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## TWO BIRD SANCTUARIES OF BIHAR ADDED TO RAMSAR LIST

Nagi and Nakti bird sanctuaries, both located in Bihar's Jamui district, are now recognised under the Ramsar Convention taking total Ramsar sites in India to 82.

Both sanctuaries are man-made reservoirs (Nagi dam and Nakti dam) and feature dry deciduous forests surrounded by hills.

- Although Nagi lies in the Gangetic Plains of India, it has a landscape reminiscent of the Deccan Plateau.
- They are also recognised as an Important Bird and Biodiversity Area (IBA) by BirdLife International.

### Major birds' habitat

- Migratory birds: Bar-headed Goose, Greylag Goose, Northern Pintail, Red-crested Pochard, Steppe Eagle, etc.
- Resident birds: Indian Robin, Ashy-crowned Sparrow-Lark, Asian Koel, Asian Pied Starling, Bank Myna, etc.

### Ramsar Convention

- An intergovernmental treaty for the conservation and wise use of wetlands and their resources.
- Adopted at Ramsar (Iran) in 1971 and came into force in 1975.
- India became a party in 1982 (Maximum Ramsar sites are in Tamil Nadu followed by Uttar Pradesh).
- 'List of wetlands of international importance' or the Ramsar List contains wetlands which hold significant value for humanity as a whole.

## STATE OF THE OCEAN REPORT 2024

The report, structured around the UN Decade of Ocean Science for Sustainable Development (2021-2023), offers insights into ocean-related scientific activities describing the current and future state of the ocean.

### Key findings

- Warming: Ocean is now warming at twice the rate it was twenty years ago.
- Ocean temperatures have increased by an average of 1.45°C, with hotspots above 2°C in the Mediterranean, Tropical Atlantic Ocean and Southern Oceans.
- Rising Sea level rise: Mostly due to accelerated ice mass loss from the Greenland and West Antarctica ice sheets, and to a lesser degree from accelerated ocean warming.
- Acidification: Ocean absorbs around 25% of annual anthropogenic CO<sub>2</sub>. This process reduces seawater pH (ocean acidification).
- Ocean acidification would increase by more than 100% by the end of the century.
- Deoxygenation: Ocean oxygen content is decreasing, resulting in worsening hypoxia. However, it is unclear whether deoxygenation is accelerating in response to ocean heat content increase.

- Coastal blue carbon ecosystems: Mangroves, sea grasses and tidal marshes provide refuge against a warmer, more acidic ocean, and are an important store of carbon.
- However, their protection is not guaranteed and 20–35% have been lost since 1970.

## STATE AND TRENDS OF CARBON PRICING 2024: WORLD BANK REPORT

### Key Findings of the Report

- **Revenue Milestone:** Carbon Pricing (CP) revenues in 2023 exceeded USD 100 billion for the first time.
- **Global CP Instruments:** 75 global CP instruments are in operation, covering around 24% of global greenhouse gas emissions.
- **Notable Progress:** Brazil, India, and Türkiye have made significant strides towards CP implementation.
- **Leading Hosts:** China and India are the largest host countries for Carbon Credit issuances.

### Carbon Pricing (CP) Overview

- **Definition:** CP attaches a cost to greenhouse gas emissions, typically through CO2 pricing mechanisms.

### Main Types of CP

- **Emissions Trading System (ETS)**
  - **Description:** Allows emitters to trade emission units to meet their targets.
  - **Types:**
    - Cap-and-trade systems
    - Baseline-and-credit systems
- **Carbon Tax**
  - **Description:** Directly sets a price per unit of greenhouse gas emissions or carbon content.

### Benefits of CP

- **Environmental Accountability:** Places the burden of emissions damage on polluters.
- **Innovation and Investment:** Spurs investment and innovation in clean technology.
- **Paris Agreement Compliance:** Facilitates pathways for emissions to align with below 2°C/1.5°C warming targets

## ENVIRONMENTAL PERFORMANCE INDEX (EPI), 2024

Recently, EPI 2024 has been published by Yale Center for Environmental Law & Policy.

### About EPI, 2024:

- Using 58 performance indicators across 11 issue categories,
- EPI ranks 180 countries on climate change performance, environmental health, and ecosystem vitality.
- Estonia tops the list.

### India-related Findings:

- India has been ranked 176.
- India is currently world's third-largest GHG emitter, with total emissions growing 32 percent over past decade.
- In 2022, India surpassed China as the world's largest emitter of anthropogenic sulfur dioxide

## WORLD ENVIRONMENT DAY

### 51st Edition of World Environment Day

#### About World Environment Day

- **Date:** Celebrated annually on June 5
- **Purpose:** Promote sustainable practices and advocate for planet protection
- **Leadership:** Led by the United Nations Environment Programme (UNEP)
- **Platform:** Largest global platform for public outreach on environmental issues
- **2024 Theme:** Land restoration, desertification, and drought resilience

#### History

- **Inception:** Declared on June 5 during the 1972 Stockholm Conference on the Human Environment
- **First Celebration:** 1973 with the theme 'Only One Earth'
- **Growth:** Now involves over 150 countries

#### United Nations Environment Programme (UNEP)

- **Role:** Leading environmental authority in the UN system
- **Focus:**
  - Strengthening environmental standards and practices
  - Helping implement environmental obligations at various levels
  - Addressing climate change, biodiversity loss, and pollution
- **Objectives:**
  - Transition to low-carbon and resource-efficient economies
  - Strengthen environmental governance and law
  - Safeguard ecosystems
  - Provide evidence-based data for policy decisions
- **Headquarters:** Nairobi, Kenya
- **Key Reports:**
  - Emission Gap Report
  - Global Environment Outlook
  - Frontiers
  - Invest into Healthy Planet
- **Secretariat Functions:**
  - Convention on Biological Diversity (CBD)
  - Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
  - Minamata Convention on Mercury
  - Basel, Rotterdam, and Stockholm Conventions
  - Vienna Convention for the Protection of Ozone Layer and the Montreal Protocol
  - Convention on Migratory Species

## GROUNDWATER WARMING

### Key Highlights from the Department of Agriculture and Farmers Welfare Estimates

- **2023-24 Horticultural Production:** Decreased to 352.23 million tonnes (0.91% decrease compared to 2022-23).
- **Production Trends:**
  - **Increased:** Fruits, Honey, Flowers, Plantation Crops, Spices, Aromatic & Medicinal Plants
  - **Decreased:** Vegetables

### About the Horticulture Sector

- **Definition:** Art of production, utilization, and improvement of fruits, vegetables, spices, condiments, ornamental, plantation, medicinal, and aromatic plants.
- **Economic Contribution:** Accounts for about 33% of agriculture Gross Value Added to the Indian economy.
- **Global Standing:** Second largest producer of vegetables and fruits in the world, after China.

### Importance of Horticulture Crops

- **Economic Benefits:** High-value, high productivity crops requiring less irrigation, increasing farmers' profitability.
- **Nutritional Value:** Rich in nutrients, vitamins, minerals, and dietary fibers.
- **Foreign Exchange:** High demand in international markets.
- **Industrial Use:** Raw material for food processing, pharmaceutical industries, etc.

### Associated Challenges

- **Harvesting Practices:** Outdated methods and inadequate cold chain infrastructure result in 4.6-15.9% wastage annually.
- **Seedling Quality:** Lack of high-quality seedlings and rootstock.
- **Climate Change:** Leads to infestations, plant diseases, and reduced crop yield and quality.
- **Groundwater Warming:** Projected average rise of 2.1°C in groundwater temperature between 2000-2100.

### Implications of Groundwater Warming

- **Oxygen Levels:** Reduced oxygen, leading to hypoxic conditions affecting species growth and distribution.
- **Algal Blooms:** Increased soluble phosphorus causing harmful algal blooms.
- **Biodiversity:** Impact on food and reproductive cycles of temperature-sensitive species.
- **Pathogens:** Increased growth of pathogens deteriorating water quality.
- **Heating Demand:** Potential to sustainably meet local heating demands.

### Status of Groundwater in India

- **Irrigation:** Largest area under groundwater irrigation in the world.
- **Assessment (2022):**
  - **Overexploited:** 14% of assessed units (extraction exceeds annual recharge).
  - **Critical:** 4% of assessed units (extraction between 90-100% of annual resources).

### Water Distribution Facts

- **Polar Ice Caps and Glaciers:** Contain more water than groundwater.
- **Rivers and Lakes:** Contain less water than groundwater.

#### Initiatives for Groundwater Conservation in India

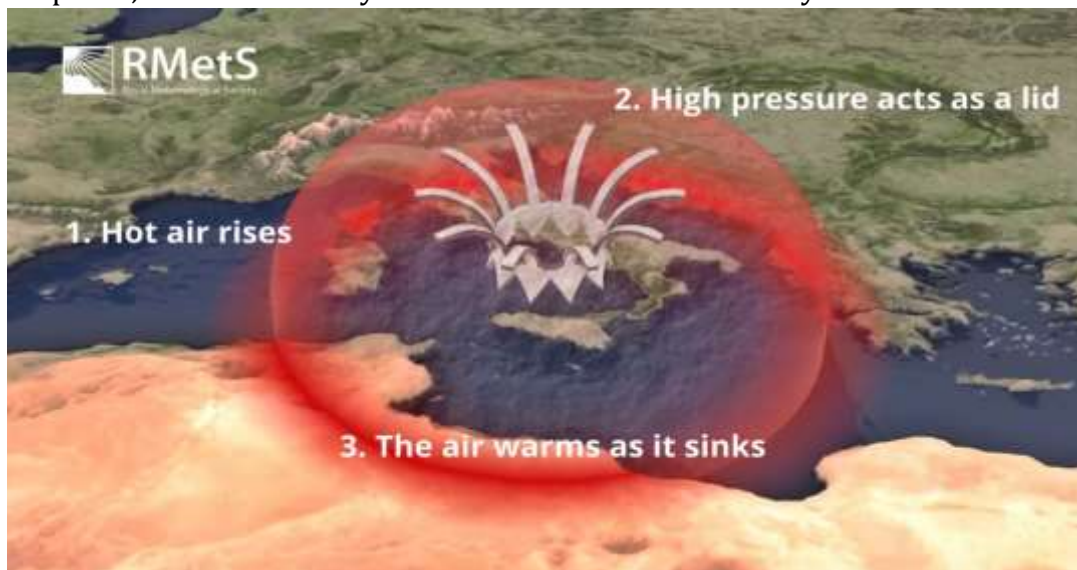
- **Atal Bhujal Yojana:** Under the Ministry of Jal Shakti for sustainable groundwater management.
- **Groundwater Management and Regulation:** Central Sector Scheme for aquifer mapping and monitoring groundwater levels and quality.
- **National Aquifer Mapping Program:** For sustainable aquifer management.

## HEAT DOME

Cities across southern and western states in the USA are facing heat waves due to a weather phenomenon known as Heat Dome.

### About Heat Dome

- It is a weather phenomenon where a ridge of high pressure gets stuck in the atmosphere.
- It traps hot air that expands vertically into the atmosphere and high pressure pushes it toward the ground.
- Winds usually move from high pressure but with the dome stretching far into the atmosphere, these weather systems become almost stationary



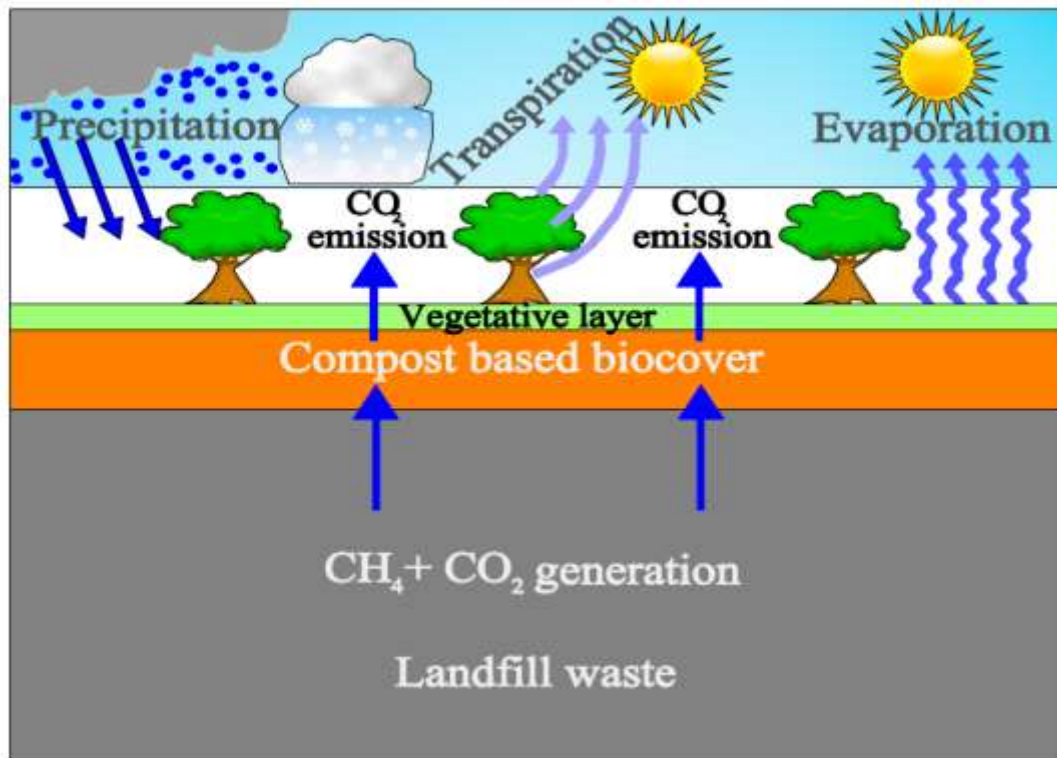
## BIOCOVER

A recent study has proposed a sustainable approach of microbial methane oxidation system (called as biocover) to control fugitive methane emissions from old dumpsites.

### About Biocover

- Biocovers are porous material layer laid directly on top of a landfill which is then covered by an oxidizing layer of mature compost.

- It provides optimal conditions for methanotrophic (methane utilizing) bacteria to thrive and act as biofilters, hence control methane emissions by converting methane to CO<sub>2</sub>.



- Potential applications: Road construction, land reclamation, etc.
- Concerns: As they are found in old and deep dumpsites, they may be contaminated with heavy metals and microplastics.

## BIOREMEDIATION

Recently, researchers found that marine fungus *Parengyodontium album* can break down the plastic polyethylene after being exposed to UV radiation.

Such plastic degrading microorganisms can be utilized for bioremediation of plastics.

### Bioremediation

- It is the process of reduction & elimination of contaminants present in the natural environment like soil, water through the application of microorganisms.
- Researchers have found various plastic degrading bacteria and fungi that can be used for bioremediation of plastics.
- Advantages: minimal disruption of ecosystem, permanent elimination of contaminants, cheap operation costs etc.

## COTTON CORPORATION OF INDIA (CCI)

CCI plans to open depots in Coimbatore (Tamil Nadu).

### About CCI

- Genesis: Established as a PSU under the Companies Act, 1956 in 1970.



- Ministry: It is under the administrative control of Ministry of Textiles.
- Headquarters: Navi Mumbai.

### Functions

- Undertakes price support operations, whenever market prices of kapas (seed cotton) fall below minimum support prices, without any quantitative limit.
- Undertakes commercial purchase operations to fulfill raw material requirement of domestic textile industry.
- Operations: Cover all cotton growing states in northern (Punjab, Haryana, Rajasthan), central (Gujarat, Maharashtra, Madhya Pradesh, Orissa), and southern zones (Andhra Pradesh, Telangana, Karnataka, Tamil Nadu).

## HYDROXYUREA

Indian Council of Medical Research (ICMR) seeks to provide oral formulation of Hydroxyurea to treat sickle cell disease (SCD) in children.

### About Hydroxyurea

- It is in a class of medications called antimetabolites.
- It treats sickle cell anemia by helping to prevent formation of sickle-shaped Red blood cells (RBCs).

### About SCD

- It's a group of inherited disorders that changes the shapes of
- RBCs from round to a C-shaped form called sickle.
- India has the highest prevalence of SCD in South Asia. (over 20 million).
- Sickle Cell Disease (SCD) is widespread among the tribal population in India where about 1 in 86 births among STs have SCD.
- A few states in India have a significantly higher SCD prevalence. These include:
  - Chhattisgarh, West Bengal, Uttar Pradesh, Maharashtra, Madhya Pradesh, Jharkhand, Gujarat, Odisha, Kerala and Rajasthan.
  - Collectively, these states are referred to as the sickle cell belt.

## NANOPARTICLE

### Enhancing Nanoparticle Formation with Charged Water Microdroplets

#### Key Findings

- **Researchers' Discovery:** Common minerals like river sand, ruby, and alumina can be instantly broken down by charged water microdroplets to produce corresponding nanoparticles.
- **Microdroplets:**
  - **Definition:** Tiny water droplets around 10 $\mu$ m in size, known for enhancing chemical reactions.
  - **Natural Generation:** Created by crashing ocean waves and atmospheric processes.

#### Potential Enhancements

- **Soil Formation:** Accelerates natural weathering processes, potentially transforming soil formation techniques.
- **Industrial Applications:** Efficient production of nanoparticles for various industrial uses.
- **Agricultural Benefits:** Enhances growth of crops like rice and wheat, where mineral nanoparticles (e.g., silica) are essential.

### Nanoparticles Overview

- **Definition:** Particles sized between 1 and 100 nanometers.
- **Properties:** Dependent on shape, size, surface characteristics, and inner structure.
- **Forms:**
  - **Aerosols:** Solids or liquids in air.
  - **Suspensions:** Solids in liquids.
  - **Emulsions:** Liquids in liquids.

### Formation of Nanoparticles

- **Natural Formation:** Through processes like erosion or weathering.
- **Human-Induced Formation:** Industrial and domestic activities such as cooking, manufacturing, and transport.
- **Manufacturing Approaches:**
  - **Top-Down:** Breaking large particles into nanostructures.
  - **Bottom-Up:** Assembling atoms or molecules into nanostructures.

### Applications of Nanoparticles

- **Medical:**
  - Targeted drug delivery
  - Gene therapy
  - Tissue engineering
- **Industrial:**
  - Induce unique electrical and mechanical properties
  - Create stronger, lighter, cleaner surfaces
- **Food Processing:**
  - Incorporate anti-microbial agents in packaging
  - Adjust gas permeability in packaging
- **Environmental:**
  - Air purification using ions
  - Wastewater purification with nanobubbles or nanofiltration systems for heavy metals
- **Electronics:**
  - Printed electronics
  - Carbon Nanotubes

## ARUN-III HYDRO POWER PROJECT

### Arun-III Hydropower Project: Key Details

- **Project Overview:**
  - **Capacity:** 900 MW run-of-the-river hydropower project.

- **Location:** Arun River, Sankhuwasabha District, Eastern Nepal.
- **Arun River:** A tributary of the Koshi River in Nepal.
- **Cost:** Rs. 144 billion, developed with Indian assistance.
- **Project Components:**
  - **Dam:** 70-meter-tall, 466-meter-long concrete gravity dam.
  - **Head Race Tunnel (HRT):** 11.74 km with an underground power house.
  - **Power Generating Units:** Four units, each with a capacity of 225 MW, located on the left bank.
- **Development and Operation:**
  - **Developer:** Satluj Jal Vidyut Nigam (SJVN) Arun-III Power Development Company (SAPDC), a joint venture of the Government of India and the Government of Himachal Pradesh.
  - **Operation Model:** Build-own-operate-and-transfer (BOOT).
  - **Operational Period:** SAPDC will operate the facility for 25 years (excluding the 5-year construction period) before transferring ownership to the Nepal government.
  - **Free Power to Nepal:** Nepal will receive 21.9% of the electricity generated as free power during the initial 25 years of operation.
- **Transmission:**
  - **Output Transfer:** Power will be transferred to Muzaffarpur, India.
  - **Transmission Line:** 317 km-long, 400 kV double circuit transmission line.

## Significance

- **Biggest Hydroelectric Facility:** Once completed, it will be the largest hydroelectric facility in Nepal.
- **Milestone Achievement:** Recently achieved a significant milestone with a tunnel breakthrough.
- **Energy Supply:** Enhances energy supply and cooperation between Nepal and India.
- **Economic Impact:** Promotes regional development and energy security.

## TELE-MANAS

- **Tele-MANAS Initiative and MoU Between MoHFW and Ministry of Defence (MoD)**
- **Signatories:** Ministry of Health and Family Welfare (MoHFW) and the Ministry of Defence (MoD)
- **Purpose:** Facilitate collaboration in operating a special cell of Tele-MANAS

### About Tele-MANAS

- **Full Form:** Tele Mental Health Assistance and Networking Across States
- **Launch:** October 2022 by the Ministry of Health and Family Welfare
- **Objective:** Provide free tele-mental health services nationwide, particularly targeting remote and underserved areas
- **Structure:** Two-tier system
  - **Tier 1:** State Tele-MANAS cells with trained counselors and mental health specialists

- **Tier 2:** Specialists from the District Mental Health Programme (DMHP) and Medical College resources for physical and e-Sanjeevani audio-visual consultations

### Current Operations

- **Tele-MANAS Cells:** 51 operational cells across 36 States and Union Territories
- **Languages:** Services offered in 20 different languages
- **Helpline Numbers:** Toll-free 24/7 helpline (14416 and 1-800-891-4416)
  - **Service Type:** Interactive Voice Response System (IVRS) based audio call with auto-call back

### Service Process

1. **Initial Contact:**
  - Caller connects via toll-free number
  - IVRS directs the call and an automated callback is initiated
2. **Counselor Engagement:**
  - Initial interaction with a trained counselor
  - Counselor assesses the need and provides immediate care or refers to a specialist
3. **Specialist Referral:**
  - If needed, the caller is referred to a mental health specialist (clinical psychologist, psychiatric social worker, psychiatric nurse, or psychiatrist)
  - Services include both audio and video consultation options
4. **In-Person Intervention:**
  - For urgent or complex cases, referral to nearest in-person service
  - Arrangement for audio-visual consultation with a specialist via eSanjeevani

### Benefits

- **Accessibility:** Ensures round-the-clock mental health support across the country
- **Comprehensive Care:** Provides a range of services from initial counseling to specialist consultations
- **Multilingual Support:** Offers services in multiple languages to cater to diverse populations

## ARTICLE 3

Telangana was carved out of the erstwhile Andhra Pradesh with Hyderabad as its capital in 2014.

- After independence, Andhra Pradesh State was the first state to be formed based on language (in 1953 following the death of PottiSriramulu).
- The move for a separate Telangana state was motivated by perceived regional inequality in the development.
- **Article 3** has provisions for the Formation of new States and the alteration of areas, boundaries or names of existing States.
- Currently, there are 28 states and 8 Union territories in the Country

## NOTA

NOTA was introduced in 2013 after a Supreme Court (SC) direction in a public Interest litigation filed by the Peoples Union for Civil Liberties (PUCL).

## About NOTA

- It provides voters an option to reject all running candidates, signaling their disapproval of the available choices.
- Even if NOTA gets the majority of votes, the candidate with the second-highest number of votes is declared the winner.
- SC held that NOTA option is meant only for universal adult suffrage and direct elections.
- Globally, It is also practiced in countries such as France, Belgium, Brazil, Finland and Sweden.

## Benefits of NOTA

- Avenue to express dissatisfaction by Citizens
- Incentivises greater participation in the democratic process of voting.
- Aims to encourage high moral and ethical values among citizens as well as politicians
- Indirectly compels political parties to nominate better candidates.
- Challenges of NOTA: Symbolic significance as it does not have an impact on the result of election, Meager amount of votes polled on NOTA, etc.
- NOTA option can be further strengthen as done in local body election of Maharashtra.
- In Maharashtra local body election, re-election may be conducted when majority votes are NOTA

## REPRESENTATION OF WOMEN IN LOK SABHA

Election of 74 women to 18th Lok Sabha (LS) is a slight dip in women representation as 78 women were elected to 17th LS (14.4% representation).

- Status of women representation in Legislature 9.7% of 797 women contestants won in 18 th LS elections while in 17th LS elections, 10.74% of 726 women contestants won.
- Women's representation in LS increased from 5% in first LS to its highest in 17th LS (14.4%).
- Presently, women members constitute 14.05% of Rajya Sabha members.
- Globally, share of women in national parliaments is 26.9%.

## Women's Reservation Act, 2023

- It modifies a single constitutional provision, Article 239AA, and adding three new articles: Articles 330A, 332A, and 334A.
- **Article 239AA (Amended)**
  - Article 239AA to the constitution grants special status to the Union Territory of Delhi as national capital with regards to its administrative and legislative functioning.
  - Article 239AA(2)(b) was amended by the Act accordingly to add that the laws framed by parliament shall apply to the National Capital territory of Delhi.
- **Articles 330A**

- The Act provided that reserved seats for women may be allotted by rotation to different constituencies in states or Union Territories for representation in the Lok Sabha.
- In the seats reserved for SCs/STs, the Act sought to provide one-third of the seats to be reserved for women on rotational basis.
- **Articles 332A**
  - The reservation of seats for women in every state Legislative Assembly.
  - Additionally, one-third of the seats reserved for SCs and STs must be allocated for women, and one-third of the total seats filled through direct elections to the Legislative Assemblies shall also be reserved for women (Article 332).
- **Articles 334A**
  - The reservation will be effective after the census conducted after the commencement of this Act.
  - Based on the census, delimitation will be undertaken to reserve seats for women.
  - The reservation will be provided for a period of 15 years (Sunset Clause).
  - However, it shall continue till such date as determined by a law made by Parliament.
  - Provisions of this act shall not affect any representation in legislative assemblies and the Lok Sabha until their dissolution

## MONETARY POLICY COMMITTEE (MPC)

Decision about Repo rate was announced in bi-monthly meeting of the Reserve Bank of India (RBI) MPC.

- Repo rate is the rate at which the central bank lends money to commercial banks against the collateral of government and other approved securities

### About Monetary Policy Committee (MPC)

- Under the amended RBI Act, 1934 the central government is empowered to constitute a six-member MPC.
- Three-members from the RBI and three members appointed by the government.
- It determines the policy repo rate required to achieve the inflation target.
- Each member of the MPC has one vote, and in the event of an equality of votes, the Governor has a second or casting vote.

## DEPRECIATION OF RUPEE

Depreciation of Rupee means fall in the value of rupee as compared to another currency due to market forces such as supply and demand

- Reasons: Political instability, outflow of capital
- Benefits: Boosts exports, discourages imports
- Issues: May give rise to inflation, expose companies to foreign exchange risks.
- Measures to control: RBI can Sell forex reserves, encourage capital flows in NRI deposits

- Devaluation is the deliberate downward adjustment in the official exchange rate by reducing the currency's value
- It is done either by the government or a central bank

### SELF-DECLARATION CERTIFICATE (SDC) MANDATORY FOR ALL NEW ADVERTISEMENTS

As per the Supreme Court (SC) directive, no advertisement will be permitted to run on television, print media, or the internet without a valid SDC.

- SDC, signed by an authorized representative of the advertiser/advertising agency, needs to be submitted through these portals.
- Broadcast Seva Portal for TV and Radio Advertisements.
- The Press Council of India's portal for print and digital/internet advertisements.
- SDC will certify that the advertisement:
  - Does not contain misleading claims.
  - Complies with all relevant regulatory guidelines, including:
    - Those stipulated in Cable Television Networks Rules, 1994.
    - The Norms of Journalistic Conduct of the Press Council of India.

#### Press Council of India (PCI), 1979

- A statutory quasi-judicial autonomous authority, set up under the Press Council Act, 1978.
- Role: Preserving the freedom of the press by maintaining and improving the standards of newspapers and the news agencies in India.
- Council consists: Chairman and 28 members.
- Chairman has, by convention, been a retired judge of the SC who is nominated by a Committee of: Chairman of Rajya Sabha Speaker of the Lok Sabha
- A person elected amongst themselves by the 28 members of the Council

### PUMP AND DUMP SCHEME

Recently SEBI imposed a fine on some individuals for allegedly operating a 'pump and dump' scheme.

- It was operated by recommendations shared through Telegram channels, resulting in public shareholders purchasing stock at inflated prices.

#### About Pump and Dump Scheme:

- A manipulation activity involving artificially inflating a stock's price through false and misleading information/recommendations.
- It is done only to sell stock at an inflated price.
- Prevalent in micro-cap and small-cap sectors due to limited public information and lower trading volumes.
- Impact: Undermine confidence in financial markets, and substantial losses to investors.
- Regulation: Under SEBI's guidelines, it is completely banned

## UNIFIED PAYMENT INTERFACE (UPI)

The Reserve Bank of India (RBI) and NPCI International Payments Ltd. (NIPL) have collaborated to expand UPI globally.

- The initiative aims to enhance cross-border payments and promote financial integration.

### About UPI

- **Unified Payments Interface (UPI):** Launched in 2016 by NPCI.
  - Integrates multiple bank accounts into a single mobile application.
  - Facilitates seamless fund routing and merchant payments within India.

### Significance of Internationalization

- **Global Market Expansion:** Facilitates faster and easier cross-border payments, boosting international trade.
- **Interoperability and Standardization:** Promotes seamless integration between payment systems across countries.
- **Digital Diplomacy:** Enhances India's influence and fosters goodwill through technological collaboration.

### Steps Taken

- **NPCI International Payments Ltd. (NIPL):**
  - Wholly owned subsidiary of NPCI, established in 2020.
  - Responsible for deploying RuPay and UPI services outside India.
- **UPI One World:**
  - Prepaid payment instrument linked to UPI for foreign nationals and NRIs from G20 countries.

### India's Initiatives under G20

- **Global Digital Public Infrastructure (DPI) Repository:**
  - Facilitates global collaboration on digital infrastructure standards.
- **Social Impact Fund:**
  - Supports DPI advancement in the Global South.

## GREEDFLATION

As per experts, the phenomenon of greedflation is contributing to high rates of inflation in the Western Countries.

### About Greedflation

- Greedflation means corporate greed is fuelling inflation. Instead of the wage-price spiral, it is the profit-price spiral that fuels inflation.
- A wage-price spiral is an economic situation in which rising wages and rising prices feed into each other in a self-reinforcing cycle.
- It implies that Companies exploit inflation by increasing their prices beyond just covering their increased costs and then use that to maximize their profit margins which further fuelled inflation.



## STICKY INFLATION

**Inflation and Rate Cuts:** Due to persistent inflation, experts now expect the Reserve Bank of India (RBI) to delay repo rate cuts until December this year. The anticipated rate cut cycle is expected to be shallow, with reductions likely between 75 – 100 basis points.

### Understanding Sticky Inflation

- **Definition:** Sticky inflation occurs when prices do not quickly adjust to changes in supply and demand, resulting in prolonged periods of inflation.

### Features of Sticky Inflation

- **Persistent Prices:** Prices for certain goods and services remain high and do not decrease quickly.
- **Primary Causes:**
  - **Rising Wages:** Increases in wages contribute significantly to persistent inflation.
  - **Consumer Goods and Services:** Higher costs for medical services, education, and housing play a crucial role.
- **Impact:**
  - **Erosion of Purchasing Power:** Reduces consumers' ability to buy goods and services.
  - **Housing Affordability Pressure:** Makes housing less affordable.

### Challenges for Central Banks

- **Inflation Control:** Central banks face difficulties in managing sticky inflation without triggering a recession.
- **Interest Rate Policy:**
  - **Rate Hikes:** Typically used to address sticky inflation.
  - **Economic Balance:** Raising rates too quickly can cause a recession; insufficient hikes allow prices to keep rising.

## CAPITAL ACCOUNT CONVERTIBILITY

To stay “future-ready” for India’s fast-growing economy, the Reserve Bank of India (RBI) has set aspirational goals: capital account liberalisation, internationalisation of the Indian rupee (INR), universalising digital payments, and globalising India’s financial sector over a multi-year timeframe.

### About Capital Account Convertibility:

- **Balance of Payments Account:** It is a statement of all transactions between a country and the outside world. It consists of two accounts:
  - **Current Account:** Deals with the import and export of goods and services.
  - **Capital Account:** Involves cross-border movement of capital via investments and loans.

- **Current Account Convertibility:** Freedom to convert rupees to other currencies for payments without restrictions.
- **Capital Account Convertibility:**
  - Freedom to conduct investment transactions without constraints.
  - No limits on converting rupees to foreign currency for asset acquisition.
  - No limits on NRIs bringing in foreign currency to acquire assets in India.
- **Why is it important?**

Caution in Developing Countries: Inflows and outflows of capital are volatile, can cause excessive currency appreciation/depreciation, and impact monetary and financial stability.

- **India's Progress:**
  - **Partial capital account convertibility** achieved.
  - India's cautious approach in opening its capital account was praised after the **1997 East Asian currency crisis** revealed issues with high current account imbalances and volatile short-term capital flows.
  - The **2006 SS Tarapore committee** report highlighted that even countries with strong fiscal positions could face currency crises and rapid exchange rate deterioration

## ZOMBIE COMPANY

An Associated Press analysis found the number of publicly-traded “zombie” companies has soared to nearly 7,000 around the world, including 2,000 in the United States.

### About Zombie Company:

- A zombie company is a **corporate entity** with very **limited cash flows**, only **sufficient to pay the interest on the debt** borrowed but **not the principal amount** of the loan.
- The **revenue generated** by the business operations **only covers the fixed routine and operating costs** (wages, rent, interest payments on debt, for example).
- These companies, often referred to as the **"living dead" or "zombie stocks,"** have **no excess capital to invest** in growth, innovation, or significant improvements.
- They are **highly dependent on banks for financing.**
- They are typically **subject to higher borrowing costs** and may be **one just event**—market disruption or a poor quarter performance—**away from insolvency or a bailout.**
- They are **“uncompetitive survivors”** and contribute to **lower productivity** in the global economy.
- These companies can pose a **risk to the broader economy** by **tying up resources** that could be more effectively used by healthier, more innovative firms.

## LIQUID NITROGEN

Food Safety and Standards Authority of India (FSSAI) has issued advisory on unauthorized use of liquid nitrogen in food by food serving establishments.

## About Liquid Nitrogen

- Nitrogen is colourless, odourless gas or liquid (cooled to liquid at very low temperature).
- It has functional use as 'freezing agent, propellant, packaging gas & foaming agent'.
- As per Food Safety and Standards (Food Products Standards and Food Additives) Regulation, 2011, nitrogen is a Good Manufacturing Practice (GMP) additive.
- It is allowed in dairy-based ice cream desserts at GMP levels solely for contact-freezing and cooling purposes.
- Health Effects: Frostbite, burns, asphyxiation and damage to internal organs

## WHITE PHOSPHOROUS

Israel is accused of using white phosphorus munitions in southern Lebanon.

### White Phosphorous

- It is a toxic substance produced from phosphate-containing rocks.
- Reacts and burns in air at temperatures above 30 °C until deprived of oxygen
- **Uses:**
- Military: In ammunition, to produce smoke for concealing troop movements and identifying targets.
- Industrial: To manufacture chemicals used in fertilizers, food additives, and cleaning compounds.
- It is not considered a chemical weapon under the Chemical Weapons Convention (CWC)

## INTERNATIONAL SPACE STATION

Starliner has innovative, weldless, reusable structure lasting up to 10 missions with six-month turnarounds, featuring wireless internet interfaces.

### About International Space station (ISS)

- It is an artificial satellite research facility jointly developed by the USA, European Countries, Japan, Canada and Russia.
- It is the largest manmade and habitable artificial satellite.
- Altitude: Installed in the near-earth orbit which is about 400 km above the earth.

### About India's Own Space Station:

- Conceptualisation Phase: ISRO is developing India's first space station, Bharatiya Antariksh Station.
- The station is planned to be assembled in a phased manner like ISS by 2035.
- The Gaganyaan mission, expected to launch by 2026, will demonstrate India's capability to send humans into space

## TRISHNA

TRISHNA (Thermal Infra-Red Imaging Satellite for High-resolution Natural Resource Assessment) mission is a collaborative endeavor between ISRO and CNES (French Space

Agency) to monitor surface temperature and water management at regional to global scale.

### About TRISHNA Mission

Objective: Detailed monitoring of energy and water budgets of continental biosphere for quantifying terrestrial water stress and water use and high-resolution observation of water quality and dynamics.

- It will also help in a comprehensive assessment of urban heat islands, detection of thermal anomalies linked to volcanic activity and geothermal resources, etc.
- **2 Primary payloads**
- **Thermal Infra-Red (TIR) payload:** Provided by CNES, features a four-channel long-wave infrared imaging sensor.
- **Visible - Near Infra-Red - Short Wave Infra-Red (VNIR-SWIR) payload:** Developed by ISRO, includes seven spectral bands designed for detailed mapping of surface reflectance.
- It will operate in a Sun-synchronous (SSO) orbit and is designed for a 5-year operational life.
- SSO is a particular kind of polar orbit in which satellites are synchronized to always be in the same position relative to the Sun

### PRAVAHA SOFTWARE

ISRO develops PraVaHa (Parallel RANS Solver for Aerospace Vehicle Aero-thermodynamic Analysis) software.

### About PraVaHa

- Computational Fluid Dynamics (CFD) software.
- Can simulate external and internal flows on launch vehicles, winged and non-winged re-entry vehicles.
- Developed in ISRO's Vikram Sarabhai Space Centre (VSSC).

### Vikram Sarabhai Space Centre (VSSC)

- Responsible for the design and development of launch vehicle technology.
- Major programme includes Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV), GSLV Mk III etc.
- HQ: Thiruvananthapuram, Kerala

### THISMIA MALAYANA

A distinctive plant named *Thismia malayana*, which steals nutrients from underground fungi, has been published as a new species.

#### About *Thismia malayana*:

- It is a **new species of plant** discovered in the **tropical rainforests of Peninsular Malaysia**.
- It belongs to a group of plants known as **mycoheterotrophs**.
  - Unlike most plants, **mycoheterotrophs do not perform photosynthesis**.
  - Instead, they **act as parasites**, stealing carbon resources from the fungi on their roots.

- This adaptation **takes advantage of the mycorrhizal symbiosis**, which is usually a mutually beneficial relationship between colonizing fungi and a plant's root system.
- **What happens in mycorrhizal symbiosis?**
  - The **fungi help the tree absorb water and nutrients** from the soil, while the **tree provides the fungi with sugars** produced through photosynthesis.
  - This symbiotic partnership is **vital for the health and growth of both organisms**.
- But **Thismia malayana, instead of contributing** to the exchange, **acts as a parasite, siphoning off carbon resources** from the fungi **without offering anything in return**.
- By stealing nutrients from fungi, this newly discovered species **thrives in the low-light conditions of dense forest understories**, where its highly specialised flowers are pollinated by fungus gnats and other small insects.
- The unusual plant is around 2 cm long and is typically **found hidden in leaf litter** and growing **near tree roots or old rotten logs**.

Despite its small size, *Thismia malayana* is very **sensitive to environmental changes** and has been **classified as Vulnerable** according to the **IUCN Red List**.

## BLAZE STAR

The upcoming explosion of "Blaze Star" (T Coronae Borealis), officially known as T CrB, promises to be a rare celestial event visible to the naked eye. Here are some details about this fascinating phenomenon:

### About Blaze Star (T Coronae Borealis):

- **Location and Distance:** Blaze Star is located approximately 3,000 light-years away from our solar system in the constellation Corona Borealis (the "Northern Crown").
- **Stellar Classification:** It is classified as a recurrent nova, which means it undergoes periodic and sudden increases in brightness due to a thermonuclear explosion.
- **Stellar Components:** Blaze Star is part of a binary star system. It consists of a white dwarf and a red giant star orbiting each other.
  - The white dwarf draws material from the red giant, which periodically ignites in explosive bursts of light.
- **Frequency of Eruptions:** The nova event of T CrB occurs approximately every 80 years. Notable eruptions were recorded in 1866 and 1946, with earlier observations dating back to 1787 and even earlier to 1217.
- **Mechanism of Explosion:** The explosion occurs when material from the red giant accumulates on the surface of the white dwarf, leading to a rapid increase in temperature and pressure. This triggers a runaway thermonuclear reaction that causes the sudden brightening of the star.
- **Visibility:** During its eruption, Blaze Star is expected to become visible to the naked eye, shining as brightly as Polaris (the North Star) for about a week. This makes it a significant event for astronomers and skywatchers alike.
- **Predicted Event:** NASA predicts that the next eruption of T CrB will occur sometime between now and September 2024. The exact timing can vary due to the unpredictable nature of nova eruptions.

- **Scientific Interest:** Novae events like T CrB provide valuable insights into stellar evolution and the dynamics of binary star systems. They differ from supernovae in scale and consequences, as novae do not destroy the star system but rather allow it to reset and repeat the cycle.

## ONGE TRIBE

The Onge tribe, indigenous to Little Andaman Island in the Andaman archipelago, represents a unique cultural and anthropological community in India.

### **Cultural and Ancestral Background:**

- **Negrito Ancestry:** The Onge people belong to the Negrito racial group, characterized by their dark skin, curly hair, and relatively small stature.
- **Traditional Lifestyle:** Historically, the Onge were semi-nomadic, relying on the ocean and forest for their livelihood. Fishing, hunting, and gathering were essential activities.

### **Beliefs and Practices:**

- **Religious Practices:** Unlike organized religions, the Onge do not follow strict worship practices or sacrifices.
- **Unique Cultural Practices:** They adorn their bodies and faces with white and ochre clay, with special emphasis on body ornamentation during important events.
- **Teeth Coloring:** The Onge traditionally chew bark to color their teeth red, considering pearly white teeth a symbol of death.

### **History and Population Decline:**

- **Colonial Impact:** Contact with British colonists and later Indian settlers significantly impacted the Onge population. By the early 2000s, their numbers had dwindled from 670 in 1900 to only 96.
- **Resettlement:** In 1976, the Indian government resettled the Onge to a designated reserve in Dugong Creek on Little Andaman. This area is much smaller than their original territory.
- **Current Population:** As of recent reports, the Onge tribe's population stands at 136 individuals, indicating a slight increase.

### **Challenges and Issues:**

- **Infertility Concerns:** The Onge face challenges related to infertility, affecting over 40% of married couples. This demographic challenge poses long-term implications for their community's sustainability.
- **Cultural Resilience:** Despite historical and demographic challenges, the Onge continue to maintain their cultural practices and identity within their reduced habitat.

## PLACENTAL MAMMALS

Recent research from Stockholm University has provided new insights into the evolutionary history of brown fat, a specialized organ found exclusively in modern placental mammals. Here's a detailed overview:

### **Brown Fat and its Evolution:**

- **Function:** Brown fat, also known as brown adipose tissue (BAT), plays a crucial role in thermoregulation by generating heat through non-shivering thermogenesis.
- **Exclusive to Placental Mammals:** The study indicates that brown fat evolved specifically in placental mammals. This organ is absent in monotremes (egg-laying mammals) and marsupials.
- **Evolutionary Origin:** The evolutionary origin of brown fat coincides with the emergence of placental mammals, which occurred between approximately 163 million to 157 million years ago during the Jurassic Period.
- **Significance:** Brown fat allows placental mammals to maintain body temperature efficiently, particularly in cold environments or during hibernation.
- **Distribution:** It is distributed in various regions of the body, including the neck, shoulders, and around the spine, and is particularly abundant in newborns and hibernating mammals.

#### **Placental Mammals: Overview**

- **Definition:** Placental mammals are characterized by their well-developed placenta, a vital organ that nourishes the fetus during gestation.
- **Gestation:** They carry their young in the uterus until they are well-developed, allowing for a longer gestation period compared to marsupials and monotremes.
- **Diversity:** There are approximately 4,000 identified species of placental mammals, encompassing diverse groups like rodents, bats, carnivores, ungulates (hoofed animals), and primates.
- **Geological Timeline:** Fossil evidence places the first placental mammals in the Jurassic Period, evolving alongside the diversification of flowering plants and insects.

#### **Marsupials: Overview**

- **Characteristics:** Marsupials are mammals known for giving birth to relatively undeveloped young that continue to grow in a pouch (marsupium).
- **Placenta:** They have a less-developed placenta compared to placental mammals, limiting the gestation period.
- **Distribution:** Found primarily in Australia and South America, marsupials include iconic species like kangaroos, koalas, and opossums.
- **Adaptations:** Marsupials have adaptations such as an epipubic bone to support their pouch and a unique reproductive strategy compared to placental mammals.

### **MAHARANI TEMPLE**

In a tragic event, the iconic Maharani Temple in Gulmarg, located atop a hillock was gutted in a blaze.

#### **About Maharani Temple:**

- It is situated on a small hillock in the heart of **Gulmarg town** in the Baramulla district of **Jammu and Kashmir**.
- Also known as the **Rani Temple** or **Mohineshwar Shivalaya**, the temple is **dedicated to Lord Shiva and his consort, Parvati**.
- It was **constructed by Mohini Bai Sisodia, wife of the former ruler of Kashmir, Maharaja Hari Singh, in 1915**.
- This temple was **once a royal temple of the Dogra dynasty** of the erstwhile princely state of Jammu and Kashmir.

- It has been constructed in such a way that it can be **seen from all corners of Gulmarg.**
- The temple's intricate carvings and designs reflect a beautiful **blend of Indian and Persian styles.**
- It is an **example of religions intertwined** with a **Muslim priest performing rituals** in the temple.

The **Indian Army collaborated with local communities in 2021 to restore this 106-year-old temple.** Apart from renovating the temple structure, the Indian Army also undertook the redesigning of pathways leading to the temple

## MONGLA PORT

India is looking to operate the Mongla Port in Bangladesh and build a new terminal, aiming to counterbalance China's strategic presence in the region.

### About Mongla Port

- The Port of Mongla is located in **the Bagerhat District of Bangladesh.**
- It lies 62 km north of the **Bay of Bengal** coastline.
- It is situated at the confluence of the **Pasur River and the Mongla River.**
- The Port is surrounded and protected by the **Sundarban mangrove** forest.
- Mongla is the **second largest seaport in Bangladesh** after Chittagong.

### Significance for India:

- Provides **strategic access** to India's northeastern states (e.g., Assam, Tripura, Meghalaya).
- Reduces distance and transportation costs for goods to and from these regions.
- **India Ports Global Limited (IPGL)** has expressed interest in operating Mongla Port, which would be its third international port operation after **Chabahar in Iran** and **Sittwe in Myanmar.**
- **Expansion project:** India and Bangladesh signed a MoU on the use of Chattogram and Mongla ports in 2015.
  - The MoU envisages the transit of goods from Mongla port to the **northeastern states** of India through **waterways, roads and railways.**

## SIANG VALLEY

Indian researchers have discovered a new blue-coloured ant species named **Parapatrechina neela** in Siang Valley.

### About Siang Valley

- Lies primarily in Arunachal Pradesh.
- Brahmaputra River in Arunachal Pradesh is known as the Siang River.
- Part of the Eastern Himalaya Biodiversity Hotspot.
- Key Protected Areas in this valley includes Mouling National Park and Daying Ering Wildlife Sanctuary.
- Tribal Groups: Nyishi, Adi tribes etc.
- Threat: Large-scale infrastructure projects like dams, highways and military installations and climate change.



## MOUNT KANLAON

### Mount Kanlaon:

- **Location:** North-central portion of Negros Island, Philippines
- **Type:** Stratovolcano
- **Geographical Features:**
  - **Height:** Highest mountain on Negros Island, 42nd tallest peak on an island globally
  - **Geological Context:** Part of the Pacific Ring of Fire
  - **Structure:** Consists of multiple pyroclastic cones and craters
  - **Summit:** Elevation of 2,435 meters, featuring a broad caldera with a crater lake and an active crater to the south
  - **Base:** Spans approximately 30 km x 14 km
- **Geological Composition:** Underlain by tropical volcanic materials including lava flows, lahar deposits, tephra, and pyroclastic materials
- **Ecological Significance:** Biologically diverse, home to various flora and fauna; serves as headwaters for major river systems on Negros Island
- **Volcanic Activity:**
  - **Eruptions:** Several recorded eruptions since 1886, characterized by phreatic explosions of small to moderate scale
  - **Phreatic Eruptions:** Steam-driven explosions caused by the heating of groundwater by volcanic activity

### Phreatic Eruptions: Explanation

- **Definition:** Explosions driven by steam when water, either beneath the ground or on the surface, is heated by volcanic processes
- **Process:**
  - **Heating:** Magma rises towards the Earth's surface, heating groundwater near volcanic vents
  - **Steam Generation:** Heated water rapidly turns to steam, creating pressure that leads to an explosive release
  - **Characteristics:** Typically involve no new magma or lava, mainly consisting of ash, steam, and rocks ejected forcefully
- **Occurrence:** Phreatic eruptions can occur before, during, or after traditional volcanic eruptions and may indicate increased volcanic activity

## DNIPRO CITY

### Dnipro: City in Ukraine

- **Former Name:** Dnipropetrovsk
- **Location:** Dnipropetrovsk Oblast, eastern Ukraine
- **Geography:**
  - **Area:** 409,718 sq. km
  - **Geographical Features:** Situated along both banks of the Dnieper River near its confluence with the Samara River
  - **Bank Division:** City center on the right bank (Dnieper Upland), left bank on the Dnieper Lowland
- **Population:** Approximately 980,948 inhabitants (2021 census)

- **Ranking:** Fourth-largest city in Ukraine after Kyiv, Kharkiv, and Odesa
- **Industrial Significance:** Principal industrial center known for heavy industries including launch vehicles, rolled metal, cast iron, machinery, and chemicals

### Dnieper River: Key Facts

- **Rank:** Fourth-longest river in Europe (after the Volga, Danube, and Ural)
- **Geographical Coverage:**
  - **Drainage Area:** Belarus and Ukraine
- **Course:**
  - **Origin:** Low Valday Hills in Russia (west of Moscow)
  - **Length:** 1,368 miles
  - **Flow:** Runs through western Russia, Belarus, and Ukraine
  - **Endpoint:** Empties into the Black Sea
- **Urban Centers:** Passes through several cities including Smolensk and Dorogobuzh in Russia; Mogilev in Belarus; Kiev, Cherkasy, Dnipro, and Zaporizhia in Ukraine

## SUNKOSHI RIVER

### Sunkoshi River

- **Nickname:** Known as the 'river of gold'
- **Location:** Nepal; part of the Koshi or Saptkoshi River system
- **Source:** Originates from the Zhangzangbo Glacier in Tibet
- **Course:**
  - Flows through eastern Nepal
  - Merges with River Saptkoshi
  - Joins the Ganga in Katihar district of Bihar, India
  - Drains into the Bay of Bengal in Bangladesh
- **Significance:**
  - Popular for rafting with challenging rapids
  - Forms the watershed for most of eastern Nepal

### Key Facts about Koshi River

- **Transboundary:** Flows through China, Nepal, and India
- **Tributary:** Prominent tributary of the Ganges
- **Course:**
  - Originates from the Tibetan Plateau
  - Crosses the Himalayas, Mahabharat range, and Siwalik hills
  - Enters the plains of eastern Nepal
  - Confluences with the Ganges in Bihar, India
- **Drainage Area:**
  - Total: 74,500 sq.km
  - Indian Territory: 11,070 sq.km
  - Drains about 45% of Nepal
- **Geographical Features:**
  - Bounded by steep margins, isolated from neighboring rivers
  - Known for its tendency to change course westward
  - Historical course shifts have impacted agricultural lands
- **Nickname:** 'Sorrow of Bihar' due to historical flooding and course changes impacting Bihar

## **Tributaries of Koshi River**

- **Major Tributaries:**
  - Sun Koshi
  - Tama Koshi or Tamba Koshi
  - Dudh Koshi
  - Indravati
  - Likhu
  - Arun
  - Tamore or Tamar

## **RANA PUNJA BHIL**

Rana Punja Bhil was a tribal leader belonging to the **Bhil tribe**.

- He was a contemporary of Maharana Pratap, the 16<sup>th</sup> -century ruler of Mewar.
- He led the guerilla warfare and restricted Mughal advances in Battle of Haldighati (1576) between Maharana Pratap and Mughal emperor Akbar.
- Maharana Pratap bestowed him with the title of "Rana."

## **NARAYAN MALHAR JOSHI**

Recently he was remembered on his birth anniversary.

### **About N.M. Joshi (Nana Saheb Joshi)**

- He was a trade unionist and freedom fighter born in Maharashtra.
- Represented India at first International Labour Conference in 1919.
- Associated organizations: Established Social Service League in 1911.
- Co-founded All India Trade Union Congress in 1920 and helped establish Bombay Textile Labour Union.
- Prominent member of Bombay Provincial Congress Committee, People's Volunteer Brigade and Servants of India Society.
- Known for his work in Royal Commission on Labour in India (Describing conditions of workers)

## **SUKUMAR SEN (1898-1963)**

A biopic on the life of Sukumar Sen has been announced.

### **About Sukumar Sen**

- First Chief Election Commissioner of India, served from 1950 to 1958.
- Conducted first two Lok Sabha elections of India (1952 and 1957) simultaneously with the Legislative Assembly Elections based on universal adult franchise.
- Many innovative methods were introduced under his leadership to conduct free and fair elections such as indelible ink to avoid voter impersonation.
- Served as the Chairman of the International Election Commission.
- Awards and Honour: Padma Bhushan.

## **TMESIPTERIS OBLANCEOLATA**

News research shows that *Tmesipteris ob lanceolata*, a species of fork fern, has largest genome.

- Genome is the complete set of genetic information in an organism.

### **About *Tmesipteris oblaceolata***

- Contains 160 billion base pairs (the units that make up a strand of DNA) outstripping the human genome by more than 50 times.
- It belongs to a primordial group of plants that evolved long before dinosaurs set foot on the earth.
- Found only in New Caledonia and a few nearby islands in the Pacific Ocean and thrives on the trunks and branches of trees in Rainforests

## ANTLIONS

Researchers have found two antlion species for first time in India, Thailand and Vietnam.

- They are *Pseudoformicaleo nubecula* and *Creoleon cinnamomeus* and were found in Kerala.

### **About Antlion:**

- Belong to family of insects.
- Comparison with damselflies: Although both have morphological resemblance, antlions are distinguished by their long, distinct antennae.
- Behaviour: Known by their **pit-building habit** as part of their predation strategy.
- Ecological Significance: Being carnivorous, they serve as biological agents to destroy the harmful pests

## PARENGYODONTIUM ALBUM

### **Parengyodontium album: A Plastic-Degrading Marine Fungus**

- **Name:** Parengyodontium album
- **Type:** Marine fungus capable of breaking down polyethylene (PE), a common oceanic plastic.
- **Discovery:** Identified by Marine microbiologists from the Royal Netherlands Institute for Sea Research (NIOZ).

### **Bioremediation Process**

- **Plastic Degradation:** *P. album* utilizes PE-derived carbon, converting it into fungal biomass as an energy source.
- **UV Dependence:** Initial photodegradation of PE by UV sunlight is essential for the fungus to initiate the degradation process.
- **Application:** Effective in degrading floating oceanic plastic litter.

### **Environmental Impact**

- **Plastic Production:** Humans produce over 400 billion kilograms of plastic annually, contributing significantly to oceanic plastic pollution.
- **Bioremediation Potential:** Fungi like *P. album* are considered effective 'masters of degradation' due to their diverse array of digestive enzymes tailored for plastic degradation.
- **Exploration:** Researchers anticipate discovering more plastic-degrading fungi in deeper oceanic environments.

## SPOT BELLIED EAGLE OWL

### **Pench Tiger Reserve: First Photographic Record of Spot-Bellied Eagle Owl**

#### **About the Spot-Bellied Eagle Owl**

- **Scientific Name:** *Ketupa nipalensis*
- **Common Name:** Forest eagle-owl



#### **Distribution**

- **Habitats:** Tropical and subtropical forests, woodlands, and savannas
- **Geographical Range:** India , Sri Lanka, Nepal ,Bhutan Bangladesh Parts of Southeast Asia

#### **Physical Features**

- **Size:**
  - Length: 50 to 65 cm
  - Weight: 1500 to 1700 grams
- **Wingspan:** Up to 1.7 meters
- **Coloration:**
  - **Upperparts:** Rich chocolate brown with white spots
  - **Wings and Tail:** Barred with alternating shades of brown and white
  - **Underparts:** Light cream color with bold black spots

#### **Behavior and Ecology**

- **Activity:** Primarily nocturnal
- **Diet:** Apex predator feeding on rodents, small mammals, reptiles, and insects
- **Social Structure:** Solitary and territorial

#### **Conservation Status**

- **IUCN Status:** Least Concern
- **Wildlife (Protection) Act, 1972:** Schedule IV
- **CITES:** Appendix II