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WEEK 5
AUGUST, 2024

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DISCLAIMER

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

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SECTION -A

MAINS ISSUES

INDIA LAUNCHES FIRST-EVER SURVEY OF HIGH-RISK GLACIAL LAKES

CONTEXT:

India has launched its first comprehensive survey of **high-risk glacial lakes** in **Arunachal Pradesh's Tawang and Dibang Valley districts.** The move is part of initiatives undertaken by the National Disaster Management Authority after the glacial lake outburst flood in **Sikkim's South Lhonak lake** in October last year.

About the Survey

- This initiative is part of the **National Glacial Lake Outburst Flood (GLOF) Mission** and led by the **National Disaster Management Authority (NDMA).**
- It aims to assess and mitigate risks associated with potential **glacial lake outburst floods.**
- The survey is designed to evaluate the risks posed by glacial lakes in **Tawang and Dibang Valley**. It will assess the feasibility of installing early warning systems and other mitigation measures to prevent potential flooding.
- **Methodology:** The survey includes evaluating accessibility, geocoordinates, lake boundaries, elevation, and land use patterns to facilitate the installation of **Automatic Early Warning Systems and Automatic Weather Stations.**

Need for Glacial Lake Surveys

- Recent satellite data analyzed by ISRO revealed concerning trends: glacial lakes in the Indian Himalayas have been growing significantly.
- Between 1984 and 2023, many of these lakes have expanded in size, with 676 out of 2,431 lakes showing notable increases.
- Specifically, 130 of these expanding lakes are in India, with 65 in the Indus basin, 58 in the Brahmaputra basin, and 7 in the Ganga basin.
    - For example, the **Ghepang Ghat lake** in Himachal Pradesh grew by 178% from 1989 to 2022, expanding at a rate of about 1.96 hectares per year.

- Studies highlight that GLOFs threaten around **15 million people worldwide**, with those in the **Himalayas being particularly at risk**. Approximately one million people live near glacial lakes in this region, and the impacts of GLOFs can extend up to 120 km downstream.
- **Issue:** The survey's geopolitical significance is heightened due to the strategic location of **Tawang and Dibang Valley** near the India-China border, an area of historical tensions and concern regarding Chinese infrastructure projects in the region.

What is the Glacial Lake Outburst Flood (GLOF)?

- A Glacial Lake Outburst Flood (GLOF) occurs when a glacial lake's natural dam (often formed by glacial debris or ice) suddenly fails, releasing a massive volume of water downstream.
- This sudden release can lead to catastrophic flooding, damaging infrastructure, ecosystems, and communities located downstream. GLOFs are particularly concerning in glaciated regions due to their potential for large-scale destruction.
- **National Glacial Lake Outburst Floods Risk Mitigation Programme (NGRMP):** The Centre has now approved the Rs 150-crore National Glacial Lake Outburst Floods Risk Mitigation Programme (NGRMP) on July 25.
    - The programme aims at detailed technical hazard assessments, and installing automated weather and water level monitoring stations (AWWS) and

early warning systems (EWS) at the lakes and in downstream areas.

- The primary objective of this programme is to attempt lake-lowering measures to reduce the risk of GLOF from such lakes.

Factors responsible for GLOF

- Glaciers in the Himalayas are shrinking very fast at the rate of 20 metre per year due to global warming. This increases the threat of a GLOF.
- Hydropower projects are being relentlessly commissioned in a region that is prone to seismicity, landslides, and climate change-related disasters.

Arunachal Pradesh's Tawang and Dibang Valley

Tawang:

- It is located in the western part of the state, in the Northern Himalayas. The area of the district is approximately 2085 sq. km. bordered by Tibet in the North, Bhutan in the South-West and Sela ranges separate West Kameng district in the East.
  - **Glacial lakes:** Sela lake, P.T.Tso lake, Sangetser lake, Banggachang lake

Dibang Valley

- The Dibang Valley district is the Trans Himalayan part of Arunachal Himalaya.
- Dibang Valley is bounded by Lohit in the south-east, Lower Dibang Valley in the South, East Siang and Upper Siang in the West and by China in the North and North-East.
- Main river system: Dibang River.

- Recently, the foundation stone of 2,880 MW Dibang Multipurpose Hydropower Project of NHPC Limited in Lower Dibang Valley district of Arunachal Pradesh was laid. It is projected to be India's highest dam.
- The district falls under heavy rainfall belt.
- Both districts are situated in areas claimed by China as part of southern Tibet.

(see Figure No. 01)

THE DUAL NINA EFFECT

CONTEXT

The North Atlantic Ocean has been experiencing **record-high surface temperatures**, a symptom of broader **climatic upheavals**. Yet, recent signs of cooling in both the Atlantic and Pacific Oceans may offer a glimmer of hope for vulnerable ecosystems and hurricane-prone regions. This cooling phenomenon, driven by two distinct climate patterns—**La**

Figure No. 01

Nina and the Atlantic Nina—has the potential to impact weather patterns and hurricane activity significantly. As of August 2024, both patterns appear to be in development, a rare occurrence with complex implications.

What is La Nina?

- La Nina is part of the **El Nino–Southern Oscillation (ENSO),** a critical climate phenomenon with global repercussions.
- **How it occurs?**
  - It occurs when **sea surface temperatures** in the **tropical Pacific Ocean** fall **below average**.
  - This cooling effect strengthens **easterly trade winds**, leading to **increased upwelling of cooler waters** along the coast of South America.
  - These changes in ocean temperature and wind patterns can influence global weather, often resulting in stormier conditions in some regions and drier conditions in others.
- Crucially, during La Nina events, wind shear in the **Atlantic**—an important factor in **hurricane formation**—tends to weaken, allowing hurricanes to develop more easily.

Atlantic Nina

- In contrast, the Atlantic Nina occurs in the Atlantic Ocean and is a **much smaller-scale phenomenon compared to its Pacific counterpart.**
- It generally peaks around July or August and has a shorter duration.
- Atlantic Ninas typically have localized impacts, such as reduced rainfall in **Africa's Sahel region** and increased rainfall in parts of **Brazil and the Gulf of Guinea.**
- Despite its relatively modest effects, an Atlantic Nina can counteract some of La Nina's influences by weakening the upwelling processes that cool the eastern Pacific, thereby potentially affecting hurricane activity in the Atlantic.

The simultaneous emergence of both Ninas is rare but not unprecedented. This alignment is akin to two pendulums swinging in opposite directions, moving together due to weak coupling.

FACT BOX

El Niño-Southern Oscillation (ENSO) Cycle

- ENSO is a well-known climate phenomenon that has widespread effects on climate and weather around the world.

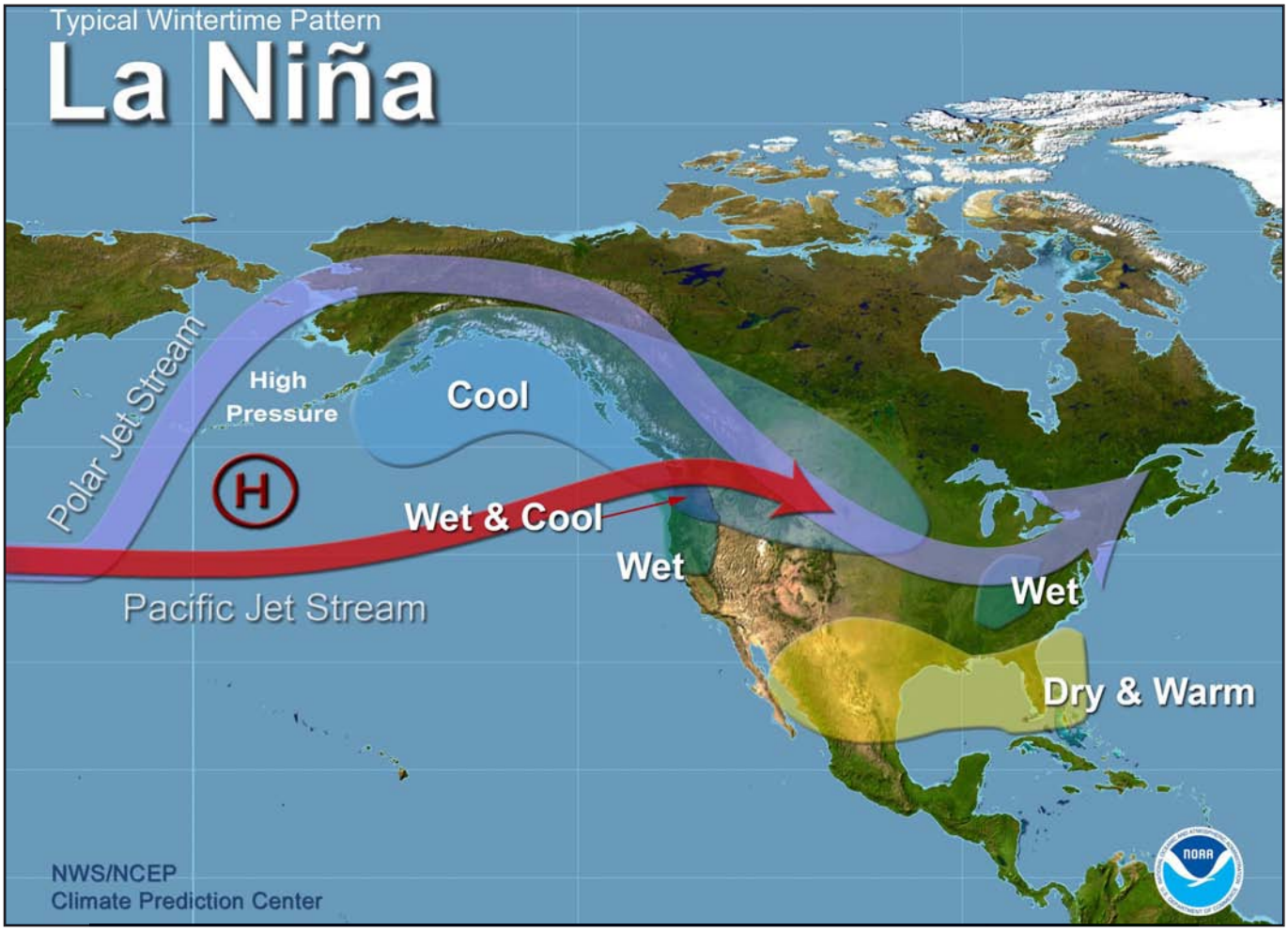

Figure No. 02

- It is characterised by changes in sea temperatures along the central and eastern tropical Pacific Ocean, coupled with fluctuations in the overlying atmosphere.
- ENSO has three phases – **warm (El Niño), cool (La Niña), and neutral.**
- El Niño and La Niña are opposite phases of the ENSO cycle, with La Niña sometimes referred to as the cold phase of ENSO and El Niño as the warm phase of ENSO.
- La Niña and its warmer opposite, El Niño, oscillate every three to four years or so.

Major Global Wind Belts:

Global winds are large-scale, persistent wind patterns that circulate across the Earth's surface due to the planet's rotation and the uneven heating of its surface by the Sun.

	Trade Winds	Westerlies	Polar Easterlies
Location	Between 30°N and 30°S latitude (Tropics).	Between 30° and 60° latitude (Mid-latitudes).	Above 60° latitude (Polar Regions).
Direction	Blow from the northeast in the Northern Hemisphere and from the southeast in the Southern Hemisphere.	Blow from the southwest in the Northern Hemisphere and from the northwest in the Southern Hemisphere.	Blow from the east towards the west in both hemispheres.
Role	They help drive tropical weather systems and influence ocean currents.	They affect temperate weather patterns and ocean circulation.	They contribute to the cold and dry conditions of the polar regions.

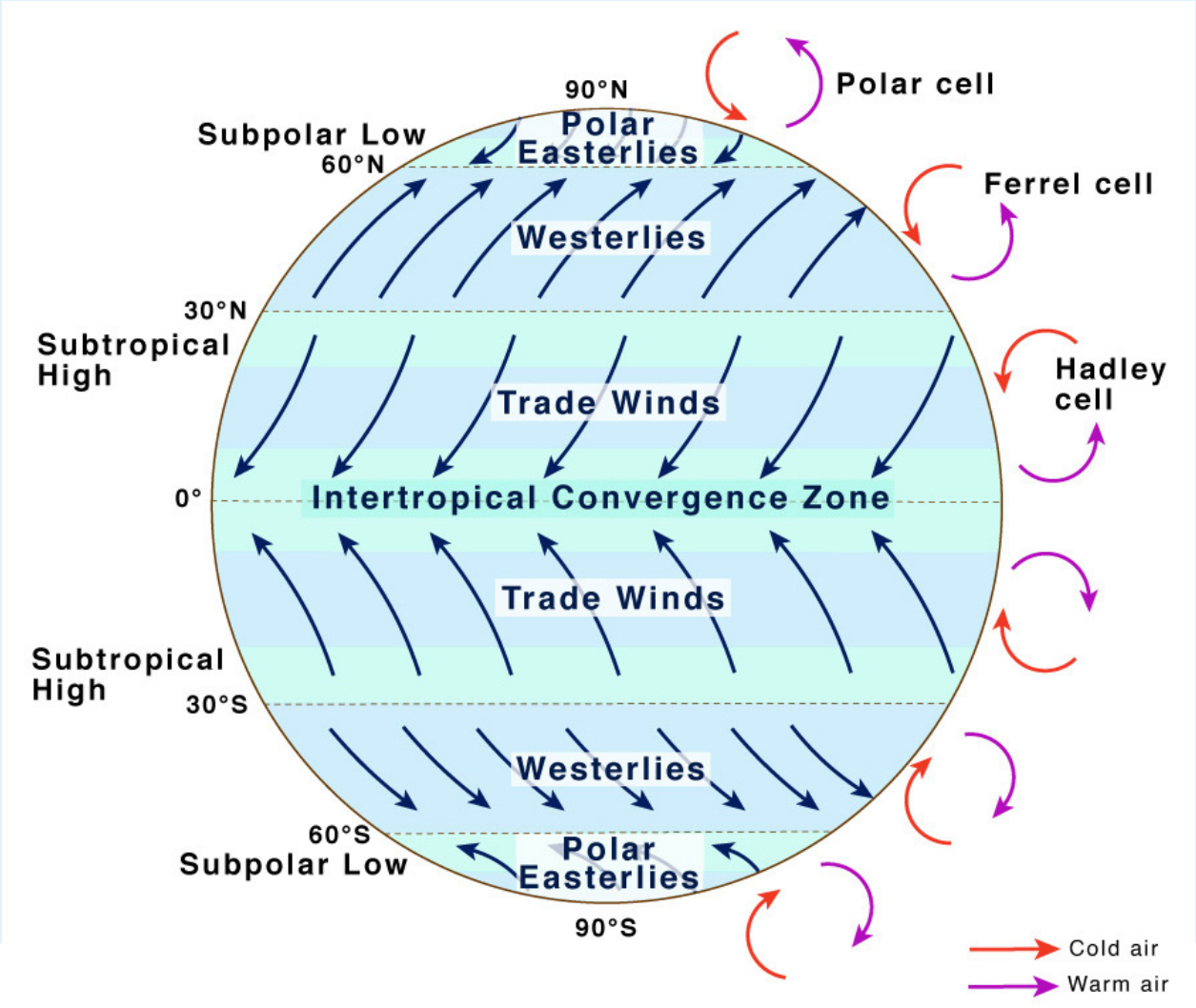

Figure No. 03

UNREST IN BALOCHISTAN REGION

CONTEXT

Recent violence claimed the lives of innocent civilians and security personnel alike in Balochistan and Khyber Pakhtunkhwa. Separatist group Balochistan Liberation Army (BLA) took responsibility for the attack.

Why is there so much violence in Balochistan?

- The Balochistan region is divided into three regions. The northern part is in present-day Afghanistan, the western region in Iran is called the Sistan-Baluchistan region and the remaining in Pakistan.
- In Pakistan, it is the largest province by size, but the least populated and it remains largely underdeveloped, with high levels of poverty.
- It makes up some **43.6 percent of the total area of the country**.
- Under British rule, the region was managed through the **'Sandeman system**,' which granted autonomy to local tribes under '*sardars*' or '*jirgars*' (tribal councils).
- Pakistan took control of Balochistan in 1948, leading to the first uprising for autonomy. This was met with violence and suppression.
- The province is rich in natural resources like **gold, copper, oil and natural gas** and boasts a 770km (478-mile) stretch of coastline, where the strategic **Gwadar Port** is located – a prominent feature of the **China-Pakistan Economic Corridor.**
- Despite being rich in natural resources, Balochistan remains the poorest province in Pakistan. The Baloch ethnic group, which makes up a third of the population, has long been marginalised due to the **Pakistani government's discriminatory policies.** This history of marginalisation has been accompanied by sustained armed resistance.
- The latest cycle of violence started in the 2000s, prompted by demands for an equal share of the province's resources for the Baloch people. Eventually, calls for independence also emerged.
- Balochistan Liberation Army (BLA) is the biggest of several ethnic insurgent groups that have battled the central government for decades, saying it unfairly exploits Balochistan's gas and mineral resources. It seeks the expulsion of China and independence for the province.

JAPAN & CHINA'S AIRSPACE INCURSION

CONTEXT

Recent developments in the **East China Sea** have heightened tensions between Japan and China. Japan has reported an **unprecedented violation of its airspace** by a **Chinese military aircraft**, specifically a Y-9 surveillance plane. This incident follows a pattern of maritime provocations by Chinese vessels near **disputed islands (Danjo Islands).**

Current Issues between Japan and China

- **Airspace Incursion:** The violation occurred when the Chinese Y-9 aircraft breached Japanese airspace near the **Danjo Islands** for approximately two minutes. This is noted as the first confirmed incursion by a Chinese military aircraft into Japanese airspace.
- **Maritime Provocations:** The incident is part of a broader pattern of tensions. Chinese vessels frequently enter waters near the **Senkaku Islands**, which are administered by Japan but claimed by China as **Diaoyu.**

Rules Pertaining to International Airspace

- Airspace above **national territories** is considered **sovereign,** meaning that incursions by foreign military aircraft without permission are deemed violations of national sovereignty.
- Countries have **exclusive rights to control and defend the airspace over their territory**. Unauthorized entry by military aircraft into this airspace is typically regarded as a **serious breach of international norms.**
- International airspace rules are governed by the **Convention on International Civil Aviation (ICAO)** and the **International Civil Aviation Organization**.
- **The Chicago Convention of 1944** marked a pivotal moment, establishing modern aviation law.
- It was signed on December 7, 1944, by 54 nations, and became effective from April 4, 1947.

Key Features:

Full Sovereignty: Article 1 of the Convention, with regards to sovereignty of Airspace states that 'every State has complete and exclusive sovereignty over the airspace above its territory'.

- The territory of any state includes **12 nautical miles of territorial waters off the coastline.** Airspace which is not within any country's territorial limit is considered as **'International Airspace'.**
- **International Air Services**: It provides framework for granting traffic rights and operating international flights.
- **Air Navigation and Safety**: It established the International Civil Aviation Organization (ICAO) to set global aviation standards.
- **Search and Rescue**: It mandates cooperation in aircraft distress situations.
- **Environmental Protection**: It emphasizes on sustainable development in aviation.

- Subsequent agreements and practices, like the **Warsaw, Geneva, and New York Conventions**, have further clarified and supported the principle of airspace sovereignty.

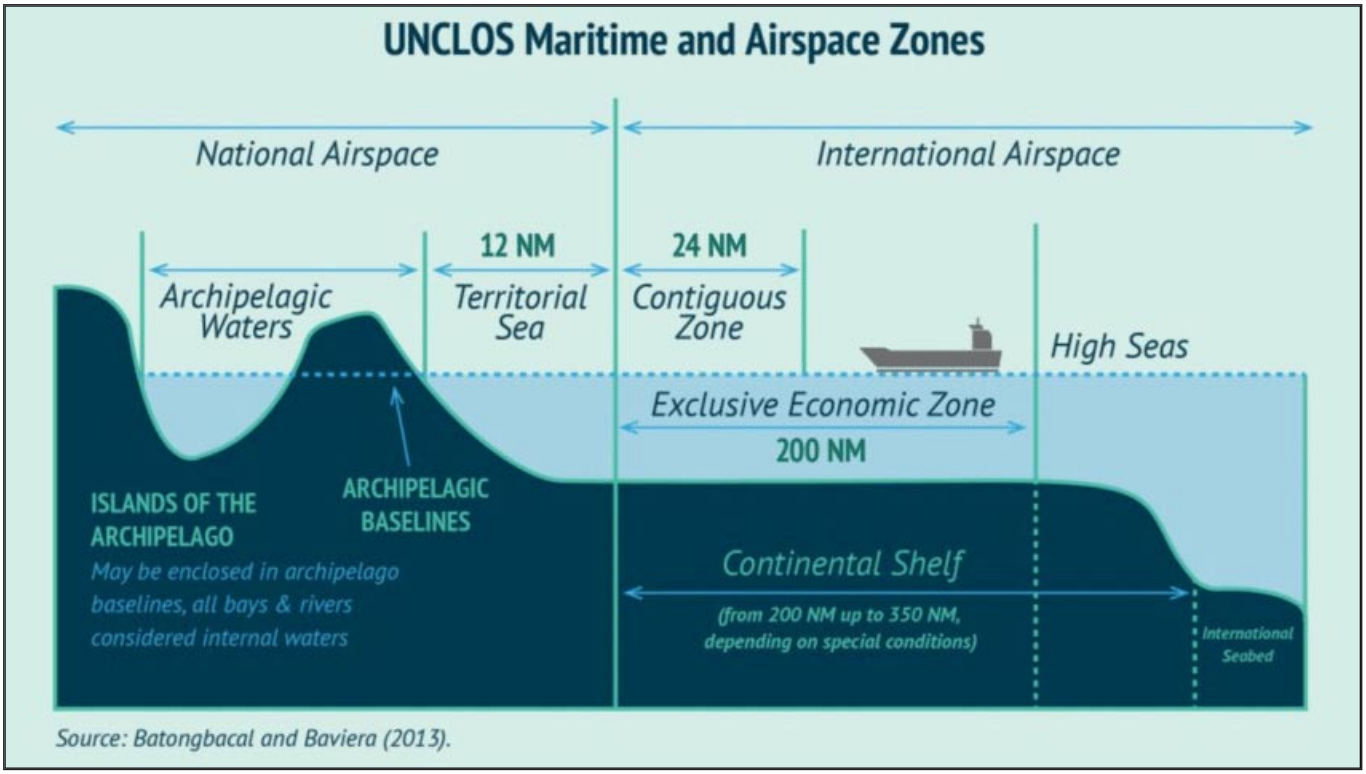

Figure No. 04

FACT BOX

Involved Locations

- **Danjo Islands:** Located in the **East China Sea** off Japan's southern **Nagasaki prefecture**, the Danjo Islands are a group of small islets. These islands are significant due to their strategic position and potential resources in the surrounding waters. The recent airspace violation occurred off these islands, marking a new dimension in the regional disputes.
- **Senkaku Islands:** The Senkaku Islands, known as Diaoyu in China, are a group of uninhabited islands surrounded by rich fishing grounds and potential oil and gas deposits. Located northeast of Taiwan and west of **Okinawa**, the Senkaku Islands have been a frequent flashpoint between Japan and China. The islands are administered by Japan, but their ownership is disputed by China, leading to regular confrontations between Japanese coastguard vessels and Chinese fishing boats.

Figure No. 05

SECURITY OF SUPPLIES ARRANGEMENT (SOSA)

CONTEXT

India and the US have recently signed two important defence agreements: the **Security of Supplies Arrangement (SOSA)** and a **Memorandum of Understanding (MoU)** on the Assignment of Liaison Officers. These agreements aim to strengthen defence cooperation between the two nations. India & US now aim for **Reciprocal Defense Procurement (RDP).**

What is SOSA?

- SOSA facilitates closer industry cooperation between India and the US, focusing on reciprocal priority support for defence-related goods and services.
- **Mechanism:** Under SOSA, both countries can request priority delivery for contracts and orders from each other's companies, helping to manage supply-chain disruptions in the defence sector.
- **US Assurance:** The US will provide India with assurances under the **US Defense Priorities and Allocations System (DPAS)**, including support from the **Department of Defense (DoD)** and the **Department of Commerce (DOC).**
- **Indian Commitment:** India will establish a government-industry code of conduct, encouraging Indian firms to prioritize US defence needs.
- **Global Participation:** India becomes the 18th country to sign SOSA with the US, joining nations like **Australia, Israel, Japan, and the UK.**

Implications for Indian Companies:

- **Code of Conduct:** Indian firms will voluntarily agree to provide priority support for US defence contracts, reflecting their reliability and commitment.
- **Priority Requests:** US DoD and contractors can request priority delivery for materials and services from participating Indian companies when needed for US defence requirements.

What is Reciprocal Defense Procurement (RDP)?

- The Reciprocal Defense Procurement (RDP) agreement will be legally binding, promoting joint production and sourcing between India and the US on a larger scale.
- **Significance:** RDP is already in place with 28 countries and aims to standardize and enhance interoperability of defence equipment.
- **Benefits for US Companies:** RDP allows American companies to bypass certain domestic procurement restrictions, facilitating easier collaboration and investment in signatory countries.
- The agreement also allows American companies to bypass the "Buy American statute"–similar to "Make in India"–entitling firms to set up manufacturing bases and collaboration with signatory countries

The SOSA and potential RDP agreements represent key steps in enhancing defence ties between India and the US, focusing on improving supply chain efficiency and fostering closer military cooperation.

UPSC PYQ

Q: What is the significance of Indo-US defence deals over Indo-Russian defence deals? Discuss with reference to stability in the Indo-Pacific region. (2020)

PRIME MINISTER MODI'S HISTORIC VISIT TO UKRAINE

CONTEXT

In a notable development in international relations, Indian Prime Minister Narendra Modi has concluded a landmark visit to Ukraine, marking the first state visit by an Indian Prime Minister since the two countries established diplomatic relations over three decades ago. This visit underscores India's evolving foreign policy and strategic interests in Europe.

Background

- Since the onset of Russia's military operation in Ukraine in February 2022, India has faced criticism from the West for not condemning Russia's actions.
- Despite Western sanctions on Moscow, India has balanced its relationship with Russia, which has been a significant supplier of military hardware.
- Prime Minister Modi's visit is part of India's broader strategy to navigate this complex geopolitical landscape and signal a more active role in global peace efforts.
- **India's Larger Europe Push:** Modi's visit to Ukraine represents a **significant departure from India's traditional foreign policy.**
  - Historically aligned with Russia during the Cold War, India's engagement with Ukraine and other European countries has been limited. India's foreign policy focused primarily on its relations with **Russia, Germany, France, and Britain.**
  - Modi articulated a move from India's historic policy of non-alignment towards a more proactive engagement with all nations.
  - The visit reflects a strategic shift to enhance ties with central and eastern Europe, recognizing the importance of diversifying India's foreign relations beyond its historical focus on Russia.

Key Highlights of Modi's Visit

- **Diplomatic Engagement:** During his visit, Prime Minister Modi met with Ukrainian President Volodymyr Zelenskyy at the Mariinskyi Palace, engaging in extensive discussions on bilateral and global issues. Modi also paid homage at Mahatma Gandhi's statue in Kyiv and

honored the memory of children affected by the conflict at the National Museum of History of Ukraine.

- **Humanitarian Assistance:** India continued its humanitarian efforts by delivering 22 tonnes of medical support equipment to Ukraine. This aid includes the **BHISHM Cube**, a state-of-the-art mobile hospital designed for rapid deployment in disaster zones, capable of handling a wide range of medical emergencies.

Implications for India-Russia Relations

- **Maintaining Balance:** Despite the enhanced engagement with Ukraine, there is no indication that India's relationship with Russia will suffer. India continues to rely on Russia for a significant portion of its military hardware and energy needs. The relationship with Ukraine is seen as a separate track, aimed at fostering peace and stability in the region without impacting India's longstanding ties with Russia.
- **Global Diplomacy:** Modi's visit underscores India's commitment to supporting dialogue and diplomacy for resolving international conflicts. By engaging with Ukraine, India is positioning itself as a global player capable of balancing its traditional alliances while pursuing new opportunities for international cooperation.

Significance of Ukraine for the World

- **Strategic Location:** Ukraine's position at the crossroads of Eastern Europe, bordering Russia, the EU, and NATO member states, makes it a crucial player in regional stability and security. The ongoing conflict in Ukraine has broader implications for global geopolitics and international relations.
- **Agricultural Hub:** Ukraine is a major global supplier of agricultural products, particularly grains such as wheat and corn. This positions Ukraine as a key player in global food security, impacting agricultural markets and food availability worldwide.

HEMA COMMISSION REPORT

CONTEXT

The Kerala High Court has ordered the state to submit the full **Hema Committee report**, including confidential sections, for review. This comes as the court is considering a **Public Interest Litigation (PIL)** demanding criminal proceedings against those named in the report. The Justice Hema Committee report, released on August 19, 2024, highlights **serious issues of discrimination and exploitation of women in the Malayalam film industry.**

Formation of the Justice Hema Committee

- In 2017, a prominent Malayalam actress was abducted and sexually assaulted, leading to widespread outrage.
- In response to this incident, the **Women in Cinema Collective (WCC)**, comprising women from the film industry, petitioned the Kerala Chief Minister, calling for an investigation into the broader gender issues in the industry.
- The Kerala government formed the Justice Hema Committee, headed by retired Kerala High Court Judge Justice K Hema, to investigate sexual harassment and gender inequality in the Malayalam film industry.
- The report was not released until August 2024, leading to criticism. The government cited concerns over sensitive information and privacy as reasons for the delay. Justice Hema had requested in February 2020 that the report not be released due to its sensitive content.
- In response to RTI requests and the Kerala State Information Commission's ruling, the report was released with certain sections redacted.

Key Findings of the Report

- **Culture of Harassment**: The report describes a pervasive culture of sexual harassment in the Malayalam film industry, including practices like casting couch and inappropriate behavior from male colleagues.
- **Fear of Retaliation**: Victims often fear retribution, both direct and through cyber harassment, which silences them from reporting incidents.
- **Male-dominated Power Structure**: The industry is controlled by a powerful male-dominated group, making it difficult for others to challenge their actions without facing severe consequences.
- **Inadequate Facilities**: Women in the industry lack basic facilities, such as proper toilets and changing rooms on film sets, leading to health risks.
- **Gender Inequality**: There is significant gender disparity in pay and working conditions, exacerbated by the lack of formal contracts.

FACT BOX

NCRB's Reports on Sexual Assault

- The National Crime Records Bureau (NCRB) has revealed that incidents of sexual assault and kidnapping have increased in India over the past year.
- According to the report, while the overall crime rate in India has decreased by 0.56%, cases of sexual assault have risen by 1.1%, and kidnapping cases have surged by 5.1% compared to the previous year.
- Despite the implementation of stricter penalties following the **2012 Nirbhaya case in Delhi**, such crimes have not seen a significant decline.
- In 2012, around 25,000 cases of sexual assault were recorded annually, but by 2022, this number had increased to 31,000, according to the NCRB.

JUSTICE J.S. VERMA COMMITTEE & DEATH PENALTY FOR RAPE

CONTEXT

In recent years, India has witnessed significant legal reforms in response to high-profile cases of sexual violence. The tragic gang rape and murder of a doctor at Kolkata's R.G. Kar Medical College and Hospital has ignited a **fresh debate on the adequacy of the current legal framework**, specifically regarding the death penalty for rape. This incident has brought renewed attention to the recommendations of the **Justice J.S. Verma Committee**, which played a pivotal role in **shaping the legal landscape for sexual offenses in India**.

Justice J.S. Verma Committee Recommendations

Established following the brutal gang rape of a paramedic student in Delhi on December 16, 2012, the Justice J.S. Verma Committee was tasked with reviewing the laws concerning sexual violence. The committee submitted its report on January 23, 2013, offering a series of recommendations aimed at strengthening the legal response to such crimes.

- **Death Penalty Stance:** The Verma Committee recommended enhanced sentences for rape from 7 years to 10 years, 20 years, and life, but "short of death". It explicitly advised against the death penalty, stating that it did not act as a deterrent. The committee highlighted that there is no substantial evidence to support the notion that the death penalty effectively prevents serious crimes. Instead, it proposed rigorous imprisonment for a term not less than twenty years for those who cause the victim to be in a persistent vegetative state, extending to life imprisonment if required.
- **Marital Rape**: The committee advocated for the **removal of the exception to marital rape**, asserting that a marital relationship should not exempt a perpetrator from rape charges. This stance was aligned with international human rights norms (European Commission of Human Rights in C.R. vs U.K.) and aimed to ensure that consent remains central to any sexual act, irrespective of the relationship between the parties involved.
  - The Union government did not go by this recommendation and refused to criminalise marital rape.
  - Under the **Bharatiya Nyaya Sanhita**, exception 2 of Section 63 states that "sexual intercourse or acts by a man with his wife, the wife not being under 18 years of age, is not rape."
- **Gender Rights**: The committee emphasized that the empowerment of women extends beyond political equality to encompass social, educational, and economic dimensions. It stressed the need for legal and public policy measures to address gender biases and promote true equality.

Government Response and Legislative Changes

Despite the committee's recommendations, the Union Cabinet did not incorporate the suggestion on the death penalty into the 2013 criminal amendments. The Cabinet opted instead for a more nuanced approach, which included:

- **Legislative Amendments**: The Criminal Law (Amendment) Act, 2013, introduced provisions for the death penalty in specific severe cases of rape:
  - **Section 376A**: Mandates death or life imprisonment for rape resulting in the victim's death or a persistent vegetative state.
  - **Section 376E**: Prescribes the death penalty for repeat offenders.
  - **Section 376DB**: Imposes the death penalty for gang rape of a minor under 12 years old and life imprisonment for victims under 16 years old.
  - Further amendments in 2018 reinforced these provisions, with the Bharatiya Nyaya Sanhita (BNS) including similar punitive measures for rape cases involving minors.

Challenges and Ongoing Issues

The legal framework established post-2013 represents a significant shift towards stringent measures against sexual violence. However, challenges remain:

- **Effectiveness of Death Penalty**: The debate continues on whether the death penalty serves as a real deterrent or if alternative punitive measures might be more effective.
- **Implementation and Awareness**: Ensuring that the laws are effectively implemented and that there is widespread awareness about legal rights and remedies remains crucial.
- **Societal Attitudes**: Beyond legal reforms, addressing deep-seated societal attitudes and biases regarding gender and sexual violence is essential for achieving lasting change.

UNIFIED PENSION SCHEME (UPS)

CONTEXT

The Union Cabinet approved the Unified Pension Scheme (UPS) for central government employees. This scheme will be effective from April 1, 2025, and will benefit 23 lakh central government employees.

What is UPS?

- The Central Government has launched the Unified Pension Scheme (UPS), which provides government workers with a steady pension based on their length of service and most recent basic salary drawn.

Key-Features:

- **Assured pension:** For a minimum qualifying service of 25 years, 50% of the average basic salary drawn for the past 12 months prior to superannuation. Up to a minimum of ten years of service, this compensation is to be commensurate with shorter service periods.
- **Assured family pension:** 60% of pension of the employee immediately before her/his demise.
- **Assured minimum pension:** After at least ten years of service, @10,000 per month in superannuation.
- **Inflation indexation:** On assured pension, on assured family pension and assured minimum pension. Dearness Relief based on All India Consumer Price Index for Industrial Workers (AICPI-IW) as in case of service employees.
- **Lump sum payment at superannuation in addition to gratuity:** 1/10th of monthly emoluments (pay + DA) as on the date of superannuation for every completed six months of service. This payment does not diminish the quantum of secured pension.

- **Eligibility:** UPS applies to all those who retired under the NPS from 2004 onwards
- Unlike the Old Pension Scheme (OPS), where employees made no contributions, UPS requires employees to contribute 10% of their basic salary and DA, while the government contributes 18.5%. A portion of the government's contribution (8.5%) goes into a guarantee reserve fund to manage any shortfalls.

How is it different from NPS and OPS?

(see Table No. 1 below)

New Pension Scheme (NPS)	Old Pension Scheme (OPS)
• **Pension Type:** Based on the accumulated value of contributions made by both the employee and the government, invested in market-linked securities. • **Eligibility:** Applicable to all central government employees who joined after January 1, 2004, and continues as an option under the UPS. • **Contributions:** Employees contribute 10% of their basic salary and DA; government contributes 14%. • **Features:** ▸ Pension depends on the accumulated corpus and investment performance. ▸ No guaranteed minimum pension; benefits are variable and depend on market returns. ▸ Less predictability in pension amounts compared to UPS. • **Implementation Date:** Replaced OPS from January 1, 2004.	• **Pension Type:** Provides a guaranteed pension based on a fixed percentage (usually 50%) of the last drawn salary. • **Eligibility:** Applies to employees who retired before January 1, 2004, or those states that have opted to revert to OPS. • **Contributions**: No employee contributions required; fully funded by the government. • **Features:** ▸ Guaranteed pension of 50% of the last drawn salary. ▸ Regular dearness allowance adjustments based on inflation. ▸ No lump sum payments or contributions by employees. ▸ Implementation Date: Preceded NPS, and has been replaced by NPS in most states; however, some states have reverted to OPS recently.

Table No. 01

MOE DEFINES 'LITERACY' AND 'FULL LITERACY'

CONTEXT

In a letter to all States, the **Ministry of Education (MoE)** has defined **'literacy,'** and what it means to achieve **'full literacy,'** in the light of the renewed push for adult literacy under **the New India Literacy Programme (NILP),** a five-year programme (2022-27), which aims to onboard one crore learners per year above 15 years across all States and union territories.

What is 'Literacy' and 'Full Literacy'?

- **Literacy**: According to the Ministry of Education (MoE), literacy encompasses the ability to **read, write, and compute with comprehension**. This includes **identifying, understanding, interpreting, and creating information**, as well as **possessing critical life skills** such as **digital literacy and financial literacy**.
- Full Literacy: Achieving 'full literacy' is defined as reaching a literacy rate of 95% in a State or Union Territory. This threshold is considered equivalent to 100% literacy for practical purposes within the CONTEXT of the NILP.

Challenges

- **Low Pass Percentage**: The drop in the pass percentage **for Foundational Literacy and Numeracy Assessment Test (FLNAT)** from 89.64%-91.27% in 2023 to 85.27% in 2024 indicates a challenge in maintaining high literacy standards and suggests potential issues in the effectiveness of literacy programs or the rigor of the assessments.

- **Budget Constraints**: The allocation and utilization of funds for the NILP have been inconsistent. For instance, only Rs 76.41 crore of the allocated Rs 160 crore was utilized in 2022-23, and the budget for 2023-24 was reduced from Rs 157 crore to Rs 100 crore in revised estimates. Such budgetary constraints can impact the scale and effectiveness of the literacy programs.
- **High Number of Non-Literate Adults**: According to the 2011 Census, there are approximately 25.76 crore non-literate adults in India, comprising a significant gender disparity with more females than males. Despite previous efforts like the **Saakshar Bharat program**, a substantial number of adults remain non-literate.
- **Impact on Daily Life**: Non-literate individuals face disadvantages in various aspects of life, including financial transactions, job applications, comprehension of media and technology, understanding of rights, and participation in higher productivity sectors.

Government Initiatives for improving adult literacy in India

- **Saakshar Bharat Programme**: This was a previous initiative aimed at improving adult literacy. Between 2009-10 and 2017-18, it certified 7.64 crore individuals as literate. Despite its success, it left a significant number of adults still non-literate.
- **New India Literacy Programme (NILP)**: It is a **Centrally Sponsored Scheme** namely to cover a target of 5.00 crore non-literates in the age group of 15 years and above. The Scheme has five components: (i) Foundational Literacy and Numeracy, (ii) Critical Life Skills, (iii) Vocational Skills Development, (iv) Basic Education and (v) Continuing Education.
  - The scheme is based on technology and implemented predominantly through online mode.
  - The teaching learning material and resources have been made available on DIKSHA platform of NCERT and can be accessed through the mobile-apps.
- **FLNAT (Foundational Literacy and Numeracy Assessment Test)**: This assessment is a crucial tool in certifying individuals as literate under the NILP. The test evaluates foundational skills in reading, writing, and numeracy. Individuals who pass the FLNAT are recognized as literate, contributing to the larger goal of increasing literacy rates.
- **National Initiative for Proficiency in Reading with Understanding and Numeracy (NIPUN) Bharat mission**: The mission strives to create an enabling environment to ensure the universal acquisition of FLN, so that every child achieves the desired learning by the end of Grade 3, by 2026-27.
- **Understanding of Lifelong Learning for All in Society (ULLAS):** The scheme aligns with the recommendations of the National Education Policy (NEP) 2020 and aims to empower those adults aged 15 years and above from all backgrounds who could not get due schooling.

A DECADE OF JAN DHAN YOJANA

CONTEXT

The Pradhan Mantri Jan-Dhan Yojana (PMJDY), the national mission for financial inclusion, has successfully completed 10 years.

About Pradhan Mantri Jan-Dhan Yojana (PMJDY)

- The mission aims to ensure access to financial services like a basic savings and deposit account, remittance, credit, insurance, and pension in an affordable manner.
- Under the scheme, a basic savings bank deposit (BSBD) account can be opened in any bank branch or Business Correspondent (Bank Mitra) outlet. Benefits of the scheme are:
  - There is **no requirement to maintain any minimum balance** in PMJDY accounts.
  - Interest is earned on the deposit in PMJDY accounts.
  - Rupay Debit card is provided to PMJDY account holder.
  - **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.
  - An overdraft (OD) facility up to Rs. 10,000 to eligible account holders is available.
  - PMJDY accounts are eligible for **Direct Benefit Transfer (DBT), Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY), Pradhan Mantri Suraksha Bima Yojana (PMSBY), Atal Pension Yojana (APY), Micro Units Development and Refinance Agency Bank (MUDRA) scheme.**

Has it achieved 'financial inclusion'?

- **JAM Trinity:** The Indian government has focused on **Digital Public Infrastructure**, leveraging the **JAM trinity—Aadhaar cards, mobile penetration, and Jan Dhan accounts**. This approach has elevated the financial inclusion rate from **25% in 2008 to over 80%** of adults in the last 6 years.
- **Foundation for Economic Initiatives:** PMJDY has served as a foundation for various people-centric economic initiatives, including **direct benefit transfers, COVID-19 financial assistance, PM-KISAN, increased wages under MGNREGA**, and expanded life and health insurance coverage.
- **Social Impact:** A 2021 SBI report noted that states with higher PMJDY account balances experienced a **drop in crime rates and reduced alcohol and tobacco consumption**, indicating the program's positive social impact.
- **Achieving Financial Inclusion Goals:** In 2023, a G20 report by the World Bank confirmed that India achieved its financial inclusion goals within just 6 years—a feat that would have taken 47 years **without its advanced Digital Public Infrastructure.**

- **Global Comparisons and Metrics:** According to the SBI report of 2021, India has surpassed China in financial inclusion metrics.

India's Efforts Towards Financial Inclusion

Banking Accessibility

India's journey toward financial inclusion began with significant milestones. The government, alongside institutions like the **Reserve Bank of India (RBI) and the National Bank for Agriculture and Rural Development (NABARD),** has made numerous efforts to enhance banking accessibility:

- **1969 & 1980**: The nationalization of 20 private sector banks aimed to improve banking penetration, especially in rural areas.
- **1972**: Introduction of priority sector lending to extend credit on favorable terms to agriculture and small industries.
- **2006**: Introduction of business correspondents by the RBI to reach underserved areas.

Despite these efforts, by 2008, nearly half of India's population still lacked a bank account, as highlighted by an extensive study under the **Chairmanship of C. Rangarajan**, former Governor of RBI.

Digital Public Infrastructure (DPI)

- In August 2014, financial inclusion received a major boost with the launch of the **Pradhan Mantri Jan Dhan Yojana (PMJDY).** This initiative, supported by **Digital Public Infrastructure (DPI),** transformed financial inclusion through:
  - **Aadhaar**: Providing biometric and portable identity.
  - **Mobile Phones with Internet**: Granting Jan Dhan account holders access to basic banking services.
- The integration of **Jan Dhan, Aadhaar, and mobile (JAM)** significantly improved banking penetration. As of August 14, 2024:
  - **Total Accounts Opened**: 53.1 crore
  - **Rural and Semi-Urban Accounts**: 35.4 crore
  - **Female Beneficiaries**: 29.6 crore
  - **Total Deposits Mobilised**: ₹2.31 trillion

Impact and Achievements

- **Household Banking**: Nearly 100% of households are now connected with formal banking institutions.
- **Financial Inclusion Index (FI-Index)**: The index improved from 60.1 in March 2023 to 64.2 in March 2024. This composite index, published by the RBI, measures various aspects of financial inclusion, including:
  - **Ease of Access** (35% weight)
  - **Availability and Usage** (45% weight)
  - **Quality of Services** (20% weight)

FACT BOX

- Financial inclusion is a process of ensuring access to appropriate financial products and services needed by all sections of the society in general and vulnerable groups in particular, at an affordable cost, in a fair and transparent manner, by regulated, mainstream institutional players.

UPSC PYQ

Q: Is inclusive growth possible under market economy? State the significance of financial inclusion in achieving economic growth in India. (2022)

Q: Pradhan Mantri Jan-Dhan Yojana (PMJDY) is necessary for bringing unbanked to the institutional fiancé fold. Do you agree with this for financial inclusion of the poorer section of the Indian society? Give arguments to justify your opinion. (2016)

UNIFIED LENDING INTERFACE (ULI)

CONTEXT

The Reserve Bank of India is set to launch the Unified Lending Interface (ULI) to further transform the lending landscape, drawing parallels with the revolutionary impact of the Unified Payments Interface (UPI) on retail payments.

What is Unified Lending Interface (ULI)?

- The Unified Lending Interface (ULI) is a new platform to streamline and enhance the lending process in India. It aims to facilitate a seamless and efficient flow of information between various stakeholders involved in **credit delivery.**
- **Purpose**: ULI is designed to address the challenges associated with accessing and aggregating data from disparate sources. It will enable a **more streamlined, consent-based flow of information from data service providers to lenders**, thereby improving the efficiency of credit appraisal and disbursement.

Significance

- **Enhanced Efficiency**: By reducing the time required for credit appraisal and minimizing the need for extensive documentation, ULI is expected to expedite the credit delivery process.
- **Broader Reach**: It aims to address the credit gap, particularly for smaller, rural, agricultural, and **micro, small, and medium enterprise (MSME) borrowers.**

- **Digital Infrastructure**: ULI is seen as a key component of India's digital public infrastructure, complementing the **existing JAM (Jan Dhan, Aadhar, and Mobile) framework** and the UPI system. The **'new trinity' of JAM-UPI-ULI** will be a revolutionary step forward in India's digital infrastructure journey
- **Improved Access**: The platform will help in delivering credit more effectively by digitizing access to scattered data, thus catering to large unmet credit demand.

- **Unified Payments Interface (UPI):** UPI is a **real-time payment system** launched in India in April 2016 by the **National Payments Corporation of India (NPCI).** It consolidates multiple bank accounts into a single mobile application, enabling various banking functions and payments.

(Table No. 02 below)

How will it help?

- **Enhanced Accessibility:** ULI will make credit more accessible to small borrowers and emerging enterprises by standardizing data-sharing processes.
- **Reduced Barriers:** It simplifies loan acquisition for previously underserved individuals and businesses.
- **Efficient Data Access:** Streamlines data sharing, reducing loan processing time and effort.
- **Improved Transparency:** Standardized data enhances accuracy and reduces misinformation in credit assessments.
- **Broader Access:** It provides credit opportunities to previously excluded populations.
- **New Lending Models:** It encourages the development of financial products for underserved groups.
- **Fintech Opportunities:** It enables fintech companies to innovate with new digital lending models.
- **Increased Competition:** It will drive better terms and services through greater market competition.
- **Complementary to Existing Platforms:** It will enhance integration with systems like **UPI, Jan Dhan, and Aadhaar.**
- **Economic Growth:** It will contribute to economic development by supporting a comprehensive digital ecosystem.

INDIA EXPANDS RAMSAR SITES WITH NEW WETLANDS DESIGNATIONS

CONTEXT

The government announced the inclusion of three new Ramsar sites in India, bringing the country's total to 85. The newly designated sites are the **Nanjarayan Bird Sanctuary and Kazhuveli Bird Sanctuary** in Tamil Nadu, and the **Tawa Reservoir** in Madhya Pradesh.

The New Ramsar Sites

Nanjarayan Bird Sanctuary (Tamil Nadu):

- **Location:** Situated on the banks of the Noyyal River.
- **Significance:** Originally a water reservoir, it has evolved into an important ecosystem supporting diverse bird species like the Eurasian coot, spot-billed duck, and various herons. It is also a key stopover for migratory birds along the Central Asian Highway and supports local livelihoods through fishing.
- **Kazhuveli Bird Sanctuary (Tamil Nadu):**
- **Location:** On the Coromandel Coast, this is one of the largest brackish water wetlands in South India.
- **Significance:** The sanctuary features a mix of salt marshes, mudflats, and shallow waters, providing habitat for globally endangered species such as the black-headed ibis and greater flamingo. It serves as a crucial stopover for migratory birds along the East Asian-Australasian Flyway and contributes to flood control and groundwater recharge.

	Unified Lending Interface (ULI)	Unified Payments Interface (UPI)
Purpose	Focuses on streamlining the lending process by integrating disparate data sources for efficient credit appraisal and disbursement.	Aims to facilitate real-time financial transactions and payments across bank accounts through a single mobile application.
Functionality	Integrates and standardizes data flow for credit-related purposes, involving multiple data providers and lenders.	Provides a platform for instant money transfers and payments, supporting a wide range of banking transactions and services.
Target Users	Primarily benefits borrowers and lenders by improving credit delivery and reducing time and documentation required for loans.	Serves consumers and merchants by enabling seamless and instantaneous financial transactions.
Technology	Uses **standardized APIs** for data integration and consent-based data sharing, focusing on credit-related data.	Relies on mobile applications and digital payment infrastructure to facilitate real-time payments and banking services.

Table No. 02

Tawa Reservoir (Madhya Pradesh):

- **Location:** Created by damming the Tawa River.
- **Significance:** The reservoir is a major wintering ground for migratory birds and supports regional water management by providing irrigation water, drinking water to local communities, and sustaining nearby fisheries.

Why Wetlands are vital?

- Wetlands are defined by the Ramsar Convention as "**areas of marsh, fen, peatland, or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish, or salt, including areas of marine water the depth of which at low tide does not exceed six meters.**"
- This broad definition encompasses **lakes, rivers, aquifers, swamps, marshes, and other water bodies**.

Wetlands are vital for several reasons:

- **Climate Regulation:** They play a crucial role in regulating climate conditions through carbon sequestration, which is the storage of atmospheric carbon.
- **Water Purification:** Wetlands help in purifying water by filtering out pollutants from shallow waters.
- **Buffer:** Wetlands are essential for mitigating floods and storms by absorbing excess rainfall and acting as buffers against extreme weather events.

The Ramsar Convention

- The Ramsar Convention, signed in 1971 in Ramsar, Iran, is an **intergovernmental treaty** aimed at the conservation and protection of wetlands worldwide.
- It encourages the designation of Ramsar sites based on criteria such as the support they provide to plant and animal species at critical life stages or during adverse conditions, as well as their ability to support fish and waterbirds.
- With **172 signatory countries, including India**, the convention mandates the creation of wetland reserves and the promotion of sustainable use of these habitats.
  - India joined the convention in 1982, initially designating **Chilika Lake in Orissa** and **Keoladeo National Park in Rajasthan** as Ramsar sites.
  - Today, India boasts one of the highest numbers of Ramsar sites in Asia.

Threats to Wetlands

- **Encroachment:** Human expansion and development.
- **Pollution:** Agricultural and industrial runoff deteriorating water quality.
- **Urbanization:** Rapid growth leading to the degradation and shrinking of wetland areas.
- The **Ramsar Convention's Global Wetland Outlook (2018)** reported a 35% loss of global wetlands between 1970 and 2015, driven largely by human activities.
- In India, the Ministry of Environment, Forest and Climate Change (MoEFCC) has launched initiatives **t**o address these challenges, such as the
  - **National Wetland Conservation Programme (1986)**
  - **2015 National Plan for Conservation of Aquatic Wetlands**

GLOBAL FRESHWATER ECOSYSTEMS FACING DEGRADATION: UN

CONTEXT

Recent reports from UN-Water and the UN Environment Programme (UNEP) reveal alarming trends in the degradation of freshwater ecosystems. The findings underscore the urgent need for enhanced water management strategies and increased global commitment to protect and restore freshwater resources.

Current State of Freshwater Ecosystems

- The reports highlight that freshwater ecosystems—including **rivers, lakes, and aquifers**—are severely degraded across half of the world's countries.
- Factors such as **reduced river flows, shrinking surface water bodies, increased pollution, and inadequate water management** are contributing to this crisis.
  - **River Flow Decrease**: River flow has significantly decreased in 402 basins globally, a fivefold increase since 2000. This reduction is driven by climate change and land use alterations, impacting water availability for communities and ecosystems.
  - **Lake and Surface Water Loss**: Lakes and other surface water bodies are diminishing in 364 basins worldwide. Persistent nutrient pollution, largely due to land clearance and urbanization, is causing harmful algal blooms and low-oxygen conditions in many large lakes.
  - **Mangrove Deforestation**: Loss of mangroves, crucial for water filtration and carbon sequestration, continues, especially in Southeast Asia. While deforestation rates have stabilized in the past decade, the decline in mangrove cover poses significant risks to coastal communities and biodiversity.

Water Quality Monitoring Deficits

- A significant gap in water quality monitoring persists, with the poorest half of the world contributing less than 3% of global water quality data. Out of nearly 250,000 lake quality measurements, only 4,500 come from these regions. This data scarcity threatens the ability to manage water resources effectively, address droughts, floods, and pollution, and make informed decisions about water management.
- The reports call for enhanced monitoring efforts, including government-funded programs, citizen science

contributions, and satellite-based Earth observation technologies. Such measures are critical to bridging the data gap and improving the quality and management of freshwater resources.

Inadequate Progress on Integrated Water Resources Management

The effective management of water resources requires an integrated approach that balances societal and economic needs. However, progress towards Integrated Water Resources Management (IWRM) is insufficient:

- **Current Status**: Out of 183 countries assessed, 47 have nearly achieved or fully implemented IWRM. Meanwhile, 63 countries need to accelerate their efforts, and 73 countries exhibit only limited capacity for IWRM. At the current pace, sustainable water management will not be achieved until 2049, potentially affecting 3.3 billion people by 2030.
- **Recommendations**: To address these challenges, the reports recommend unlocking finance through innovative revenue and cost-recovery mechanisms, investing in infrastructure and management, and enhancing institutional capacity. Coordinated action and improved monitoring networks are also essential for effective water management.

INDIA'S WEATHER-READINESS AND CLIMATE-RESILIENCE

CONTEXT

India faces a diverse array of **location-specific natural hazards**, driven by complex interactions among **weather events, local vulnerabilities, and exposure risks**. Effective management of these hazards requires well-planned responses and a deep understanding of evolving risk landscapes. The **National Disaster Management Authority (NDMA)** has made notable strides in disaster response, but significant knowledge gaps and operational barriers persist, highlighting the need for a **more robust approach to disaster preparedness and climate resilience.**

Vulnerability Profile of India

- India experiences a range of extreme weather events across different seasons, including **heatwaves, wildfires, heavy rains, landslides, droughts, and cyclones**.
- Almost 58.6 percent of the landmass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12 per cent of land) are prone to floods and river erosion; of the 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis; 68 per cent of the cultivable area is vulnerable to drought and hilly areas are at risk from landslides and avalanches.

Current Hazard Landscape

- The **India Meteorological Department (IMD)** has been working to enhance weather forecasts, though these often lack the local specificity needed for effective disaster response.
- Advancements in climate research and predictive capabilities by academic institutions and government facilities are critical for improving hyperlocal forecasts. However, **climate change is altering patterns, leading to increasingly unpredictable weather extremes.**
  - **For example**, temperature trends have shifted in different regions, and rainfall extremes now occur beyond the traditional monsoon season, exacerbating issues such as landslides and wildfires.

Growing Vulnerabilities

- **Settlement in hazardous areas**: India's rapid population and economic growth have led to increased settlement in hazardous areas and informal housing on unstable slopes and flood-prone regions.
- **Tourism and economic activities**: Additionally, tourism and economic activities have intensified pressure on vulnerable regions, such as replacing forest cover with cash crops.
  - This development exacerbates vulnerabilities, combining factors like p**overty, high population density, and poor infrastructure with wealthier, unsafe development**s.
  - The lack of effective insurance and policies may further incentivize risky behaviors, heightening exposure to climate risks.
- **Lack of information**: Despite substantial investments in climate research, forecasts, and services, the uptake of climate information remains low.

Challenges in Climate Services

Climate services, which translate **forecasts into actionable support** for sectors like **agriculture, water, energy, and transportation**, often fall short due to insufficient local or sector-specific details. For example:

- **Irrigation Advisories:** Tools developed for optimizing irrigation based on weather forecasts have shown potential in saving water and maintaining crop yield. However, scaling these tools for widespread use involves significant challenges, including engaging farmers, developing user-friendly applications, and establishing effective extension agencies. These agencies are essential for translating research into practical applications but are often lacking in resources and training.
- **Urban Flood Predictions:** Effective urban flood management requires downscaled rainfall predictions for street-level forecasting. Municipalities use **sensors and weather station data**, but ideal **flood management** involves evaluating forecasts over multiple seasons to plan for drainage, traffic control, and emergency responses. The current lack of coordinated structures and trained personnel hampers the full operationalization of downscaled forecasts.

Bridging Research and Operations

The current research-to-operations framework is fragmented, with climate research often not translating into timely operational solutions. To improve weather-readiness and climate resilience, it is crucial to:

- **Develop Sector-Specific Extension Agents:** These agents should act as intermediaries between research and operational agencies, translating scientific data into actionable solutions. Training these agents in local languages and cultural CONTEXTs is essential for effective communication and implementation.
- **Sustain Financing and Capacity-Building:** Investment in research-to-operations systems at local and sector-specific levels is necessary to address climate risks effectively. Building capacity through training and developing infrastructure for operationalizing forecasts and advisories is crucial for enhancing disaster management and climate resilience.

The right approach for becoming weather-ready and climate-resilient

- **Earth System Model (ESM):** A complete integration of the Earth System Model (ESM) with the data network will be a functional digital twin, which will thrive on anticipating hazards and minimising impacts while driving rapid and full recovery back to the sustainable pathway.
  - ESM will be completely integrated with all land uses including lakes, crops, water and air quality, fisheries, health, ecohydrology, terrestrial and marine ecosystems from lower to upper trophic levels, and so on
- **Circular economy:** The ancient wisdom of the circular economy will see India manage the circularity of all resources with innovative biotechnologies that will drive biofuel, bioenergy, water and soil clean-up, minimisation of environmental footprints, and overall food, water, and energy security.
- **Climate Leader**: India has already established itself as a climate leader. Its commitment to the Paris Agreement and the development and implementation of its Nationally Determined Contributions (NDC) is a testament to this. India must continue to lead by example.
- **Energy security** is the backbone of national security. Solar, wind, and hydrogen must be the key pillars of the energy pathway to Net Zero.
- **Climate-smart agriculture** will ensure minimising food, water, and energy waste and manage the food-water-energy nexus synergistically.
- **Innovations in smart green buildings and infrastructure** is necessary given the rapidly moving economy towards urbanisation.
- **Climate adaptation and mitigation** need synergy between different ministries such as MoEFCC, MoES, DA&FW, Jal Shakti (water resources), DST, DBT, and MeitY.

India's journey toward improved weather-readiness and climate resilience involves addressing the multifaceted challenges posed by natural hazards, enhancing the effectiveness of disaster management systems, and bridging gaps between climate research and operational practices. By focusing on localized solutions, sustainable development, and capacity-building, India can better prepare for and mitigate the impacts of climate change, ensuring a safer and more secure future for its population.

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SECTION -B

QUICK BYTES

FARAKKA BARRAGE

Context

Bangladesh is experiencing severe floods due to continuous monsoon rains and overflowing rivers. The country has partly attributed the flooding to the opening of the Farakka Barrage gates in West Bengal, India. However, India's Ministry of External Affairs has denied any link between the Farakka Barrage and the floods in Bangladesh.

About Farakka Barrage

- The Farakka Barrage is situated on the **Ganga River** in **West Bengal's Murshidabad district.** It is located approximately 18 km from the border with Bangladesh.
- The barrage officially commenced operations on April 21, 1975.
- Purpose: to merely divert 40,000 cusecs of water into the Farakka canal and is carefully done using a system of gates on the main Ganga river, while the balance water flows into the main river which then flows to Bangladesh in its natural course.
- **The Farakka Barrage Agreement, 1977 And The Ganga Water Treaty, 1996**
  - The Ganga river flows from India into Bangladesh, where its primary distributary is known as the **Padma river**. The river ultimately drains into Bay of Bengal after a confluence with the river **Meghna.**
  - The reason for India to establish the Farakka barrage was to flush out the silt of **Bhagirathi Hoogly river** to ensure smooth operation of **Kolkata port**. Bangladesh said that **Ganga is an international river**, so the water from it must be regulated as per a mutual agreement.
  - The two nations, in 1972, established a **Joint River Commission (JRC)** to negotiate terms of the water settlement.
  - In 1977, both countries signed an agreement to resolve the Farrakka issue.
  - In 1996, Bangladesh signed a fresh treaty with India - known as **The Ganga Water Treaty, 1996**. The agreement was to share the **surface waters at the Farakka Barrage near the India-Bangladesh border.**

SABINA SHOAL

Context

The maritime dispute between **China and the Philippines** has escalated, with a recent clash near the **Sabina Shoal** intensifying tensions.

About

- The Sabina Shoal, also known as Xianbin Jiao (China) and Escoda Shoal (Philippines), is situated approximately 75 nautical miles west of the Philippines' coast and about 630 nautical miles from China.
- The shoal lies within the disputed Spratly Islands, a region known for its potential energy resources.

About the South China Sea Issue

- The South China Sea is a highly contested region involving multiple countries, each asserting claims over various islands and maritime zones.
- The dispute primarily centers around control of the **Spratly Islands** and other features, which are believed to be rich in oil and gas deposits.
- China's extensive claims are marked by the so-called **nine-dash line**, which overlaps with claims made by other countries, including the **Philippines, Vietnam,**

Figure 01

Malaysia, and Brunei.

- The line comprises nine dashes which extends hundreds of miles south and east from its most southerly province of Hainan.

- The Philippines had previously sought arbitration through the United Nations, which ruled against China's expansive claims, but Beijing has refused to recognize this decision.
- The dispute affects regional players like China, Philippines, Vietnam, Malaysia, Brunei, and international stakeholders such as the UK, Japan, Australia, and South Korea.

Primary contested locations and the countries involved in these disputes:

Location	About	Claimants
Spratly Islands	The Spratly Islands consist of numerous islands, reefs, and atolls. They are strategically significant and believed to contain rich oil and gas reserves. Each claimant controls different features within the archipelago.	China, Philippines, Vietnam, Malaysia, Brunei
Paracel Islands	The Paracel Islands are a group of islands and reefs in the northern part of the South China Sea. China controls the entire group, but Vietnam and Taiwan also claim parts of it. The Paracels are important for their strategic location and fisheries.	China, Vietnam, Taiwan
Scarborough Shoal (Huangyan Island)	Located northeast of the Spratlys, Scarborough Shoal is an area rich in fishing resources. China has maintained de facto control over the shoal, but the Philippines also claims it. It is a little more than 100 miles (160km) from the Philippines and 500 miles from China.	China, Philippines

Figure 02

Location	About	Claimants
Second Thomas Shoal (Ren'ai Jiao)	The Second Thomas Shoal is located southwest of the Spratlys. The Philippines maintains a military outpost here on a grounded ship, which has been a source of ongoing friction with China.	China, Philippines
Macclesfield Bank (Zhongsha Islands)	This underwater atoll lies to the northeast of the Spratlys. It is claimed by China, but the Philippines also asserts rights over the area, which is important for its potential resources.	China, Philippines
James Shoal (Zhenghe Reef)	Situated near the southern edge of the South China Sea, James Shoal is claimed by China and Malaysia. China claims it as the southernmost point of its maritime territory.	China, Malaysia

SECOND BIGGEST DIAMOND EVER FOUND IN BOTSWANA

Context

The second-largest diamond ever discovered, a 2,492-carat rough stone, was found in Botswana.

Key-facts

- **Location:** The diamond was unearthed at the Karowe mine, located about 500 km north of Botswana's capital, Gaborone.
- **Previous Largest**: The largest diamond ever found was the 3,106-carat Cullinan diamond discovered in South Africa in 1905. It was cut into nine stones, many of which are now part of the British Crown Jewels.
- Botswana is the world's leading diamond producer by value, contributing about **20% of global diamond production.**
- **Previous Record in Botswana**: The largest diamond found in Botswana before this was a 1,758-carat stone discovered at the same Karowe mine in 2019.
- **Other major discoveries at the Karowe mine** include the 1,109-carat Lesedi La Rona diamond in 2015 and the 1,758-carat Sewelô diamond in 2019.

FACT BOX

Global Diamond Production

- In 2023, the world's total production of rough diamonds was 119.96 million carats, with Russia producing the most at 37.32 million carats.
- Botswana and Canada followed with 25.1 and 16 million carats, respectively.
- In terms of value, Botswana was the top producer in 2023, with a total value of $3.28 billion, while Russia was second at $3.6 billion.
- India does not produce a significant amount of diamonds when compared to the global ranking. It ranks **29th in the world's diamond production.**

FLOODING IN BANGLADESH

Context

Parts of India's northeast border state of Tripura and districts in eastern Bangladesh have recorded heavy rainfall of up to nearly 200 millimeters (about 8 inches) in recent days, which has caused perilous floodwaters to rise.

What caused flooding?

- Bangladesh attempted to blame India for opening the **Dumbur dam upstream** of the **Gumti River** that led to the flooding.
- However, India's Ministry of External Affairs clarified that the opening of the Dumbur dam upstream of the Gumti River in Tripura has **not caused** the current flood situation in districts on Bangladesh's eastern borders.
- The catchment areas of the Gumti River that flows through India and Bangladesh have witnessed the heaviest rains of this year over the last few days. The flood in Bangladesh is primarily due to waters from these large catchments downstream of the dam.
- **Dumbur dam** is located quite far from the border - over 120 Km upstream of Bangladesh. It is a low-height (about 30m) dam that generates power that feeds into a grid from which Bangladesh also draws 40 MW of power from Tripura.

The common problem:

- Floods on the common rivers between India and Bangladesh are a shared problem inflicting suffering to people on both sides and requires close cooperation towards resolving them.
- India and Bangladesh share 54 common cross-border rivers.
- India has three water-level observation sites along the 120-km stretch of the river from the Dumbur dam to the Bangladeshi border at Amarpur, Sonamura, and Sonamura 2.
- The Amarpur station is part of a bilateral protocol under which India provides real-time flood data to Bangladesh.

FACT BOX

- Gumti River is a trans-boundary river that flows from Tripura into district of Comilla, Bangladesh. Gumti River is the longest and largest river of Tripura.
- The Gumti flows into **Bangladesh's Chittagong or Chattogram division**, where it flows through the key city of Comilla, before emptying into the Meghna, one of three key rivers of Bangladesh along with the **Ganga** (known as Padma in Bangladesh) and **Brahmaputra** (known as Jamuna).

US-INDIA DEFENCE AGREEMENTS

Context

India and the US have signed a Security of Supply Arrangement (SOSA) and Memorandum of Agreement regarding the Assignment of Liaison Officers.

About the Agreements

- **Security of Supply Arrangement (SOSA):** Under SOSA, the US and India will provide reciprocal priority support to each other for goods and services that promote national defence.
  - It will "enable both countries to acquire the industrial resources they need from one another to resolve unanticipated supply chain disruptions to meet national security needs.

- SOSA are an important mechanism to strengthen interoperability with US defence trade partners.
- India is the **18th SOSA partner** of the US. SOSA is **legally non-binding.**

- **MOU ON LIAISON OFFICERS:** The Memorandum of Agreement regarding the Assignment of Liaison Officers is a progression on a decision taken earlier to increase information-sharing between India and the US, and to post Indian armed forces officers in key strategic US Commands. India will deploy the first Liaison Officer to the US Special Operations Command headquarters in Florida.

Key Milestones in India-US Defence Cooperation:

- **2023 US-India Roadmap for Defence Industrial Cooperation:** Priority areas of cooperation identified in the roadmap included Intelligence, Surveillance, and Reconnaissance (ISR), Undersea Domain Awareness, Air Combat and Support, including Aero engines, munitions systems, and mobility.
- **iCET (Initiative on Critical and Emerging Technology):**The iCET is spearheaded by the National Security Councils of both countries. It focuses on strengthening the US-India partnership on the technologies that will drive global growth, bolster both countries' economic competitiveness, and protect shared national security interests**.**
- **INDUS-X:** INDUS-X, or the India-U.S. Defence Accelerator Ecosystem, is a defense innovation bridge between the United States and India that was launched in 2023. It establishes the India-US Defence Acceleration Ecosystem to enhance defence innovation.
- **Logistics Exchange Memorandum of Agreement (LEMOA)** of 2016 established the basic terms, conditions, and procedures for reciprocal provision of logistic support, supplies, and services between the two militaries.
- **Communications Compatibility and Security Agreement (COMCASA)**, an India-specific version of the Communications and Information Security Memorandum of Agreement (CISMOA), was signed in 2018 to secure military communication between the countries, facilitate access to advanced defence systems, and enable India to optimally utilise its existing US-origin platforms.
- **The Basic Exchange and Cooperation Agreement (BECA)** of 2020 aimed to facilitate the sharing of military information including maps, nautical charts, and other unclassified imagery and data.

Other Achievements

- **Major Defence Partner Status, 2016:** India was designated as a Major Defence Partner by the US.
- **Strategic Trade Authorisation Tier 1 Status, 2018:** Provides India with licence-free access to US military and dual-use technologies.

Military Procurement Highlights:

- **Procurements:** MH-60R Seahawk helicopters, Sig Sauer Rifles, M777 ultra-light howitzers.
- **Ongoing Negotiations**: Manufacturing GE F-414 jet engines in India for LCA MK 2 fighters, procuring 31 MQ-9B High-Altitude Long-Endurance UAVs, and delivering GE-F404 engines for LCA Tejas Mark-1A.

INDIA-BRAZIL PARTNERSHIP

Context

The **9th India-Brazil Joint Commission Meeting (JCM)** took place in Delhi, marking a significant moment in the bilateral relations between the two countries. The meeting highlighted the mutual support given during each other's **G20 presidencies** and set the stage for discussions on various cooperative areas.

Key Highlights

- **Expanded Strategic Partnership**: The strategic partnership between India and Brazil, established in 2006, now covers a broad range of areas including **defence, space, security, trade, biofuels,** and more.
- **Discussion Topics**: The meeting addressed issues such as **bilateral trade challenges, energy cooperation, biofuels, and cultural exchanges**. It also touched upon multilateral cooperation in forums like the **G20, BRICS, and the UN.**
- Both countries had committed to promoting a high-level dialogue between the three **IBSA (India, Brazil, South Africa) partners** and highlighted the strategic importance of the forum – which was created in 2003 – in protecting and advancing the interests of the **Global South.**

India-Brazil Relations/Partnership

- **Defence and Security**: The partnership includes cooperation in defence, space, and security, with joint initiatives in technology and cyber security.
- **Economic Cooperation**: There is substantial bilateral trade, focusing on energy, particularly biofuels, and other sectors like agriculture, health, and food processing. **Brazil's lithium industry,** which has seen significant investments and advancements, offers India a reliable source of lithium.

FACT BOX

India-Brazil Relations

- India-Brazil established a strategic partnership in 2006, and sought to deepen it in 2020 by agreeing to an Action Plan to Strengthen the Strategic Partnership.

- The two countries work together in various international forums, including platforms such as BRICS, IBSA, G4, G20, BASIC, as well as the United Nations in the wider multilateral context.

About the Grouping

- **G20:** The Group of Twenty (G20) is a major international forum for the governments and central bank governors, which aims to discuss and coordinate economic policies.
  - The G20 is made up of 19 countries–**Argentina, India, Australia, Brazil, Canada, China, France, Germany, Indonesia, Italy, Japan, South Korea, Mexico, Saudi Arabia, South Africa, Russia, Turkiye, UK and the US** and two regional bodies: the **African Union and the European Union**.
- **BRICS:** BRICS is a group of five major emerging economies—Brazil, Russia, India, China, and South Africa—focused on enhancing cooperation and dialogue on economic and political issues.
- **BASIC:** The BASIC countries is a grouping of Brazil, South Africa, India and China.
- **G4:** The G4 countries—India, Brazil, Germany, and Japan—work together to reform the United Nations Security Council, advocating for increased representation and more effective global governance.
- **India-Brazil-South Africa (IBSA):** The IBSA Dialogue Forum is a tripartite grouping that was established in 2003 to promote cooperation between the three countries

MISLEADING ADVERTISEMENTS CASE

Context

The Supreme Court has stayed the central government's decision to omit **Rule 170 of the Drugs and Cosmetics Rules 1945** from the **Drugs and Cosmetics Rules**. This rule pertained to the prohibition of misleading advertisements for **Ayurvedic, Siddha, and Unani drugs**. The stay was granted because the court found that the Ministry of AYUSH's decision to omit the rule was in violation of an earlier court order regarding misleading advertisements by Patanjali.

What is Rule 170?

- The Government of India regulates Ayurveda, Siddha, and Unani (ASU) medicines under the Drugs and Cosmetics Act, 1940
- **Rule 170** of the **Drugs and Cosmetics Rules 1945** was a regulation that **prohibited misleading advertisements** for **Ayurvedic, Siddha, and Unani drugs**. It aimed to prevent false claims about the efficacy and safety of these traditional medicines.

Government Policies

- **Drugs and Cosmetics Act, 1940**: This Act regulates the import, manufacture, distribution, and sale of drugs and cosmetics in India. It includes rules for ensuring the safety, efficacy, and quality of medicines.
- **Drugs and Cosmetics Rules, 1945**: These rules were framed under the Drugs and Cosmetics Act and provide detailed regulations for the classification and control of drugs and cosmetics.
- **Ministry of AYUSH**: Responsible for the development and regulation of traditional medicine systems in India, including Ayurveda, Siddha, and Unani.

Laws & Regulations Against Misleading Advertisements in India

An advertisement is considered misleading when it misleads people from reality and influences their behaviour toward purchasing a product or service from the market.

What Are Ayurvedic, Siddha, and Unani Drugs?

	Ayurveda	Unani	Siddha
Origin	Ancient India.	Ancient Greece	Ancient Tamil Nadu, India.
Philosophy	Harmony between the three doshas—Pitta, Kapha, and Vata—is necessary for optimal health.	The four humors—blood, phlegm, yellow bile, and black bile—must be in balance in order to sustain health.	The three humors—Pitham, Kabam, and Vatha—as well as the five elements—earth, water, fire, air, and space—are the foundation of Siddha medicine.
Treatment Plan	Herbal therapies, dietary recommendations, lifestyle adjustments, yoga, and meditation	Herbs, minerals, animal products, dietary adjustments and lifestyle adjustments.	Minerals, metals, plants, meditation, yoga, and dietary advice.

Table No. 01

- **Consumer Protection Act, 1986: Section 2(1)(r)** defines "Unfair Trade Practices" to include any false or deceptive information aimed at endorsing the sale or supply of goods and services. This encompasses unfair methods and practices.
- **Central Consumer Protection Authority (CCPA) 2022 Guidelines a**imed at preventing deceptive advertisements and endorsements. It applies to all advertisements, manufacturers, service providers, traders, advertising agencies, and associates.
  - **Guidelines:**
    - Ensure truthfulness and honesty in advertisements.
    - Avoid misleading information or exaggerated claims.
    - Ensure claims are not misleading and are aligned with market rules.
    - Permits bait advertising under specific conditions, focusing on transparency and fairness.
- **Advertising Standards Council of India (ASCI) Code: Chapter 1 (4)** prohibits advertisements from falsifying information or deceiving consumers through implication or omission.
- **Food Safety and Standards Authority of India (FSSAI)**
  - **Food Safety and Standards Act, 2006**:
    - **Section 53**: Makes deceptive advertisements punishable and requires that ads be truthful, practical, and scientifically substantiated.
    - **Section 24**: Prohibits misleading and deceptive advertising about food.
    - **Food Safety and Standards (Advertisement and Claims) Regulations, 2018**: Focuses on food and related products.
- **Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954**
  - **Section 4**: Bans deceptive advertisements about drugs that falsely represent their true nature.
  - **Section 5**: Prohibits claims that magical remedies can treat specific diseases or disorders.
- **Legal Metrology Act, 2009: Section 11(1)(c)** prohibits advertisements that do not use standard units of weights, measures, or numeration.
- **Legal Metrology (Packaged Commodities) Rules, 2011: Section 23(1)** allows the seizure of products if the quantity or packaging is deceptive or misleading.
- **Cable Television Networks (Regulations) Act, 1995: Section 6** requires all advertisements to comply with the code specified by the Advertising Standards Council of India (ASCI).
- **Cigarettes and Other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003: Section 5** strictly bans the promotion of cigarettes and tobacco-related items in any form.

SC & ST (PREVENTION OF ATROCITIES) ACT, 1989

Context

The Supreme Court recently held that simply insulting a member of a Scheduled Caste (SC) or Scheduled Tribe (ST) does not automatically constitute an offence under the **1989 SC and ST (Prevention of Atrocities) Act,** underlining that the offence requires a specific intent to humiliate the individual based on their caste identity.

What is SC/ST Act?

- The Scheduled Castes and Scheduled Tribes (Prevention of Atrocities) Act of 1989 (SC/ST Act) is a law that aims to prevent crimes against members of Scheduled Castes and Scheduled Tribes (SCs and STs).
- The Act came into effect in1990.
- Popularly known as POA, the SC/ST Act, lists 22 offences relating to various patterns or behaviours inflicting criminal offences and breaking the self-respect and esteem of the scheduled castes and tribes community.
  - This includes denial of economic, democratic and social rights, discrimination, exploitation and abuse of the legal process.
- **'Police' and 'Public Order'** are **State subjects** under the **Seventh Schedule (List-II)** to the **Constitution of India**. The primary responsibility for implementation of the Act rests with the State Governments/UT Administrations.

FACT BOX

Government Schemes for SC/ST

- Pradhan Mantri Adi Adarsh Gram Yojana (PM AAGY)
- Scheduled Castes Sub Plan (SCSP)
- Tribal Sub-Plan (TSP)
- National Scheduled Castes Finance and Development Corporation (NSFDC)
- National Scheduled Tribes Finance and Development Corporation (NSTFDC)
- Pre-Matric Scholarship for SC/ST Students
- Post-Matric Scholarship for SC/ST Students
- Dr. Ambedkar Post-Matric Scholarship for Economically Backward Classes
- Post-Matric Scholarship Scheme for ST Students
- Integrated Tribal Development Projects (ITDP)
- ST/SC Hostels Scheme
- Scholarships for Top Class Education for SC Students
- Skill Development Scheme for SC/ST Youth
- Pradhan Mantri Jan Vikas Karyakram (PMJVK)
- Ambedkar Foundation Scholarship Scheme
- Economic Support Schemes for SC/ST

MHA ANNOUNCES FIVE NEW DISTRICTS IN LADAKH

Context

The Ministry of Home Affairs (MHA) announced the creation of five new districts in Ladakh: Zanskar, Drass, Sham, Nubra, and Changthang.

Background

- Ladakh was given the status of a Union Territory in 2019 after the abrogation of Article 370 which granted special status to the erstwhile state of Jammu and Kashmir. The revocation of article 370 bifurcated it into two Union Territories after which Ladakh comes under the direct administrative control of the Home Ministry.
- Currently, Ladakh has two districts, **Leh and Kargil**. It has been reported to face administrative challenges due to its large area and difficult terrain.
- Meanwhile, Ladakh has been demanding:
  - Statehood
  - Early recruitment process along with a public service commission for Ladakh
  - Separate Lok Sabha seats for Leh and Kargil districts.
  - Extension of the Constitution's **Sixth Schedule**
    - The **Sixth Schedule under Article 244** (Administration of Scheduled Areas and Tribal Areas) of the Constitution guarantees certain protections for land and nominal autonomy for citizens in designated tribal areas.
    - In Ladakh, more than 97% of the population belongs to the Scheduled Tribes.
    - The inclusion of Ladakh in the Sixth Schedule would allow for the creation of autonomous development councils to govern land, public health and agriculture.

FACT BOX

Creating a New District in India

- The process is managed by state governments under their administrative powers, with no direct central government role.
- The **Home Ministry** comes into the picture when a State wants to change the name of a district or a railway station.
- The State government's request is sent to other departments and agencies such as the **Ministry of Earth Sciences, Intelligence Bureau, Department of Posts, Geographical Survey of India Sciences and the Railway Ministry seeking clearance**.
- A no-objection certificate may be issued after examining their replies.
- **Considerations:** Decisions are based on factors like population growth, geographic size, and administrative efficiency.

Sixth Schedule under Article 244

- The Sixth Schedule of the Indian Constitution includes provisions for the administration of tribal areas in the states of **Assam, Meghalaya, Tripura and Mizoram** in northeast India.
- It establishes autonomous councils that have legislative, judicial, executive and financial powers to independently govern these areas.
- P**urpose**: to protect the interests of the tribal populations in these northeastern states through autonomous governance.

Major Tribes in Ladakh

- The total tribal population in Ladakh region is more than 97 percent. The region is inhabited by following Scheduled Tribes, namely: **Balti, Beda, Bot, Boto, Brokpa, Drokpa, Dard, Shin, Changpa, Garra, Mon and Purigpa.**

FSSAI DIRECTIVE ON A1 AND A2 LABELS

Context:

The - has directed companies to cease using labels such as A1 and A2 on dairy products. This action is based on the assertion that such labels are "misleading" and do not comply with the provisions of the **FSS Act, 2006.**

What is A1 and A2?

- A1 and A2 refer to specific types of beta-casein proteins found in cow's milk. The difference between A1 and A2 milk is related to the structure of a protein called **beta-casein**. Beta-casein is a major protein in milk, and there are at least 13 different forms.
  - **A1 beta-casein**: Milk from breeds of cows that originated in northern Europe is generally high in A1 beta-casein. These breeds include Holstein, Friesian, Ayrshire, and British Shorthorn.
  - **A2 beta-casein**: Milk that is high in A2 beta-casein is mainly found in breeds that originated in the Channel Islands and southern France. These include Guernsey, Jersey, Charolais, and Limousin cows.
- **A2 Milk:** Contains only A2 beta-casein, whereas regular milk has both A1 and A2.

Health Considerations:

- **Research: Some** studies suggest that A2 milk may be healthier and cause fewer digestive issues than milk with A1 beta-casein. For instance, a study indicated that individuals with milk intolerance experienced fewer symptoms with A2 milk.
- **BCM-7 Peptide:** A peptide produced during the digestion of A1 beta-casein, BCM-7, is sometimes linked to health issues such as type 1 diabetes and heart disease, though research is limited and ongoing.
- **Scientific Debate**: A study published in 2005 found no strong evidence linking A1 beta-casein to health problems like type 1 diabetes or heart disease.

FACT BOX

Food Safety and Standards Act, 2006

- It is an Act to consolidate the laws relating to food and to establish the Food Safety and Standards Authority of India for laying down science based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connected therewith or incidental thereto.
- The FSS Act was formed as a consolidation of various orders and acts like the Prevention of food adulteration Act 1954, fruit products order 1955, milk and milk products order 1992, etc.

About FSSAI

- It is an autonomous statutory body established under the **Food Safety and Standards Act, 2006.**
- **Implementing Agency**: Ministry of Health & Family Welfare
- **Composition:** The FSSAI consists of 1 Chairperson and a total of 22 members. Out of these 22, at least one-third should be women.
- **Functions:** FSSAI performs various functions to promote and protect public health.
  - Setting Rules and Guidelines
  - Giving a License
  - Test the Food Standard
  - Conducting Regular Audits
  - Spreading Food Safety Awareness
  - Maintaining the Records and Data
  - Keeping the Government Updated
- **Key-initiatives by FSSAI:** Eat Right India, Clean Street Food, Diet4Life, Save Food, Share Food, Share Joy

UPSC PYQ

Q: Consider the following Statements: (2018)

1: The Food Safety and Standard Act, 2006 replaced the prevention of food Adulteration Act, 1954.

2: The Food Safety and standards Authority Of India (FSSAI) is under the charge of Director General of Health Services in the Union Ministry of Health And Family Welfare.

Which Statement given above is/ are correct?

(a) 1 only (b) 2 only

(c) Both 1 and 2 (d) Neither 1 nor 2

Solution: (a)

CABINET APPROVES 12 INDUSTRIAL NODES/CITIES UNDER NICDP

Context

The Union Cabinet has approved the development of 12 new industrial cities across 10 states in India, marking a significant advancement in the nation's effort to enhance its manufacturing capabilities and drive economic growth. This initiative, under the National Industrial Corridor Development Programme (NICDP), involves an estimated investment of Rs 28,602 crore.

About

- The new industrial areas will be established in the following locations:
  - Uttarakhand: Khurpia
  - Punjab: Rajpura-Patiala
  - Maharashtra: Dighi
  - Kerala: Palakkad
  - Uttar Pradesh: Agra and Prayagraj
  - Bihar: Gaya
  - Telangana: Zaheerabad
  - Andhra Pradesh: Orvakal and Kopparthy
  - Rajasthan: Jodhpur-Pali
- The project have been approved under the **National Industrial Corridor Development Programme (NICDP).**
- The new industrial cities will be developed as **greenfield smart cities** of global standards, built "ahead of demand" on the **'plug-n-play'** and **'walk-to-work'** concepts.
- Aligned with the **PM GatiShakti National Master Plan**, the projects will feature multi-modal connectivity infrastructure, ensuring seamless movement of people, goods, and services.

Benefits

- **Employment Opportunities**: The NICDP projects are expected to generate approximately 1 million direct jobs and up to 3 million indirect jobs.
- **Investment Potential**: The total investment potential from these projects is estimated at about Rs 1.52 lakh crore.

- This strategic move is set to transform India's industrial landscape, creating a robust network of industrial nodes and cities that will significantly enhance the country's economic growth and global competitiveness.

FACT BOX

National Industrial Corridor Development Programme (NICDP)

- National Industrial Corridor Development Programme is India's most ambitious infrastructure programme

aiming to develop futuristic industrial cities in India which can compete with the best manufacturing and investment destinations in the world.

- NICDP is designed to foster a vibrant industrial ecosystem by facilitating investments from both large anchor industries and Micro, Small, and Medium Enterprises (MSMEs).
- **Key Components:** Industrial Corridors, Greenfield Projects, Infrastructure Enhancement, Smart Cities

AGRICULTURAL INFRASTRUCTURE FUND

Context

The Union Cabinet approved an expansion of the Agricultural Infrastructure Fund (AIF).

About Agriculture Infra Fund (AIF)

- Agriculture Infra Fund (AIF) is a financing facility launched in 2020.
- **Objective:** Creation of post-harvest management infrastructure and community farm assets.
- It is a **medium - long term debt financing facility** for investment in viable projects for post- harvest management infrastructure and community farming assets through interest subvention and credit guarantee support.
- Under this scheme, Rs 1 lakh crore is to be disbursed by financial year 2025-26 and the interest subvention and credit guarantee assistance will be given till the year 2032-33.
- **Eligible beneficiaries**: Farmers, Agri-entrepreneurs, Start-ups, Primary Agricultural Credit Societies (PACS), Marketing Cooperative Societies, Farmer Producers Organizations(FPOs), Self Help Group (SHG), Joint Liability Groups (JLG), Multipurpose Cooperative Societies, Central/State agency or Local Body sponsored Public Private Partnership Projects, State Agencies, Agricultural Produce Market Committees (Mandis), National & State Federations of Cooperatives, Federations of FPOs (Farmer Produce Organizations) and Federations of Self Help Groups (SHGs).

Key Changes and Objectives:

- **Redesigned Scheme:** The AIF will now include financial support for FPOs.
- **Enhanced Attractiveness**: The expansion aims to make the scheme more appealing and impactful.
- **Infrastructure Development**: The initiative focuses on strengthening agricultural infrastructure facilities across the country.
- **Broader Scope**: Expanding the range of eligible projects and integrating additional supportive measures.

Previous Achievements:

- **Sanctioned Projects:** ₹47,575 crore sanctioned for 74,508 projects.
- **Mobilised Investment**: ₹78,596 crore in the agriculture sector, with ₹78,433 crore from private entities.
- **Employment Generated**: Over 8.19 lakh rural jobs created in the agriculture sector.

FACT BOX

Farmers' Producers Organisations (FPOs)

- A farmer producer organisation (FPO) is a **legal entity** that is owned and managed by farmers (cultivators, dairy producers, fishers, plantation owners, and others engaged in primary production in the agriculture sector).
- FPO is a generic term for farmer collectives and can refer to one of the following:
- **A company** (under the Companies Act)
- **A cooperative society** (under the Multi-state Cooperative Societies Act)
- **A mutually aided cooperative society** (under the Mutually Aided Cooperative Societies Act).
- FPOs are one type of producer organisation; others include collectives of weavers and artisans. Since most farmer producer organisations in recent years have been registered as producer companies, the terms FPC and FPO are often used interchangeably.

INDIA'S FIRST REUSABLE HYBRID ROCKET RHUMI-1

Context

India has successfully launched its first reusable hybrid rocket, RHUMI-1, developed by the **Tamil Nadu-based start-up Space Zone India** in collaboration with the Martin Group.

Key Details:

- RHUMI-1 incorporates a **reusable mechanism**, promising a cost-effective and environmentally sustainable solution to satellite launches.
  - **Rocket Technology**: RHUMI-1 is equipped with a **generic-fuel-based hybrid motor** and **electrically triggered parachute deployer.** The spacecraft is **100% pyrotechnic-free and 0% TNT.**
    - The hybrid propulsion system, combining solid fuel and liquid oxidizer technologies, is engineered to slash the costs associated with hybrid rocket operations while ensuring utmost safety.

- The RHUMI-1 rocket combines the advantages of **both liquid and solid fuel propellant systems** to improve efficiency and reduce operational costs.
- The RHUMI series includes three models—**RHUMI-1, RHUMI-2, and RHUMI-3**—capable of reaching altitudes ranging from 1 km to 500 km.

- **Application:** Beyond its space exploration objectives, RHUMI 1's applications extend to agriculture, environmental monitoring, and disaster management.

Key-features

- Flexibility and reusability
- Adjustable launch angle, which can be modified between 0 and 120 degrees
- A CO2-triggered parachute system

- **Rocket and Satellites**: RHUMI-1 carried **3 Cube Satellites** and **50 PICO Satellites** into a **suborbital trajectory.** These satellites will gather data on global warming and climate change.
- **Space Zone India**: Based in Chennai, Space Zone India focuses on providing affordable, long-term space solutions. The company offers training in Aerodynamics, Satellite Technology, Drone Technology, and Rocket Technology. They also promote awareness about careers in the space industry.
  - **Educational Initiatives:** In 2023, Space Zone India ran the "Dr. APJ Abdul Kalam Students Satellite Launch" mission, involving over 2,500 students from various schools in designing and building a student satellite launch vehicle. This vehicle was capable of carrying 150 Pico satellites for research experiments.

SIG716 RIFLE

Context

India's Ministry of Defence has placed an order for **73,000 SIG716 rifles from Sig Sauer**. This is the second major procurement order from Sig Sauer in the past five years.

About the SIG716 Rifle

- **Platform:** The SIG716 is an advanced rifle built on the ArmaLite Rifle (AR) platform, chambered for 7.62 NATO rounds.

Design Features:

- **Barrel:** 16-inch barrel.
- **Handguard:** M-LOK handguard for improved accessory attachment and ventilation.
- **Stock:** 6-position telescoping stock for customizable length and better ergonomics.

Performance:

- **Calibre and Recoil:** Higher calibre and recoil compared to the INSAS and AK-47, designed for increased lethality.
- **Effective Range:** Capable of shooting accurately up to 600 meters.

- **Comparative Advantage:** The SIG716 offers greater range, lethality, and recoil than both the **INSAS (Indian Small Arms System)** and the **AK-47**, which fires a smaller round.

NASA'S CREW DRAGON

Context

NASA has announced that astronauts Sunita Williams and Barry Wilmore, currently aboard the ISS, will return to Earth in February 2025 aboard a **Crew Dragon flight.**

About Crew Dragon

- Crew Dragon, developed by SpaceX, is one of the two variants of the **Dragon 2 spacecraft**, designed for space missions.
  - While Crew Dragon is used to ferry astronauts to and from the International Space Station (ISS), the other variant, Cargo Dragon, is used for cargo deliveries.
- Crew Dragon was developed as part of **NASA's Commercial Crew Program** to replace the space shuttle program, which was retired in 2011.
- It made its first crewed mission to the ISS in 2020, carrying four American and Japanese astronauts. Since then, Crew Dragon has completed eight crew rotation missions.

Features

- **Spacecraft Design:** Crew Dragon consists of two main components:
- **Reusable Capsule:** Houses the crew and is equipped with 16 Draco thrusters for orbital maneuvering. Each thruster produces 90 pounds of force.
- **Expandable Trunk Module:** Contains solar panels, heat-removal radiators, cargo space, and stability fins for emergency aborts.
- **Launch and Docking:** The spacecraft is launched into orbit atop a SpaceX Falcon 9 rocket, which is reusable. It docks automatically with the ISS using advanced sensors and cameras, including Lidar for precise distance measurements and relative velocity calculations.
- **Return to Earth:** When it's time for the crew to return, Crew Dragon undocks from the ISS, and the trunk module is jettisoned and burns up upon re-entry. The capsule performs a de-orbit burn to reduce speed and then re-enters Earth's atmosphere. Four parachutes are deployed to slow its descent, and it finally splashes down in the ocean, where it is recovered by a recovery ship.

SUNSPOT'S MAGNETIC FIELD

Context

The Indian Institute of Astrophysics (IIA) is conducting a detailed study of the **magnetic fields** associated with **sunspots** to address the longstanding problem of **coronal heating** and to gain deeper insights into the solar wind. This research, conducted at the **Kodaikanal Solar Observatory**, aims to improve understanding of the physical mechanisms driving these solar phenomena.

Key-highlights of the Study

- The Indian Institute of Astrophysics is focusing on **sunspots' magnetic fields** to investigate their role in solar phenomena.
- **Solar Wind and Coronal Heating:** The study seeks to resolve the **coronal heating problem**, where the Sun's outer atmosphere (the corona) is unexpectedly hotter than the **Sun's surface (the photosphere).**
- The solar wind, a stream of charged particles emitted by the Sun, is driven by magnetic fields. By analyzing how these magnetic fields operate, researchers aim to clarify the mechanisms that heat the corona and contribute to the solar wind.
- **Observations and Techniques:** Researchers are utilizing data from spectral lines, specifically Hydrogen-alpha and Calcium II 8662 Å, to assess the magnetic fields at various heights in the solar atmosphere.
  - The **Hydrogen-alpha line** is particularly useful for studying the **chromospheric magnetic field** during events like solar flares due to its reduced sensitivity to temperature fluctuations.

FACT BOX

Sun's Magnetic Field

Sunspots

- Sunspots are regions on the Sun's surface with intense magnetic activity, which influence the Sun's overall magnetic field.
- Understanding these magnetic fields is crucial for explaining how energy is transported from the Sun's inner layers to its outer atmosphere.

Sun's Magnetic Field

- Magnetic fields are produced in the Sun by the flow of electrically charged ions and electrons.
- Sunspots are places where very intense magnetic lines of force break through the Sun's surface.
- The sunspot cycle results from the recycling of magnetic fields by the flow of material in the interior.

Solar Coronal Heating

- The coronal heating problem in solar physics relates to the question of why the temperature of the Sun's corona is millions of kelvins versus the thousands of kelvins of the surface.
- The corona's average temperature is 1–3 × 10 K, but it can reach temperatures as high as 10 K during solar flares.
- The exact cause of this heating is a mystery that has puzzled scientists for centuries.

INDIA'S FIRST NATIONAL SPACE DAY

Context

India is celebrating its inaugural **National Space Day on August 23, 2024**, to mark the successful landing of the **Chandrayaan-3 mission's Vikram Lander** on the **Moon's southern polar region**. This achievement is significant as **India became the first country to land in this uncharted region** and the fourth overall to achieve a lunar landing. The occasion is commemorated with the theme **"Touching Lives while Touching the Moon: India's Space Saga"**.

About Chandrayaan-3

- Chandrayaan-3, developed by the Indian Space Research Organisation (ISRO), successfully landed the Vikram Lander and the Pragyaan Rover on the Moon.
- This mission not only accomplished a soft landing but also made India the first nation to land on the Moon's southern polar region, highlighting India's growing capabilities in space exploration.

Major Space Missions and Achievements

- **Aditya-L1:** This mission aims to study the Sun from the first Earth-Sun Lagrange point (L1), a stable point in space that allows continuous observation of the Sun. Aditya-L1 reached L1 and has been conducting observations, including the study of a solar storm that occurred in May 2024.
- **Gaganyaan TV-D1:** As part of the Gaganyaan human spaceflight program, this mission tested the Crew Escape System (CES) of the spacecraft.
  - The test demonstrated the CES's ability to safely separate from the test vehicle, protect the crew module, and ensure it decelerates effectively before splashing down into the Bay of Bengal.
  - The crew module was successfully recovered by the Indian Navy vessel INS Shakthi.
- **XPoSat:** The X-ray Polarimeter Satellite (XPoSat) was launched to study the polarization of X-ray radiation. This mission aims to enhance our understanding of various cosmic sources of radiation.
  - XPoSat is **India's second X-ray polarimeter satellite**, following **NASA's IPEX** launched in 2021.

- It carries two main instruments: XSPECT and POLIX, which began operations shortly after the launch.

- **INSAT-3DS:** This meteorological satellite was launched to test the capabilities of the **Geosynchronous Satellite Launch Vehicle (GSLV).**
  - INSAT-3DS plays a crucial role in validating the GSLV before the critical launch of the **NASA-ISRO Synthetic Aperture Radar (NISAR) mission**, scheduled for early 2025.
- **RLV-TD**: The Reusable Launch Vehicle (RLV-TD), specifically the Pushpak variant, underwent two landing experiments.
  - These tests simulated the vehicle's landing from space, with one test dropping the vehicle along its intended landing path and another offset by 500 meters.
  - These tests are pivotal for developing reusable launch vehicles for future space missions.
- **SSLV:** The Small Satellite Launch Vehicle (SSLV) successfully launched the **EOS-08 and SR-0 Demosat satellites into orbit.**
  - This mission concluded the development phase of the SSLV, which is now ready for commercial use. EOS-08 includes payloads for earth observation in the infrared range and other advanced technologies.

CHANDRAYAAN-3'S PRAGYAN ROVER

Context

Chandrayaan-3's Pragyan rover has made a remarkable contribution to lunar science, providing information about the identification of **ferroan anorthosite** and the insights into the **Moon's early magma ocean** are significant milestones in space exploration.

Key Achievements:

- **Mission Duration and Rover Operations**: The **Pragyan rover**, after landing, operated for approximately 14 days on the lunar surface before it ceased functioning due to **subzero temperatures**. Despite its relatively short operational window, Pragyan met all its scientific objectives, delivering significant data on lunar soil and surface composition.
- **Scientific Findings**: The mission's standout discovery is the identification of **ferroan anorthosite** in the lunar soil. This rock type is critical for understanding the Moon's early history and supports the theory of a **primordial magma ocean**. This discovery confirms findings from earlier missions but provides new data from the **Moon's south pole region**, an area previously less explored.
- **Ferroan Anorthosite:** Ferroan anorthosite is a type of rock that forms from the crystallization of molten magma. Its presence on the Moon is significant because it is believed to be remnants of a vast magma ocean that covered the lunar surface billions of years ago. This supports the theory that the Moon's surface was once molten and has since solidified, with subsequent meteorite impacts contributing to its current state.
  - Similar rocks were found by the **Apollo and Luna missions** at the **lunar equator**, but the new data from Chandrayaan-3 adds valuable information from the southern hemisphere. This broadens our understanding of the Moon's geological diversity.

Pragyan's Instruments:

- Pragyan was equipped with instruments like the **Alpha Particle X-ray Spectrometer (APXS)** and the **Laser-Induced Breakdown Spectroscopy (LIBS).**
- These tools were essential in analyzing the chemical composition of lunar soil and rocks.
- The APXS, for instance, utilized X-rays and alpha particles to examine dust and identify the presence of ferroan anorthosite and other mineral components.

CHOLERA OUTBREAK IN SUDAN

Context

More than 350 cases of cholera have been recorded in a new outbreak in Sudan in just a few weeks.

What is Cholera?

- Cholera is a bacterial disease usually spread through **contaminated water**. It is spread when people drink infected water, when people with open wounds have direct contact with the contaminated water, and, in some cases, when they eat raw shellfish.
- The disease causes severe **diarrhoea and dehydration**. If the disease is left untreated, cholera can kill within hours – even people who were previously healthy.
- **Transmission:** It cannot be transmitted from person to person, so casual contact with a person who has the disease is not a risk.
- While the disease might not cause illness to everyone exposed to it, infected people can still pass the bacteria in their stool, contaminating food and water supplies. This is a particular problem where there are no working sanitation facilities.
- **Vulnerability:** Children under the age of five have the highest rates of infection, but all age groups are at risk, especially those suffering from malnutrition, those who are immunocompromised or who lack prior vaccination.

Treatment:

- Rehydration to replace the lost fluids.
- Other treatments include intravenous fluids, antibiotics and zinc supplements.

US' NEW MISSILE (AIM-174B MISSILE)

Context

The introduction of the **AIM-174B missile** into the **US Navy's arsenal** marks a significant development in air-to-air missile technology and strategic balance, particularly in the Indo-Pacific region where tensions with China are prominent.

About AIM-174B Missile

- **AIM-174B** is an **air-to-air derivative** of the **Raytheon SM-6 surface-to-air missile**, designed for the F/A-18 Super Hornet.
- With an operational range of around 400 km and a speed of Mach 3.5, it positions itself as a formidable counterpart to other long-range air-to-air missiles like the **Russian Rh-37 Vympel and the Chinese PL-15 and PL-17.**
- The AIM-174B benefits from the existing production infrastructure for the SM-6, enabling its rapid deployment and operational readiness.
- **Strategic Importance of Long-Range Missiles:** While stealth fighters like the F-35 and J-20 aim to avoid detection, long-range air-to-air missiles are crucial for ensuring engagement at distances where stealth alone cannot guarantee safety.
  - The development of missiles such as the **PL-15 and PL-17** by China indicates that long-range engagement capabilities are becoming a key element of modern air combat.
  - The AIM-174B's capabilities help the US maintain a strategic edge by enabling its aircraft to strike from beyond the range of enemy systems.

India's Air-to-Air Missiles

- India's air-to-air missile arsenal includes the **Astra Mk1**, which has a shorter range (100 km) compared to the AIM-174B and other advanced missiles.
- The Astra Mk1 is being integrated into the Su-30MKI fighter jet, with further developments like the Astra Mk2 and Mk3 under trial.
- The **Meteor missile**, which is operational on the **Rafale jets**, is considered one of the most advanced in terms of range and performance.

IAF TO PRIORITIZE INDIGENOUS ASTRA MISSILES OVER ISRAELI I-DERBY ER

Context

In a strategic move to bolster its air defense capabilities, the **Indian Air Force (IAF)** has decided to prioritize the integration of its indigenous Astra MkI and MkII missiles over the **Israeli I-Derby ER Beyond Visual Range Air-to-Air Missiles (BVRAAMs).** This decision will affect the IAF's fleet of **Su-30MKI, Tejas MkIA, and Tejas MkIIs**, marking a significant shift towards enhancing domestic defense technology.

Astra Missiles: India's Indigenous Advancements

- **Astra MkI:** Operational since 2019, the Astra MkI is a testament to India's growing missile technology prowess. Developed by the Defence Research and Development Organisation (DRDO), it features a range of 110 km and has been successfully integrated into the IAF's Su-30MKI and Tejas fighters.
  - The missile is equipped with an active radar homing seeker, ensuring high-precision targeting in the terminal phase.
  - Its deployment marks a significant enhancement in India's air-to-air combat capabilities.
- **Astra MkII:** Building on the success of the MkI, the Astra MkII is in advanced testing stages and promises to further extend India's air defense reach.
  - With a range of 160 km, achieved through a dual-pulse solid rocket motor, the Astra MkII represents a substantial leap in missile technology.
  - Its development underscores a commitment to producing cost-effective and adaptable solutions for modern aerial combat, reinforcing its strategic value for the IAF.
- **I-Derby ER: Israel's Advanced BVRAAM**
- The I-Derby ER, developed by Israel's Rafael Advanced Defense Systems, is a leading contender in the BVRAAM category.
- With a range of 100 km, it features a 'fire-and-forget' capability, which allows pilots to engage targets beyond visual range, thus significantly enhancing operational effectiveness.

CDO-7N-1, NEEDLE-FREE COVID-19 VACCINE

Context

Hyderabad-based vaccine maker **Indian Immunologicals Limited (IIL)** has developed a **live-attenuated needle-free intra-nasal booster vaccine** against **Sars-CoV-2 virus** that causes Covid-19, amid the rising number of cases of the virulent across the world.

About the vaccine

- **Needle-free injection systems** are novel ways to introduce various medicines into patients without piercing the skin with a conventional needle.
- IIL's intranasal vaccine, named CDO-7N-1, is a live attenuated vaccine designed to be given through the nose. It could trigger both mucosal and systemic immunity with just a single dose
- The vaccine is made using **codon deoptimisation technology**.
  - Codon deoptimization involves **decreasing the frequency** of underrepresented **codon pairs** (**genetic determinant for amino acids**) without changing **amino acid sequences.**

- It is a **highly efficient virus attenuation strategy** that utilizes suboptimal codon pairs to achieve attenuation of recoded viruses
- The technology weakens viruses by using less common genetic codes while keeping the protein the same.
- Codon deoptimisation is considered highly efficient as a virus attenuation strategy and is also considered safe and less time-consuming than the conventional way which usually takes several years.

- **Live-attenuated vaccines** are known for their ability to induce strong, long-lasting immunity, often requiring just one dose.
- Unlike other vaccines that use a single antigen, live-attenuated vaccines incorporate the entire virus, providing broader immunity.

MPOX RT-PCR KIT, INDIA'S INDIGENOUS MPOX DETECTION KIT

Context

India has recently developed its own indigenous **RT-PCR testing kit for Mpox**, known as the **IMDX Mpox Detection RT-PCR Assay**. This significant advancement in diagnostic technology has received manufacturing approval from the Central Drugs Standard Control Organisation (CDSCO).

About RT-PCR Testing Kit for Mpox

- The **IMDX Mpox Detection RT-PCR Assay** is a newly developed diagnostic tool designed to detect Mpox virus infections.
- This kit will be manufactured at Siemens Healthineers' molecular diagnostics unit in Vadodara, India, which has a production capacity of one million reactions per year.
- The assay is engineered to detect two distinct regions in the Mpox viral genome, covering both **Clade I and Clade II variants,** ensuring comprehensive and accurate detection across different viral strains.
- Its platform-agnostic design means it integrates seamlessly with existing PCR setups, eliminating the need for new instruments.
- The assay provides results in just 40 minutes, significantly faster than traditional methods that take 1-2 hours.
- It has been clinically validated by the ICMR-National Institute of Virology, Pune, with 100% sensitivity and specificity, adhering to both Indian and international standards.

Technology Used

- The **IMDX Mpox Detection RT-PCR Assay** utilizes **RT-PCR (Reverse Transcription Polymerase Chain Reaction) technology**, which amplifies and detects specific genetic material from the Mpox virus. The process involves converting RNA into DNA through reverse transcription, followed by amplification to detectable levels.
- The assay's platform-agnostic design allows it to work with standard PCR equipment, making it compatible with existing diagnostic infrastructure.

About Mpox

- Mpox is a viral illness caused by the Mpox virus, which belongs to the Orthopoxvirus genus. This genus also includes smallpox, cowpox, and vaccinia.
- The World Health Organization (WHO) declared Mpox a **global public health emergency** for the second time due to its outbreak in Africa and its spread to other regions.
- A new strain, **Clade I**, is notably more transmissible and has higher mortality rates compared to previous strains.
- Mpox typically presents with symptoms such as **fever, rash, and swollen lymph nodes**, and can be transmitted through direct contact with infected individuals or contaminated materials.

SOLAR PARABOLOID TECHNOLOGY

Context

As the world grapples with the urgent need to transition to renewable energy, solar paraboloid technology is emerging as a potentially transformative solution.

What is Solar Paraboloid Technology?

- Solar paraboloid technology operates using a system known as the **Parabolic Trough Collector (PTC).** The core components of this system include:
  - **Parabolic Mirrors:** These mirrors are shaped like a parabola and are designed to focus sunlight onto a receiver tube located at the focal line of the mirror.
  - **Receiver Tube:** This tube captures the concentrated sunlight and heats a fluid contained within it. The heated fluid can be used to generate electricity through a steam turbine or provide direct heat for industrial processes.

Advantages:

- **High Temperature Operation:** Unlike **traditional PV panels**, which operate at lower temperatures, solar paraboloids can achieve temperatures up to 300°C. This high temperature operation enhances thermal efficiency by reducing heat losses.
- **Enhanced Efficiency**: The ability to operate at higher temperatures allows solar paraboloids to convert a larger portion of solar energy into usable heat. This efficiency translates into more electricity or heat generation per unit of sunlight compared to **conventional PV systems.**
- **Cost Efficiency**: The high efficiency of solar paraboloids in concentrating solar energy can lead to a reduction in the cost per unit of electricity produced. This could make solar energy more competitive with traditional fossil fuels, potentially driving down energy costs in the long term.

NORTHERN BALD IBIS (*GERONTICUS EREMITA*)

Context

Due to the effects of climate change and past extinctions, **bald ibis**, a bird species), no longer instinctively know their migratory routes. Conservationists have been using innovative methods (microlight aircraft) to teach these birds how and where to fly to ensure their survival and to **re-establish migratory patterns.**

About the Species: Northern Bald Ibis

- **Scientific Name**: *Geronticus eremita*
- **Physical Characteristics**:
  - **Appearance**: The northern bald ibis is notable for its black and iridescent green plumage, a bald red head, and a long curved beak.
  - **Size**: Medium-sized with a wingspan of about 1.2 meters (4 feet).
- Historically, the northern bald ibis migrated across North Africa, the Arabian Peninsula, and parts of Europe, including southern Germany's Bavaria.
- The birds lack knowledge of their migration routes and require human guidance to learn them. Early reintroduction attempts failed as the birds flew in incorrect directions and died.

Extinction and Conservation Efforts:

- By the 17th century, hunting and habitat loss had led to the bird's near extinction in Europe. However, a few populations survived in other regions.
- However, conservation efforts have increased the population from zero to nearly 300, shifting their status from "critically endangered" to **"endangered**."

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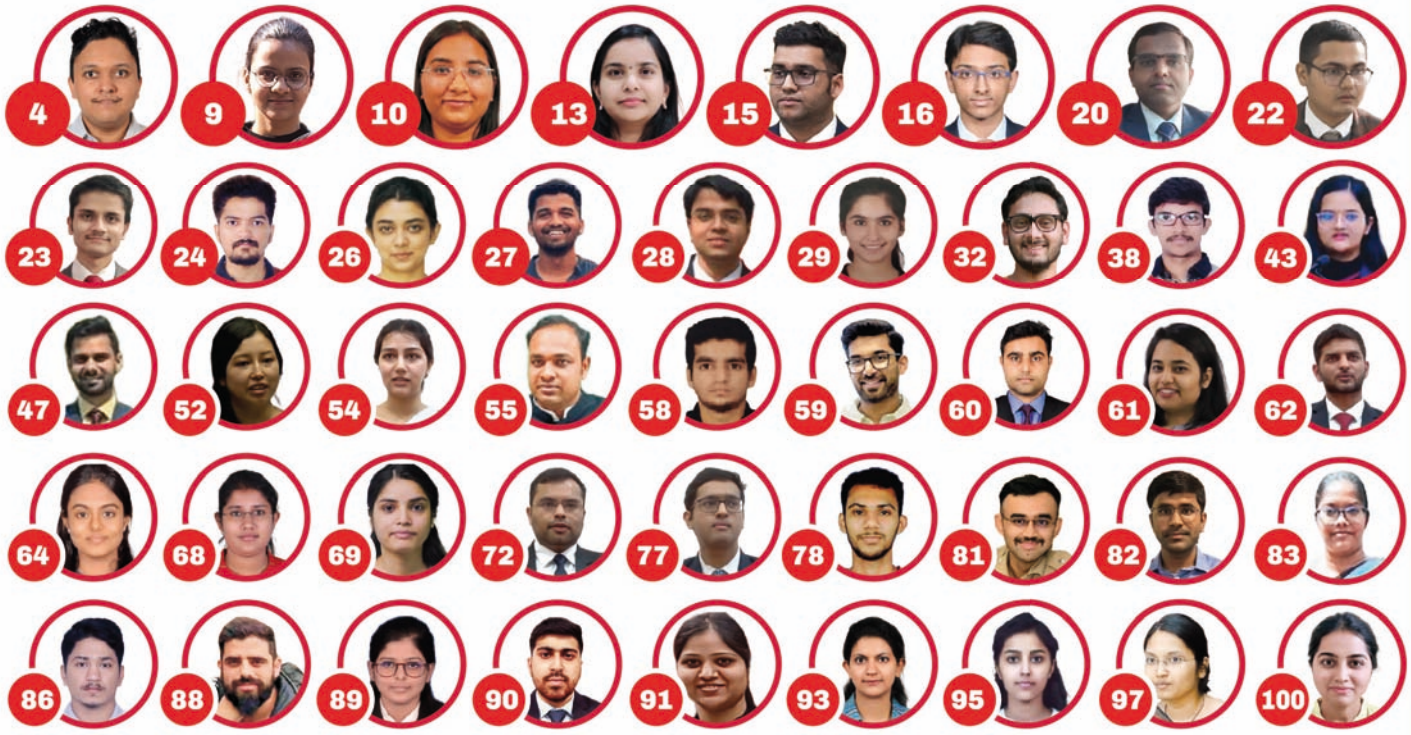

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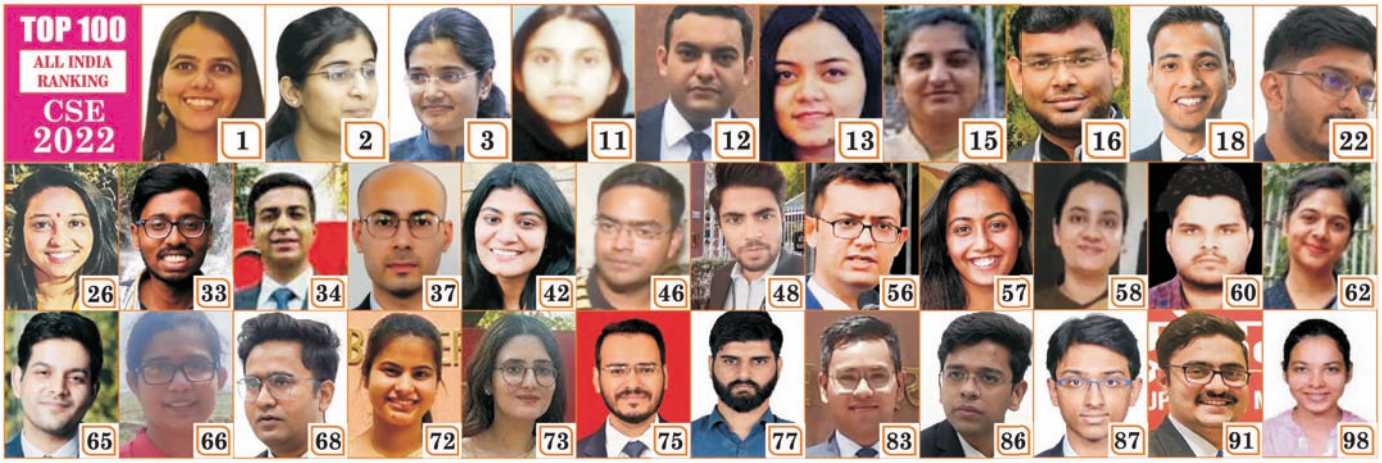

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