

AUGUST CURRENT AFFAIRS

AXIOM 4 MISSION

Why in News?

Group Captain Shubhanshu Shukla has been selected as the prime mission pilot for the Axiom-4 mission, while Group Captain Prasanth Balakrishnan Nair has been selected as the back-up mission pilot.

About Axiom-4 mission:

- Axiom Mission 4 (Ax-4) is a **private spaceflight** organized by Axiom Space to the **International Space Station (ISS)**.
- The mission is **in collaboration with NASA** and is scheduled for launch in 2024.
- It **aims to transport a crew to the International Space Station (ISS)** for a **14-day mission**.
- This will be **Axiom Space's fourth mission to the ISS**, following their previous missions (Ax-1, Ax-2, and Ax-3).
- The mission will launch from the Kennedy Space Center in Florida using SpaceX's Falcon 9 rocket.
- The spacecraft for this mission is a SpaceX Crew Dragon, known for its advanced technology and safety features.
- This mission is organized in collaboration with NASA, highlighting a strong partnership between private space companies and government space agencies to further space exploration and research.



WAYANDA LANDSLIDES

Recently, severe **landslides struck Meppadi in Kerala's Wayanad district.**

About:

- The Landslide Atlas of India, prepared by the National Remote Sensing Centre (NRSC) of ISRO, details landslide occurrences and damage assessments in landslide-prone areas of India.
- According to ISRO's Landslide Atlas of India, **India is among the top four countries with highest landslide risk.**
- It has been estimated that loss of life per 100 km² is greater than one.
- It covers 147 districts in 17 states and two Union Territories in the Himalayas and Western Ghats.
- **India accounts for about 8 per cent of global fatalities due to landslides.**
- **13.17 per cent of the country is susceptible to landslides**, and 4.75 per cent is 'very highly susceptible'.
- **Kerala is the most vulnerable state** with over 14 per cent of its land mass in the 'very high susceptibility' category.
- The geospatial landslide inventory database includes approximately 80,000 landslides mapped from 1998 to 2022, categorized into **three types: seasonal, event-based, and route-wise inventories.**
 - The seasonal inventory documents landslides from the 2014 and 2017 rainy seasons.
 - The event-based inventory includes major events like the Kedarnath and Kerala disasters and the Sikkim earthquake.
 - The route-wise inventory covers landslides along significant tourist and pilgrimage routes.
- The mapping utilized **high to very high-resolution satellite data**, including IRS-1D, Resourcesat, Cartosat, Sentinel, Pleiades, and WorldView, as well as aerial images, with some landslides validated in the field.



- The data was used to rank districts based on their exposure to landslides, considering key socio-economic parameters.

FACTORS BEHIND WAYANAD SLIDES:

- Wayanad witnessed 140mm of rainfall, with some areas reporting more than 300 mm of rainfall. This **rainfall was about five times more than India Meteorological Department's (IMD) projections.**
- **Overflow in the Chaliyar river swept more sediment downstream.** This was due to the fact that heavy rains in 2020 had caused the Chaliyar to strip swaths of its upstream areas of plant cover. This left more rocks and humus vulnerable to being displaced.
- **The heavy rainfall has saturated with moisture.** The water reaches the rocks by flowing between the soil and the rock layers. **This weakens the force that binds the soil to the rocks and triggers the movement.**
- Quarrying, linear infrastructure development, and construction activities have compromised ecosystems' ability to cope with changing natural conditions.
- Monocropping, has resulted in the cut down of large, native trees, which serve to hold the topsoil to the bedrock.
- The replacement of these native trees with big plantation crops, such as tea and coffee having shallow roots, has increased the vulnerability.
- According to a study by the International Journal of Environment and Public Health, **Wayanad has lost 60 per cent of its forests between 1950 and 2018.** The erosion of the green cover has made Kerala susceptible to landslides.
- **Climate Change has been leading to gradual warming of the Arabian Sea** leading to the formation of a deep cloud system over parts of the Western Ghats.

ABOUT LANDSLIDES:

- A landslide is **the downward movement of rock, soil, and debris on a slope**, ranging from small shifts to large, destructive events.
- It can **occur on natural or man-made slopes** and is triggered by factors like heavy



rainfall, earthquakes, volcanic activity, human activities, and changes in groundwater levels.

Types of Landslides:

- **Slides:** Movement along a rupture surface, including rotational and translational slides.
- **Flows:** Soil or rock mixed with water moving like a fluid, such as earth flows, debris flows, mudflows, and creep.
- **Spreads:** Lateral extension and cracking of the mass, often due to liquefaction.
- **Topples:** Forward rotation and free-fall from a vertical or near-vertical slope.
- **Falls:** Detachment from a steep slope or cliff, descending by free-fall, bouncing, or rolling.

MAJOR LANDSLIDES IN INDIA:

- Kedarnath, Uttarakhand in 2013
- Pettimudi, Kerala in 2020
- Mumbai, Maharashtra in 2021
- Tupal, Manipur in 2022
- Raigarh, Maharashtra in 2023
- Aizawl, Mizoram in 2024
- Shirur, Karnataka in 2024

Causes of Landslides

Natural Causes

Heavy Rainfall : Heavy rainfall is one of the most common triggers of landslides. It increases pore water pressure as well as the weight of soil by making it saturated.

Erosion : Clay and vegetation present within the soil or rock act as cohesive elements and help bind particles together. By removing these cohesive elements, erosion makes an area more prone to landslides.

Earthquakes : Intense ground shaking due to earthquakes causes instability in rocks and soils, thus triggering landslides.

Volcanic Eruptions : Ash and debris deposited by volcanic eruptions overload slopes while the accompanied seismic activity causes instability.

Anthropogenic Causes

- **Deforestation** : By holding soils as well as obstructing the flow of falling debris, vegetation cover plays an important role in preventing landslides in any area. Deforestation takes away this preventive cover and increases vulnerability to landslides.
- **Encroachment in Vulnerable Terrains** : Of late, humans have been encroaching in landslide-prone areas such as hilly terrains. This has led to increased construction activities in these areas and increased chances of landslides.
- **Uncontrolled Excavation** : Unauthorized or poorly planned excavation activities, such as mining, quarrying, etc destabilize slopes and increase the chances of landslides.
- **Climate Change** : Climate change caused by various anthropogenic activities has led to abrupt alterations in precipitation patterns and increased frequency of extreme weather events. All these, in turn, have increased the frequency as well as the severity of landslides.

CHALLENGES ASSOCIATED WITH LANDSLIDES:

- **Loss of Life and Injury:** Landslides can result in fatalities and serious injuries to individuals in affected areas. The sudden nature of landslides often leaves little time for evacuation.

- **Displacement of Communities:** Landslides can lead to the displacement of populations, forcing communities to relocate. This can disrupt social structures and lead to long-term socio-economic challenges.
- **Damage to Infrastructure:** Critical infrastructure such as roads, bridges, and buildings can be severely damaged or destroyed, leading to significant economic losses and hampering rescue and relief operations.
- **Economic Impact:** The cost of repairing damaged infrastructure and providing humanitarian aid can be substantial. Additionally, landslides can disrupt local economies, particularly in areas reliant on agriculture and tourism.
- **Environmental Degradation:** Landslides can lead to soil erosion, loss of vegetation, and habitat destruction, adversely affecting biodiversity and ecosystem services.

GOVERNMENT INITIATIVES REGARDING LANDSLIDES:

- The **Disaster Management Act, of 2005** provides a comprehensive legal and institutional framework for the management of various disasters including landslides.
- **National Landslide Risk Management Strategy (2019):** It is a comprehensive strategy addressing hazard mapping, monitoring, early warning systems, awareness programs, capacity building, policies, and stabilisation measures.
- **Landslide Risk Mitigation Scheme (LRMS):** This scheme under preparation, aims to provide financial support for tailored landslide mitigation projects in vulnerable states, focusing on disaster prevention, mitigation strategies, and research and development for monitoring critical landslides.
- This initiative will contribute to the establishment of an Early Warning System (EWS) and enhance capacity-building efforts.
- **Flood Risk Mitigation Scheme (FRMS):** A forthcoming scheme for developing flood shelters, river basin-specific early warning systems, and digital elevation maps for flood preparedness and evacuation.
- **National Guidelines on Landslides and Snow Avalanches:** Guidelines by National Disaster Management Authority (NDMA) covering hazard assessment, risk management, structural and non-structural measures, institutional mechanisms, financial arrangements, and community participation.

- The **National Disaster Management Authority (NDMA)** has issued Guidelines on Landslide Hazard Management (2009) that outline the steps that should be taken to reduce the risk of landslides.
- The **National Institute of Disaster Management (NIDM)** has been providing capacity building and other support to various national and state-level disaster management authorities.
- **Landslide Atlas of India:** It is a detailed resource that documents landslide events in the country's vulnerable areas and includes damage assessments for certain sites. Developed by the National Remote Sensing Centre (NRSC) under Indian Space Research Organisation (ISRO), it offers important information and insights related to landslides in India.
- The central government has planned to introduce the **Disaster Management (Amendment) Bill, 2024 in the 18th Lok Sabha.**
- The **Bill seeks to create a disaster database at national and State level** and makes provision for the constitution of Urban Disaster Management Authority for State capitals and large cities having Municipal Corporations.
- The database will include disaster assessment, fund allocation details, expenditure, preparedness and mitigation plan, risk register according to type and severity of risk and such other relevant matters.

MEASURES TAKEN TO PREVENT LANDSLIDES HAZARDS:

- **Building Resilience:** This involves setting up a network of sensors for real-time monitoring and data collection.
- **Assessment of rainfall thresholds for soil saturation** in different areas.
- **Mapping out the routes that landslides are likely to take** after being triggered.
- Creating route maps to mark areas that should be out of bounds for settlements or activities.
- **Harnessing Technology for Vigilant Monitoring:** Utilise web-based sensors like rain gauges, piezometers, inclinometers, extensometers, InSAR (Interferometric Synthetic Aperture Radar), and total stations to monitor vulnerable areas, focusing on densely populated and urbanised zones.

- **Integrated EWS:** Develop a comprehensive EWS using Artificial Intelligence (AI) and Machine Learning (ML) algorithms to predict and alert communities about impending hazards, providing valuable time for precautionary measures.
- Sustainable Socio-Economic Progress: Recognise the region's valuable natural resources, such as glaciers, springs, minerals, energy sources, and medicinal plants, for sustainable socio-economic development. Balance resource utilisation with ecological conservation for long-term viability.
- **Environmental Considerations:** There is a need to safeguard ecosystems through sustainable practices and responsible resource use.
- Implement **thoughtful urban planning in mountainous areas**, restricting extensive construction and managing drainage and slope excavation scientifically.
- Use retaining walls to support soil and restore ecological balance through reforestation and soil conservation efforts.
- Building Codes and Evaluation: There is a need to map towns and assess load-bearing capacities to develop **robust building codes for safe construction in hazard-prone areas.**
- Enforce strict land use restrictions in these areas to prevent activities that could destabilise the soil.

STURGEON

Why in News?

A WWF report reveals that poaching and trafficking are critically endangering four sturgeon species in the Lower Danube, a key stronghold in south-eastern Europe.

About Sturgeon:

- Sturgeons are a group of ancient fish originating from the late Triassic period more than 200 million years ago.
- These species have been around since the age of the dinosaurs.
- They usually live in freshwater,



coastal waters and inner seas.

- They are **flagship species in their rivers and adjacent seas.**
- These fishes are **found in the northern hemisphere and in large river systems,** lakes, coastal waters and inner seas throughout Azerbaijan, Bulgaria, other European countries and North America.
- They **mostly feed on benthic organisms found on the bottom of water bodies,** like molluscs, invertebrates and small fishes.
- Between 2016 and 2023, **WWF documented 395 cases of illegal sturgeon fishing** and trade in Bulgaria, Romania, and Ukraine, involving 1,031 sturgeon individuals.
- Of the 1,031 sturgeons affected, **Romania reported the highest number (610),** followed by Ukraine (418) and Bulgaria (3).
- **Sturgeons are heavily exploited for their roe (caviar) and meat,** leading to a global decline in populations.
- Of the six sturgeon species formerly native to the Danube River, two are now considered locally extinct.
- The WWF report emphasizes the need for consistent and comprehensive enforcement data from all affected countries to better understand and address sturgeon trafficking trends and illegal activities more effectively.
- The Lower Danube Basin should be prioritized for conservation efforts to protect the remaining sturgeon populations.

WAQF

Why in News?

- The **Waqf (Amendment) Bill 2024** was **tabled in the Lok Sabha recently** by the Union Minister of Minority Affairs. (Kiren Rijju)
- The Bill, proposes **major changes to the Waqf Act 1995,** by introducing sweeping changes in the governance and regulation of Waqfs in India.
- The **Bill has been met with strong**



criticism from the opposition parties, who have held it as unconstitutional, divisive and anti-minority.

- The **Bill has been referred to a Joint Committee of Parliament.**
- The bill is known as the amendment bill as it seeks to modify the existing act.
- This bill is **designed to regulate the management of Waqf properties more effectively.**
- The primary focus of the Waqf Board Amendment Bill 2024 is to ensure **greater accountability, transparency, and inclusivity within the Waqf system.**

About WAQF:

- A waqf, also called a habs, or mortmain property, is an **inalienable charitable endowment under Islamic law.**
- It typically involves donating a building, plot of land or other assets for Muslim religious or charitable purposes**with no intention of reclaiming the assets.**
- It is a personal property given by Muslims for a specific purpose– religious, charitable, or for private purposes.
- The **ownership of the property is implied to be with God.** However, the beneficiaries of the property can be different.
- A **charitable trust may hold the donated assets.**
- The person making such dedication is known as a **waqif ('donor')** who uses a **mutawalli ('trustee')** to manage the property in exchange for a share of the revenues it generates.

FORMATION OF WAQF

- The Waqf can be formed through a **deed, or Instrument, or even orally.**
- A property can be deemed to be Waqf **if it has been used for religious or charitable purposes for a long period of time.**
- Once a property is declared as Waqf, **its character changes forever, and cannot be reversed.**
- The income generated from these properties is typically used for maintaining mosques, funding educational institutions, or supporting the poor.

- Notably, **once a property is designated as waqf, it cannot be inherited, sold, or transferred.**
- Non-Muslims can also establish a waqf, provided the purpose aligns with Islamic principles.

About WAQF BOARD ACT:

- The Waqf Board Act was **first enacted in 1954 and was later replaced by the Waqf Act of 1995.**
- The Waqf Board Act is a **legislative framework that regulates Waqf properties in India.**
- The Waqf Boards Act **provides provisions to manage and designate properties as Waqf and establish a Central Waqf Council for oversight.**
- The act aims to protect the interests of the Muslim community by ensuring that Waqf properties are used for charitable and religious purposes.
- **Section 40 of the Waqf Act, 1995, gives Waqf boards the power to decide if a property is Waqf property.**
- There are complaints this power has been misused by vested interests for property grab with the help of the corrupt Waqf bureaucracy.
- However, over the years, there have been numerous issues related to the lack of transparency as seen in the 2022 Tamil Nadu Waqf Board case.
- Recently, the **Madhya Pradesh High Court refused claims by the Waqf Board on three ancient ASI-protected monuments in Burhanpur as Waqf property**
- A large number of properties in India have come under the Waqf claim over past decades, some of which that made it to the headlines were **Mukesh Ambani's home, Antilia, in Mumbai, two islands in Bet Dwarka in Gujarat, properties of the ISB, Microsoft, Wipro and Lanco in Hyderabad, Kolkata's Tollygunge Club, Royal Calcutta Golf Club, ITC Windsor Hotel in Bengaluru and a whole village and a temple said to be 1,500 years old in Tamil Nadu.**
- The Waqf Board Amendment Bill 2024 seeks to introduce necessary changes to enhance its effectiveness while making the composition of boards more inclusive.

CENTRAL WAQF COUNCIL

- Central Waqf Council is an **Indian statutory body** operated by the Government of India under the Waqf Act, a subsection of the Waqf Act, 1995.
- Presently **there are 32 Waqf Boards across the country** in twenty-eight states and Union territories.
- States such as Goa, Arunachal Pradesh, Mizoram, Nagaland and Sikkim and the Union Territory Daman and Diu have **no Waqf Board at present**.
- The **Waqf Act 1995 is not applicable to Jammu and Kashmir**.

KEY AMMENDMENTS PROPOSED BY THE BILL:

- Formation of waqf: Only individuals who have practiced Islam for at least five years and own the property can declare a waqf. It eliminates waqf by the user and ensures waqf-alal-aulad does not deny inheritance rights to any heirs, including women.
- Government property as waqf: Government property identified as waqf will no longer be treated as waqf. The **local Collector will resolve ownership issues**, report to the state government, and update revenue records if it's confirmed as government property.
- Verification of Properties: **The bill empowers collectors to do the survey of Waqf as per state revenue law**. It also removes the power of the Waqf Board to determine if a property is a waqf.
- Inclusion of Women and Non-Muslims: The proposed amendments advocate the **inclusion of two non-Muslims into the Central Waqf Council**. Bill proposes nominated members in Waqf boards and mandates one member must be from Bohra and Agakhani communities and two must be women.
- Appeals on Tribunal orders: The **Bill removes the rule that Tribunal decisions are final and non-appealable**. Tribunal orders can now be appealed to the High Court within 90 days, either on the High Court's own initiative or through an application by the Board or an aggrieved party.

ANALOGUE RESEARCH STATION

Why in News?

Scientists have pitched **Ladakh as ideal site for India's 1st analogue research station.**

About Analogue Research Station:

- An analogue research station is a **place that has physical similarities to a planet or planetary body or extreme space environments.**
- Presently, there are 33 analogue research stations with **none being in Indian sub-continent.**
- These include **BIOS-3 (Russia), HERA and Biosphere 2 (USA), Mars One (Netherlands) and D-MARS (Israel).**
- This proposal aligns with ISRO's ambitious space program goals, such as the Gaganyaan mission and plans for lunar and interplanetary exploration.



LADAKH – IDEAL AS ANALOGUE RESEARCH STATION

- **Indian Astronomical Observatory is also located in Hanle, Ladakh** with an optical infrared telescope.
- Ladakh has been host to various space programmes such as NASA's Spaceward Bound India Programme 2016, Field validations of ExoMars 2020 HABIT Instrument etc.
- Besides there have been geomorphological, **geochemical and exobiological similarities between Ladakh and early Martian surface** such as
 - Dry, cold, arid desert, with abundant rocky ground.
 - Vast flat land devoid of vegetation, dunes, and drainage networks.



- Segregated ground ice and permafrost, and rock glaciers.
- Volcanic rocks, saline lakes, and hydrothermal systems.
- Permafrost (evidence of water in past), increased UV and cosmic radiation flux, reduced atmospheric pressure, hot springs (rich in boron) and sufficient isolation.

MIOMBO FOREST

Why in News?

The **United Nations Food and Agriculture Organization (FAO)** and the **Italian Agency for Development Cooperation (AICS)** have launched two significant projects to protect the Miombo forest and enhance food security in Mozambique and Zimbabwe.

About projects:

- **Miombo Forest Project:** This project focuses on sustainable management, biodiversity conservation, and community-based practices in the Miombo forest, benefiting 5,000 families.
- **Zim-Moza Agriculture Value Chain & Trade Development Project (Zim-Moza ATDP):** This project aims to improve agricultural value chains and trade between Mozambique and Zimbabwe.
- Both projects align with Sustainable Development Goals (SDGs) and aim to promote resilience against environmental and economic challenges.

About Miombo:

- The Miombo is a **biome that includes tropical and subtropical grasslands, bushlands and savannahs.**
- It is a **vast African dryland forest ecosystem** covering close to 2.7 million square kilometres across southern Africa, including Angola, the Democratic Republic of the Congo, Malawi, Mozambique, Tanzania,



Zambia and Zimbabwe.

- The woodlands are **characterized by the dominance of Brachystegia species**, either alone or in association with Julbernardia and Isoberlinia species.
- It also **encompasses four bio-regions** and is responsible for maintaining the Greater Zambezi, one of the most important transnational river basins.
- It is **facilitating trade in the border region between Mozambique and Zimbabwe.**
- This forest is vital for millions of people in rural areas, **providing essential resources such as firewood, food, and water.**
- Found in Angola, the Democratic Republic of Congo, Malawi, Mozambique, Tanzania, Zambia, and Zimbabwe.
- It is **home to various mammal species**, such as African elephants, lions, leopards, zebras, giraffes, and several species of antelope.
- It also hosts **numerous bird species, including the Miombo rock thrush** and the African pitta.
- The **climate in the Miombo region is typically tropical**, with a distinct dry season that can last for several months.
- **Rainfall is seasonal**, occurring mainly during the wet season from November to April.
- **Temperatures vary widely** between the hot, wet season and the cooler, dry season.

VAMPIRE STAR

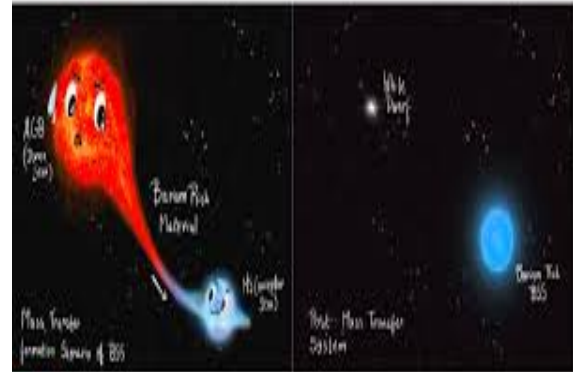
Why in News?

Researchers from the Indian Institute of Astrophysics (IIA) have **discovered a “vampire star” in the star cluster M67 in the constellation Cancer.**

The study provides rare insights into the binary star evolution process and provides an important missing link in the rejuvenation in these stars.

About Vampire Stars:

- Vampire stars, known to astronomers as **blue straggler stars (BSS)**, are identified easily in star clusters.
- These stars **defy simple models of stellar evolution** and show many characteristics of younger stars.
- The star, named **WOCS 9005**, rejuvenates by siphoning material from a companion star.
- This anomalous youth is explained theoretically as due to rejuvenation by eating up material from a binary stellar companion.
- Star clusters are useful test-beds to test this theory as they host a large number of binary stars, some of which can lead to the formation of vampire stars.
- Once rejuvenated, these stars follow a different path of evolution when compared to Sun-like single stars.
- So far, detection of sucked up material along with the sighting of their remnant binary companion was elusive.
- This **detection was made possible using data from the UltraViolet Imaging Telescope on AstroSat**, India's first space observatory.
- Spectroscopic analysis revealed the **star's atmosphere is rich in heavy elements like barium, yttrium, and lanthanum**, indicating it has been polluted by material from its binary companion, which has since become a white dwarf.
- This discovery provides significant insight into the complex mass transfer process in binary star systems.



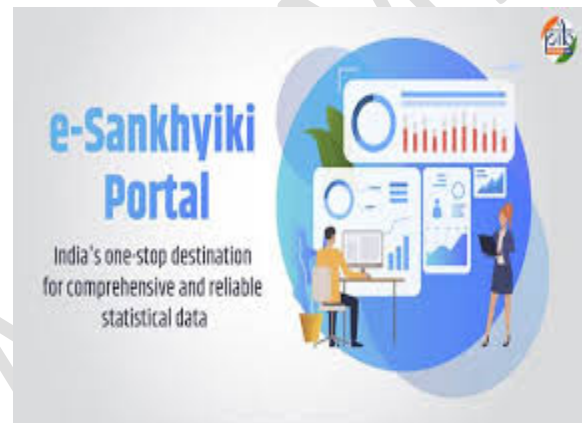
e-SANKHYIKI PORTAL

Why in News?

Launched on National Statistics Day 2024, the **e-Sankhyiki portal** is designed to create a **comprehensive system for managing and sharing data**, facilitating the easy dissemination of official statistics across the country.

About e-Sankhyiki Portal:

- The portal is **accessible at - <https://esankhyiki.mospi.gov.in>**.
- It aims to provide timely and valuable data inputs for policymakers, researchers, and the general public.
- It **provides time series data for key macroeconomic indicators**, with features for filtering and visualising the data.
- Users can also download customised datasets and visualisations and access them through APIs, enhancing the data's reusability.
- The **e-Sankhyiki Portal comprises two modules** designed to facilitate easy access and re-use of data.



1.Data Catalogue Module

- This module catalogues the Ministry's major data assets, simplifying users' access.
- It enables searching within datasets and tables, downloading relevant data, and enhancing its value and reusability
- The **Data Catalogue includes seven core data products:**
 - Consumer Price Index,
 - Index of Industrial Production,
 - National Accounts Statistics,
 - Periodic Labour Force Survey,
 - Annual Survey of Industries,
 - Household Consumption Expenditure Survey, and

- Multiple Indicator Survey.
- It currently hosts over 2,300 datasets, each accompanied by specific metadata and visualisations for user convenience.

2.Macro Indicators Module

- This module provides time series data on key macro indicators, featuring tools for filtering and visualising data.
- It allows users to download custom datasets, generate visualisations, and share data through
- APIs, promoting greater reusability. The initial phase of this module covering data from the past decade includes four major MoSPI products:
 - National Accounts Statistics,
 - Consumer Price Index,
 - Index of Industrial Production, and
 - Annual Survey of Industries

Users can filter, visualize, and download customized datasets, making the data highly reusable.

The **government has implemented robust data security measures**, including cloud storage, security audits, and SSL technology, to ensure safe data dissemination.

The **portal supports data-driven decision-making, fostering effective policies and socio-economic development in India.**

SAINT MARTIN'S ISLAND

Why in News?

Recently, SajeebWazed, son of former Bangladesh PM Sheikh Hasina, has dismissed the report claiming that Sheikh Hasina could have stayed in power by handing over Bangladesh's St. Martin's Island to America.

About:

- St Martin's island is **located in the northeastern region of the Bay of Bengal**, close to the border between Bangladesh and Myanmar.
- It is nine kilometres away from the southern tip of Bangladesh's Cox's Bazar-Teknaf peninsula.
- It is **7.3 km long and flat**. It has an elevation of 3.6 meters above sea level.
- It is **Bangladesh's only coral island**, surrounded by reefs located 10-15 km to the west-northwest.



History:

- It was **originally part of the Teknaf peninsula**.
- However, the island was submerged into the sea around 5,000 years ago.
- The **southern part resurfaced about 450 years ago**, with the northern parts rising above sea level in the following century.
- The island has a permanent population of approximately 10,000 people.
- In the 18th Century, **Arab merchants were among the first to settle on the island**.
- They initially named it "Jazira" (meaning "the island") and later changed it to "NarikelJinjira" or "Coconut Island."
- The **island was annexed by British India** during a land survey in 1900.
- During this time, **the island became known as St Martin's Island**, reportedly named **after the then Deputy Commissioner of Chittagong, Martin**.
- After the partition of British India in 1947, it became part of Pakistan and subsequently, a part of independent Bangladesh after the 1971 Liberation War.

Significance:

- St Martin's Island is a **popular tourist spot**, with an average of 10,000 tourists visiting and staying on the island daily.

- The island's **proximity to both Bangladesh and Myanmar** makes it strategically important in regional geopolitics.
- The island has a **mixed cultural heritage**, with influences from both Bengali and Rakhine communities, as well as the early Arab settlers.
- St Martin's Island holds **significant environmental importance** as it is both a coral island and a breeding ground for sea turtles.

NANDINI SAHKAR YOJANA

Why in News?

The **National Cooperative Development Corporation (NCDC)** has recently launched the Nandini Sahakar Scheme to support women entrepreneurs.

About Nandini Sahkar Yojana:

- The Nandini Sahkar Yojana is a **women-focused initiative by the National Cooperative Development Corporation (NCDC)**.
- It is a women-focused **framework for financial assistance, project formulation, hand-holding, and capacity development**.
- Objectives:
 - Align with the principles of Atmanirbhar Bharat as outlined by the Hon'ble Prime Minister.
 - Improve the socio-economic status of women.
 - Support entrepreneurial dynamism through women cooperatives.
- It will converge critical inputs of women's enterprise, business plan formulation, capacity development, credit and subsidy and/ or interest subvention of other schemes.
- Features:



Nandini Sahkar
Empowering Women through Cooperatives

Objective:

- ▶ Enhance the socio-economic status of women.
- ▶ Support entrepreneurial dynamism via women cooperatives.

Eligibility:

- ▶ Cooperative societies with at least 50% women as primary members.
- ▶ Minimum of three months in operation.

Benefits:

- ▶ Credit linkage for infrastructure term loan and working capital.
- ▶ Subsidy or interest subvention from other government schemes/agencies.

Incentives:

- ▶ NCDC provides a 2% interest subvention on its term loan interest rate for new and innovative activities.
- ▶ 1% interest subvention on its term loan interest rate for all other activities, lowering borrowing costs.

- **Project Formulation:** It assists women cooperatives in project formulation, ensuring their business plans are well-structured.
- **Financial Assistance:** The scheme provides financial assistance to women cooperatives for business model-based activities. There is no minimum or maximum limit on financial aid for projects.
 - NCDC offers a 2% interest subvention on its rate of interest on term loans for new and innovative activities.
 - A 1% interest subvention is provided on term loans for all other activities, resulting in lower borrowing costs for women cooperatives.
- **Capacity Development:** The scheme focuses on building the capacity of women cooperatives to effectively manage their enterprises.
- **Convergence:** It brings together critical inputs such as credit, subsidies, and interest subvention from other schemes to support women's enterprise.

NAGALAND DRTPS INITIATIVE

Why in News?

Nagaland became the first state in India to adopt a Disaster Risk Transfer Parametric Insurance Solution (DRTPS) by signing an MoU with SBI General Insurance.

About:

- The insurance aims to **protect critical infrastructure and reduce economic losses** from extreme weather events over a **three-year period (2024-2027)**.
- Parametric insurance provides a **predefined payout** when specific events, like natural disasters, occur, ensuring quick financial support and enhancing the state's resilience.



- This means that **after a disaster, financial support is given quickly without the need for detailed damage assessments.**
- The main aim of the agreement is to protect Nagaland's important infrastructure and reduce economic losses caused by natural calamities.
- The scheme will **cover the whole state**, helping with proactive disaster management. The Nagaland State Disaster Management Authority (NSDMA) and SBI General Insurance are working together on this, showing a joint effort to strengthen the state's ability to handle disasters.
- The significance of this initiative lies in its ability to enhance Nagaland's financial resilience and safeguard livelihoods against the increasing frequency of extreme weather events.
- Providing quick payouts after disasters helps ensure rapid recovery and reduces economic losses, setting a precedent for disaster risk management in India.

UN CONVENTION AGAINST CYBERCRIME

Why in News?

- The **UN member states have adopted the Convention Against Cybercrime** after nearly three years of negotiations.
- The finalisation of this Convention is a **landmark step as the first multilateral anti-crime treaty in over 20 years** and the first UN Convention against Cybercrime at a time when threats in cyberspace are growing rapidly.
- The **treaty would enter into force once 40 member nations will ratify it.**
- Presently, the Budapest Convention (2001) serves as the guideline or reference for cybercrime legislation worldwide.



Key Provisions of this Convention:

- This convention **calls states to put in place legislation** that will make it illegal to breach an information and communications system people don't have access to.

- It calls states to make it illegal to produce, offer, sell, distribute, etc. child sexual content online to protect children from sexual abuse.
- Under this convention states shall ensure that implementation of their obligations under this treaty is consistent with their obligations under international human rights law.
- It gives states permission to “collect or record” relevant data for a conviction and “compel” service providers to hand over incriminating information or documents.

Issues with the UN Cybercrime Treaty:

- **Human Rights Concerns:** Criticized for potentially enabling authoritarian regimes to suppress dissent and violate freedoms.
- **Surveillance Risks:** Lacks oversight on data access and sharing, raising global surveillance concerns.
- **Implementation Challenges:** Poor drafting may endanger security researchers and journalists, and allow secretive IT interventions.
- **Lack of Oversight:** No measures for judicial oversight or proper handling of electronic evidence.

India’s Position on the Convention:

- India opposed a clause promoting bilateral or multilateral data transfer arrangements, prioritizing data sovereignty.
- India supports transferring personal data with prior written authorization and safeguards.
- India supports designating 24/7 points of contact for cybercrime investigations and cooperation.

About Cybercrime:

- Cybercrime **encompasses a wide range of criminal activities that are carried out using digital devices and/or networks.**

- These crimes involve the **use of technology to commit fraud**, identity theft, data breaches, computer viruses, scams, and expanded upon in other malicious acts.
- Cybercriminals **exploit vulnerabilities in computer systems and networks to gain unauthorized access**, steal sensitive information, disrupt services, and cause financial or reputational harm to individuals, organizations, and governments.
- They include :
 - Hacking: Unauthorized access to computer systems or networks.
 - Phishing: Fraudulent attempts to obtain sensitive information by pretending to be a trustworthy entity.
 - Online Fraud: Scams or deceitful schemes to steal money or personal information.
 - Malware: Software designed to harm or exploit computers and networks.
 - Cyberstalking: Harassment or stalking conducted online and various other types.
- **Cybercrimes fall under State subjects as per the Seventh Schedule of the Constitution of India.**



GRAIN ATM

Why in News?

- The WFP and the **Government of Odisha launched India's first 24/7 'Grain ATM,' called 'Annapurti,'** in Bhubaneswar.
- The new Grain ATM, part of the Annapurti initiative, **will offer 24/7 access to foodgrains under the National Food Security Act,** aiming to enhance nutritional security across the state.

About Grain ATM:

- Grain ATM is known as **Annapurta Grain ATM** which was designed and developed by the World Food Programme India.
- This initiative allows **Public Distribution System beneficiaries** to access food grains anytime under the National Food Security Act.
- This partnership aims to **enhance food security across Odisha**, providing consistent access to essential grains for all beneficiaries.
- The **machine, which can dispense up to 50 kilograms of grain in five minutes after biometric authentication**, reduces waiting times by 70% and can be powered by solar panels.
- The machine operates with an impressive error rate of just 0.01 per cent.
- It is an automated multi-commodity dispensing solution that provides fast, clean and precise access to commodities (**rice, wheat, grains**) to beneficiaries, post biometric authentication.
- Once biometric authentication is completed, it provides consistent access to the full food ration.
- The modular design allows **easy assembly based on available space.**
- Annapurta is energy efficient and can be connected to solar panels for automatic refilling.



OVERNIGHT INDEX SWAP

Why in News?

Recently, the Reserve Bank of India (RBI) has been reviewing the investment limit for foreign investors in the overnight index swap (OIS) market.

About Overnight Index Swap:

- An Overnight Index Swap (OIS) is a **financial derivative that allows two parties to exchange a fixed interest rate for a floating rate linked to an overnight index.**
- OIS contracts are used to manage interest rate exposure, ensure financial stability, and potentially profit from interest rate predictions.
- In this hedging agreement, **two parties agree to exchange predetermined cash flows for a certain time.**
- **Fixed-Rate Payer:** Pays a predetermined, constant interest rate throughout the swap's duration.
- **Floating-Rate Payer:** Pays a variable interest rate based on an overnight index, which fluctuates daily.
- Unlike conventional fixed-rate swaps, an overnight index swap involves the use of an overnight rate index, such as the federal funds rate or the London Interbank Offered Rate (LIBOR).
- The **terms of the contract can range from as short as one day to more extended periods beyond one year.**
- This derivative contract plays a crucial role in financial markets, providing a mechanism for parties to manage their exposure to short-term interest rates.
- It is **particularly relevant for institutions such as pension funds, hedge funds, and other financial institutions** looking to optimize their portfolios and navigate fluctuations in interest rates.
- **Financial institutions use OIS to protect against short-term interest rate fluctuations.**
- Traders may speculate on future interest rate movements to profit from the difference between fixed and floating rates.



TARANG SHAKTI

Why in News?

India hosted its **first-ever multinational air exercise**, “**Tarang Shakti**,” showcasing the capabilities of indigenously manufactured aircraft, including the Sarang helicopters and LCATEjas.

ABOUT:

- Indian Air Force (IAF) decided to make the **multi-national air exercise Tarang Shakti** a biennial event, aiming to enhance international cooperation despite a tense Indo-Pacific climate.
- The IAF announced that the multi-national air exercise **Tarang Shakti will be held every two years**, with a focus on expanding participation.
- The **first phase of Tarang Shakti, running from August 6 to 14**, features the German, French, British, and Spanish air forces.
- The **second phase, starting on 29th August in Jodhpur**, will include the US Air Force and Australian Air Force among others.
- India has never hosted a major multinational air exercise comparable to the US's Red Flag or Australia's Pitch Black before this event.
- Out of 51 invited countries, 29 responded positively, with 11 bringing aircraft and 18 participating as observers.
- The **exercise is aimed at improving interoperability through shared communication protocols and tactics**, rather than confronting any specific nation.
- International participants, including the chiefs of the French, German, and Spanish air forces, praised India's indigenous LCA Tejas fighter jet, highlighting its performance during the exercise.



LATERAL ENTRY IN UPSC

Why in News?

On August 18, 2024, the **Union Public Service Commission (UPSC)** issued an **advertisement to recruit for multiple roles in certain Central Ministries through lateral entry**, either on a contract basis or through deputation. The advertisement is for 45 posts across 24 ministries, including 10 joint secretary and 35 director/deputy secretary posts.

About Lateral Entry in Civil Services:

- Lateral entry refers to the process of **appointing individuals from outside the government directly to mid-level and senior positions.**
- It aims to **bring in domain-specific expertise and fresh perspectives to enhance governance.**
- The lateral entry appointments are **done on a contractual basis.**
- The appointments are mainly made to the post of Joint Secretary, Deputy Secretary and Director positions in the Central secretariat.
- These 'lateral entrants' become a part of the central secretariat, which, till now, had only career bureaucrats from the All India Services/ Central Civil Services.
- These 'lateral entrants' are **appointed on contracts for 3 years, which can be extended to a maximum of 5 years.**
- Union Public Service Commission (UPSC) advertises vacancies for lateral entry.
- Applications are invited for lateral entry against these advertised posts.
- After a selection process instituted by the UPSC, individuals are recommended for appointment.
- The **concept of lateral entry was first introduced under the 2004-09** and was strongly endorsed by the Second Administrative Reforms Commission (ARC) established in 2005.



- It was **later recommended by NITI Aayog in 2017** to bring in expertise and fresh perspectives.
- In 2017, NITI Aayog, in its 3-year Action Agenda, and the Sectoral Group of Secretaries (SGoS) on Governance recommended the induction of personnel at middle and senior management levels in the central government.
- Individuals with domain expertise and a proven track record in relevant fields from the private sector, state governments, autonomous bodies, or public sector undertakings are eligible to apply for these positions.
- The selection criteria typically emphasise professional accomplishment and subject matter expertise.
- **Lateral entries have been excluded from the reservation system because of the "13-point roster" policy.**
- The "13-point roster" policy establishes a method for determining a candidate's placement on a list of job openings by calculating their group's quota percentage (SC, ST, OBC, and EWS) as a fraction of one hundred.
- Since each lateral entry position is considered a "Single Post," the reservation system does not apply, allowing these appointments to be made without following reservation guidelines.
- In the current round of recruitment, 45 openings have been advertised separately for each department. If considered as a single group, reservations would apply with specific allocations for SC, ST, OBC, and EWS candidates.
- However, since the vacancies are treated as individual posts, they bypass the reservation policy, effectively excluding reserved categories from these positions.
- Since the lateral recruitment process began in 2018, a total of 63 individuals have been appointed to various Ministries/Departments.
- As of August 2023, 57 of these lateral entrants currently hold positions in the central government.

REASONS FOR LATERAL ENTRY IN UPSC:

- Meeting the shortage of Personnel at the center (Baswan Committee)
- Need for specialist and fresh talent
- Strengthening of Participatory government
- Improvement of government efficiency

- Promotion of healthy competitive spirit
- Bridging public-private gap
- Incline with global best practices
- Transparency and Meritocracy
- Bringing a Change in Work Culture

CRITICISM OF LATERAL ENTRY SYSTEM:

- Ambiguity
- Reservation Concerns
- Lack of Institutional Memory
- Risk of Political Influence
- Short Tenure
- Impact on Permanent Officers' Morale
- Potential Dilution of Merit-Based Recruitment
- Experience Requirement for Senior Positions

WAY FORWARD:

- Ensure Transparency
- Training of Lateral Entrants
- Clear Expectations and Role Definition
- Maintenance of balance
- Implementation of reservation policy (13 point roster system)

FOUR-RINGED BUTTERFLY

Why in News?

A four-ringed butterfly, the great four-ring (*Ypthimacantliei*), has been **rediscovered in India after 61 years**, according to a study published by the Bombay Natural History Society (BNHS).

About Four-ringed butterfly:

- The great four-ring (*Ypthimacantliei*), part of the Satyrinae subfamily, was **last reported in 1957 from Margherita, Assam.**
- It was photographed during a survey to document the butterfly diversity in the **Miao range of the Namdapha National Park** during 2018-19.
- It was identified based on general morphological patterns and habitat.
- This butterfly features **dull brown-grey wings with distinctive yellow-ringed eye spots** and is **larger than other Ypthima species.**
- It is considered a rich genus of the family Nymphalidae which has some 6,000 species of butterflies.
- **Of the 35 Ypthima species recorded in India, 23 have been reported from the northeast.**
- The highest Ypthima diversity is in **China**, particularly in the Yunnan and Sichuan provinces.
- The diversity is also vast in Nepal, Bhutan, and Myanmar apart from the northeastern part of India.



About Namdapha National Park:

- Namdapha National Park is a 1,985 km² (766 sq mi) large **protected area in Arunachal Pradesh of Northeast India.**
- The park was **established in 1983.**
- With more than 1,000 floral and about 1,400 faunal species, it is a **biodiversity hotspot in the Eastern Himalayas.**



- The national park **harbours the northernmost lowland evergreen rainforests** in the world at 27°N latitude.
- It also **harbours extensive dipterocarp forests**, comprising the northwestern parts of the Mizoram-Manipur-Kachin rain forests ecoregion.
- It is the **fourth largest national park in India**.
- Namdapha was **originally declared a wildlife sanctuary in 1972, then a national park in 1983 and became a tiger reserve under Project Tiger scheme in the same year**.
- Its name was a combination of two Singpho words, namely "**nam**" which means **water, and "dapha" which means origin**; the river originates at the Dapha Bum glaciers.

3 NEW RAMSAR SITES

Why in News?

- India has recently designated **three new Ramsar sites**. This increases the total number of Ramsar sites in the country to 85.

About:

- The three new Ramsar sites are Nanjarayan Bird Sanctuary and Kazhuveli Bird Sanctuary in **Tamil Nadu** and Tawa Reservoir in **Madhya Pradesh**.
- Now, **Tamil Nadu harbours a maximum number of Ramsar Sites (18 sites) followed by Uttar Pradesh (10 sites)**.

About Nanjarayan Bird Sanctuary:

- Nanjarayan Tank Bird Sanctuary is a protected area and bird sanctuary located in Tiruppur district of the Indian state of **Tamil Nadu**.
- The sanctuary covers an area of



1.26 km² (0.49 sq mi) and was **notified in 2022**.

- It was **designated as a Ramsar site of International importance in 2024**.
- It is a **large shallow wetland**.
- The lake derived its name from King Nanjarayan who repaired and restored the lake during his reign.

About Kazhuveli Bird Sanctuary:

- Kaluveli Bird Sanctuary, sometimes spelled Kazhuveli Bird Sanctuary, is a **protected area and bird sanctuary** located in Villupuram district of the Indian state of **Tamil Nadu**.
- The sanctuary covers an area of 51.56 km² (19.91 sq mi) and was **notified in 2021**.
- It was designated as a Ramsar site of international importance in 2024.
- The sanctuary has the **brackish shallow Kaluveli lake**, which is connected to the Bay of Bengal by the brackish Uppukalli creek and the Edayanthittu Estuary.



About Tawa Reservoir:

- Tawa Reservoir is a **reservoir on the Tawa River in central India**.
- It is located in Itarsi of Narmadapuram District of **Madhya Pradesh** state, above Betul district.
- The reservoir was **formed by the construction of the Tawa Dam**, which began in 1958 and was completed in 1978.



- The dam provides for irrigation to several thousand hectares of farming land in Narmadapuram and Harda districts.
- It is also a big tourist attraction during the monsoon months.
- It was designated as a Ramsar site of national importance in 2024.
- **Tawa Reservoir forms the western boundary of Satpura National Park and Bori Wildlife Sanctuary.**

What are Wetlands?

- Wetlands, or simply a wetland, is a **distinct ecosystem that is flooded or saturated by water, either permanently** (for years or decades) or **seasonally** (for weeks or months).
- Wetlands are considered among the most biologically diverse of all ecosystems, serving as home to a wide range of plant and animal species.
- The water in wetlands is either freshwater, brackish or saltwater.
- Ramsar treaty broadly defines wetlands 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 metres.”**

Benefits of Wetlands:

- Wetlands play a critical role in maintaining many natural cycles and supporting a wide range of biodiversity.
- Wetlands are an important part of our natural environment. **They lessen flood impacts, protect coastlines, and promote community resilience to disasters.** They also absorb pollutants and improve water quality.
- They serve as a natural sponge against flooding and drought, protect our coastlines and help fight climate change.
- Wetlands are essential to human and plant life. More than one billion people rely on them for a living, and wetlands are home to 40 percent of the world's species.
- They provide food, raw materials, genetic resources for medicines, and hydropower.

- **Peatland stores 30% of land-based carbon.**
- They play a significant role in transportation, tourism, and people's cultural and spiritual well-being.

About Ramsar Convention:

- The Ramsar Convention on Wetlands of International Importance is an **international treaty for the conservation and sustainable use of Ramsar sites (wetlands).**
- It is also known as the Convention on **Wetlands.**
- It is named after the **city of Ramsar in Iran, where the convention was signed in 1971.**
- **In India, it came into force on 1st February 1982,** under which wetlands of international importance are declared as Ramsar sites.
- India joined it in 1982, initially designating the **Chilika Lake in Odisha and Keoladeo National Park in Rajasthan.**
- **Montreux Record** is a register of wetland sites of International Importance where changes in ecological character have occurred, are occurring, or are likely to occur as a result of technological developments, pollution or other human interference.
- Currently, two wetlands of India are in Montreux record: **Keoladeo National Park (Rajasthan) and Loktak Lake (Manipur).**

Ramsar site criteria

Criterion 1: "it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region."

Criterion 2: "it supports vulnerable, endangered, or critically endangered species or threatened ecological communities."

MEGAQUAKE

Why in News?

Japan issued its first-ever “megaquake advisory” following a 7.1-magnitude earthquake recently.

About:

- The warning said the likelihood of strong shaking and large tsunamis is higher than normal on the **Nankai Trough**.
- The **Nankai Trough** is an **underwater subduction zone** (nearly 900 km long) where the Eurasian Plate collides with the Philippine Sea Plate, pushing the latter under the former and into the Earth’s mantle. This accumulates tectonic stress which can cause a **megaquake — an earthquake with a magnitude larger than 8**.
- The Nankai Trough has historically produced large quakes every 100-150 years, and the next major quake has a 70% chance of occurring within 30 years.
- However, this does not mean that a major earthquake would definitely happen during a specific period, the advisory said.



5 NEW DISTRICTS IN LADAKH

- Union Home Minister announced the creation of five new districts in Ladakh—**Zaskar, Drass, Sham, Nubra, and Changthang**—to improve governance.
- Currently, Ladakh has only two districts: Leh and Kargil.
- **State governments have the authority to create, alter, or abolish districts** through either executive orders or laws passed in the State Assembly.

- The Centre is involved only when renaming districts or railway stations. The process requires clearance from various departments after the state submits a proposal.

ERI SILK

Why in News?

- The North Eastern Handicrafts and Handlooms Development Corporation (NEHDC) has achieved the Oeko-Tex certification for Eri Silk, the world's only vegan silk.
- This certification, awarded directly from Germany, highlights Eri Silk's ethical and eco-friendly production process, where the moth naturally exits the cocoon, unlike other silk types where the moth is killed.
- The Oeko-Tex certification confirms that Eri Silk is free from harmful substances and produced under environmentally friendly conditions.
- This accomplishment **enhances the global recognition of Eri Silk, a Geographical Indication (GI) product of Assam**, and paves the way for its expansion into international markets.

About Eri Silk:

- Eri silk (Khasi: Ryndia) is the product of the **domesticated silkworm *Samia ricini***, found mainly in North East India and some part of China and Japan.
- It **was imported to Thailand in 1974**.
- The name "eri" is derived from the Naga word "era", which means "castor", as the silkworm feeds on castor plants.
- Eri silk is also known as endi or errandi in India.
- The woolly white silk is often referred to



as **the fabric of peace** when it is processed without killing the silkworm.

- This process results in a silk **called Ahimsa silk**.
- Moths leave the cocoon and then the cocoons are harvested to be spun.
- Eri silk is **soft, warm, and has a woolly texture**, making it comfortable for all-season wear.
- It is **durable with good tensile strength and elasticity**.
- **Naturally off-white**, Eri silk can be dyed using natural or chemical dyes, although plant-based dyes are commonly used in traditional practices.
- The **production cycle from egg to cocoon takes approximately 45-50 days**.
- Methods:
 - After the moths leave the cocoons, the cocoons are boiled to remove sericin, and the fiber is spun into yarn.
 - Spinning: The yarn is spun using handlooms, floor looms, or power looms. The process is labor-intensive due to the short filaments of the silk.
- Eri caterpillars **eat a number of plants**, including Kesseru.
- In India, it is **grown in the states of Meghalaya, Assam, Nagaland, Manipur, Arunachal Pradesh, Bihar, Jharkhand, Chhattisgarh, Odisha, Karnataka, Andhra Pradesh and some small cities in other states**.
- It is a **Geographical Indication (GI) tagged product from Assam**.
- India is unique in producing **all five major types of commercially important silk**, which are derived from different species of silkworms. These types include **Mulberry, Oak Tasar, Tropical Tasar, Muga, and Eri**.
- Among these, Mulberry silk is cultivated, while the others, known as **vanya silks**, are wild silks.
- Eri silk production supports rural livelihoods, particularly empowering women through cottage industries.

ZOOPHARMACOGNOSY

- It is the **study of how animals use natural substances like plants, soils, and insects to treat their own illnesses**.
- The term was coined by ecologist **D.H. Janzen** from the University of Pennsylvania.

- It shows that **animals have an instinctive ability to find and use natural remedies.**

WATERSPROUT

- At least one man died and six people are missing after a **luxury yacht sank** was **hit by a violent storm off the coast of Sicily, Italy.**
- A waterspout is a **rotating column of air that occurs over a body of water, usually appearing as a funnel-shaped cloud in contact with the water and a cumuliform cloud.**
- There are **two types of waterspout**, each formed by distinct mechanisms.
- The most common type is a **weak vortex known as a "fair weather" or "non-tornadic" waterspout.**
- The other less common type is simply a **classic tornado occurring over water rather than land**, known as a "tornadic", "supercellular", or "mesocyclonic" waterspout, and accurately a "tornado over water"



DHANGARS TRIBE

Why in News?

- A large group of Dhangars marched to the subdivisional officer's office in Khamgaon, Buldhana district, Maharashtra. They demanded the establishment of a "grazing corridor" for their sheep and goats.
- They have also long advocated for Scheduled Tribe (ST) status.

About Dhangars Tribe:

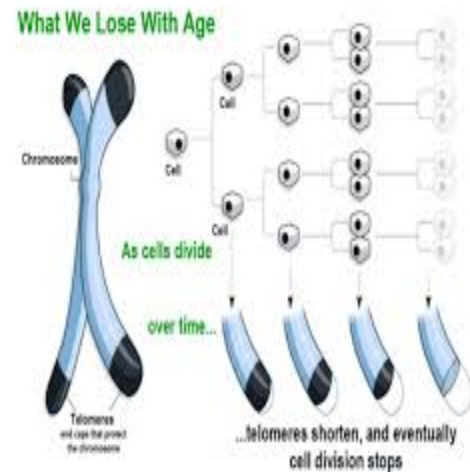
- The Dhangars are **caste of people found in the Indian states of Maharashtra, Karnataka, Goa, Madhya Pradesh**known for herding sheep and goats.
- They are referred to as dhangar in southern Maharashtra, Goa and northern Karnataka, **Golla in Andhra Pradesh** and Kuruba in Karnataka and Gavli Dhangars in northern Maharashtra (Khandesh region).
- Some Gavlis live in forested hill tracts of India's Western Ghats. Gavli, also known as Dange or Mhaske, and ahir are a sub-caste of Dhangar.
- They **follow a nomadic lifestyle**, moving along specific routes to graze their animals.
- They are **part of Maharashtra's Vimukta Jati and Nomadic Tribes (VJNT) list.**
- The **Dhangars are estimated to be around 1 crore which makes up about 9% of Maharashtra's population.**
- About 40% of the community relies solely on herding for their livelihood underscoring the importance of their traditional grazing routes.
- **They are asking for "grazing corridors" to be allowed to graze their animals on traditional routes without being seen as illegal encroachers.**
- They argue that their grazing practices benefit the land and do not harm the forests. Their traditional grazing routes are vital for their livelihood and are deeply rooted in their cultural heritage.



The **Dhangars want to be classified as a Scheduled Tribe (ST) to receive reserved benefits in education and jobs** which they currently do not get under their existing VJNT (Vimukta Jati and Nomadic Tribes) category

HAYFLICK LIMIT

- Leonard Hayflick, in the 1960s discovered that **somatic (non-reproductive) cells can only divide approximately 40-60 times before they stop dividing**, a phenomenon known as cellular senescence (those that have stopped dividing).
- The Hayflick limit suggests that **there is an inherent cellular clock in organisms, including humans, determining the maximum lifespan.**
- **For humans, this limit is estimated to be around 125 years**, beyond which no external factors or genetic modifications can extend life.



mPOX

Why in News?

- The World Health Organization (WHO) has declared mpox (monkeypox), a Public Health Emergency of International Concern (PHEIC) due to a significant upsurge in cases, particularly in the Democratic Republic of Congo (DRC) and neighbouring African countries.
- The outbreak, which originated in the Democratic Republic of Congo (DRC), underscores the critical importance of global health security and the challenges of vaccine equity.
- The *PHEIC designation is the highest level of alarm under International Health Regulations (IHR, 2005)*, reflecting the disease's potential to spread beyond Africa.



- This is the second time in two years that mpox has been declared a global emergency.
- This response **highlights the growing concern over the global spread of Mpox**, with cases emerging in countries as distant as Sweden, Pakistan, and the Philippines.

About mPOX:

- Mpox is a **viral illness caused by the monkeypox virus**, a species of the genus Orthopoxvirus. **Two different clades exist: clade I and clade II.**
- The variola virus, which causes smallpox, is also in this genus.
- Mpox is an infectious viral disease that **can occur in humans and other animals.**
- Symptoms include a **rash that forms blisters and then crusts over, fever, and swollen lymph nodes.**
- The illness is usually mild, and **most of infected individuals recover within a few weeks without treatment.**
- It can be **transmitted to humans through physical contact with someone who is infectious, with contaminated materials, or with infected animals.**
- The time from exposure to the onset of symptoms ranges from **three to seventeen days**, and **symptoms typically last from two to four weeks.**
- However, cases may be severe, especially in children, pregnant women, or people with suppressed immune systems.
- Mpox can be prevented by avoiding physical contact with someone who has mpox.
- **Persons with mpox should be isolated.** Several **antivirals**, such as tecovirimat, have been used to treat mpox, and further studies are underway.
- **Vaccination, including the JYNNEOS[®] vaccine**, can help protect those at risk.
- To address the Mpox outbreak effectively, there is **an urgent need to scale up low-cost production of the MVA-BN vaccine** {The Modified Vaccinia Ankara vaccine developed by Bavarian Nordic (MVA-BN)} in India and other low and middle income countries.
- This can be achieved through international collaboration and negotiations for technology transfers with Bavarian Nordic, the manufacturer of the MVA-BN vaccine.

- Rapid mobilization of financial and technical resources, as well as the sharing of information, is critical for effective outbreak management.

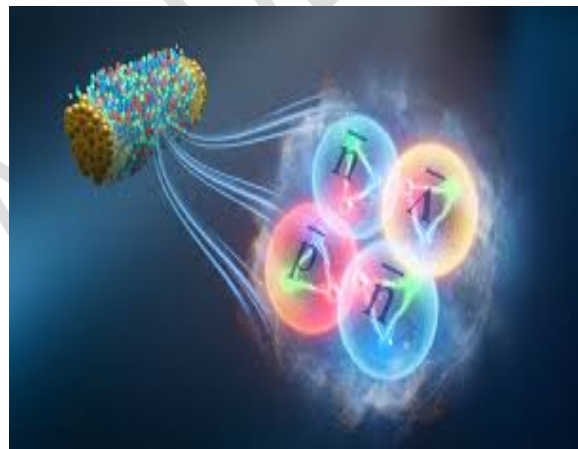
HEAVIEST ANTIMATTER PARTICLE DISCOVERED

Why in News?

Scientists discovered the **heaviest antimatter particle**, named **antihyperhydrogen-4**, at the Relativistic Heavy Ion Collider in New York.

About AntiMatter:

- **Antimatter is a type of matter composed of antiparticles**, which have the same mass as ordinary matter particles but possess opposite electric charges.
- For example, the antimatter counterpart of an electron (which has a negative charge) is the positron, which has the same mass as an electron but a positive charge.
- Similarly, the antiproton is the antimatter equivalent of a proton, having the same mass but an opposite, negative charge.
- **Antimatter particles carry the same charge as matter particles, but of opposite sign.**
- That is, an antiproton is negatively charged and an antielectron (positron) is positively charged.
- When matter and antimatter meet, they annihilate each other, releasing energy.
- This discovery revolves around an antimatter nucleus known as antihyperhydrogen-4.
- **The antihyperhydrogen-4 particle consists of an antiproton, two antineutrons, and one antihyperon.**
- The antihyperon contains a strange quark, distinguishing it from the simpler antiparticles.



- Scientists identified this particle in the particle tracks from around 6 billion collisions at the Relativistic Heavy Ion Collider (RHIC) at Brookhaven National Laboratory, New York.

GUMTI RIVER

Why in News?

The Ministry of External Affairs (MEA) denied that the floods in Bangladesh were caused by the opening of the Dumbur dam (on the Gumti River) in Tripura.

About Gumti River:

- The Gumti, Gomti, Gumati or Gomati is a **river flowing through the north-eastern Indian state of Tripura** and the district of Comilla in Bangladesh.
- The **Gumti River originates from the Longtharai and Atharamura ranges in Tripura** and **runs over 167 km to the Indo-Bangladesh border.**
- It **flows through Bangladesh and joins the Meghna River near Daudkandi.**
- The river has a total length of 167.4 kilometers from its origin to the Indo-Bangladesh border.
- The river is fed by several right bank tributaries, including: **Kanchi Gang, Pitra Gang, San Gang.**
- The left bank tributaries of the Gumti River includes: **Ek Chhari, Maharani Chhara, Ganga.**
- A dam has been constructed near Dumbur on the river that has formed a 40 square kilometers.



SHIVELUCH VOLCANO

- Shiveluch volcano in **Russia** recently erupted following a **7.0-magnitude earthquake** that occurred off the country's eastern coast.
- Shiveluch volcano is a **large and active volcano** in Kamchatka peninsula, Russia.
- It is a **stratovolcano** characterized by its composition of alternating layers of solidified ash, hardened lava, and volcanic rocks.
- The **summit has a broad caldera (a large crater)** that was formed during a past eruption.
- It is a **part of the Pacific Ring of Fire** and contains both active and dormant volcanoes.
- It is a **UNESCO World Heritage Site**.
- Eruptions from Shiveluch often produce volcanic ash emissions that can disrupt air traffic, particularly on routes connecting Asia and North America.
- Tata Power won a contract in 2017 to mine coal from Krutogorovskoye Coal Deposit in Kamchatka peninsula.



RHUMI-1

Why in News?

India launched its first reusable hybrid rocket 'RHUMI- 1', developed by the Tamil Nadu-based start-up Space Zone India with Martin Group, from Thiruvudandhai in Chennai.

About RHUMI-1:

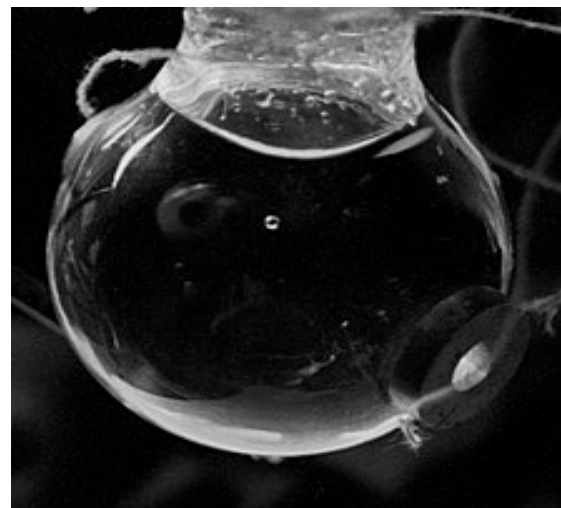
- It is **India's First reusable hybrid rocket**.
- The RHUMI-1 rocket was developed by Tamil Nadu-based startup Space Zone India, in collaboration with Martin Group.

- The rocket was launched from a mobile platform in Thiruvudandai, Chennai.
- It has adjustable launch angle, which can be set between 0 and 120 degrees. This allows precise control over the rocket's trajectory, providing greater versatility during launch.
- RHUMI-1 can be launched using a mobile launcher, allowing it to be deployed from various locations.
- It uses a CO₂-triggered parachute system to safely recover its components. This method represents a significant advancement in rocket technology.
- An innovative, cost-effective, and eco-friendly descent mechanism ensures safe recovery of rocket components.
- It utilizes a hybrid propulsion system, combining the advantages of both liquid and solid fuels to improve efficiency and reduce operational costs.
- RHUMI-1 is 100% pyrotechnic-free and contains 0% TNT.



SONOLUMINESCENCE

- It is a fascinating phenomenon where small gas bubbles in a liquid emit a brief flash of light when exposed to intense sound waves.
- This phenomenon was first observed in 1934 by two German engineers studying sonar, a method of using sound waves for navigation similar to how bats operate.
- The process begins when a tiny bubble trapped in a liquid is subjected to



powerful sound waves.

- These waves cause the bubble to rapidly expand and contract due to alternating high and low-pressure phases.
- During the contraction phase, the bubble compresses so rapidly that its internal temperature skyrockets to several thousand kelvins.
- **This extreme heat ionizes the gases inside the bubble, resulting in the emission of light energy for a fraction of a second**—about a trillionth of a second.

NATIONAL MEDICAL REGISTER PORTAL

Why in News?

The **Union Minister for Health, launched the National Medical Register (NMR) Portal**, a comprehensive digital database for all registered allopathic (MBBS) doctors in India.

About National Medical Register Portal:

- It is a portal of the National Medical Commission (NMC) **for the registration of all MBBS doctors eligible for registration in India.**
- The National Medical Register (NMR) is **mandated under Section 31 of the NMC Act, 2019**, which states that the Ethics and Medical Registration Board (EMRB) of the NMC shall maintain a National Register in electronic form containing the name, address, and all recognised qualifications possessed by a licensed medical practitioner.
- It **aims to provide a secure and accurate record of all doctors practicing in India.**
- It requires the Ethics & Medical Registration Board (EMRB) of NMC to maintain an electronic registry of licensed medical practitioners, including their names, addresses, and qualifications.



Key features of National Medical Register Portal:

- **Centralized Database:** The NMR provides a single, continuously updated digital record of all MBBS doctors in India, including their names, addresses, and qualifications.
- **Adhaar Integration:** The portal is linked to the Aadhaar IDs of doctors, ensuring the authenticity and accuracy of the information.
- **Part of Digital Healthcare Ecosystem:** The NMR is integrated with the Healthcare Professional Registry under the Ayushman Bharat Digital Mission, enhancing the management and transparency of healthcare data.
- **Easy Registration:** Doctors can easily register online by uploading their degree and registration certificates, along with their Aadhaar numbers. The application is verified by the State Medical Council and the NMC, which then issues a unique NMR ID.
- **Support for Stakeholders:** The portal serves as a platform for State Medical Councils, educational institutions, and the National Board of Examinations to manage doctor registrations and verifications.
- **Future Updates:** Planned enhancements include integration with medical education systems and additional digital services for healthcare professionals.

Significance:

- It is a **major step towards improving India's digital healthcare infrastructure.**
- It **provides a centralized, verified record of all doctors**, ensuring only qualified professionals practice medicine.
- It includes strengthening the digital healthcare ecosystem, ensuring transparent access to quality medical professionals, and consolidating public trust in healthcare.
- This initiative is part of the government's vision to "Reform, Perform, and Transform," focusing on providing reliable and quality healthcare to all.
- The portal also fosters trust in the healthcare system by making verified information about medical professionals easily accessible.

HIMACHAL PRADESH INCREASES MARRIAGE AGE

Why in News?

- The Himachal Pradesh Assembly has passed the Prohibition of Child Marriage (Himachal Pradesh Amendment) Bill, 2024.
- The **Bill proposed to raise the minimum age of marriage for women from 18 to 21 years.**
- In order to do so, the bill amended the Prohibition of Child Marriage (PCM) Act, which was passed by Parliament in 2006.

About:

- The **Bill redefines a “child” as anyone under 21, eliminating the age difference between genders.** It also overrides any conflicting laws or customs.
- Additionally, **it extends the time frame for filing a petition to annul a child marriage,** allowing individuals to do so within five years of reaching the age of majority, giving them until the age of 23 to annul the marriage.
- Since the Bill amends a central law, **it must receive the President’s assent to become enforceable, following approval from the state’s Governor.**
- Earlier, in June 2024, a Central bill ‘Prohibition of Child Marriage (Amendment) Bill, 2021’ lapsed in Lok Sabha which aimed to bring uniformity in the age of marriage for men and women. 2021 Bill was based on recommendations of Jaya Jaitley Committee.



What does the law say currently?

- Currently, the law prescribes that the minimum age of marriage is 21 for men and 18 years for women.
- The minimum age of marriage is distinct from the age of majority, which is gender-neutral.

- An individual attains the age of majority at 18 as per the Indian Majority Act, 1875.
- For Hindus, Section 5(iii) of the Hindu Marriage Act, 1955 sets 18 years as the minimum age for the bride and 21 years as the minimum age for the groom.
- In Islam, the marriage of a minor who has attained puberty is considered valid under personal law.
- The Special Marriage Act, 1954 and the Prohibition of Child Marriage Act, 2006 also prescribe 18 and 21 years as the minimum age of consent for marriage for women and men respectively.

SOLAR PARABOLOID TECHNOLOGY

Why in News?

Solar paraboloid technology, a **form of concentrating solar power (CSP)**, is emerging as a promising renewable energy solution.

About Solar Paraboloid Technology:

- It is a technology designed to harness solar energy more efficiently by using a parabolic-shaped reflector.
- It uses parabolic mirrors to focus sunlight onto a receiver, generating high temperatures (up to 300°C) for electricity or industrial heat.
- This technology **offers higher efficiency** than traditional photovoltaic systems, potentially **lowering electricity costs.**
- Solar paraboloids use a Parabolic Trough Collector system, which includes long, curved mirrors designed to concentrate sunlight onto a receiver tube located at the mirror's focal line.



- The **concentrated sunlight heats a fluid inside the receiver tube**. This thermal energy can either be converted into electricity or used directly for industrial heating purposes.
- **These systems can operate at temperatures up to 300°C**, which allows for higher thermal efficiency due to reduced heat losses.

Significance:

- **Renewable Energy Contribution:** As countries aim to reduce carbon emissions and achieve net-zero targets, solar paraboloids offer a sustainable and effective alternative to fossil fuels for both electricity and heat generation.
- **Enhanced Efficiency:** By concentrating solar energy, solar paraboloids achieve higher thermal efficiencies than traditional photovoltaic (PV) systems. This is due to their ability to operate at higher temperatures, reducing convective and conductive heat losses.
- **Lower Cost Per Unit of Electricity:** The high efficiency of solar paraboloids means more electricity can be produced from the same amount of sunlight, potentially lowering the cost per unit of electricity and making it competitive with fossil fuels.
- **Scalability and Flexibility:** Solar paraboloid systems can be scaled up or down depending on the energy needs and available space. This flexibility allows for both large-scale utility applications and smaller-scale installations.
- **Versatile Applications:** Besides generating electricity, solar paraboloid technology can provide direct heat for various industrial processes, making it versatile in its applications.
- **Improved Land Use Efficiency:** Due to their concentrated design, solar paraboloids can achieve higher energy yields per unit of land area, making them a more efficient use of space compared to flat-panel PV installations.

Challenges in Solar Paraboloid Technology:

- **Infrastructure Requirements:** The adoption of solar paraboloids on a large scale necessitates considerable infrastructure support, including land availability and maintenance capabilities.

- High Upfront Costs: The technology requires precise construction, specialized materials, and advanced tracking systems, all contributing to significant initial investment costs.
- Need for Policy Support and Incentives: Government initiatives and policies are crucial in promoting the adoption of solar paraboloid technology which includes investing in research and development, providing financial incentives, and supporting local manufacturing efforts.

Way Forward

- To overcome technical and economic barriers, ongoing research and development are needed to improve efficiency, reduce costs, and enhance material quality and system design.
- Strong partnerships between governments and private sectors can drive innovation, offer financial incentives, and streamline the integration of solar paraboloid technology into existing energy frameworks.
- Educating the public and providing incentives for early adopters can accelerate the transition to renewable energy sources, highlighting the benefits of solar paraboloids over traditional energy methods.
- Encouraging local production and innovation can reduce costs and dependency on imported technology, fostering a sustainable market for solar paraboloids.

NORTHERN BALD IBIS

Why in News?

The northern bald ibis, once extinct in Europe due to hunting, has been revived through breeding and rewilding efforts.

About Northern Bald Ibis:

- The northern bald ibis, hermit ibis, or Waldrapp is a **migratory Old World ibis** found in open areas such as grasslands, rocky mountains, and semi-deserts, often close to running water.
- **Scientific Name : Geronticus eremita**

- The Northern Bald Ibis is **known for its black plumage with** an iridescent green sheen, **a bald red head** adorned with black markings, and a long, downward-curved beak.
- Their red beak and legs stand out against their dark feathers. There is no sexual dimorphism in this species.
- They **primarily feed on insect larvae, earthworms and other invertebrates**, using their long, slender beak to probe the ground, guided by their sense of touch.
- It **breeds colonially on coastal or mountain cliff ledges**, where it typically lays two to three eggs in a stick nest, and feeds on lizards, insects, and other small animals.
- The northern bald ibis **was once widespread across the Middle East, northern Africa, southern and central Europe**, with a fossil record dating back at least 1.8 million years.
- There are about 2000 northern bald ibises living in captivity.
- **Conservation status: Endangered (formerly Critically Endangered)**
- These ibises prefer open areas with short grass, such as meadows, pastures, or even sports fields like golf courses.
- Despite their bald head resembling that of a vulture, they are not scavengers.
- Northern Bald Ibises are **social birds**, historically forming large colonies with thousands of individuals.
- They engage in a ritual greeting involving crest-spreading and bowing, which often triggers a similar response throughout
- Typically, seasonally monogamous, breeding partnerships often change yearly, though some pairs may stay together for multiple years.
- They choose steep rock faces with protective nooks for nesting, laying up to four greenish eggs.
- They learn migration routes by following experienced birds during the fall migration.
- It **disappeared from Europe over 300 years ago**, although reintroduction programmes in the region are underway.



- In 2019 there were about 700 wild birds remaining in southern Morocco, and fewer than 10 in Syria, where it was rediscovered in 2002 but where their number declined in the following years, maybe to zero.
- **To combat these low numbers, reintroduction programs have been instituted internationally in recent times**, with a semi-wild breeding colony in Turkey which counted almost 250 birds in 2018 as well as sites in Austria, Italy, Spain, and northern Morocco.
- These programmes and the natural growth in Morocco from about 200 birds in the 1990s helped to downlist the northern bald ibis from Critically Endangered to Endangered on the IUCN Red List in 2018.

CLASSIC IAS ACADEMY

CLASSIC IAS ACADEMY