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ELEVEN NEW BIOSPHERE RESERVES ADDED TO WORLD NETWORK

UN Educational, Scientific and Cultural Organization (UNESCO) added 11 biosphere reserves from countries like Colombia, etc. under the Man and Biosphere (MAB) Programme.

- World Network of Biosphere Reserves now totals 759 sites in 136 countries.
- Also, for the first time, two trans-boundary biosphere reserves were added.
- It includes Kempen-Broek (Belgium and Netherlands) and Julian Alps (Italy and Slovenia)

MAB Programme

- Launched in 1971 as an intergovernmental scientific programme.
- Aim: To establish a scientific basis for enhancing the relationship between people and their environments.
- Combines the natural and social sciences with a view to improving human livelihoods and safeguarding natural and managed ecosystems.
- Promotes economic development that is socially and culturally appropriate and environmentally sustainable.
- **Out of 18 biosphere reserve in India, 12 are recognised under it.**
- Nilgiri Biosphere Reserves was first to be recognized.

About Biosphere Reserves (in situ conservation)

- Areas representing diverse natural and cultural landscapes across terrestrial, coastal, or marine ecosystems.
- Consists of three main zones-
 - **Core areas:** Comprise a strictly protected zone
 - **Buffer zones:** Used for activities compatible with sound ecological practices that can reinforce scientific research, etc.
 - **Transition area:** Communities foster socio-culturally and ecologically sustainable activities

KALLAKKADAL

Weather agencies has sent an alert in coastal areas of Kerala and Tamil Nadu about possibility of 'Kallakkadal' phenomenon.

About Kallakadal:

- It is essentially coastal flooding usually in pre-monsoon (April- May) or post monsoon season by swell waves on southwest coast of India.
- Swell waves are a series of mechanical or surface gravity waves generated by distant weather storms E.g. Hurricane that propagate thousands of miles across oceans and seas.
- Swell waves can propagate in directions that differ from direction of the wind.

CARBON COMPENSATION DEPTH

Research indicates that the Carbonate Compensation Depth (CCD) is expanding.

About CCD

- It is defined as the water depth at which the rate of supply of calcium carbonate from the surface is equal to the rate of dissolution.
- In the deep ocean, carbonate particles in bottom sediments are supplied by the die-off of surface plankton that secrete calcium carbonate tests or shells.
- When these shells fall below a certain water depth (around 4,000 meters), they begin to dissolve as ocean waters become under saturated with respect to calcium carbonate because of increasing pressure, decreasing temperature and increasing amounts of dissolved CO₂

CODEX ALIMENTARIUS COMMISSION

Food Safety and Standards Authority (FSSAI) represented India (as a member elected on a geographic basis (Asia)), in the CCEXEC session held in Rome.

Key highlights of the Session

- India proposed Codex guidance on recycled materials in food packaging.
- India also shared guidelines (developed by FSSAI) on recycling polyethylene terephthalate (PET) containers, bottles, etc.
- India advocated for standards development in spices (cardamom, turmeric, and vanilla).
- This would facilitate smoother international trade.
- Also supported standards for vegetable oils, guidelines for the control of Shiga Toxin-Producing Escherichia coli, etc.

Codex Alimentarius Commission (CAC)

- **Genesis:** An international food standards body established jointly by Food and Agriculture organization (FAO) and WHO in 1963.
- **Objective:** Protecting consumer's health and ensuring fair practices in food trade. Develops food standards called Codex Alimentarius (CA).
- CA is a collection of international standards, guidelines and codes of practice to protect the health of consumers and ensure fair practices in the food trade.
 - These standards are voluntary in nature.
- WTO Agreements on Sanitary and Phytosanitary Measures (SPS Agreement) encourages members to harmonise national regulations with CA.
- **Members:** 189 (188 Member Countries and 1 Member Organization (EU))
- **HQ:** Rome.

FLY ASH

Ministry of Coal is taking proactive measures for disposal and repurposing of Fly Ash generated by thermal power plants.

About Fly Ash

- Fly ash is a byproduct from burning pulverized coal in thermal power generating plants.

- As per the Ministry of Environment, Forest and Climate Change notification of 2009, the term "fly ash" means and includes, all ash generated such as Electrostatic Precipitator (ESP) ash, dry fly ash, bottom ash, pond ash and mound ash.
- Its composition includes silicon dioxide (SiO₂), calcium oxide (CaO), and aluminium oxide (Al₂O₃).
- Uses: Manufacture of building materials, replacement of cement, enhancement of soil fertility etc.

NHRC

The 'Advisory for the Protection and Rehabilitation of Impoverished, Uneducated Children, Women, and Differently-abled Individuals Engaged in Begging' identifies eight key areas for action by Centre and State governments and UT administrations.

- As per the 2011 census, there were more than 413 thousand beggars and vagrants in India.

Key Action Areas

- Survey, identification, Mapping and preparing Data Bank for building a national database.
- Rehabilitation of individuals engaged in beggary through Shelter homes, education, and necessary assistance.
- **Healthcare:** Mental health care, de-addiction and healthcare services in shelter homes.
- **Education:** Early childhood care (**Article 45**) and Free and compulsory education (**Article 21A**).
- Drafting a National Policy for the protection and rehabilitation of individuals involved in beggary and decriminalising beggary.
- Collaboration with NGOs, civil society organisations, private sector, charitable trusts for skill training programmes.
- Access to financial services through Self-help Groups (SHGs).
- Awareness generation, sensitization and monitoring.

Constitutional Provisions

- **Preamble** postulates 'Justice - social, economic and political', and 'Fraternity, assuring the dignity of the individual'.
- **Article 23:** State should strive to prohibit all forms of human trafficking, beggary and forced labour.
- Government Initiatives:
 - Bombay Prevention of Begging Act, 1959
 - Juvenile Justice (Care and Protection of Children) Act, 2015
 - SMILE is a Central Sector Scheme designed for the comprehensive rehabilitation of individuals engaged in begging

CENTRAL CONSUMER PROTECTION AUTHORITY

CCPA directs an online travel platform to refund booking amounts to consumers affected by COVID-19 lockdown.

CCPA

- Statutory body: established in 2020 under section 10 of the Consumer Protection Act, 2019.
- Objective: To promote, protect and enforce the rights of consumers as a class.
- Composition: Chief Commissioner and such number of other Commissioners as may be prescribed.
- Powers and functions: Conduct investigations into violation of consumer rights and institute complaints / prosecution, order recall of unsafe goods and services, etc.

PMSTIAC

The 25th PM-STIAC Prime Minister Science, Technology & Innovation Advisory Council meeting was held.

About PM-STIAC

- Constituted in 2018.
- **Functions:**
 - It serves as an overarching council to assess the status of various science and technology-related matters, comprehend challenges, formulate interventions, develop a futuristic roadmap, and advise the Prime Minister accordingly
 - It also oversees the implementation of interventions by concerned S&T departments, agencies, and other government ministries.
- **Missions approved by the PM-STIAC:**
 - Deep Ocean Exploration Mission, AI (Artificial Intelligence) Mission, National Quantum Mission, Electric Vehicle Mission, and AGNli Mission, etc

RTI ACT 2005

RTI appeals pendency coming down every year: Ministry of Personnel, Public Grievances & Pensions

About RTI Act 2005

- It provides citizens right to secure access to information under control of Public Authorities (PAs).
- It promotes transparency and accountability in Government working, contains corruption, and enhances people's participation in democratic process.
- **Nodal agency:** Department of Personnel and Training under MoPPG&P.
- It replaced Freedom of Information Act, 2002
- Deals with constitution, composition, and functions of Central and State Information Commissions.
- Puts obligations on PAs for designation of Central/State Public Information Officers (CPIO/SPIOs) to provide requested information to citizen.
- Provides for a system of appeals to aggrieved person:

- Appeal can be made to 1st appellate authority (an officer senior in rank to CPIO/SPIOs) within 30 days of filing RTI application.
- Provision for second appeal to Central/State Information Commissioner (CIC/SIC) within 90 days of order by 1st appellate authority.
- The onus to prove that denial of request was justified lies on CPIO/SPIOs.
- Disposal of appeals within 30 days (extended to 45 days) from date of filing.
- Decision of CIC/SIC is binding

SDG INDIA INDEX 2023-2024

It measures and tracks national progress of all States and Union Territories (UTs) on 113 indicators aligned to Ministry of Statistics and Programme Implementation's National Indicator Framework.

- Composite score for each State/UT was computed by aggregating their performance across 16 SDGs.
- Scores range between 0–100.
- Score of 100 means State/UT achieved targets set for 2030.
 - States are divided into four categories: Achiever (100), Front runners (65-99), Performers (50-64), and Aspirants (0-49).

Key findings

- National Level
 - Composite score for India improved 66 in 2020-21 to 71 in 2023-24.
 - Between 2020-21 and 2023-24, significant progress observed in Goals 1 (No Poverty), 8 (Decent Work and Economic Growth) and 13 (Climate Action) and these goals are now in front runner category.
- Goal 13 records highest increase in score followed by Goal 1.
 - Targeted interventions by Government like Pradhan Mantri Awas Yojana (Goal 11), Swachh Bharat
- Mission (Goal 6), Ayushman Bharat (Goal 3), etc. had led to rapid improvement.
- State/UT level
 - All States have shown an improvement in overall score.
 - Front-runner category: 32 States and UTs.
- 4 states in Performer category: Meghalaya, Nagaland, Jharkhand, Bihar.
 - Top States: Uttarakhand and Kerala with scores of 79 each.
 - Top UT: Chandigarh.

PRODUCTION LINKED INCENTIVE PLI SCHEME FOR WHITE GOODS (PLIWG)

Government has invited applications for PLIWG Scheme for White Goods (ACs and LED Lights).

- White Goods are large electrical goods and home appliances like refrigerators, washing machines, and ACs.
- Brown goods generally refer to Consumer Electronics like televisions, DVD players, stereos, and computers.

PLIWG

- **Nodal Ministry:** Ministry of Commerce & Industry
- **Type:** **Central Sector Scheme**
- **Background:** **Launched in 2021** in pursuance of 'Atmanirbhar Bharat.
- **Financial incentives to applicants:** An incentive of 4% to 6% on incremental sales (net of taxes) over the base year 2019-20.
- **Tenure:** FY 2021-22 to FY 2028-29

ZOMBIE STARTUP

Recently shutting down of Koo (India's Twitter-like app) has raised debate around Zombie startups.

About Zombie startups

- It refers to startups that have raised enough funds (during the boom cycle) to operate but are currently not generating significant revenue.
- It can be considered to be stuck in a situation of consuming resources without growing into a successful enterprise.
- In the long term, such startups may vanish.
- Lack of market-suitable products, high cost of acquiring customers, funding winter, etc. can make a startup Zombie.

REGENERATIVE BRAKING

Regenerative braking, a feature of EVs, is being widely used among those developing next-gen cars.

Regenerative Braking

- Braking slows down a vehicle by removing kinetic energy.
- Regenerative braking works on the principle of conversion of combined kinetic energy and potential energy of the braking system directly into electrical energy using a generator.
- This electric energy is used for recharging the battery (hence, braking in EVs increases the mileage slightly)
- **Benefits:** Better efficiency and less maintenance (wear and tear on brake systems is reduced).

GIG WORKERS

As per Internet and Mobile Association of India (IAMA), provisions like mandatory registration, updation of database, monetary contribution by firms would likely impact the Ease of doing business.

- These are required under Draft Karnataka Gig Workers (Conditions of Service and Welfare) Bill, 2024
- Currently, Rajasthan is the only state to have legislation for welfare of gig workers.

- **Gig workers:** Means a person who performs work or participates in a work arrangement and earns from such activities outside of traditional employer-employee relationship. (Code on Social Security, 2020)
- Broadly classified into two categories:
 - Platform based: Whose work is based on online software apps or digital platforms.
 - Non-platform based: Casual wage workers in conventional sectors, working part-time or full-time

Initiatives for gig workers

- Code on Social Security, 2020: Provides for extension of social security benefits to gig workers as well.
- Provides for setting up a Social Security Fund with contributions between 1-2% (subject to a limit of 5%) of annual turnover from aggregators.
- Occupational Safety, Health and Working Conditions Code, 2020: To promote safe and healthy work environment and it also regulates contract labour.

RUSSIA INDIA SUMMIT

The Prime Minister of India co-chaired the Annual Summit with the President of Russia in Moscow.

- Joint statement was released after the summit.

Major Outcomes

- Trade and Economic partnership: Set the bilateral trade target of USD 100 billion by 2030.
- Promote bilateral settlement system using national currencies.
- Expanding energy cooperation across nuclear, oil, and petrochemical sectors, including infrastructure and technology.
- **Transport and Connectivity:** Increase of cargo turnover with India by implementing projects like North-South International Transport Corridor, the Northern Sea Route and the Chennai-Vladivostok Eastern Maritime Corridor.
- **Comprehensive reform of the UNSC:** To reflect contemporary global realities and to make it more representative, effective and efficient.
- **Counter Terrorism:** Demanded for expeditious finalization and adoption of the Comprehensive Convention on International Terrorism in the UN framework.
- Also implementation of the UNGA and the UNSC resolutions on countering terrorism and violent extremism, conducive to terrorism.
- **On Ukraine:** Peaceful resolution of the conflict around Ukraine through dialogue and diplomacy including engagement between both parties.
- **Military cooperation:** agreed to encourage joint manufacturing in India of spare parts, components, aggregates and other products for maintenance of Russian origin arms and defence equipment under Make-in-India program.

Order of Saint Andrew the Apostle

- **Prime Minister of India awarded Russia's highest civilian honour**, the Order of Saint Andrew the Apostle.
- The award was announced in 2019, for “exceptional services in promoting special & privileged strategic partnership between Russia and India and friendly relations between the Russian and Indian people”.
- Established in 1698, It is awarded for the most outstanding civilian or military merit

INDIA AUSTRIA RELATIONS

It was first trip by an Indian Prime Minister to Austria in 41 years, last being in 1983.

- Both countries emphasized on future-oriented bilateral sustainable economic and technology partnership.
- Partnership will cover a range of new initiatives and joint projects, and business-to-business engagement in green and digital technologies, infrastructure, renewable energy, water management, life sciences, smart cities, mobility and transportation.

India-Austria Relations

- **Historical Relations:** Diplomatic relations were established in 1949.
- PM Nehru supported Austria's emergence as a neutral and independent country in 1955.
- **Political and Security Cooperation:** Both countries affirmed their commitment to a free and open Indo-Pacific region and peaceful resolution of Ukraine conflict.
- **Economic Relations:** Total bilateral trade for 2023 was 2.93 USD billion with Indian exports to Austria valued at USD 1.52 billion.
- To foster innovation and entrepreneurship between countries, India-Austria Start-up Bridge was launched in 2024.
- **Multilateral Cooperation:** Austria expressed interest in India-Middle East-Europe Corridor (IMEC).
- India reiterated its support for Austria's UNSC candidature for term 2027-28, while Austria expressed its support for India's candidature for 2028-29.
- India invited Austria to join the International Solar Alliance.

BLUE LINE

UN warns of escalating tensions on Lebanon-Israel 'Blue Line' frontier.

About Blue line:

- Israel and Lebanon have no official border separating them, except the Blue Line.
- It was set by the United Nations in 2000.
- It is made of blue barrels and runs from the Mediterranean to the Golan Heights to the east.



- Its purpose was to confirm the withdrawal of Israeli forces from the south of Lebanon.
- **Note: Blue Line is also a learning ecosystem created by the UN System Staff College.**

BBNJ AGREEMENT

Union Cabinet approves India's signing of the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement

- It is a significant step towards the conservation and sustainable utilisation of marine biological diversity in areas beyond national jurisdiction.

BBNJ Agreement

- It is an agreement under United Nations Convention on Law of the Sea (UNCLOS) on Conservation of Marine Biological Diversity of Areas beyond National Jurisdiction.
- It is **also referred as High Seas Treaty.**
- 'High Seas' are areas beyond national jurisdiction which are global common oceans open to all for internationally lawful purposes such as navigation, overflight, laying submarine cables and pipelines, etc.
- It was adopted in 2023 by Intergovernmental Conference on Marine Biodiversity of Areas Beyond National Jurisdiction.
- It will become international law only when it is signed and ratified by at least 60 countries.
- It is third implementing agreement to UNCLOS with other two being 1994 Agreement related to implementation of UNCLOS and 1995 U.N. Fish Stocks Agreement
- Ministry of Earth Sciences is implementing the agreement in India

UNCLOS

- International Convention that was adopted in 1982 & came into force in 1994.
- Lays down comprehensive regime of law and order in world's oceans & seas.
- Establishes rules governing uses of oceans and their resources by Countries.
- Divides marine areas into zones namely- Territorial Sea, Contiguous Zone, Exclusive Economic Zone (EEZ) and High Seas

BIMSTEC

First edition of Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) Foreign Ministers' Retreat was held in Thailand in 2023.

About BIMSTEC

- It is a regional organization established in 1997 by signing Bangkok Declaration.
- 7 member states: Bangladesh, India, Sri Lanka, Thailand, Myanmar, Nepal, and Bhutan.
- Permanent Secretariat: Dhaka, Bangladesh.

- BIMSTEC's Principle: Sovereign equality, Territorial integrity, Political independence, Non-interference in internal affairs, Peaceful co-existence, etc.
- 7 Focus areas: Trade; Environment and Climate Change; Security; Agriculture and Food
- Security; People-to-People Contact; Science, Technology, and Innovation; Connectivity.
- Combined GDP of BIMSTEC member States amounts to USD 4.5 trillion in 2022 (approx. 4.5% of global GDP).

Significance of BIMSTEC for India

- Regional cooperation: It is a critical intersection of Neighbourhood First Policy and Act East Policy of India.
- Geostrategic importance: Sectoral cooperation in Bay of Bengal region helps to secure critical lines of communication in Indian Ocean Region (IOR) and boost trade.
- Security: In line with India's Security and Growth for All in the Region (SAGAR) vision and strengthen maritime cooperation in IOR.
- Potential to overcome-e the deficiencies of SAARC to evolve as a meaningful platform for regional cooperation in South Asia

DIGITAL BHARAT NIDHI

Department of Telecommunication (DoT) has notified the draft Telecommunications (Digital Bharat Nidhi) Rules, 2024 under Sections 26 and 56 of the Telecommunication Act, 2023.

About Digital Bharat Nidhi (DBN)

- DBN has been created under the Telecommunication Act, 2023 and it will replace the Universal Service Obligation Fund (USOF) created under the Indian Telegraph Act, 1885.
- USOF is a pool of funds generated by a Universal Access Levy through the license fee charged on licensee of DoT @ 5% of the Adjusted Gross Revenue.
- Balance of Credit under DBN is non-lapsable at the end of financial year.
- Objectives: Promoting access to and delivery of telecommunication services in underserved rural, remote and urban areas, support research and development of telecommunication services, technologies, etc.

E-OFFICE

Government has decided to implement e-Office in all attached, subordinate offices, and autonomous bodies.

About e-Office

- A mission mode project under National e-Governance Program and is developed by National Informatics Centre (NIC).
- It is a digital work place solution built on open architecture making it a standard reusable product amenable for replication across the Governments.

- Key Components: eFile (File Management System), KMS (Knowledge Management System), WAW (Work from Anywhere) portal, SPARROW (Smart Performance Appraisal Report Recording Online Window).

TOKAMAK

China has made world's first high-temperature superconducting Tokamak device -HH70.

- Previously, the EU and Japan inaugurated JT-60SA, the world's largest and most advanced Tokamak fusion reactor in Japan and pledged support to advance fusion research for International Thermonuclear Experimental Reactor (ITER).
- Tokamak is a machine for controlled thermonuclear fusion with **a toroidal shape, similar to a doughnut.**

About Nuclear Fusion

- A process by which two light atomic nuclei combine to form a single heavier one while releasing massive amounts of energy.
- In nuclear fission, on the other hand, large atomic nuclei are split into smaller atomic nuclei to release energy.
- Most fusion reactors use a mixture of deuterium and tritium
 - hydrogen atom isotopes that contain extra neutrons.

About ITER

- ITER is a global scientific partnership between China, Europe, Japan, India, the Republic of Korea, Russia and the US.
- It's currently under construction in France.
- **Objective:** To prove the viability of fusion as an energy source.
- It will be the largest Tokamak device to test magnetic confinement to produce fusion energy.
- ITER has been designed for high fusion power gain with about 10-fold return (expressed as $Q \geq 10$), i.e., ratio of heating input power to thermal output power.
- Current record for fusion power gain in a Tokamak is $Q = 0.67$ by European JET facility in the UK

ITER-India

- India formally joined the ITER Project in 2005.
- ITER-India is the Indian domestic agency, a specially empowered project of the Institute for Plasma Research (IPR), IPR an aided organization under Department of Atomic Energy, Government of India.
- ITER-India is responsible for delivery of ITER packages such as Cryostat, In-wall Shielding, Cooling Water System, Cryogenic System, Ion-Cyclotron RF Heating System, etc

TRANSPONSON

A recent paper published by researchers at the University of California emphasized on the role of transposons in gene-editing.

About Transposons

- Transposons, **or jumping genes**, are DNA sequences that can change their position within a genome.
- **Discovered by: Noble Laureate Barbara McClintock.**
- Function: Transposons can reversibly alter gene expression depending on their insertion points.
- **Prevalence: Over 45% of the human genome consists of transposable elements.**
- Role in Evolution: Transposons are crucial for genetic diversity and evolution, capable of turning genes on or off using epigenetic mechanisms.
- Can also cause mutations leading to diseases.

OPEN SOURCE TOOL FOR TMT

Indian scientists develop Open-source tool for the Thirty Meter Telescope (TMT)

- It will create a comprehensive star catalogue for the Adaptive Optics system (AOS) of the TMT, enabling TMT to generate sharper astronomical images
- Telescopes on Earth's surface face atmospheric distortion, affecting the quality of images (more pronounced in telescopes with high light-collection capacities, like the TMT).
- To counteract this, an AOS is used.

About Adaptive Optics system

- Involves sophisticated, deformable mirrors controlled by computers to correct the distortion caused by turbulence of Earth's atmosphere in real-time.
- To achieve this, it requires a fairly bright reference star (close to the object under study) to measure the blurring that has to be corrected by the deformable mirror.
- Above mentioned AOS system on TMT, aka Narrow Field Infrared Adaptive Optics System (NFIRAOS), would be enhanced by a Laser Guide Star (LGS) facility.
- It would require feedback from three real stars, known as Natural Guide Stars (NGS).

Ground Based Astronomy

- It involves large telescopes located on Earth's surface employing sophisticated optics to capture and analyse celestial objects.
- Unlike space based telescopes, they are cost effective and easier to maintain.
- It includes the Extremely Large Telescopes currently under development: The Thirty Meter Telescope, the Giant Magellan Telescope, and the European Southern Observatory.

Thirty Meter Telescope

- It is being installed at Mauna kea in Hawaii, designed and developed by the TMT International Observatory LLC (TIO).
- TIO is a non-profit international partnership involving the USA, Japan, India (Department of Science and Technology), and Canada.

- Indian Institute of Astrophysics (IIA), Bengaluru, the Inter University Center for Astronomy and Astrophysics (IUCAA),
- Pune, and the Aryabhata Research Institute for Observational Sciences (ARIES), Nainital are involved in collaboration with TMT

BANNED CHEMICAL SEIZED

Indian Security agencies have seized the consignment consisting of internationally banned chemical - Ortho-Chloro Benzylidene Malononitrile - used for tear gas and riot control agents at a port in Tamil Nadu.

- Consignment was seized under provisions of the Customs Act, 1962 and the Weapons of Mass Destruction and Delivery Systems (Prohibition of Unlawful Activities) Act, 2005.
- The chemical is also listed in India's export control list 'SCOMET' as a controlled substance whose export shall be permitted only against an export authorization.

About SCOMET List

- SCOMET (Special Chemicals, Organisms, Materials, Equipment and Technologies) list is National Export Control List of dual use items, munitions and nuclear related items, including software and technology.
- Dual use items are goods and technologies that can have both civilian and military applications. Dual-use items have been named as SCOMET under Foreign Trade Policy, 2023.
- Export of dual-use items and technologies is either prohibited or is permitted under a license.
- SCOMET List is notified under Indian Trade Clarification based on Harmonized System [ITC (HS)] Classification.
- ITC (HS) was adopted for import-export operations.
- SCOMET control list is aligned to control lists of all multilateral export control regimes and conventions

Multilateral Export Control Regimes

- Wassenaar Arrangement (1996): For conventional arms and dual-use goods and technologies.
- Nuclear Suppliers Group (NSG) (1974): For transfers of civilian nuclear material and nuclear-related equipment and technology.
- Missile Technology Control Regime (MTCR) (1987): To limit the spread of ballistic missiles and other unmanned delivery systems.
- Australia Group (1985): For Chemical and Biological weapons.
- Note: Except NSG, India is a member of all the above control Regimes

MOLECULAR CHAPERONES

Researchers at S.N. Bose National Centre for Basic Sciences have found a new method of a single molecule technique to study protein folding & associated chaperones.

- This could help track progression of diseases like cancer, Parkinsons and Alzheimer's.

Protein Folding and Molecular Chaperones

- Most proteins fold into defined 3-D structures to gain functional activity.
- In the cellular environment, newly synthesized proteins are at risk of aberrant folding potentially forming toxic species.
- To avoid this, cells invest in a complex network of molecular chaperones.
- Endogenous proteins that serve as an essential control mechanism to prevent aggregation promoting efficient folding of protein

PRIMARY AGRICULTURAL CREDIT SOCIETIES (PACS)

While addressing a programme on 102nd International Day of Cooperatives, Union Minister of Home Affairs and Cooperation urged stakeholders in cooperative societies to support establishment of Primary Agricultural Credit Societies (PACS) in all villages and blocks of the country.

- International Day of Cooperatives, celebrated annually on first Saturday of July since 1923, by International Cooperative Alliance (ICA).

About PACS

- PACS are grass root level arms of the short-term co-operative credit structure.
- It serves as the final link between ultimate borrowers and higher financing agencies, namely Scheduled Commercial Banks, and RBI/NABARD.
- PACS deals directly with the rural (agricultural) borrowers and also undertake distribution and marketing functions.
- Currently, there are ~65,000 functional PACS in the country.
- Government target is that by 2029 all Panchayats of the country will have their own PACS.
- **Significance of PACS**
 - First building block of the cooperative banking system of India.
 - Brings farmer communities closer to credit, inputs, market, and value addition.
 - Can also play a major role by integrating its warehouse with physical and financial supply chain of agro-commodities in the Gramin Agriculture Markets (GrAMs) or large warehouses in private sector

Initiatives to promote Cooperatives in India

- Constitution (Ninety-Seventh) (Amendment) Act, 2011: Granted constitutional status to the Cooperative Societies.
- Union Ministry of Cooperation: Created in 2021 to realize the vision of 'Sahkar se Samridhhi' (Cooperation to Prosperity).
- Multi-State Co-operative Societies (Amendment) Act, 2023:
- To strengthen governance, enhance transparency, increase accountability, and reform electoral process in Multi State Cooperative Societies.

INTEGRATED TRIBAL DEVELOPMENT PROGRAMME

NABARD will launch an Integrated Tribal Development Programme (ITDP) in the Kulathupuzha Gram Panchayat in Kerala.

About ITDP

- It is a **flagship project of NABARD** that has been implemented since 2005-06.
- It is centred on 'wadi', which is a small orchard based programme.
- **'Wadi' model** is holistic in approach, based on tribals' affinity to trees and forests.
- Projects are **funded through Tribal Development Fund (TDF)**.
- **Objective of TDF:** To create replicable models of integrated development of tribal families on participatory basis, through adoption of sustainable income generating activities

JUTE BASED LIVELIHOOD

Ministry of Rural Development organized Webinar to boost Jute Craft based livelihoods

About Jute:

- Jute is a **Kharif crop**
- Jute, a stem or bast fibre, is also known as the golden fibre.
- **Climatic Conditions:**
 - It grows well on alluvial soil
 - High temperature, heavy rainfall and humid climate are required during the time of growth.
- **Producing states:** West Bengal , Assam , Orissa , Bihar , Uttar Pradesh , Tripura and Meghalaya.
- **India is the largest producer of raw jute and jute goods** and stands at second place as an exporter after Bangladesh.
- Due to its high cost, it is losing market to synthetic fibres

PARTNERSHIP FOR MATERNAL, NEWBORN & CHILD HEALTH (PMNCH)

India Participated in the 33rd PMNCH Board Meeting at Geneva (Switzerland).

About PMNCH

- Established in 2005
- About: World's largest alliance for women's, children's and adolescents' health and well-being.
- Funded by inter-governmental organizations, and UN agencies etc.
- Aim: To have world in which every woman, child and adolescent realizes their right to health and well-being, leaving no one behind.
- Governance: PMNCH is governed by a Board and administered by a Secretariat hosted by World Health Organization (WHO)

MITOCHONDRIAL DISEASE

New IVF procedure called mitochondrial donation (currently under trial in Australia) offers a cure to Mito.

- Mitochondria is the Powerhouse of the cells producing 90% of the energy needed to sustain life.

About Mito

- Inherited metabolic condition caused by genetic mutation in the DNA.
- It impairs the ability of mitochondria to convert food and oxygen into energy.
- Two Kinds (as there are two types of DNA):
 - Nuclear DNA, inherited from both parents.
 - DNA of the mitochondria, passed down through the mother.

DENISOVAN

Scientists have identified bone remains found in a Tibetan Baishiya Karst Cave as belonging to a Denisovan individual.

About Denisovans

- An extinct species of hominid and a close relative to modern humans.
- May have ranged from Siberia to Southeast Asia during the last Ice Age.
- DNA evidence suggests Denisovans are related to both Neanderthals and modern humans, and may have interbred with both.
- Share a common ancestor - Homo heidelbergensis (most likely lived in Africa) - with both modern humans and Neanderthals.

PROJECT PARI

Ministry of Culture initiates Project PARI for the 46th World Heritage Committee Meeting.

- First intervention under Project is taking place in Delhi

About Project PARI

- It's being executed by Lalit Kala Akademi (an autonomous institution under the Ministry of Culture) and National Gallery of Modern Art.
- Aim: Promotes democratization of art through public installations in urban landscapes which transforms them into accessible galleries.
- More than 150 visual artists from all over the country would create artwork in Delhi such as paintings, murals, sculptures etc.
- It includes Thangka painting (Sikkim/Ladakh), Cherial painting (Telangana), Bani Thani Painting (Rajasthan), Alpana art (Tripura)

WORLD HERITAGE TRANSHUMANCE INITIATIVE

The initiative is led by the International Council on Monuments and Sites (ICOMOS) and supported by Azerbaijan.

- Initiative aims to highlight complex environmental, cultural and social dimensions of transhumance, promote international cooperation and building awareness of its contribution to human heritage.

About Transhumance

- Transhumance is the traditional practice of seasonal livestock movement, which involves the migration of human communities along with their herds.
- It is a common practice in several mountainous regions throughout the world.
- In 2023, two transhumance traditions – Transhumance in 10 European States and Alpine Pasture season of Switzerland – were declared Intangible Cultural Heritages of Humanity.

Transhumance Landscapes of India

- The transhumance practice is prevalent in the Himalayas, where there are several nomadic tribes such as Gujars, Bakarwals, Gaddis and Changpas, who rear sheep and goats.
- Animals are moved to subalpine and alpine pastures during summer, while during winter they are grazed on adjoining plains.
- This system also exists in the plains, such as Rajasthan, Madhya Pradesh, Tamil Nadu, Gujarat and Uttar Pradesh

MOIDAMS

International Council on Monuments and Sites (ICOMOS) has recommended inclusion of Assam's Ahom Era Moidams in UNESCO World Heritage List.

- ICOMOS is an advisory body of UNESCO World Heritage
- Committee for implementation of World Heritage Convention of UNESCO.

Ahom 'Moidam'

- Situated in Assam's Charaideo district, they **are the burial grounds** of rulers of Ahom kingdom, and are often compared to pyramids of Egypt.
- In 13th century, Chau-lung Siu-ka-pha, the founder of Ahom kingdom, established his first capital at Che-rai-doi or Charaideo (at the foothill of Patkai hills).



Architectural features:

- Exterior of Moidams is hemispherical and their sizes vary depending upon the power and status of the person buried.
- Moidam consists of **three major features**:
 - **A Vaulted Chamber** with a centrally raised platform where the body was laid,
 - **A hemispherical earthen mound** covering the chamber with a brick structure (Chaw-chali), and
 - **Octagonal boundary wall around** mound's base having an arched gateway on its west.

- Several objects used by deceased during his life, like royal insignia, objects made in wood or ivory or iron, gold pendants etc. were buried with them.
- The Changrung Phukan (canonical text developed by the Ahoms) record the materials used to construct Moidams which include wood, stone and burnt bricks

VACHANA LITERATURE

Fa.Gu. Halakatti, renowned for his role in revitalizing Vachana Literature was remembered on his birth anniversary.

About Vachana Literature

- “That which is spoken” is the literal meaning of the term “vachanas”.
- Type of Kannada rhythmic composition (also known as Kannada poetry) which originated in the 11th century and thrived throughout the 12th century as element of the Sharana movement.
- **Guru Basavanna** spearheaded the **Sharana movement** in Karnataka.
- Madara Chennaiah, an eleventh century cobbler-saint who lived in the time of the Western Chalukyas’ rule, is considered as the “father of Vachana poetry” by certain researchers

WORLD POPULATION PROSPECTS 2024

Recently, United Nations Department of Economic and Social Affairs (UN-DESA) released the World Population Prospects Report which provides population trends for countries across the globe.

Key Findings of the Report

Global

- Population peak: World’s population is projected to peak around 10.3 billion people in mid-2080s, up from 8.2 billion in 2024.
- Fertility rate: Currently, fertility rate stands at 2.25 live births per woman, down from 3.31 births in 1990.
- Life expectancy: Life expectancy at birth reached 73.3 years in 2024, an increase of 8.4 years since 1995.
- Early pregnancies: In 2024, 4.7 million babies, or about 3.5 per cent of the total worldwide, were born to mothers under age 18.

India

- India’s population is expected to reach its peak in early 2060s and is expected to remain the world’s largest throughout century.
- Main drivers of population increase
 - Population momentum: Growth in number of women of reproductive age even when the number of births per woman falls to/below the replacement level (2.1).
 - Other drivers: Higher fertility rates in some countries/ regions; increase in life-expectancy, etc

United Nations department of economic and social affairs

- Genesis: Rooted in the United Nations Charter.
- Headquarter: New York (US)
- Works closely with governments and stakeholders to help countries meet their economic, social, and environmental goals.
- It is the development pillar of the UN Secretariat.
- Important Reports: World Economic Situation and Prospects, Financing for Sustainable Development, etc.

BLUE PLANET PRIZE 2024

IPBES won Blue Planet Prize for 2024.

- Awarded annually by Japan based Asahi Glass Foundation to individuals and organizations to recognize achievements in scientific research and its application, providing solutions to global environmental problems. Prize includes an award of US\$500,000.

About IPBES

- Established in Panama City in 2012, it is **an independent intergovernmental body** to strengthen science-policy interface for biodiversity and ecosystem services.
- It is **not a UN body**. However, United Nations Environment Programme provides secretariat services to IPBES.
- **Secretariat:** Bonn, Germany
- Currently, it has more than 145 member States (including India). All States Members of UN are eligible for IPBES Membership

ZORAWAR TANK

Defence Research and Development Organisation (DRDO) unveils prototype of the country's indigenous light Zorawar tank.

About Zorawar Tank

- Jointly developed **jointly by the DRDO and private sector firm L&T**.
- Named after the legendary General Zorawar Singh who led multiple successful victories in Tibet.
 - Equipped with advanced technologies such as artificial intelligence (AI), integration of tactical surveillance drones, etc.
 - Designed for rapid deployment and manoeuvrability in mountainous regions, providing the same firepower as regular tanks but with enhanced mobility and situational awareness.
 - Tanks are amphibious, making them versatile for operations in riverine regions.

NATIONAL SECURITY COUNCIL

Union Government has restructured reporting relationships within National Security Council Secretariat (NSCS).

National Security Council (NSC)

- It is a 3-tiered organization, created in 1998, that oversees political, economic, energy, and security issues of strategic concern.
- National Security Advisor presides over the NSC.
- It operates within the executive office of the Prime Minister of India.
- It comprises the Strategic Policy Group, National Security Advisory Board, and Secretariat from the Joint Intelligence Committee.
- NSC's agenda includes issues of external and internal security, military affairs, conventional and non-conventional defense, etc

RIMPAC 2024

Indian Navy's P-8I aircraft joined Rim of the Pacific Exercise (RIMPAC) 2024 in Hawaii (USA).

About RIMPAC

- RIMPAC is the world's largest multinational naval exercise held biennially.
- Aim of RIMPAC 2024: bolster multilateral relationships and enhance operational preparedness across the Indo-Pacific region, reinforcing stability and security.

EXERCISE PITCH BLACK

Indian Air Force (IAF) contingent reached Australia to participate in Exercise Pitch Black 2024.

About Exercise Pitch Black 2024

- It is a biennial, multi-national exercise hosted by the Royal Australian Air Force (RAAF).
- It includes participation by 20 countries.
- The IAF has previously participated in the 2018 and 2022 editions of this exercise.
- It provides an opportunity for strengthening the ability to deploy over large distances, and support integrated operations in the Indo-Pacific region.

EXERCISE SAGAR KAVACH

It is a coastal security exercise held along Andhra Pradesh coast.

- It is aimed to validate the effectiveness of coastal security mechanisms in dealing with asymmetric threats from the sea.
- Assets of Indian Navy, Coast Guard, Marine Police, fisheries, customs and other security agencies were engaged in it

PANGONG LAKE

As per Satellite images it has been claimed that China is digging in close to Pangong Tso in Eastern Ladakh to build some structure.

About Pangong Tso

- Located at 4,350m altitude and is an endorheic (landlocked).
- World's highest saltwater lake.
- One-third of the lake lies in India and the other two-thirds in China.
- Change colors (appears blue, green and red at different times).

- Neither a part of the Indus River basin, nor a Ramsar Site.
- Acts as an important breeding ground for a variety of birds including a number of migratory birds.
- Formerly, Pangong lake had an outlet to Shyok River (tributary of Indus) but it was closed off due to natural damming

UDAYGIRI KHANDAGIRI CAVES

The President of India recently visited Udayagiri Caves in Bhubaneswar.

About Udayagiri and Khandagiri Caves

- They are built on the Kumari mountain range and are the earliest examples of rock-cut cave tradition in Odisha.
- They were built around 2nd century BC by King Kharavela of the Meghavahana dynasty for Jain monks.
- Udayagiri caves are famous for the Hathigumpha inscription which is carved out in Brahmi script highlighting military campaigns undertaken by Kharavela.
- There are other sets of Vaishnavite caves built during Gupta period in Udayagiri near Vidisha in Madhya Pradesh.



KARTARPUR CORRIDOR

Recently, Pakistan completed the long-awaited bridge at Kartarpur Corridor zero line.

About Kartarpur Corridor

- Corridor links Gurdwara Darbar Sahib in Pakistan, the final resting place of Sikhism founder Guru Nanak Dev, with the Dera Baba Nanak shrine in Gurdaspur district in India's Punjab state.
- Followers of Guru Nanak Dev built the Dera Baba Nanak town.
- Gurdwara Dera Baba Nanak is about 1 km from the Indo- Pakistan border and on the east bank of River Ravi while Kartarpur Sahib is located on west bank of River Ravi.

SATYAMANGALAM TIGER RESERVE

Study highlights lack of awareness on vulture conservation across species' key habitats in STR.

About STR

- Declared as tiger reserve in 2013.

- Located in **Erode district, Tamil Nadu**. It is contiguous with Mudumalai Tiger Reserve (TN); Biligiri Rangaswamy Temple Tiger Reserve and Bandipur Tiger reserves (Karnataka).
- Links Eastern and Western Ghats.
- Notable Fauna: Elephant, Tiger, Panther, Sloth bear, Gaur, Black Buck, Spotted deer, **Nilgiri langur**, etc.
- Forest types: Tropical dry thorn, tropical dry mixed deciduous; Tropical semi evergreen; Sub tropical hill forest.
- Concerns: Smuggling of Sandalwood; Poaching etc.

INDIAN GAUR AND SAMBHAR

Study by National Centre for Biological Sciences revealed disruption in genetic connectivity of two large herbivores – Gaur and Sambar – due to change in land use patterns and roads in Central Indian Landscape.

Gaur/Indian Bison (*Bos gaurus*)

- Grazing animal, lives in groups of about 30 to 40.
- Habitat: Mostly found in Western Ghats.
- Threat: Poaching, Food scarcity, etc.
- IUCN Status: Vulnerable
- WPA, 1972: Schedule I
- CITES: Appendix I



Sambar (*Rusa unicolor*)

- Large deer, predated by Indian Leopard, Bengal Tiger and Dhole.
- State animal of Odisha.
- Habitat: Native to Indian subcontinent and Southeast Asia.
- Threat: Habitat Encroachment and hunting.
- IUCN Status: Vulnerable
- WPA, 1972: Schedule



VAQUITA

A recent survey revealed a devastating decline in population of endangered marine mammal, the Vaquita.

About Vaquita

- It is the smallest and now most endangered species of the cetacean order.
- It is a toothed whale, like dolphins and sperm whales, as opposed to whales with baleen (Baleen is a filter-feeding system inside the mouths), such as the blue whale.



- It is endemic to the Gulf of California where it lives in the shallow waters bordering the Colorado estuary.
- **IUCN Conservation Status:** Critically endangered.
- **Threats:** Low reproductive rate and limited geographical distribution make it highly vulnerable to human disturbances.

SARUS CRANE

Summer census reveals rise in Sarus crane population in Uttar Pradesh.

About Sarus Crane

- It is the tallest flying bird in the world.
- It has been declared as State Bird of Uttar Pradesh.
- Social creature: Found mostly in pairs or small groups.
- Known to mate for life with a single partner.
- **Distribution:** Indian sub-continent (northern and central India, Terai Nepal and Pakistan), Southeast Asia and Northern Australia.
- **Habitat:** Marshes, floodplains, wetlands, fallow and cultivated lands and paddy fields.
- **Conservation Status:** IUCN (Vulnerable), WPA (Schedule IV).
- **Threats:** Habitat loss and degradation, conversion of land for agriculture, ingestion of pesticides



SQUALUS HIMA

Scientists from Zoological Survey of India discovered a new species of 'Squalus hima' from Sakthikulangara fishing harbor in Kerala along Arabian Sea.

About Squalus hima

- Squalus is a genus of dogfish sharks in family Squalidae.
 - Unlike most sharks, dogfish are venomous.
- Commonly known as **spurdogs**, and are characterized by smooth dorsal fin spines.
- They have angular short snout, a small mouth almost as wide as snout, first dorsal fin origin behind pectoral fins, and body without any spots.
- They are exploited for their liver oil which is in high demand for pharmaceutical industries particularly for making high end cosmetic products and anti-cancerous product.

