fort, Mamallapuram, Red Fort, and Taj Mahal — as part of its CSR.

Note:

Experience of Italy: Italy has the largest number of **UNESCO** Heritage Sites in the world. The cash-strapped government has been successfully collaborating with corporations since 2014 for heritage maintenance after shunning them for decades.

■■■

Note:

Geography

Earthquake in Morocco

Why in News?

The most powerful **earthquake** in Morocco's history struck late on the 8th of September 2023. The earthquake had a **magnitude of 6.8** and its epicenter was located in the **Al-Haouz province, within the Atlas Mountains near the historic city of Marrakech.**

➢ A series of aftershocks, including a 4.9 magnitude tremor, added to the region's distress.

What are the Causes of the Earthquake in Morocco?

➢ The earthquake resulted from the **convergence of the African plate and the Eurasian plate along a complex plate boundary.**

➢ The earthquake's faulting mechanism was classified as **"oblique-reverse,"** indicating movement along the **fault plane where the upper block moves up and over the lower block** within the Moroccan High Atlas Mountain range.

  ○ Faults are **fractures in rock formations** that **enable rock blocks to move relative to each other.** Rapid movement along faults can trigger earthquakes.

  ○ Faults are categorized by their **dip (angle with respect to the surface) and slip direction.**

   ● **Dip-slip faults** include **normal faults (upper block moves down lower block)** and **reverse fa-ults (upper block moves up and over lower block),** reverse faults are common in areas of tectonic compression.

   ● **Strike-slip faults** involve **horizontal movement along the fault plane.**

● **Oblique-slip faults** exhibit characteristics of **both dip-slip and strike-slip faults.**

Oblique-slip fault: Arrows represent relative movement.
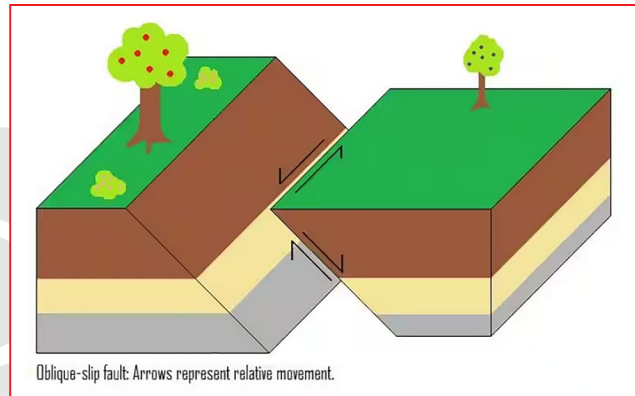
➢ The earthquake occurred at a relatively **shallow depth beneath the Earth's surface,** which is a contributing factor to its destructive potential.

  ○ **Shallow earthquakes** are more dangerous due to their proximity to the Earth's surface.

   ● They release more energy compared to deeper quakes, making them potentially more destructive.

  ○ Deeper earthquakes lose energy as seismic waves travel greater distances.
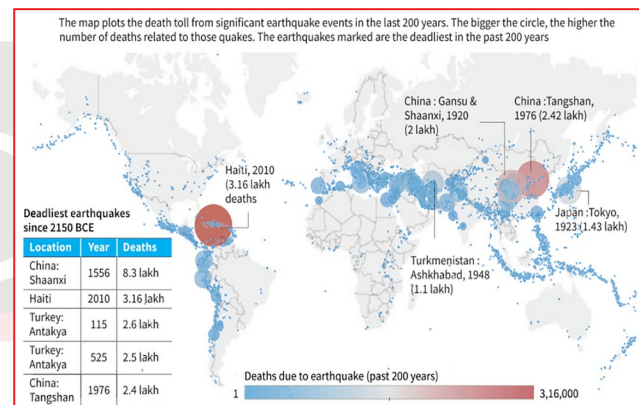

Note:

Key Facts About Morocco:

➢ Morocco is situated in western North Africa, directly across the **Strait of Gibraltar** from Spain.

➢ It shares borders with **Algeria to the east and southeast, the Western Sahara to the south,** and is surrounded by the **Atlantic Ocean to the west and the Mediterranean Sea to the north.**

➢ **Capital City :** Rabat.

➢ **Major Mountain Ranges**: The Atlas and Rif Mountains.

➢ **Morocco is situated on the convergence plate of Africa and Eurasia**, which are two of the major tectonic plates that make up the **Earth's crust.** These plates are constantly moving and colliding, creating mountains, volcanoes, earthquakes, and other geological features.

  ❍ **The Atlas Mountains in Morocco** are a result of the collision between these plates, as they are squeezed and uplifted by the compressional forces.

Strongest Earthquakes in History

Why in News?

Recently, a powerful 6.8 magnitude **earthquake struck Morocco** killing over 2,900 people.

➢ According to the **Significant Earthquake Events (SEE) database**, this is the strongest quake to hit Morocco.

➢ The SEE database maintains some of the oldest earthquake records that fulfil certain criteria.

Note:

➢ The Significant Earthquake Database is maintained by the **National Centers for Environmental Information (NCEI)**, a US government agency.

➢ It contains information on earthquakes **from 2150 BCE to the present** that meet at least one of the following criteria:

  ❍ **Moderate damage (approximately USD 1 million or more)**

  ❍ **10 or more deaths**

  ❍ **Magnitude of 7.5 or more**

  ❍ **An earthquake that generated a tsunami**

What is the NCEI's Data on Earthquakes?

The map plots the death toll from significant earthquake events in the last 200 years. The bigger the circle, the higher the number of deaths related to those quakes. The earthquakes marked are the deadliest in the past 200 years

Deadliest earthquakes since 2150 BCE

Location	Year	Deaths
China: Shaanxi	1556	8.3 lakh
Haiti	2010	3.16 lakh
Turkey: Antakya	115	2.6 lakh
Turkey: Antakya	525	2.5 lakh
China: Tangshan	1976	2.4 lakh

➢ **Global Highest Earthquakes:** As per NCEI, in the last 200 years, **China has suffered the highest number of quakes — 428.**

  ❍ It is followed by **Indonesia** (366 quakes), **Iran** (272), **Japan** (256), and **Turkey** (209).

Major Earthquakes in and around India					
Nu.	Place	#of Deaths	Date, Time and Year	Magnitude	Epicenter
1.	Indian Ocean	> 283,106	08:50, December 26th, 2004	9.1-9.3	West coast of Sumatra, Indonesia
2.	Kashmir	130,000	08:50.38, October 8th, 2005	7.6	Muzaffarabad, Pakistan Administered Kashmir
3.	Bihar and Nepal	> 30,000	14:13, January 15th, 1934	8.7	South of Mount Everest
4.	Gujarat	20,000	08:50 January 26th 2001	7.7	Kutch, Gujarat
5.	Kangra	> 20,000	06:10, April 4th, 1905	7.8	Himalayas
6.	Latur	> 9,748	22:25, September	6.4	Killari, Latur

EARTHQUAKE

ABOUT

- Shaking of the earth; caused due to release of energy, generating seismic waves in all directions

EARTHQUAKE WAVES

- **Body Waves:** Move in all directions travelling through the body of the earth
  - **P Waves:** Move faster, First to arrive at surface, Similar to sound waves, Travel through gaseous, liquid and solid materials
  - **S Waves:** Arrive at surface with some time lag, Travel only through solid materials
- **Surface Waves:** Last to report on seismographs, More destructive, Cause displacement of rocks
  - **Love Waves:** Same motion as S-waves (horizontal) without vertical displacement, Sideways motion perpendicular to the direction of propagation, Faster than Rayleigh waves
  - **Rayleigh Waves:** Cause the ground to shake in an elliptical pattern, Spread out the most of all seismic waves, Move vertically and horizontally in a vertical plane
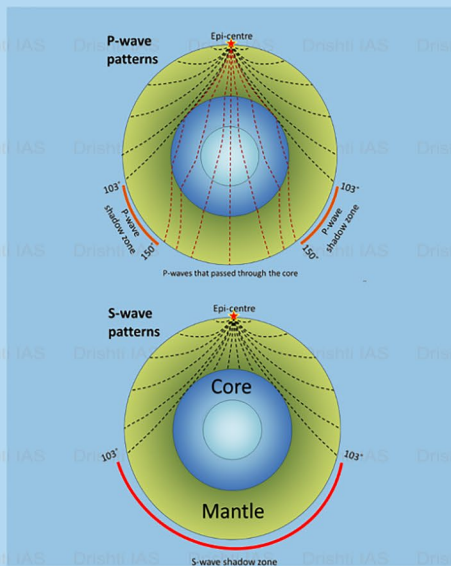
CAUSES OF EARTHQUAKES

- Release of energy along a Fault/Fault Zones (break in the crustal rocks)
- Movement of tectonic plates (most common)
- Volcanic eruption (stress changes in rock-injection/withdrawal of magma)
- Human activities (mining, explosion of chemical/nuclear devices etc.)

MEASURING EARTHQUAKE

- Seismometers - Measures seismic waves
- Richter Scale - Measures magnitude (energy released; range: 0-10)
- Mercalli - Measures intensity (visible damage; range: 1-12)

DISTRIBUTION

- Circum-Pacific Belt - 81% of earthquakes
- Alpide Earthquake Belt - 17% of the largest earthquakes
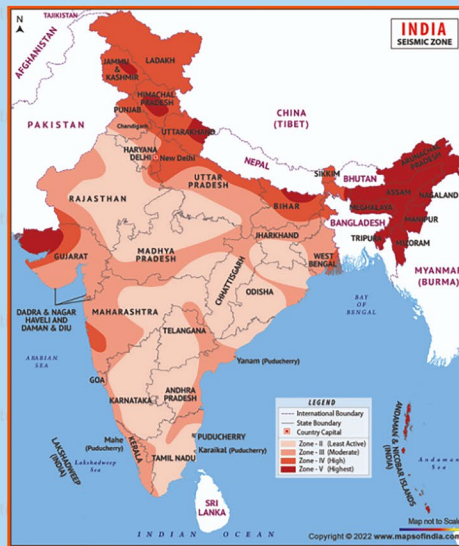- Mid-Atlantic Ridge - Mostly submerged underwater

Drishti IAS

HYPOCENTER

- Location where the earthquake starts (below earth's surface)

EPICENTER

- Location right above the Hypocenter (on the earth's surface)

P-wave patterns

S-wave patterns

EARTHQUAKE IN INDIA

- India is one of the highly earthquake affected countries due to the presence of technically active mountains - the Himalayas.
- India has been divided into 4 seismic zones (II, III, IV, and V)

INDIA SEISMIC ZONE

LEGEND
- International Boundary
- State Boundary
- Country Capital
- Zone - II (Least Active)
- Zone - III (Moderate)
- Zone - IV (High)
- Zone - V (Highest)

Map not to Scale

Copyright © 2022 www.mapsofindia.com

- **Most Severe Earthquakes:** In the past 200 years, there have been **four quakes with a magnitude of 9+.**
  - The most severe quake struck the **Chilean city of Puerto Montt in 1960** (9.5).
    - This is followed by **Alaska** in 1964 (9.2), **Honshu** (Japan) in 2011 (9.1), and **Sumatra** (Indonesia) in 2004 (9.1).
  - Of the **10 most severe earthquakes since 2150 BCE, seven have occurred in the last 200 years.**
- **Morocco:** The recent one that occurred is the strongest that hit Morocco. The **deadliest ever to hit the country occurred in 1960** and killed about 13,100 people (Magnitude at 5.9).
- **India:** As per NCEI, India has recorded 85 quakes in the last 200 years and ranks 16 on the list of countries with highest earthquakes.
  - The deadliest earthquake to hit India (either in the last 200 years or since 2150 BCE), occurred in 2001 in Gujarat.
    - The **Bhuj earthquake (magnitude - 7.6)**, as it is commonly known, is considered to be the deadliest as it killed over 20,000 people.
  - However, the Bhuj earthquake was not the strongest; the **1941 earthquake in Andaman** (poorly recorded due to **WW-II**), and the **1897 earthquake in Assam,** were both considered the strongest with a magnitude of 8.

Note:

drishti

Drop in India's Reservoir Water Levels

Why in News?

India, a country heavily reliant on **monsoon rains**, faced a significant challenge in **August 2023 with an unprecedented rainfall deficit.**

➢ As a result, the **water levels in the nation's crucial reservoirs** have experienced a **sharp decline**, raising concerns about water supply for households, industries, and power generation.

➢ August is typically a month when India's reservoirs see their water storage levels increase significantly. However, **August 2023 was an exception, as it marked the driest August in over 120 years.** Instead of the **expected 255 mm of rainfall, the country received only about 162 mm, resulting in a 36% rainfall deficiency.**

How Dry are India's Reservoirs?

➢ According to the **Central Water Commission (CWC),** the live storage in the **150 reservoirs was 113.417 billion cubic meters (BCM) as of 31st August, 2023,** which was **63% of their total live storage capacity.**

   ○ This was about **23% less than the storage during the same period in 2022 and about 10% less than the average of the last 10 years.**

➢ The water levels in the reservoirs varied across different regions and river basins. The southern region, which had a **rainfall deficiency of 60% in August, had the lowest storage level of 49% of its combined capacity.**

➢ The eastern region, which received normal rainfall, had the **highest storage level of 82% of its combined capacity.**

➢ Some of the **river basins that had highly deficient or deficient** water levels were:

   ○ **Highly Deficient:**
      ● **Pennar** basin in Karnataka and Andhra Pradesh
      ● **Mahanadi basin** in Chhattisgarh and Odisha

   ○ **Deficient:**
      ● **Subarnarekha, Brahmani and Vaitarni** basins in Jharkhand, West Bengal and Odisha
      ● **Kaveri** basin in Karnataka and Tamil Nadu
      ● **Mahi** basin in western India
      ● **Krishna** basin in Maharashtra, Karnataka and Telangana

➢ Water storage in the reservoirs of the eastern, western, central and southern regions, except the northern region is less than last year (2022).

Note:
➢ A **20% reduction in a river basin is close to normal,** according to the CWC.
➢ A basin is categorized as **deficient** if the reduction is **greater than 20% and less than or equal to 60%.**
➢ A reduction of over 60% is called **highly deficient.**

What Are the Consequences of this Water Scarcity?

➢ **Agriculture:**
   ○ The reservoirs provide irrigation water for crops, especially **during the rabi season.** The reduced water availability can affect crop production and farmers' incomes.

➢ **Power:**
   ○ The reservoirs also supply water for hydropower generation, which accounts for over **12% of India's total electricity generation.**
      ● The dry August led to an **unexpected increase in power demand,** primarily for irrigation purposes.
         ■ Power generation reached a record high in August, necessitating additional electricity production by coal-fired power plants due to the precarious water levels in the reservoirs.

➢ **Environment**:
   ○ The reservoirs also **support biodiversity and ecosystem services**, such as **flood control, groundwater recharge, fisheries and recreation.** The lower water levels can affect these functions and cause ecological damage.

➢ **Impact on Water Supply:**
   ○ India's annual rainfall primarily occurs during the **southwest monsoon season,** making these reservoirs vital for water supply year-round. This scarcity in water storage threatens households.

What are the Causes for the Rainfall Deficit?

➢ **El Niño:**
   ○ **El Niño** is a climatic phenomenon that occurs when the **sea surface temperature in the central and eastern Pacific Ocean rises above normal.**
      ● It affects the global weather patterns and reduces rainfall in India during the monsoon season.

Note:

- According to the **India Meteorological Department (IMD),** El Niño was present during August 2023 and was expected to continue till September.
- The IMD has forecasted that rainfall in **September will likely not be more than 10% deficient.**
  - However, the looming threat of El Niño in the **equatorial Pacific Ocean,** which is still gaining strength, poses a significant risk to India's water resources.

➢ **Indian Ocean Dipole (IOD):**
  ❍ The **Indian Ocean Dipole (IOD)** is defined by the **difference in sea surface temperature between two areas (or poles, hence a dipole)** – a western pole in the Arabian Sea (western Indian Ocean) and an eastern pole in the eastern Indian Ocean south of Indonesia.
  ❍ The IOD affects the climate of Australia and other countries that surround the Indian Ocean Basin, and is a significant contributor to rainfall variability in this region.
    - According to IMD, IOD was expected to turn favourable for the monsoon rainfall this year, but did not have much impact.
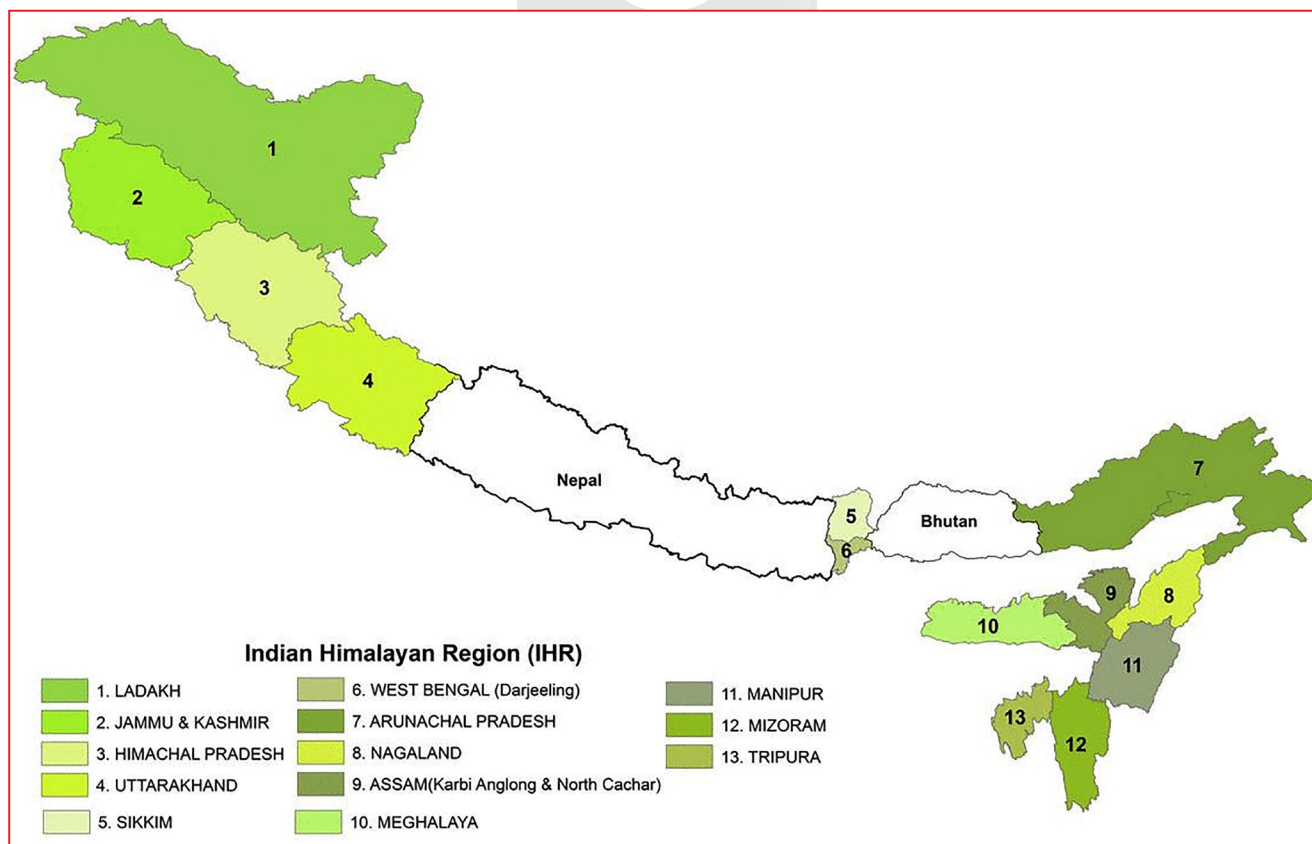
Carrying Capacity of Himalayan States

Why in News?

The Centre has urged the **Supreme Court** to direct 13 Himalayan states of the country to assess their '**carrying capacity**' and proposed setting up of an expert panel to evaluate the action plans submitted by each of them.

➢ This initiative is essential to ensure **sustainable development and preservation of the fragile Himalayan ecosystem.**

What is Carrying Capacity?
➢ Carrying capacity refers to the **maximum population size that an ecosystem or environment can sustainably support** over a specific period without causing significant **degradation or harm to its natural resources** and overall health.
➢ Carrying capacity assessments is crucial for understanding and **managing the balance between human activities and the preservation of natural ecosystems** to ensure long-term sustainability.

Indian Himalayan Region (IHR)

1. LADAKH
2. JAMMU & KASHMIR
3. HIMACHAL PRADESH
4. UTTARAKHAND
5. SIKKIM
6. WEST BENGAL (Darjeeling)
7. ARUNACHAL PRADESH
8. NAGALAND
9. ASSAM(Karbi Anglong & North Cachar)
10. MEGHALAYA
11. MANIPUR
12. MIZORAM
13. TRIPURA

Nepal
Bhutan

Note:

What are the Government Initiatives Related to the Conservation of the Himalayan Region?

➢ **National Mission on Sustaining Himalayan Ecosystem (2010):**
  ○ Covers **11 states (Himachal Pradesh, Uttarakhand, Sikkim, all northeast states, and West Bengal)** and **2 UTs (Jammu & Kashmir and Ladakh).**
  ○ Part of the **National Action Plan on Climate Change (NAPCC)**, comprising eight missions.

➢ **Indian Himalayas Climate Adaptation Programme (IHCAP):**
  ○ It aims to enhance the **resilience of vulnerable communities in the Indian Himalayas** by strengthening the capacities of **Indian institutions in climate science**, with a specific focus on glaciology and related areas

➢ **SECURE Himalaya Project:**
  ○ Integral to the **"Global Partnership on Wildlife Conservation and Crime Prevention for Sustainable Development"** (Global Wildlife Program), funded by the **Global Environment Facility (GEF).**
  ○ Focuses on promoting sustainable management of alpine pastures and forests in the high-range Himalayan ecosystems.

➢ **Mishra Committee Report 1976:**
  ○ Named after **MC Mishra**, the then Garhwal commissioner in erstwhile Uttar Pradesh. It provided findings on land subsidence in Joshimath.
  ○ Recommendations included **imposing restrictions on heavy construction work,** blasting, excavation for road repairs and other construction activities, and tree felling in the region.

Pacific Weather Changing: More Multi-Year El Nino and La Nina

Why in News?

A recent study has raised concerns about the **impact of human activities on the duration and behaviour of El Nino and La Nina events.**

➢ It found that **Walker Circulation** has changed its behavior since the industrial era and **multi-year El Nino and La Nina events could become more frequent.**

What do the Recent Studies Suggest?

➢ The **Walker Circulation,** a key atmospheric component of ENSO, drives weather patterns worldwide. Researchers aimed to assess whether **greenhouse gas emissions** had influenced this critical climate driver.

➢ The study's findings revealed that the transition from El Nino to La Nina has slightly slowed over time. This suggests that **multi-year climate patterns** may become more frequent in the future, posing heightened risks of **droughts, fires, heavy rainfall, and floods.**

➢ While the overall strength of the **Walker Circulation has not yet decreased,** researchers speculate that **elevated carbon dioxide levels could weaken it.**
  ○ Many climate models also predict a **decline in the Walker Circulation by the end of the century.**

➢ The study also highlighted a **connection between volcanic eruptions and the weakening of the Walker Circulation.** This phenomenon often leads to El Nino-like conditions.
  ○ The research identified three significant **El Nino events in the twentieth century that followed volcanic eruptions: Mount Agung in 1963, El Chichón in 1982, and Mount Pinatubo in 1991.**

➢ **Walker Circulation:**
  ○ The Walker Circulation is a **large-scale atmospheric circulation pattern** in the tropical Pacific region of the Earth.
    ● It is a system of winds that plays a crucial role in shaping climate and weather patterns in the tropics and beyond.
  ○ The **Walker Circulation is primarily associated with the Pacific Ocean** but has global impacts.
    ● A **weaker Walker Circulation is associated with El Nino**, while a **stronger circulation signals La Nina.**

➢ **El Nino:**
  ○ **El Nino** is a climate pattern that describes the **unusual warming of surface waters in the Tropical Pacific Ocean.** It means Little Boy in Spanish and it occurs more frequently than La Nina.
    ● It is known to **suppress monsoon rainfall in India.**
  ○ It occurs due to the **weakening or reversal of trade winds** in the tropical Pacific.
    ● Normally, **trade winds blow from east to west,** pushing warm surface waters towards the **western Pacific.**

Note:

- **La Nina:**
  - ○ La Nina is a pattern that describes the **unusual cooling of the Tropical Pacific Ocean.** It means **"Little Girl"** in Spanish and is sometimes called **El Viejo, anti-El Niño, or simply "a cold event."**
    - It is known to aid rainfall over India.
  - ○ It occurs as a result of the **strengthening of the trade winds in the tropical Pacific Ocean.**
    - During La Nina events, these trade winds become **even stronger, intensifying the normal east-to-west flow** of warm surface waters across the equatorial Pacific.
    - This strengthening of the trade winds leads to cooler-than-average sea surface temperatures in the **central and eastern equatorial Pacific.**
- **El Nino-Southern Oscillation (ENSO):**
  - ○ It is a climate phenomenon resulting from the interaction between ocean and atmospheric conditions.
    - The "**southern oscillation**" component refers to **differences in sea-level air pressure over the western and eastern Pacific Oceans.**
  - ○ **El Nino and La Nina** represent the warm and cool phases of the **El Nino-Southern Oscillation (ENSO) cycle**.
    - El Nino and La Nina episodes typically occur every 2 to 7 years. La Nina events may last **between one and three years**.
- However, it is rare for El Nino events to last longer than a year.
  - Multi-year El Niño and La Nina events are those that persist for more than one year without returning to normal conditions in between.
- In 2023, **La Nina concluded a three-year period,** and El Nino made its presence felt. Such long-lasting ENSO phases are unusual.

What can be the Impacts of Rising Multi-year El Nino and La Nina Events?

- **Increased Frequency of Extreme Weather Events:** Multi-year El Niño and La Niña events can alter the patterns of precipitation, temperature, wind, and atmospheric pressure across the globe, leading to more frequent and **severe droughts, floods, heat waves, cold snaps, storms, and wildfires.**
- **Natural Disasters:**
  - ○ **Floods and Droughts:** Multi-year **El Nino events can amplify the risk of prolonged droughts** followed by severe flooding events in different regions.
    - Conversely, multi-year La Nina events can lead to excessive rainfall and flooding in some areas, followed by extended periods of drought in others.
  - ○ **Tropical Cyclones:** The frequency and intensity of tropical cyclones can be influenced by ENSO events.
    - Multi-year events can result in **variations in cyclone activity in different ocean basins, affecting coastal regions' vulnerability.**
- **Agriculture and Food Security:** Multi-year El Nino-induced droughts can lead to **reduced crop yields,** affecting global food supplies and prices.
  - ○ In contrast, multi-year La Nina events may enhance crop production in some regions but also **lead to excessive rainfall and waterlogging, damaging crops.**
- **Economic and Societal Impacts:**
  - ○ **Economic Costs**: The combined impacts of multi-year ENSO events can result in significant economic costs due to **damage to infrastructure, increased energy demand, and disruptions to global trade** in commodities such as food and minerals.
  - ○ **Health Risks:** Changing weather patterns can affect the spread of diseases, with **increased risks of waterborne diseases** during flooding and vector-borne diseases during prolonged droughts.
- **Environmental Consequences:**
  - ○ **Ecosystems:** Multi-year events can **stress terrestrial and marine ecosystems,** leading to **coral bleaching, forest fires, and habitat disruptions**.
    - Ecosystems may struggle to adapt to the rapid and persistent changes in temperature and precipitation.
  - ○ **Biodiversity:** Shifts in environmental conditions can **impact the distribution and survival of species**, particularly those sensitive to climate variations. This can have cascading effects on biodiversity.

Note:

El Niño and La Niña

El Niño

- **Warming** of the ocean surface/ Above average **sea surface temp.** (SST)
- **Easterly winds either weaken** or start blowing in the **opposite direction**
- First noticed by **Peruvian fishermen** in the 1600s
- **More frequent than La Niña**

Impacts

- **Drastically higher rainfall in S. America** (coastal flooding and erosion)
- **Droughts in Indonesia and Australia**; wildfires
- **Weaker monsoons** and even **droughts** in **India and SE Asia**
- **Reduces the upwelling** of cooler, nutrient-rich waters from the deep - along the west coast of South and Central America.
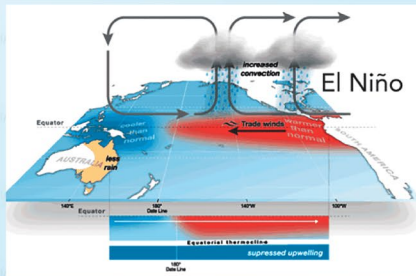

Fig. 1 - Depiction of El Niño Phenomenon

La Niña

- Also called **El Viejo, anti-El Niño, or simply "a cold event"**
- **Normal easterly winds** along the equator **become even stronger**
- **May last 1-3 years,** unlike El Nino (which usually lasts no more than a year)

Impacts

- **Heavier rains in SE Africa**, catastrophic **floods in Australia**
- **Drier-than-normal conditions** in S. America
- **Summer Monsoon rainfall** - greater than normal rainfall in **India**; beneficial for agriculture dependent Indian economy
- Off the west coast of the Americas, **upwelling increases**, bringing cold, nutrient-rich water to the surface.
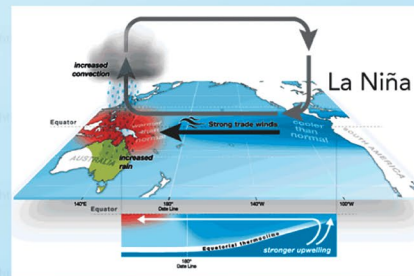

Fig. 2 - Depiction of La Niña Phenomenon

Oceanic Nino Index (ONI)

- It is a measure of the departure from normal sea surface temperature in the east-central Pacific Ocean.
- It is the **standard means by which each El Nino episode is determined,** gauged, and forecast.

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■■■

Note:

Ethics

Highlights

- *Attitude and Aptitude*

Attitude and Aptitude

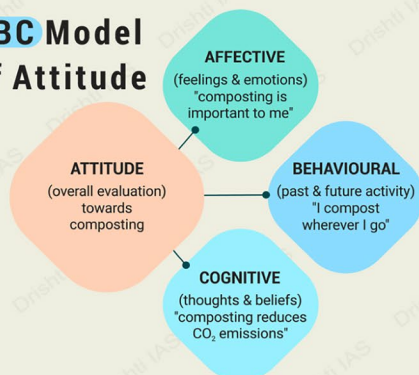ATTITUDE AND APTITUDE

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ATTITUDE

A psychological tendency where one evaluates something with some degree of favour/disfavour

- **Classification:**
  - **Explicit** (formed consciously)
  - **Implicit** (subconscious behaviour)

ABC Model of Attitude

- **AFFECTIVE** (feelings & emotions) "composting is important to me"
- **ATTITUDE** (overall evaluation) towards composting
- **BEHAVIOURAL** (past & future activity) "I compost wherever I go"
- **COGNITIVE** (thoughts & beliefs) "composting reduces CO_2 emissions"

- **Changing Attitude:**
  - **Classical/ Pavlovian Conditioning:**
    - Exposing one to a positive and neutral stimulus repeatedly so that the response towards both becomes same eventually

CLASSICAL CONDITIONING

BEFORE CONDITIONING	DURING CONDITIONING	AFTER CONDITIONING
Neutral Sitmulus / positive Sitmulus	+ =	Conditioned Sitmulus

- **Instrumental Conditioning:**
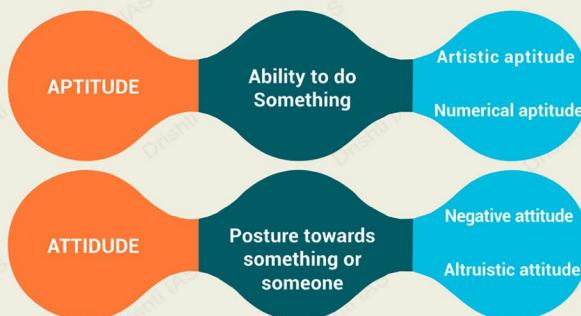 - Rewarding positive behaviour besides punishing negative behaviour
- **Social Observation:**
  - Learning from social environment

APTITUDE

A natural, inborn ability that enables one to learn/do something more easily

Aptitude v/s Interest/Skill/Intelligence

Aptitude v/s	Meaning	Difference from Aptitude
Interest	Attraction towards a task	Even if one has interest but not the potential (aptitude), they may not succeed
Skill	Knowledge to do a given task with ease and precision	Skills can be acquired; aptitude is inborn, unique
Intelligence	Capacity for learning, reasoning, understanding etc.	It is the ability to apply skills; aptitude helps to master a skill

- **APTITUDE** — Ability to do Something — Artistic aptitude, Numerical aptitude
- **ATTITUDE** — Posture towards something or someone — Negative attitude, Altruistic attitude

- While aptitude is related to competence, attitude is to do with character
- Aptitude without Attitude is Blind; Attitude without Aptitude is Lame

Note:

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Miscellaneous

National Teachers' Award 2023

Why in News?

Recently, the Prime Minister of India interacted with the **winners of the National Teachers' Award 2023 on the eve of Teachers' Day.**

What is the National Teachers' Award?

➢ The purpose of the National Teachers' Award is to celebrate the **unique contribution of some of the finest teachers in the country** and to honour those teachers who, through their commitment, have **not only improved the quality of education but also enriched the lives of their students.**

➢ The awards are conferred by the **President of India on 5th September.**

➢ The awards **consist of a silver medal, a certificate and a cash prize of Rs. 50,000.**

➢ This year, the scope of the award has been expanded from including teachers selected by the **Department of School Education & Literacy** to now also including teachers selected by **Department of Higher Education and Ministry of Skill Development.**

Why is Teacher's Day Celebrated in India?

➢ Teachers' Day, celebrated annually on 5th September since 1962, **honours the contributions of educators, including teachers, researchers, and professors in India.**

   ○ Dr. Sarvepalli Radhakrishnan, the President of India at the time, suggested observing **his birthday as Teachers' Day** in response to students' requests for celebration.

➢ **About Radhakrishnan:**

   ○ **Birth:**

- He was born into a Telugu family in Tiruttani town of Tamil Nadu, on 5th **September, 1888.**

   ○ **Academics:**

- He studied philosophy at Christian College, Madras, and later became a professor at Madras Presidency College and the University of Mysore.
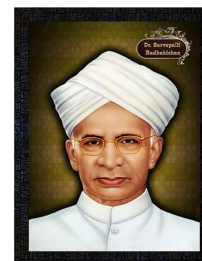
   ○ **Employment:**

- He served as the **first Vice-President of India** from 1952 to 1962 and the **second President of India** from 1962 to 1967.

- He was also the **Ambassador of India to the Soviet Union** from 1949 to 1952. He was the **fourth Vice-Chancellor of Banaras Hindu University** from 1939 to 1948.

   ○ **Recognition:**

- In 1984, he was posthumously (after death) awarded the **Bharat Ratna.**

   ○ **Notable Works:**

- Reign of Religion in Contemporary Philosophy, Philosophy of Rabindranath Tagore, The Hindu View of Life, Kalki or the Future of Civilisation, An Idealist View of Life, The Religion We Need, India and China, and Gautama the Buddha.

R. Ravi Kannan Wins Ramon Magsaysay Award 2023

Why in News?

Recently, Surgical oncologist **Padma Shri Dr R. Ravi Kannan,** Director of the Cachar Cancer Hospital and Research Centre (CCHRC) in Assam, received the **prestigious Ramon Magsaysay Award for 2023.**

➤ He won the award for revolutionising the treatment of cancer in Assam through his people-centered and pro-poor programs **(offering free treatment, food, lodging, and employment for caregivers).**

What are the Key Facts
*About the Ramon Magsaysay Award?*

➤ **About:**
- Established in 1957 as **Asia's highest honour and premier prize**.
- It celebrates **individuals who demonstrate exceptional spirit in serving the people of Asia, regardless of their background.**
- The award is presented annually on **August 31ˢᵗ,** which coincides with the birthday of **Ramon Magsaysay, the third president of the Republic of the Philippines**, who inspired its creation.
- Awardees are presented with a certificate, a medallion with an embossed image of Ramon Magsaysay, and a cash prize.

- The award is internationally recognised as the **Nobel Prize** counterpart of Asia.

➤ **Categories of Recognition:**
- The award initially featured six categories, including "Government Service", "Public Service", "Community Leadership", "Journalism, Literature, and Creative Communication Arts", "Peace and International Understanding", and "Emergent Leadership".
- However, post-2009, the **Ramon Magsaysay Award is no longer being given in fixed Award categories, except for Emergent Leadership.**
- However, post-2009, the Ramon Magsaysay Award Foundation annually selects the awardees for the **field of Emergent Leadership.**
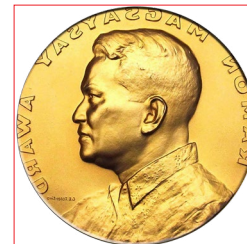
Note:

Rapid Fire Current Affairs

Highlights

- Bhoj Wetland
- Foreigners' Tribunals
- South Korea and Quad
- Expansion of PM Ujjawala Yojana
- Natural Polyphenols to Combat Alzheimer's Disease
- India and WOAH Collaborate for Pandemic Preparedness
- Operation Polo
- Hindi Diwas
- President Calls for Protecting Farmers' Rights and Traditional Seed Varieties
- World Duchenne Muscular Dystrophy Day
- Defence Minister Inaugurates 90 Border Infrastructure Projects Across India
- Libya's Catastrophic Flooding
- Acharya Vinoba Bhave
- India to Enable Cross-Border Bill Payments for UK NRIs
- BIS Promoting Indian Standards at Village Level
- Novak Djokovic Wins 24th Grand Slam Title at US Open 2023
- Crown Shyness
- 21st Edition of India-France Bilateral Naval Exercise 'VARUNA'
- Ustad Ali Zaki Hader
- National Ayush Mission
- Quad Leaders Invited on India's Republic Day
- Sandes App
- White Sambar in Cauvery Wildlife Sanctuary
- BRIGHT STAR-23
- Indonesia Seeks US Trade Talks for Critical Minerals
- Indian President to Inaugurate Asia Pacific Human Rights Conference
- World EV Day
- Bird-Like Dinosaur: Fujianvenator prodigiosus
- India's first ever UPI-ATM
- UIDAI Drives Aadhaar Innovation at Global Fintech Festival
- EMRS Principal Honored with National Teachers' Award 2023
- Ministry of Tourism and UNWTO Unveil G20 Tourism and SDG Dashboard
- Hong Kong's Top Court Rules to Recognise Same-Sex Partnerships
- Malaviya Mission: Teacher Training Program for Higher Education
- Integrating Personalised Adaptive Learning into DIKSHA Platform
- WHO's Gujarat Declaration
- Uncertainty of Andhra Pradesh students' Local Quota
- Electricity's Surge in Indian Irrigation: MIC 6th Edition Report
- IAF's Trishul Exercise Tests Western Air Command's Readiness
- Israeli PM Proposes Fiber Optic Link from Asia and the Middle East to Europe
- Prayan Rover Completes Tasks and Enters Sleep Mode
- Karnataka Takes Steps to Address Dementia
- Significance of Cartesian Coordinates in Modern Geometry
- Shared Neural Mechanisms in Spatial Navigation and Social Interaction in Bats
- World Organ Donation Day
- Golden Globe Race
- A Comic Book by NCERT & UNESCO 132
- Superfoods
- Sree Narayana Guru Jayanti
- Indigenously Developed Electric Nuclear Power Reactor
- Diving Support Craft (DSC) Project

Bhoj Wetland

The **National Green Tribunal (NGT)** recently ordered the MP state govt to stop the **operation of cruise vessels as well as other motor-propelled boats in the Bhoj wetland** on account of the drastic damage being done to water bodies.

➢ The Bhoj Wetland, also known as **Bhopal Lake** is a **designated Ramsar site** and hence, **a wetland of international importance** (**Ramsar Convention 1971**).

➢ It consists of two contiguous human-made reservoirs -

○ **"Upper Lake"** - created in the 11th century by construction of an earthen dam across the Kolans River.

○ **"Lower Lake"** - constructed ~200 years ago, largely from leakage from the Upper lake. It is surrounded by the city of Bhopal.

Note:

Ramsar Sites

Total Sites: 75 (August 2022)

Jammu & Kashmir
Wular Lake
Hokera Wetland
Surinsar-Mansar Lakes
Hygam Wetland Conservation Reserve
Shallbugh Wetland Conservation Reserve

Ladakh
Tso Kar Wetland Complex
Tsomoriri Lake

Himachal Pradesh
Pong Dam Lake
Renuka Wetland
Chandertal Wetland

Punjab
Harike Lake
Kanjli Lake
Ropar Lake
Nangal Wildlife Sanctuary
Beas Conservation Reserve
Keshopur-Miani Community Reserve

Uttarakhand
Asan Conservation Reserve

Bihar
Kabartal Wetland

Haryana
Sultanpur National Park
Bhindawas Wildlife Sanctuary

Rajasthan
Sambhar Lake
Keoladeo Ghana NP

Assam
Deepor Beel

Manipur
Loktak Lake

Tripura
Rudrasagar Lake

Mizoram
Pala Wetland

Gujarat
Wadhvana Wetland
Nalsarovar Bird Sanctuary
Khijadia Wildlife Sanctuary
Thol Lake Wildlife Sanctuary

West Bengal
Sunderbans Wetland
East Kolkata Wetlands

Madhya Pradesh
Sakhya Sagar
Bhoj Wetlands
Sirpur Wetland
Yashwant Sagar

Odisha
Chilka Lake
Satkosia Gorge
Bhitarkanika Mangroves
Tampara Lake
Hirakud Reservoir
Ansupa Lake

Maharashtra
Lonar Lake
Thane Creek
Nandur Madhameshwar

Uttar Pradesh
Sur Sarovar
Haiderpur Wetland
Sarsai Nawar Jheel
Sandi Bird Sanctuary
Saman Bird Sanctuary
Bakhira Wildlife Sanctuary
Nawabganj Bird Sanctuary
Parvati Arga Bird Sanctuary
Samaspur Bird Sanctuary
Upper Ganga River (Brijghat to Narora Stretch)

Goa
Nanda Lake

Karnataka
Ranganathittu Bird Sanctuary

Andhra Pradesh
Kolleru Lake

Pichavaram Mangrove
Karikili Bird Sanctuary
Vellode Bird Sanctuary
Vaduvur Bird Sanctuary
Chitrangudi Bird Sanctuary
Vedanthangal Bird Sanctuary
Vembannur Wetland Complex
Kanjirankulam Bird Sanctuary
Koonthankulam Bird Sanctuary
Pallikaranai Marsh Reserve Forest
Suchindram Theroor Wetland Complex
Udhayamarthandapuram Bird Sanctuary
Gulf of Mannar Marine Biosphere Reserve
Point Calimere Wildlife and Bird Sanctuary

Kerala
Asthamudi Wetland
Sasthamkotta Lake
Vembanad Kol Wetland

Tamil Nadu

Read More: National Green Tribunal (NGT), Wetlands in India, Ramsar Convention 1971 (Infographic)

Foreigners' Tribunals

Recently, the Assam state government disclosed that since 2001, a total of 3,100 people have been declared and convicted as foreigners by tribunals in Assam and have been deported. These people were **declared non-citizens by Foreigners' Tribunals (FTs).**

➢ Steps against people with doubtful citizenship are taken according to the **Foreigners' Act of 1946**, the **Foreigners (Tribunal) Order of 1964** and **notifications issued by the Centre** from time to time.

➢ FTs are **quasi-judicial bodies** to whom an individual can represent his/her case if their name does not figure in the final National Register of Citizens (NRC). **Only FTs are empowered to declare a person as a foreigner.**

❍ The FTs judge their citizenship on the basis of documents provided or the lack of them.

Read More: Foreigners Tribunals, Citizenship of India

South Korea and Quad

South Korea has expressed its will to join the Quad grouping and now the decision of expansion rests with the latter.

➢ Currently, Quad is a grouping of **India, Australia, the US, and Japan** formed on a common ground of democratic values of the countries. It aims to ensure and support a **"free, open and prosperous" Indo-Pacific region**.

➢ On the bilateral front, India and South Korea are negotiating expansion of the Comprehensive Economic Partnership Agreement (CEPA) (in place since 2010).

Note:

Read More: Quad, India-South Korea Relations

Expansion of PM Ujjawala Yojana

The Union Cabinet has recently approved the extension of **Pradhan Mantri Ujjwala Yojana (PMUY)** for release of 75 lakh LPG connections **over 3 years from FY 23-24 to FY 25-26** increasing the total number of beneficiaries to 10.35 crore.

➢ **Initiatives to expand LPG coverage:**

➢ **PAHAL (Pratyaksh Hastantarit Labh):** To reduce "ghost" accounts and illegal use of household cylinders for commercial purposes, the LPG cylinders were not sold at subsidised price and rather at market price.

  ❍ The applicable subsidy was directly transferred to the individual's bank account electronically.

➢ **GIVE IT UP:** Instead of removing subsidies forcefully, people were encouraged to voluntarily surrender their subsidies which helped redirect the funds to those who genuinely needed assistance in acquiring LPG cylinders.

Read More: Pradhan Mantri Ujjwala Yojana

Natural Polyphenols to Combat Alzheimer's Disease

Researchers at **Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR),** an autonomous institute of the **Department of Science and Technology (DST)** have discovered that naturally occurring plant-based **polyphenols (beneficial plant compounds with**

antioxidant properties), like tannic acid found in Chestnut and Oak twigs, can modulate the **ferroptosis-AD axis** to yield a safe, cost-effective strategy for combating **Alzheimer's disease (AD).**

➢ AD is a progressive neurodegenerative disorder characterized by **memory and cognitive decline.**

  ❍ Ferroptosis is a type of **programmed cell death** that is **dependent on iron and is linked to the development of AD.**

➢ AD aligns with characteristics of ferroptosis, including **abnormal iron build-up,** and reduced activity of the antioxidant enzyme **glutathione peroxidase 4 (GPX4).**

➢ **Tannic acid activates and enhances GPX4,** offering a comprehensive approach to combat AD.

Read more: Alzheimer's disease

India and WOAH Collaborate for Pandemic Preparedness

Recently, the Department of Animal Husbandry & Dairying, in partnership with the **World Organization for Animal Health (WOAH),** organized a multi-sectoral workshop "**Risk-based management of spillover events in wildlife in India**" at Hyderabad.

➢ The workshop aimed at enhancing stakeholder knowledge about **wildlife-origin disease risk analysis.**

➢ Discussions emphasized the significance of a **One Health approach,** cross-sectoral collaboration, and pandemic preparedness.

  ❍ The "One Health" approach, which recognizes the **interconnectedness of wildlife, domestic animals, and human health,** remains crucial for a sustainable future.

➢ The WOAH is an **intergovernmental organization** that was founded in 1924 to **improve animal health worldwide.**

  ❍ WOAH aims to **control and prevent the spread of epizootic diseases.**

  ❍ WOAH has **182 member countries, including all EU Member States.**

  ❍ The **WOAH headquarters is in Paris, France**, and Regional Commissions are maintained in each region of the world.

Read more: One Health Concept

Operation Polo

On **13ᵗʰ September, 1948,** India's military action known as **"Operation Polo"** was launched to integrate the princely state of **Hyderabad,** a significant event in Indian history.

➢ The **Nizam of Hyderabad, Mir Osman Ali Shah**, had hesitated to join India or Pakistan after Independence, capitalizing on the Indian government's preoccupation with the Kashmir conflict.

  ❍ A standstill agreement signed in **November 1947** maintained the **status quo between Hyderabad and India for a year,** allowing the Nizam to continue governing independently.

  ❍ However, **escalating tensions, cross-border raids, and intentions to establish an independent state**, prompted India to act.

➢ The **operation saw well-planned military thrusts from multiple directions**, ultimately leading to the surrender of the Hyderabad state forces.

  ❍ This pivotal campaign, carried out under the **watchful eye of Sardar Vallabhbhai Patel**, culminated in a ceasefire declaration on **17ᵗʰ September, 1948** effectively placing Hyderabad under Indian control by **18ᵗʰ September, 1948.**

  Read more: Hyderabad Liberation Day

Hindi Diwas

Hindi Diwas, celebrated annually on **14ᵗʰ September**, holds immense **historical significance** as it commemorates the **adoption of Hindi as one of India's official languages.**

➢ Its roots extend back to the **early days of India's struggle for independence** when a group of committed Hindi scholars and activists formed the **Hindi Sahitya Sammelan (Hindi Literary Conference) in 1918** to champion Hindi as a national language.

➢ The turning point arrived on **14ᵗʰ September, 1949,** when the Constituent Assembly of India officially **embraced Hindi as the nation's official language,** envisioning it as a unifying element among India's diverse linguistic and cultural regions.

  ❍ Today, Hindi stands as **one of the two official languages of the Union government along with English** and is one of the **22 scheduled languages of India.**

➢ **World Hindi Day** is observed on **10 January.** It commemorates the anniversary of the first **World Hindi Conference** held in **Nagpur on 10ᵗʰ January, 1975.**

  Read more: Hindi Diwas

President Calls for Protecting Farmers' Rights and Traditional Seed Varieties

The President of India inaugurated the **First Global Symposium on Farmers' Rights** in New Delhi, organized by the **International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)** and the **Food and Agriculture Organization (FAO)** to address farmers' rights.

➢ The essential role of farmers as **'anna daatas' (providers of food)** was highlighted and called for the **protection of their rights and future**.

  ❍ India, with just **2.4% of the world's land area, accounts for 7-8% of all recorded plant and animal species**, thanks to farmers' efforts in conserving local varieties, domesticating wild plants, and nurturing traditional crop varieties, which have ensured **food and nutritional security for humans and animals.**

➢ The President also presented the **Plant Genome Saviour Farmer Reward** 2021-22 to **recognise the efforts of farmers** who have **bred and developed new plant varieties.**

  ❍ The reward includes a citation, memento, and cash amount of Rs 1,50,000.

  Read more: Plant Genome Saviour Farmer Reward

World Duchenne Muscular Dystrophy Day

World Duchenne Muscular Dystrophy (DMD) Day observed annually on **7ᵗʰ September,** aims to **raise awareness about DMD** and improve the lives of individuals affected by this rare degenerative illness.

➢ The theme for this year's World DMD Day is **"Duchenne: Breaking Barriers."**

➢ DMD is a rare genetic condition that **weakens muscles progressively** and affects **approximately one in every five thousand boys.**

Note:

○ The condition results from an **X-chromosome mutation** and leads to difficulties in walking, followed by the **impairment of other motor functions.**

○ Ultimately, DMD affects vital functions like **breathing and heart function since the heart is a muscle too.**

● Currently, there is no known cure for DMD. Treatment aims to control symptoms to improve quality of life.

➢ The Department of Empowerment of Persons with Disabilities (DEPwD) under the Ministry of Social Justice and Empowerment, is actively involved in creating awareness about DMD.

Read more: Treatment for Duchenne Muscular Dystrophy

Defence Minister Inaugurates 90 Border Infrastructure Projects Across India

The **Defence Minister** inaugurated a total of 90 border infrastructure projects to enhance all-weather connectivity and military readiness along the **Line of Actual Control (LAC).**

➢ Notable among them is the **Nechiphu tunnel in Arunachal Pradesh**, which will provide year-round connectivity to the **strategically vital Tawang sector.**

➢ Additionally, the construction of the **Shinku La tunnel,** the world's highest tunnel, will provide all-weather connectivity to the **Lahaul-Spiti region** in Himachal Pradesh.

Read more: Line of Actual Control

Libya's Catastrophic Flooding

Recently, **Eastern Libya** experienced a catastrophic event as **floods** caused by **Storm Daniel,** brought widespread destruction.

➢ Decades of war and a **lack of a central government have resulted in deteriorating infrastructure,** making the country highly susceptible to the recent torrential rains.

➢ **Libya is the only nation without a climate strategy, as per the United Nations**.

➢ This catastrophe underscores the urgent **need for stability, unity, and comprehensive governance in Libya,** as it continues to grapple with multiple crises, from internal unrest to the exploitation of migrants and oil revenue disputes.

Acharya Vinoba Bhave

Recently, the Prime Minister of India paid homage to **Acharya Vinoba Bhave on his birth anniversary.**

➢ Vinayak Narahari Bhave was born on **September 11, 1895,** in Gagode, Bombay Presidency (Maharashtra).

➢ Vinoba Bhave was a prominent **nonviolence activist, freedom fighter, social reformer, and spiritual teacher** who followed **Mahatma Gandhi's principles** of non-violence and equality.

➢ He was the inaugural recipient of the **international Ramon Magsaysay Award for Community Leadership in 1958** and posthumously received the **Bharat Ratna in 1983.**

➢ He actively participated in the **non-cooperation movement** and encouraged the use of **Khadi.**

➢ Vinoba worked to eradicate **social inequalities and championed the cause of Harijans (Dalits)**. He initiated the Sarvodaya movement, which included the **Bhoodan (Gift of the Land) Movement.**
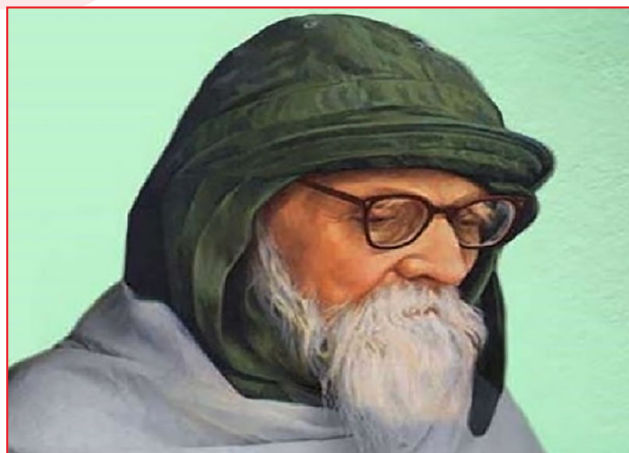
Read more: Acharya Vinoba Bhave

India to Enable Cross-Border Bill Payments for UK NRIs

➢ **India's Bharat Bill Payment System (BBPS)** is extending its reach to the UK after successful operations in **Middle Eastern countries like Oman, Kuwait, UAE, and Bahrain.**

Note:

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○ Non-Resident Indians (NRIs) in the UK will benefit from this system, enabling **them to pay bills conveniently through multiple payment methods.**

➤ BBPS serves as an interoperable and accessible one-stop ecosystem for various bill payments, including electricity, water, gas, telephone, DTH, and insurance.

➤ The BBPS is a **Reserve Bank of India** conceptualised system driven by **National Payments Corporation of India (NPCI).**

➤ India is showcasing its **digital payment infrastructure(DPI)** to attract international delegates' attention.

Read more: India's Digital Public Infrastructure

BIS Promoting Indian Standards at Village Level

The **Bureau of Indian Standards (BIS)** launched an initiative aimed at **promoting adherence to Indian standards at the grassroots level**.

➤ Through this initiative, BIS has reached out to **2.4 lakh Gram Panchayats** and embarked on a mission to sensitize **Gram Panchayat Presidents and Secretaries** across the country.

➤ Furthermore, BIS has developed the **BIS Care App to empower consumers with information on Indian Standards** and product certification.

➤ BIS is the **National Standard Body of India established under the BIS Act 2016** for the harmonious development of the activities of **standardization, marking and quality certification of goods** and for matters connected therewith or incidental thereto.

Read more: Bureau of Indian Standards

Novak Djokovic Wins 24th Grand Slam Title at US Open 2023

Novak Djokovic of Serbia wins his 24th **Grand Slam** title at the US Open 2023, defeating Daniil Medvedev of Russia. Djokovic moved ahead of **Serena Williams** to claim the record for the **most major singles titles won in the Open era.**

➤ Grand Slam tournaments, also called **majors**, are the **four most important annual tennis events.**

➤ The Grand Slam itinerary consists of the **Australian Open in mid-January, the French Open from around late May to early June, Wimbledon in June–July, and the US Open in August–September.**

➤ The Australian and United States tournaments are played on **hard courts**, the **French on clay, and Wimbledon on grass.**

Read more: Roland-Garros(French Open)

Crown Shyness

Crown shyness is a phenomenon common in **temperate deciduous forests,** where the **tops of some trees do not touch each other,** creating gaps of sky between them.

➤ It is observed in many species of trees, such as **black mangrove, camphor, and Japanese larch.**

➤ Scientists have different hypotheses to explain why crown shyness happens, such as **reducing competition for light, preventing disease transmission, or avoiding physical damage from wind.**

➤ Crown shyness creates intricate patterns and enhances **light penetration in the forest.**

21st Edition of India-France Bilateral Naval Exercise 'VARUNA'

The **Phase II of Varuna-23,** the bilateral naval exercise between the **Indian and French Navies**, took place in the **Arabian Sea**.

➤ This exercise involved **guided missile frigates, tankers, Maritime Patrol Aircraft,** and integral helicopters from both sides.

Note:

➢ Varuna, which began in **1993 and was officially named in 2001,** has evolved over the years into a symbol of the strong strategic relationship between **India and France.**

Read more: India France Relations

Ustad Ali Zaki Hader

➢ Renowned Rudra Veena exponent, **Ustad Ali Zaki Hader,** a disciple of **Ustad Asad Ali Khan,** was the last exponent of the **Khandarbani style of the Jaipur Beenkar gharana of Dhrupad.**

   ○ The Khandarbani style of the Jaipur Beenkar gharana of Dhrupad is a **musical tradition that originated in the 18th century by Shahaji Saheb.**

➢ Rudra Veena is a **traditional stringed instrument that originates from North India**. Crafted from materials like teak wood, metal, pumpkin, and bamboo, it has a distinctive appearance with **two large gourd resonators placed beneath a tubular wooden body.**

Hunga Tonga-Hunga Ha'apai Volcano

➢ A recent study reveals that during the **Hunga Tonga-Hunga Ha'apai volcano eruption in January 2022**, ejected rock and ash rapidly collapsed into the ocean, **forming a high-speed and destructive underwater debris flow.**

➢ The Hunga Tonga-Hunga Ha'apai volcano is a **submarine volcano** in the South Pacific Ocean. It's located 40 miles north of Tongatapu, **Tonga'**s main island.

   ○ The volcano formed in 2015 when a moderate eruption fused two uninhabited islands into one.

   ○ The volcano is part of the **Kermadec-Tonga subduction zone**, where the Pacific Plate is pushed under the Indo-Australian Plate, forming a long chain of volcanoes and islands.
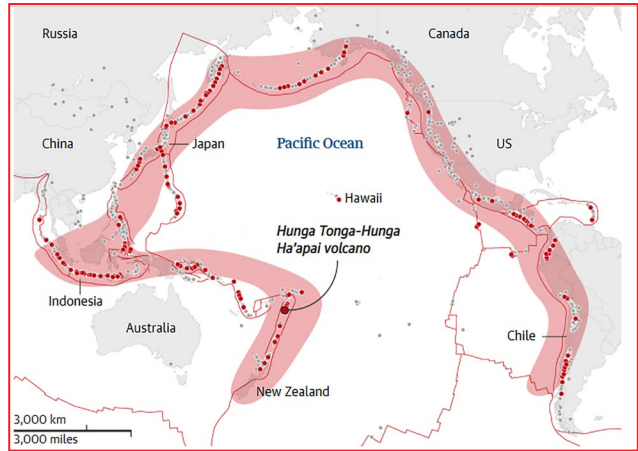
Read more: Volcanic Eruption in Tonga

National Ayush Mission

Recently, the Regional Review meeting of the **National Ayush Mission (NAM)** was ceremonially inaugurated.

➢ At the meeting, following **robust programmes of AYUSH were highlighted:**

   ○ **Ayurvidya:** Promotion of healthy lifestyle through Ayush **for school children**

   ○ **Supraja:** Ayush for **Maternal & Neonatal intervention**

   ○ **Vayomitra:** Ayush based **geriatric programme**; prevention and management of Osteoarthritis and other Musculoskeletal disorders

➢ NAM is being implemented with the vision and objectives to provide Ayush health care services throughout the country by strengthening and improving facilities, to provide informed choice to the needy public.

   ○ Under NAM, the Ministry of Ayush is working on operationalisation of 12,500 **Ayush Health and Wellness Centres (AHWCs)** through support of State/UT Governments by **2023-24.**

Read More: National Ayush Mission

Quad Leaders Invited on India's Republic Day

India is discussing the possibility of inviting leaders of the Quad grouping to the **Republic Day** parade on **January 26, 2024.**

➢ January 26 is also observed as **Australia Day** - the anniversary of the arrival of the First Fleet of 11 convict ships from Great Britain, and the raising of
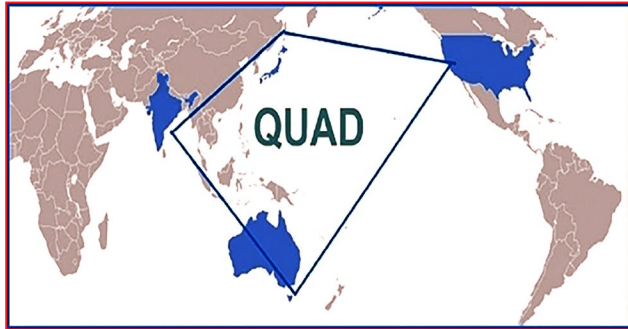
Note:

the Union Jack at Sydney Cove by its commander Captain Arthur Phillip, in 1788.

➤ Quad is the grouping of four democracies – **India, Australia, the US,** and **Japan** which aims to ensure and support a "free, open and prosperous" Indo-Pacific region.

➤ The idea of Quad was **first mooted by Japanese Prime Minister Shinzo Abe in 2007.** However, it came into being in 2017.

Read More: Quad

Sandes App

➤ **Delhi Police's official communication** on **G20** security arrangements will now take place on an **Indian** instant messaging platform, **Sandes**.

➤ On this **app Sandes**, users can **only access information** and **cannot forward** it to anyone whose number is **not registered on the app.**

➤ **Sandes** is a **secure** and **user-friendly messaging platform.** It has been designed to provide a **reliable** and **efficient** means of communication among various **government organizations.**

➤ The **first version** of the **app** was released by the **National Informatics Centre (NIC)** in **2020.**

➤ The **launch of the app** is also a part of the **government's strategy** to **push** for the use of **India-made software** so as to **build an ecosystem** of indigenously developed products.

Read More: Sandes: Government Instant Messaging System

White Sambar in Cauvery Wildlife Sanctuary

The first time a **leucistic sambar** has been observed in the **Sangama range** of **Cauvery Wildlife Sanctuary.**

➤ A **White Sambar Deer** was previously recorded in **Bandipur Tiger Reserve** in **2014.**

➤ **Leucism** is a condition in which the **pigmentation of an animal's skin is missing,** causing **white** or **pale skin.**
  ○ This condition can occur **naturally** from **birth** due to a **phenotype** (a trait of any living being) that may have formed from a **defect** in the **animal's development.**

➤ It is different from **albinism** which is a condition that arises due to a **lack of melatonin** in the **animal's skin** and the animal will have **pink** or **reddish eyes in albinism.**
  ○ The animal **lacks the pink eyes** in **leucism.**

➤ **IUCN** Status: Vulnerable

Read More: Cauvery Wildlife Sanctuary

BRIGHT STAR-23

INS Sumedha, a Saryu class Naval **Offshore Patrol Vessel** (NOPV), arrived in Port Alexandria, Egypt for **'Exercise BRIGHT STAR-23.'**

➤ It is a **multinational Tri-Services military exercise taking place in Port Alexandria, Egypt.**
  ○ 34 countries are participating, making it the **largest joint military exercise ever conducted in the Middle East & North Africa region.**

➤ The exercise is divided into two phases: the **Harbour Phase and the Sea Phase.**
  ○ The Harbour Phase includes cross-deck visits, professional exchanges, sports fixtures, and planning interactions.
  ○ The Sea Phase includes complex and high-intensity exercises such as cross-deck flying, anti-surface and anti-air exercises, and live weapon firing drills.

Note:

➢ The **Indian Navy is participating for the first time in Exercise BRIGHT STAR.**

Indonesia Seeks US Trade Talks for Critical Minerals

➢ Indonesia has requested the United States to begin trade talks for **critical minerals.**

   ❍ Indonesia has ambitions to become a major player in the manufacturing of **electric vehicles (EVs) and their batteries,** leveraging its vast **nickel reserves.**

   ❍ Indonesia is a producer and holder of the world's biggest nickel reserves amounting to 21 million metric tons.

➢ Critical minerals are minerals and metals that have specific **industrial, technological, and strategic applications.**

   ❍ They are the building blocks for the **green and digital economy** and many clean energy technologies, such as **solar panels, electric vehicles, wind turbines, and electricity networks.**

   ❍ Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, and Nickel are some examples of critical minerals.

  Read more: Critical Minerals for India, Demand for Critical Minerals Across the Globe

Indian President to Inaugurate Asia Pacific Human Rights Conference

The **President of India** is set to inaugurate the biennial conference of **National Human Rights Institutions (NHRIs) of Asia Pacific on 20th September 2023** at **Delhi.**

➢ Organized by the **National Human Rights Commission (NHRC)** in partnership with the **Asia Pacific Forum (APF),** the event will also feature the **28th Annual General Meeting of APF.**

   ❍ The conference will mark the **75th anniversary of the Universal Declaration on Human Rights** and will also celebrate **30 years of National Human Rights Institutions** and the **Paris Principles.**

➢ The NHRC came into existence on **12th October 1993,** as established by the **Protection of Human Rights Act (PHRA) of 1993,** later amended by the **Protection of Human Rights (Amendment) Act in 2006.**

  Read more: National Human Rights Commission

World EV Day

World EV Day celebrated on **9th September,** is an annual event dedicated to raising global awareness about the numerous benefits of **electric vehicles (EVs).**

➢ The Sustainability Media Company GreenTV initiated World Electrical Vehicle Day, and the **inaugural World EV Day was observed in the year 2020.**

➢ This day serves as a platform to emphasize the importance of **sustainable transportation, reduced emissions**, and the pivotal role EVs play in combating climate change and improving air quality.

  Read more: Electric Vehicles: The Advantages and Challenges

Bird-Like Dinosaur: Fujianvenator prodigiosus

➢ The recent discovery of fossils of a Jurassic Period ***bird-like dinosaur called Fujianvenator prodigiosus*** in southeastern China has captivated scientists and shed light on a critical evolutionary stage in the origin of birds.

➢ The dinosaur **had elongated legs and arms built much like wings,** suggesting it either was a **fast runner or lived a lifestyle like a modern wading bird.**

➢ It is classified as a member of a grouping called **avialans that includes all birds and their closest non-avian dinosaur relatives.**

➢ Its forelimb is generally built like a bird's wing, but with three claws on the fingers, which are absent from modern birds.

India's first ever UPI-ATM

➢ **India's first UPI-ATM was launched on 5th September 2023, by Hitachi Payment Services**.

➢ The ATM is a **White Label ATM (WLA)** developed in collaboration with the **National Payments Corporation of India (NPCI).**

Note:

➢ The ATM was designed to enable **"seamless cash withdrawals"** and eliminate the need to **carry physical ATM cards.** It also aims to drive financial inclusion by making banking services more accessible in areas with limited traditional banking infrastructure.

Read more: Unified Payments Interface (UPI)

UIDAI Drives Aadhaar Innovation at Global Fintech Festival

At the **Global Fintech Festival in Mumbai, Unique Identification Authority of India (UIDAI)** unveiled its enhanced **Face Authentication feature**, utilizing in-house **Artificial Intelligence and Machine Learning** technologies, embodying the theme **"reimagining Aadhaar authentication."**

➢ Under the **Volunteer Guideline 2022 initiative,** UIDAI has fostered collaborations with industry and fintech partners to **accelerate technology adoption and develop innovative solutions for residents**.

➢ Collaborative efforts with **Airtel Payments Bank have enhanced face authentication,** optimizing low-light conditions and bolstering fraud prevention measures.

Read more: Unique Identification Authority of India, Artificial Intelligence.

EMRS Principal Honored with National Teachers' Award 2023

Union Minister for Tribal Affairs felicitated **Dr. Yashpal Singh,** Principal of **Eklavya Model Residential School (EMRS) Bhopal, Madhya Pradesh**, who received the prestigious **National Teachers' Award for 2023.**

➢ The EMRS scheme, initiated in **1997-98**, aimed to establish residential schools that **offer free education to Scheduled Tribe children from class VI to XII in remote corners.**

○ The scheme is being implemented by the **Ministry of Tribal Affairs, Government of India.**

Read more: Eklavya Model Residential School, National Teachers' Award for 2023.

Ministry of Tourism and UNWTO Unveil G20 Tourism and SDG Dashboard

➢ The Ministry of Tourism in collaboration with the **United Nations World Tourism Organization (UNWTO)**, unveiled the **G20** Tourism and **Sustainable Development Goals (SDGs)** Dashboard

○ It showcases the **best practices, case studies, and insights from G20 countries for achieving the SDGs.**

➢ The UNWTO is an **intergovernmental organization based in Madrid, Spain,** and has **159 Member States**.

➢ UNWTO promotes tourism as a **driver of economic growth, inclusive development, and environmental sustainability** and offers leadership and support to the sector in advancing knowledge and tourism policies worldwide.

Read more: United Nations World Tourism Organization (UNWTO)

Hong Kong's Top Court Rules to Recognise Same-Sex Partnerships

➢ Hong Kong's top court has ruled in favour of recognising same-sex partnerships but **stopped short of granting full marriage rights to the city's LGBTQ community.**

➢ The court gave the government two years to come up with a legal framework for legal recognition of same-sex partnerships.

➢ In 133 countries homosexuality decriminalised, but only in **32 of them same-sex marriage is legal.**

Read more: LGBTQIA+ Rights and Acceptance in India

Note:

Malaviya Mission: Teacher Training Program for Higher Education

The **Union Minister for Education** unveiled the **Malaviya Mission - Teacher Training Programme** initiated by the **University Grants Commission (UGC)** in collaboration with the Ministry of Education.

➢ The program aims to **enhance the quality of education** by providing customised training for teachers in higher educational institutions.

○ It aspires to equip **15 lakh teachers across India** with the skills needed to meet the goals of the National Education Policy (NEP).

➢ Renaming of **Human Resource Development Centres (HRDCs)** as **Madan Mohan Malaviya Teachers' Training Centres** was also announced.

Read more: Pt. Madan Mohan Malaviya

Integrating Personalised Adaptive Learning into DIKSHA Platform

The **National eGovernance Division (NeGD),** a branch of the Ministry of Electronics and Information Technology (MeitY), is embarking on a mission to **integrate Personalised Adaptive Learning (PAL)** into the **Digital Infrastructure for Knowledge Sharing (DIKSHA)** platform.

➢ DIKSHA, overseen by the **Ministry of Education**, serves as an **online repository of educational content for schools,** but it is currently static.

○ PAL, on the other hand**, employs AI to offer students personalised learning experiences** tailored to their individual needs and abilities.

Read more: DIKSHA

WHO's Gujarat Declaration

The World Health Organization (WHO) has released the outcome document of the **first WHO Traditional Medicine Global Summit 2023** in the form of the **"Gujarat Declaration".**

➢ India hosted the **first WHO Global Traditional Medicine Centre in Gujarat.**

➢ The declaration reaffirmed global commitments towards **indigenous knowledge, biodiversity and traditional, complementary and integrative medicine.**

➢ The Gujarat Declaration aims to advance **evidence-based traditional medicine interventions** for universal health coverage and health-related **Sustainable Development Goals (SDGs).**

○ It calls for standardized documentation and data collection on traditional medicine.

➢ The summit explored the role of digital health technologies, including AI, in traditional medicine.

Read more: Global Centre for Traditional Medicine: Gujrat

Uncertainty of Andhra Pradesh students' Local Quota

Andhra Pradesh students' **'local quota'** in educational institutions, protected by Article **371 D,** faces uncertainty as the **Andhra Pradesh Reorganisation Act, 2014 expires in May 2024.**

➢ Article 371 of the Constitution provides "special provisions" for 11 states, including six states of the Northeast (excluding Tripura and Meghalaya).

➢ Article 371 D was incorporated as the **32nd amendment to the Constitution in 1973.**

○ It particularly applies to the **regions of Andhra Pradesh, addressing agitations in the early 1970s.**

○ Article 371 D was introduced to **safeguard the rights of local students in education and employment.**

➢ Under Article 371 D, **85% of seats in educational institutions are reserved for local students.**

○ The provision has played a crucial role in **ensuring access to education for students in specific regions.**

Read more: Stalemate Between Telangana and AP,

Electricity's Surge in Indian Irrigation: MIC 6th Edition Report

The recently published **sixth edition of the Minor Irrigation Census (MIC) report** offers significant insights into the power sources employed in Indian irrigation.

➢ The MIC highlights ª noteworthy transformation in the primary power source for irrigation in India, **where electricity has taken center stage.**

Note:

- In 2011, electricity was the predominant power source for **56% of irrigation**, a figure that surged to **70% by 2017.**

➢ However, these findings are specific to the 2017-18 period and do not provide an accurate representation of the present state of irrigation practices.

Read more: India's 6th Minor Irrigation Census

Prayan Rover Completes Tasks and Enters Sleep Mode

➢ Pragyan, part of **Chandrayaan-3,** has **entered sleep mode for the lunar night, scheduled to awaken on September 22, 2023.**

CHANDRAYAAN3

India's 3rd lunar mission; a successful attempt at achieving a soft landing on lunar south

BRIEF HISTORY

Lunar Mission	Aim	Launch Vehicle	Success
Chandrayaan1 (2008)	Create a 3D atlas of moon & Mineralogical mapping	PSLV – C11	Detection of water and hydroxyl on lunar surface
Chandrayaan2 (2019)	Exploring lunar south pole	GSLV MkIII-M1	Lander and rover crashed but orbiter successfully collected data

COMPONENTS

- Lander - **Vikram;** Rover - **Pragyan** (same as Chandrayaan 2)
  ▸ Both designed to last for 14 days; not supposed to come back to the earth
- Spectro-polarimetry of Habitable Planet Earth **(SHAPE)**
  ▸ An experimental payload in propulsion module
  ▸ Study spectro-polarimetric signatures of Earth (near-infrared wavelength range)

ASPECTS TO STUDY

- Lunar quakes
- Thermal properties of lunar surface
- Changes in plasma near the surface
- Accurately measuring distance b/w Earth and the moon

MISSION LIFE

- 1 lunar day (~14 Earth days)

LAUNCH VEHICLE

- LVM3 - M4

India became the 1st country to successfully land on Lunar south pole and 4th to achieve soft-landing on Lunar surface (after US, Russia and China)

Why Chandrayaan 3 Succeeded?

- A "failure-based design", unlike the "success-based design" of Chandrayaan-2
  ▸ Even if all the sensors failed and engines stopped, **Vikram was sure to make the landing**
  ▸ Provision of **multiple attempts** for landing if attempt 1 failed
- Developed accordingly to **rule out the scenario of crash landing**
  ▸ Expanded landing area for more flexibility to land safely
  ▸ Equipped with more fuel to enable longer-distance travel

Importance of Lunar South Pole

- Vastly different, more **challenging terrain** compared to lunar equatorial region
- Potential repositories of valuable **information about early Solar System**
- Impact **future deep space exploration** significantly
- **Water may be concentrated** in the moon's southern hemisphere

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- **One lunar day** is equivalent to about **14 days on Earth.**
- If the rover doesn't awaken, it will remain on the **Moon as India's lunar ambassador.**

➤ The **ISRO** indicated that the process of putting the rover to sleep is to ensure its **survival during the lunar night** when temperatures **can plummet below -200°C.**

➤ The lander and rover rely on a solar panel to generate power and charge the battery during the lunar day, while they must endure the harsh lunar night conditions.

Read more: Chandrayaan-3 Successfully Lands on Moon's South Pole

IAF's Trishul Exercise Tests Western Air Command's Readiness

The **Indian Air Force (IAF)** has launched its annual mega training exercise, **Trishul,** with the activation of all combat assets under the **Western Air Command (WAC)**.

➤ This internal exercise encompasses a wide range of frontline assets, including fighter jets, transport aircraft, and helicopters, deployed from **Leh in Kashmir to Nal in Rajasthan**.

➤ Trishul serves as a **crucial test of the command's operational preparedness**, requiring a high level of coordination and readiness due to its scale and complexity.

Read more: Need to Modernise Indian Air Force

Israeli PM Proposes Fiber Optic Link from Asia and the Middle East to Europe

Israel's Prime Minister has put forward the idea of a **fibre optic cable project, to connect Asia and the Arabian Peninsula with Europe** through **Israel and Cyprus.**

➤ It highlights that the **fibre optic connection** serves as a **cost-effective and secure route for international communication**.

➤ This proposal extends Israel's collaboration with Cyprus and Greece on energy projects, such as the **EurAsia Interconnector, a 2,000-megawatt undersea electricity cable.**

➤ Additionally, there are plans for energy diversification, including gas pipelines and liquefied natural gas processing plants, to strengthen the East Mediterranean basin's link to Europe.

Read more: Optical Fibre

Karnataka Takes Steps to Address Dementia

➤ Karnataka is committed to prioritizing **dementia** as **a health concern.**

➤ Dementia is an **umbrella term encompassing diseases that affect memory, cognitive abilities,** and behaviour, hindering daily activities. **Alzheimer's disease is the most common type of dementia.**

- Recent estimates indicate a **7.4% dementia prevalence rate among Indians aged 60 and above**, totaling approximately **9 lakh individuals.** This number is expected to surge **from 88 lakh in 2016 to 1.7 crore by 2036.**

➤ **Risk factors** for dementia include smoking, excessive **alcohol consumption, physical inactivity, social isolation, head injuries, and conditions like diabetes, hearing loss, depression, obesity, and hypertension.**

Read more: Dementia , Alzheimer Disease

# Significance of Cartesian Coordinates in Modern Geometry

The **Cartesian coordinate system**, introduced by the **French philosopher and mathematician Rene Descartes**, revolutionized the **way we represent points in space.**

➤ This system utilizes sets of numbers to specify the location of a point in relation to perpendicular planes.

- In two dimensions, it relies on a **pair of numbers (x and y)** to pinpoint a specific location on a plane, akin to how **latitude and longitude locate a city on Google Maps.**
- For three-dimensional spaces, **a third number (z) is added to determine the point's exact position.**

➤ It has not only bridged the gap between algebra and geometry but also gave birth to **analytic geometry and** found widespread applications in fields like **astronomy, engineering, computer graphics,** and spatial data representation.

Note:
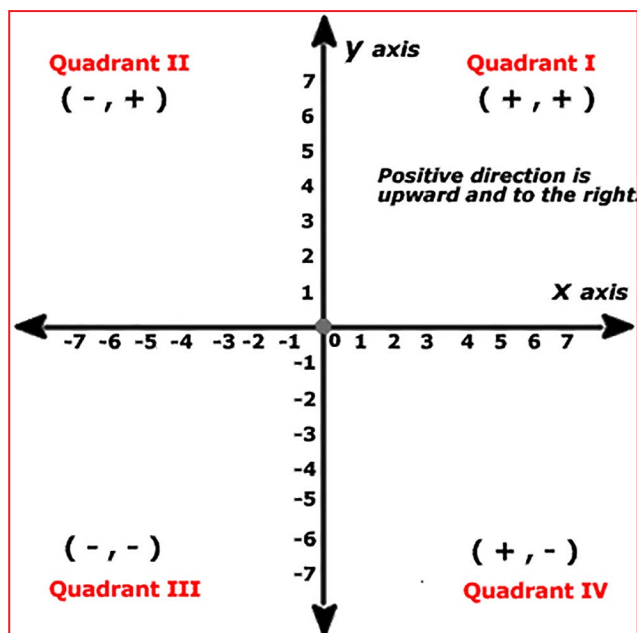
Shared Neural Mechanisms in Spatial Navigation and Social Interaction in Bats

Recent research reveals the **neural processes** underlying both **spatial navigation and social interaction in Egyptian fruit bats.**

➢ These mammals, along with humans and various other species, **rely on the hippocampus** (a part of the brain) **to navigate their surroundings,** forming a **mental 'map.'**

➢ This study revealed that bats establish resting spots within their environment and follow very similar trajectories when traveling among them. The bats also displayed strong **preferences for interacting with specific "friend" bats,** highlighting the intriguing **overlap between spatial navigation and social dynamics in these fascinating creatures.**

Read more: Nipah virus and Fruit Bat

World Organ Donation Day

➢ **World Organ Donation Day** is observed every year on **13th August** to spread awareness around the importance of **organ donation** and **bust myths** around it.

○ **India's National Organ Donation Day** was celebrated annually on **November 27,** however, from **2023** the day has been **shifted to 3rd August** to commemorate the first successful deceased heart transplant in India on **3rd August 1994.**

➢ **Organ donation** involves the **surgical extraction** of an **organ** from a **living donor** or, in the case of a **deceased donor**, their next of kin's consent, for the purpose of **transplantation** into another individual.

○ Organs which can be donated include liver, **kidney, pancreas, lung, heart intestine**, **cornea, bone, tissues** and many more.

➢ **Organ donation** in **India** is regulated by **Transplantation of Human Organs Act 1994.**

Read More: Organ Donation in India, Ethical Concerns of Organ Donation and Transplantation, National Organ Transplantation Guidelines

Golden Globe Race

➢ **Abhilash Tomy**, **former Commander** in the **Indian Navy** who became the **first Indian** to go around the world on a sailboat solo has now attained another record of completing a **solo circumnavigation** when he made **podium finish** at the **Golden Globe Race (GGR), 2022**.

○ He is currently working with the **Indian Space Research Organisation (ISRO)** on its **manned space mission, Gaganyaan,** advising on **recovery of astronauts** at **sea.**

○ He is working to **assist in the recovery of astronauts** once the **capsule splashes** into the **sea** on return.

➢ The **Golden Globe Race** is a **non-stop**, **solo**, **unassisted yacht race around the world** which was held for the **first time** in **1968-69**.

○ The second edition of the race was held 50 years later, in 2018.

○ The sailing is along a stipulated route, rounding the three great capes, **the Cape of Good Hope in South Africa, Cape Leeuwin in Australia and Cape Horn in Chile.**

A Comic Book by NCERT & UNESCO

The Ministry of Education, **unveiled a new comic book, "Let's Move Forward", developed jointly by NCERT and UNESCO** in New Delhi.

Note:

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➢ This partnership **marks a step towards advancing the objectives of the School Health and Wellness Programme (SHWP)**.

  ○ It was **launched in 2018 as part of the Ayushman Bharat campaign** and jointly administered by the MoE and the MoHFW.

  ○ The aim is to **provide health education, prevent diseases, and improve access to health services**.

➢ The comic **covers information related to the 11 thematic components** (emotional well-being, interpersonal relationships, gender equality, nutrition and health, prevention of substance abuse, promoting healthy lifestyles, reproductive health, internet safety, and more) **of the SHWP**.

➢ It is **accessible in multiple languages;** Hindi, English, Assamese, Bengali, Gujarati, Kannada, Malayalam, Marathi, Odia, Tamil, and Telugu.

   Read More: Prioritizing Mental Well-being

Superfoods

Superfoods are **nutrient-rich foods, primarily plant-based but including some fish and dairy, packed with vitamins, minerals, and antioxidants** beneficial for health.

➢ According to the American Heart Association, **superfood lacks scientific recognition, with no established criteria to define it**.

➢ Nevertheless, **certain foods like blueberries** (rich in vitamins), salmon (prevent heart disease), kale (promote digestive health), acai and millets (the energy, proteins, good fats, minerals and vitamins that **millets provide makes them a superfood**) **are exceptionally nutritious compared to less nutrient-dense options**.

➢ Scientists **claim that the use of the term superfood is largely a marketing tool, with no root in academic research**.

   Read More: India's Millet Revolution

Sree Narayana Guru Jayanti

Recently, the Prime Minister paid tributes to Sree Narayana Guru on his Jayanti.

➢ **Sree Narayana Guru (1856-1928)** was a revered **Indian spiritual leader and social reformer born in Chempazhanthy, Kerala.**

➢ He advocated for **equality, education, and social upliftment regardless of caste.** Guru's philosophy emphasized, **"One Caste, One Religion, One God for All" (Oru Jathi, Oru Matham, Oru Daivam, Manushyanu)** promoting harmony among different communities.

➢ He became one of the greatest proponents and re-evaluators of **Advaita Vedanta**, the **principle of non-duality put forward by Adi Shankara.**

➢ He established a philanthropic society as the founder of the **Sree Narayana Dharma Paripalana Yogam (SNDP).**

   Read more: Sree Narayana Guru
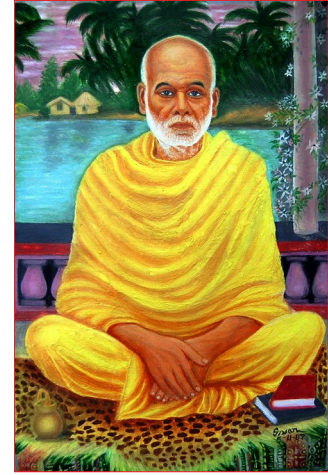
Indigenously Developed Electric Nuclear Power Reactor

➢ The **indigenously developed 700 MWe nuclear reactor** at Gujarat's **Kakrapar Atomic Power Project (KAPP-3)** is now operating at full capacity.

➢ KAPP-3 is **India's largest indigenously developed Pressurised Heavy Water Reactor (PHWR), using natural uranium as fuel and heavy water as a moderator.**

➢ It features an advanced safety system called the **'Passive Decay Heat Removal System,'** capable of removing decay heat (the heat released as a result of radioactive decay) from the reactor core without requiring any operator actions.

➢ India aims to increase its nuclear power capacity from 7,480 MWe to 22,480 MWe by 2031.

   Read more: India's Nuclear Power Capacity

Note:

Diving Support Craft (DSC) Project

Recently, the **first ship of the Diving Support Craft (DSC) project, 'DSC A 20' (Yard 325), was launched** in Kolkata (**Hooghly River**).

➢ In 2021, **a contract was signed between the Ministry of Defence (MoD) and M/s Titagarh Wagons Ltd (TWL)** for the construction of 5 DSC.

   ❍ These specialized vessels **are designed to perform operational and training diving operations in harbors and coastal waters**.

➢ The project **aims to deliver all five DSC to the Indian Navy** during FY 2024-25.

➢ The majority of equipment used are sourced from indigenous manufacturers, making them a **source for the "Make in India" and "Make for the World" initiatives** of the GoI and MoD.

Read More: Innovations for Defence Excellence, Atma Nirbhar in Defence Production.

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Key Points

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Summary

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