

Current Affairs Update (Oct 1-7)

National

Legal Challenges for Caste-Based Survey

- Critics argue that the survey **violates the Constitution, infringes on privacy, exceeds the state government's competence (in Bihar's Case)**, is politically motivated, and relies on unreliable methods.
- Critics assert that **assigning caste identity to all citizens**, regardless of their intent to access state benefits, **contradicts constitutional rights** such as the right to identity, dignity, informational privacy, and **choice under Article 21**.
- The central government has exclusive authority, per **Entry 69 in the Seventh Schedule's Union List**, to conduct a census, raising questions about the Bihar state's role in this survey.
- However, the Patna High Court initially halted, but later validated it, citing the **Indra Sawhney Case and its alignment with Article 16(4)** of the Constitution.

Key findings in Bihar Caste census: Confirms substantial OBC presence in Bihar. OBCs and EBCs make up over **63% of the population**. Political parties seek to leverage the data for political strategies, emphasizing "social justice" and "development with justice. These findings may lead to **demands for increasing the OBC quota** beyond 27% and introducing a quota within a quota for the EBCs

Other issues:

- Disclosure of caste could lead to stigma
- Exploitation by politicians for short-term gains
- Oversimplification overlooks intra-caste variations and historical changes
- Caste identities are not static and may change due to factors like inter-caste marriages. The survey may struggle to capture dynamic changes

Sarna religious code

- **The Jharkhand** Chief Minister has written to the Prime Minister, urging the recognition of the **'Sarna' religious code for tribal communities in the state**.
- The request for the Sarna code as a **separate religious code in the next Census has been a long-standing demand of tribal groups**, and **the Jharkhand Assembly passed a resolution for the 'Sarna' code on November 11, 2021**.
- **Protecting the traditional religious practices** of tribals is crucial, and the demand for a **'Tribal/Sarna Religious Code'** is being raised to ensure the **confidence and identity of the nature-worshipping tribal community**

About Sarna Religion:

The Sarna religion is a nature-worshipping faith that is also known as “**Sarna Dharma**” or “**Religion of the Holy Woods**”. Followers of the **Sarna religion pray to trees and hills and believe in protecting forest areas. Their holy grail is “Jal (water), Jungle (forest), Zameen (land)”**.

The Sarna religion is **practised by a majority of the tribal community in Jharkhand**. The tribal community celebrates **the Sarhul festival, which is the New Year festival, as part of the Sarna religion**.

Central Tribal University

- The Prime Minister has announced the **establishment of a Central Tribal University** in Telangana’s Mulugu district, **with a project cost of Rs 900 crore**.
- The university will be **named after tribal goddesses Samakka and Sarakka**. This initiative is aimed at **benefiting the youth, particularly those from tribal communities**.
- Additionally, the Prime Minister has conferred the **title of “Institution of Eminence” on the Central University of Hyderabad and provided it with a special fund**.

Cauvery Water Dispute

The Cauvery Water Dispute is a dispute between the Indian states of **Karnataka and Tamil Nadu**, along with **Kerala and Puducherry**, over the sharing of the **Cauvery River’s waters**. It involves issues of water allocation and usage rights, with historical agreements, tribunals, and court rulings playing a significant role in its resolution.

Water sharing in the Cauvery River is regulated by a **monthly schedule between Karnataka and Tamil Nadu**. In a typical year, Karnataka must release about 177 TMC of water to Tamil Nadu from June to May, including about 123 TMC during the monsoon months from June to September. Disputes often arise during the **southwest monsoon season when rainfall is below expectations**.

Tamil Nadu went to the Supreme Court to **ensure the release of 24,000 cusecs of water** from Karnataka’s reservoir. Karnataka had previously refused agreed-upon water release quantities.

Mekedatu Dam Project: Tamil Nadu argues that the project is **unauthorized and could harm its interests**, violating the orders of the Cauvery Water Disputes Tribunal and the Supreme Court. While Tamil Nadu advocates for **10,000 cusecs of water release for 15 days**. Karnataka suggests 8,000 cusecs of water release for the same 15-day period.

Cauvery River

It is the **third largest river – after Godavari and Krishna** – in southern India, and the **largest** in the state of Tamil Nadu, known as ‘**Ponni**’ in Tamil. Originates in Karnataka (**Talakaveri** in the Brahmagiri range in the Western Ghats, Kodagu district) and eventually drains into the Bay of Bengal. **Its left bank**

tributaries include Arkavathi, Hemavathi, Shimsa, and Harangi, while **right bank tributaries** consist of Lakshmantirtha, Suvarnavati, Noyil, Bhavani, Kabini, and Amaravathi.

MGNREGS social audit

- The **social audit units** responsible for **detecting corruption and malpractice in the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** have **shown poor performance** in terms of fund recovery, raising concerns about the scheme's credibility.
- In the ongoing financial year, **these units flagged misappropriation of over ₹27 crore, but only about ₹1 crore (about 14%) has been recovered so far**
- Several states **have reported "zero cases" and "zero recoveries" over the past three years.**
- The situation **has raised concerns about the effectiveness of the MGNREGS audit process and its ability to combat corruption effectively.**

Online Registration of FIR

- The **22nd Law Commission of India** submitted a report which suggest **amending Section 154 of the Code of Criminal Procedure, 1973 (CrPC) to allow for online registration of FIRs (First Information Reports).**
- **The Law Commission** recommends **enabling the registration of e-FIRs in a phased manner, starting with offenses carrying a maximum punishment of up to three years of imprisonment.**
- e-Complaint to be **allowed for all Non-Cognizable Offences**

Ek Tareekh Ek Ghanta Ek Saath initiative

- The **"Ek Tareekh Ek Ghanta Ek Saath" initiative** is a massive voluntary effort for cleanliness in India, endorsed by Prime Minister Narendra Modi.
- The initiative encourages citizens to **engage in one hour of "shramdaan" (voluntary labour)** for cleanliness at 10 am on October 1st as a tribute to Mahatma Gandhi.
- Various groups and organizations, including Resident Welfare Associations, village communities, NGOs, market associations, faith groups, and the private sector, have come forward to participate in shramdaan at different locations.
- **Swachhata Pakhwada 2023, with the theme "Garbage Free India,"** is organized alongside this initiative and has seen the participation of over 31 crore citizens across the nation in various cleanliness-related activities.

International

United Nations Convention against Transnational Organized Crimes (UNTOC)

- The Minister of State for Home Affairs attended a two-day conference in **Palermo, Italy**, marking the **20th anniversary of the United Nations Convention against Transnational Organized Crimes (UNTOC)**.
- The **United Nations Convention against Transnational Organized Crime (UNTOC)** is a **global and legally binding instrument** adopted by the **UN General Assembly in 2000** and enforced in **2003**.
- It is the **first comprehensive treaty aimed at combatting transnational organized crime including** human trafficking, migrant smuggling, and illicit firearms trafficking.
- Currently, there are **191 parties to the Convention**, including **India (who joined it in 2002 and ratified it in 2011)**. **Central Bureau of Investigation** acts as the national Nodal Authority from India. India also enacted the **Criminal Law Amendment Act in 2013**, which specifically defines human trafficking.

Mohamed Muizzu

The Maldives recently elected a new leader, **Mohamed Muizzu**, replacing President Ibu Solih. Muizzu. President Solih's loss was attributed to **anti-incumbency sentiment**, economic concerns post-COVID-19, internal party divisions, and sovereignty issues fueled by the **"India out" campaign**. This election was seen as a contest between **India and China's influence** in the Maldives.

Science-Tech & Environment

R21/Matrix-M malaria vaccine

- The **World Health Organization (WHO)** has recommended the **use of the R21/Matrix-M malaria vaccine**, which was jointly developed by the **University of Oxford and the Serum Institute of India**.
- The recommendation is based on **pre-clinical and clinical trial data showing good safety and high efficacy in four countries** with both seasonal and perennial malaria transmission.
- Malaria is a disease that **claims the lives of over half a million people each year**, particularly **affecting vulnerable populations**.
- **The R21/Matrix-M malaria vaccine** will compete with **the RTS,S shot by GSK Plc**, which was recommended by the **United Nations agency in 2021 and is sold under the brand name Mosquirix**

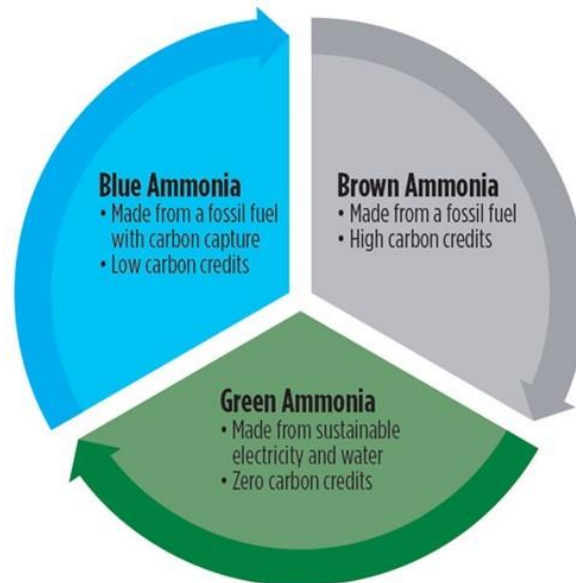
PET46

PET46 has unique properties, such as the ability to **degrade long-chain and short-chain PET molecules**, making it valuable for biotechnology applications. This research is part of the **PLASTISEA project** and sheds light on the potential for plastic waste degradation in the sea and on land.

PET plastic: PET plastic, or **polyethylene terephthalate**, is a common type of plastic used to make bottles, containers, and synthetic fibres. It is known for its transparency, lightweight nature, and recyclability. PET is widely used for packaging beverages, food, and personal care products.

Green ammonia

Green ammonia is ammonia that is **produced using renewable energy and hydrogen from water electrolysis. This makes green ammonia production virtually carbon dioxide-free.**



Kaimur Wildlife Sanctuary

Bihar is getting its **second tiger reserve in Kaimur (Kaimur Wildlife Sanctuary)**, expected to be established by the end of 2023 or early 2024. The need for a second reserve arose as the **Valmiki Tiger Reserve** (Bihar's 1st tiger reserve) reached its capacity to manage tigers.

Kaimur Wildlife Sanctuary, Bihar's largest, covers Kaimur and Rohtas Districts. Established in 1979, it features diverse forest types, rare flora and fauna, and historical sites like **Rohtasgarh Fort and Shergarh Fort**. The government plans to convert it into a Tiger Reserve.

Lithium-ion battery fires

- Lithium-ion battery fires, **although relatively rare, can be intense and long-lasting.**
- They are mainly caused by a phenomenon called **"thermal runaway,"** triggered by factors like **internal failures (such as short circuits) or external damage. This can lead to a battery catching fire or even exploding.**
- Using water to extinguish lithium-ion battery fires is **counterproductive as it can fuel the fire by reacting with lithium, producing flammable hydrogen gas** Water also **conducts electricity, posing additional risks of electrical shocks or short-circuits.**

- To combat these fires, **experts recommend using specialized fire extinguishers, such as Class D fire extinguishers designed for lithium-metal fires or dry chemical fire extinguishers suitable for electrical fires.**
- Aftermath of these fires includes the **release of toxic gases like carbon monoxide, hydrogen fluoride, and hydrogen chloride**, which can be hazardous when inhaled in significant quantities, especially in confined spaces.

Sundarbans

- India and Bangladesh have signed an agreement to address **climate-related loss and damage** in the Sundarbans, a UNESCO World Heritage Site shared between the two countries.
- This consensus calls for a **joint stakeholder initiative** to raise awareness of the Sundarbans' climate challenges on the global stage.
- Despite contributing minimally to carbon emissions, the Sundarbans face significant climate impacts, including cyclones, sea-level rise, and forced migration.
- **Sundarbans is a mangrove area** in the delta formed by the confluence of the Ganges, Brahmaputra and Meghna Rivers in the Bay of Bengal.

Fish that can change colour – *Badis limaakumi*

Scientists have **discovered a new fish species called *Badis limaakumi*** in the Milak River in Nagaland, India. This species, **named after Limaakum, an assistant professor and head of the zoology department at Fazl Ali College, Nagaland**, is unique in that it **can change its colour similar to a chameleon.**

About *Badis limaakumi*:

- ***Badis limaakumi* belongs to the Badidae family and is a freshwater fish commonly found in streams with slow or moderate water flow.**
- It is also found in **ditches and stagnant water bodies in various countries**, including India, Bangladesh, Nepal, Pakistan, Thailand, and Myanmar.
- The new species **differs from other members of its family due to distinctive features**, such as a **dark opercular blotch** at the base of its **opercular spine and the absence of spots on its sides and cleithrum.**
- Fish from the **Badis family are known as chameleon fish** because of **their remarkable ability to change colour, which helps them blend with their surroundings when under stress.**

CERN Experiment Reveals Antimatter's Response to Gravity

Researchers at the European Center for Nuclear Research (CERN) conducted an experiment with antimatter, demonstrating that it responds to gravity by falling, consistent with the behavior of ordinary matter, aligning with Albert Einstein's theory of general relativity. Despite the expected equal production of matter and antimatter during the Big Bang, very little antimatter exists, and the two are

incompatible, leading to annihilation upon contact. This discovery has profound implications, but it also raises new questions about this mysterious substance.

Antimatter, once a concept from science fiction, is now a scientific reality. British mathematician Paul Dirac first theorized its existence in 1928 while working on quantum mechanics. He postulated that fundamental particles like electrons could have antiparticles with opposite charges. In other words, there could be negative electrons (matter) and positive electrons, or positrons (antimatter).

One of the greatest mysteries in physics relates to the absence of antimatter in the universe. According to the standard model of physics, equal amounts of matter and antimatter should have been created during the Big Bang. If this had occurred, they would have annihilated each other, leaving no matter behind. Yet, the universe is predominantly composed of matter. This mystery has puzzled physicists for decades, prompting questions about the existence and whereabouts of antimatter.

New Asian pangolin species

- Researchers analysing confiscated pangolin scales in Hong Kong and China's Yunnan province have **identified a new and distinct pangolin species named *Manis mysteria* through DNA analysis.** This discovery marks the **ninth known species of pangolin.**
- Pangolins have been **poached for bushmeat, but in the last decade**, their skins, scales, and whole bodies have been in high demand in countries like **Vietnam, China, and the US. This has led to a decline in their populations.**

Pangolin: Pangolins are among the **most trafficked wild mammals globally.** India is home to two species:

1. **Indian Pangolin (EN)**, found across the subcontinent
2. **Chinese Pangolin (CR)**, is found across a larger area in south Asia.

Both species are included under **India's Schedule I** of the **Wildlife Protection Act** (Jail term for those hunting animals listed here)

Astra missiles

- The **Indian Air Force (IAF)** is set to induct the **indigenous Astra Beyond Visual Range (BVR) Air to Air Missile by the end of 2023.**
- Astra is **already integrated into the SU-30MKI** and was **successfully test-fired from the Light Combat Aircraft (LCA) Tejas.** The IAF intends to **equip its frontline fighters with the Astra-MK1**, while the **Astra-2 is expected to become a mainstay of the IAF's BVR missile arsenal, reducing import dependency.**
- The Astra is a family of **Indian air-to-air missiles.** It's the first indigenous air-to-air missile developed by the **Defence Research and Development Organisation (DRDO).** The Astra is a

beyond-visual-range (BVRAAM) missile that uses **radar guidance to navigate and position the target**

Pink Bollworm

- The **Pink Bollworm (PBW)** is causing significant damage to cotton fields in northern **Rajasthan, Haryana, and Southwestern Punjab**, with the infestation being more widespread and serious than before.
- Farmers have been using **Bt cotton seeds, which have lost their effectiveness against the PBW.**
- The situation has led to a **drastic reduction in cotton yields**, making it financially unviable for many farmers.

Economics

Global Innovation Index 2023

- India has **retained its 40th position in the Global Innovation Index (GII) 2023.**
- This ranking is attributed to **India's vibrant start-up ecosystem, knowledge capital, and contributions from public and private research organizations.**
- India also maintained its **top position in the lower-middle-income group and the Central and South Asian region.**
- **The GI, published by the World Intellectual Property Organisation (WIPO), evaluates 132 economies on their innovation capabilities.**
- **Switzerland secured the top position in the index**, followed by Sweden, the United States, the United Kingdom, and Singapore.
- **China ranked 12th among middle and lower-middle-income economies**, with no others in the top 30.

Project Mariana

- **Project Mariana**, a collaborative effort involving the **Bank for International Settlements (BIS) and the central banks of France, Singapore, and Switzerland**, has successfully completed its mission.
- The project focused on testing the cross-border trading and settlement of **wholesale central bank digital currencies (wCBDCs) among financial institutions, utilizing decentralized finance (DeFi) technology concepts on a public blockchain.**

Key points about Project Mariana:

- Project Mariana demonstrated the **successful cross-border trading and settlement of hypothetical euro, Singapore dollar, and Swiss franc wCBDCs** among simulated financial institutions.
- The project relied on several key **elements, including a common technical token standard provided by a public blockchain, bridges for seamless wCBDC transfers** between different networks, and an **Automated Market Maker (AMM)** to facilitate automated spot FX transactions and settlements.

Ethics & Society

2023 India Ageing Report

The United Nations Population Fund, India, has released the “**2023 India Ageing Report**,” which projects a significant increase in the elderly population in India

Major Findings of the Report:

- The population of people aged **80+ years** is projected to grow by around **279%** between 2022 and 2050.
- By 2046 it is likely that the elderly population will have surpassed the population of children (aged 0 to 15 years) in the country
- By 2050, the elderly population in India is expected to make up over **20% of the total population** (The present share of elderly is about 10% in 2021)
- More than **40% of the elderly in India** are in the poorest wealth quintile, with over 18% having no income.

Personalities

Waheeda Rehman

Waheeda Rehman will receive the **53rd Dadasaheb Phalke Lifetime Achievement Award** for 2021. The award will be presented at the **69th National Film Awards ceremony**. Her accolades include a **National Film Award**, Padma Shri and Padma Bhushan honours and three Filmfare Awards. She is renowned for her roles in iconic Hindi films like “**Pyasa**,” “**Kaagaz ke Phool**,” and “**Guide**.”

Dadasaheb Phalke Lifetime Achievement Award is India’s highest cinema honour and is presented annually at the **National Film Awards ceremony by the Directorate of Film Festivals**. It was established in **1969** and was **first awarded to actress Devika Rani**. This award commemorates Dadasaheb Phalke, the director of India’s inaugural full-length feature film, “**Raja Harishchandra**,” in 1913. The prize includes a **Swarna Kamal (Golden Lotus)** medallion, a shawl, and a cash prize of **10 lakh**.

MS Swaminathan

Mankombu Sambasivan Swaminathan (MS Swaminathan) (1925 to 2023) who passed away recently, played a crucial role in **heralding the Green Revolution** that helped India combat food insecurity. Became Director General of the **International Rice Research Institute**. **Awarded the first World Food Prize**. Collaborated with Norman Borlaug to develop high-yielding dwarf wheat varieties suitable for Indian conditions. Launched programs like **“lab to land”**. Served as the head of the National Commission on Farmers and recommended fair minimum support prices for farmers’ crops.

Awards

2023 SASTRA Ramanujan Prize

- **Ruixiang Zhang**, an Assistant Professor at the University of California, Berkeley, USA, will receive the 2023 SASTRA Ramanujan Prize for his exceptional contributions to mathematics.
- His work spans various areas of mathematics, including **analytic number theory, combinatorics, Euclidean harmonic analysis, and geometry**.
- The SASTRA Ramanujan Prize, **established in 2005**, is presented annually by SASTRA University in Tamil Nadu on **Ramanujan’s birth anniversary**, December 22 (at its centre **Kumbakonam**, the hometown of the renowned **mathematician Srinivasa Ramanujan**).
- It recognizes mathematicians **under 32 years old who work in areas influenced by Srinivasa Ramanujan**, in honour of his remarkable accomplishments within that age. The prize includes a **\$10,000 cash award** and a citation, and it has gained international recognition.

Nobel Prize in Medicine 2023

The 2023 Nobel Prize in Physiology or Medicine was awarded to **Katalin Karikó and Drew Weissman** for their research enabling the **development of mRNA vaccines** against COVID-19.

Katalin Karikó and Drew Weissman made important contributions to the development of **COVID-19 mRNA vaccines** (Pfizer and Moderna’s vaccine). Previous to Katalin and Weissman’s findings, **lab-grown genetically engineered mRNA** was recognized as **foreign by the body’s dendritic cells** (Nerve Cells), leading to unwanted **inflammatory reactions**.

Kariko and Weissman realized that **RNA from mammalian cells** is often chemically modified, whereas **lab-created mRNA lacks these modifications**. They hypothesized that **modifying the bases in lab-created mRNA** could reduce the inflammatory response. Their experiments confirmed this hypothesis, with base modifications significantly reducing inflammation when introduced to dendritic cells.

mRNA vaccines are a **type of vaccine that uses messenger RNA (mRNA)** to instruct cells in the body to produce a **specific viral protein**, such as the spike protein of a COVID-19 virus. This protein triggers an **immune response**, helping the body build immunity against the virus.

Notably, **mRNA vaccines** do not contain **live or weakened viruses**, making them safe and effective tools for preventing infectious diseases like COVID-19.

Comparison of mRNA and DNA vaccines:

mRNA Vaccines	DNA Vaccines
Use messenger RNA (mRNA) as genetic material.	Use DNA (deoxyribonucleic acid) as genetic material.
mRNA is relatively fragile and needs lipid protection to remain stable.	DNA is more stable and does not require lipid protection
mRNA vaccines require ultra-low temperatures (e.g., -90°C to -50°C) for storage and transportation.	DNA vaccines can typically be stored at less extreme temperatures (so more suited for tropical countries like India)
mRNA vaccines deliver instructions directly to the cell to produce viral proteins .	DNA vaccines often use a harmless virus (vector) to deliver DNA instructions to cells.
Both mRNA and DNA vaccines can be adapted quickly to address emerging variants and new diseases by changing the genetic code.	DNA vaccines offer flexibility but may require additional development steps for adaptation.

Nobel Prize in Physics

The 2023 Nobel Prize in Physics was awarded to **Pierre Agostini, Ferenc Krausz, and Anne L’Huillier** for their groundbreaking experiments that have allowed scientists to generate **attosecond pulses of light**.

Why are Electrons hard to capture?

Exposure Time Analogy: To understand why electrons were hard to capture, think of taking a **picture of a race car**. Longer exposure times result in blurry images, while shorter exposure times yield sharper pictures. If a normal camera is used to capture a race car, the image will be blurred. But a high **shutter-speed camera** can freeze motion and capture a clear image of the car.

Electrons move so quickly that capturing them requires extremely short pulses of light such as **attosecond**.

What is the Attosecond Timescale?

Electron dynamics occur on **the attosecond timescale**, which is a **billionth of a billionth of a second** (1×10^{-18} of a second), much faster than **femtoseconds** (a millionth of a billionth of a second) associated with atomic movements.

Significance:

- Attosecond pulses enable the **capture of ultrafast processes within atoms** and molecules, providing insights into their dynamics.
- Attosecond spectroscopy aids in **understanding and manipulating materials at the quantum level**, essential for advanced materials.
- Studying **ultrafast chemical reactions** with attosecond precision contributes to improving catalytic processes in chemistry.
- Attosecond pulses can **identify molecules based on their fleeting signatures**, potentially advancing medical diagnostic techniques.

Nobel Prize in Chemistry 2023

The Royal Swedish Academy of Sciences has decided to award the Nobel Prize in Chemistry 2023 to **Moungi G. Bawendi (USA), Louis E. Brus (USA) & Alexei I. Ekimov (USA)** *“for the discovery and synthesis of quantum dots”*

The Nobel Prize in Chemistry 2023 rewards the discovery and development of *quantum dots*, nanoparticles so tiny that their size determines their properties. These smallest components of nanotechnology now spread their light from televisions and LED lamps, and can also guide surgeons when they remove tumour tissue, among many other things. Their work laid one of the foundations of nanotechnology, which has applications from electronics to surgery.



Nobel prize for chemistry 2023

Alexei Ekimov, Louis Brus and Moungi Bawendi were awarded the Nobel prize for chemistry for the discovery and synthesis of quantum dots

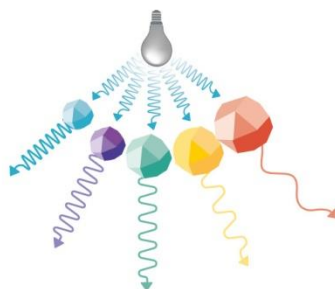
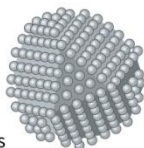


Quantum dots are tiny crystals, often consisting of just a few thousand atoms, made from semiconductor materials



The size ratio of a quantum dot to a football is about the same as a football to the Earth

Because their size is reduced to the **nanometre scale**, they exhibit **quantum effects** that determine their characteristics



By manipulating their size, scientists can precisely control their properties and make them emit light of specific colours when they are excited by light

SOME APPLICATIONS

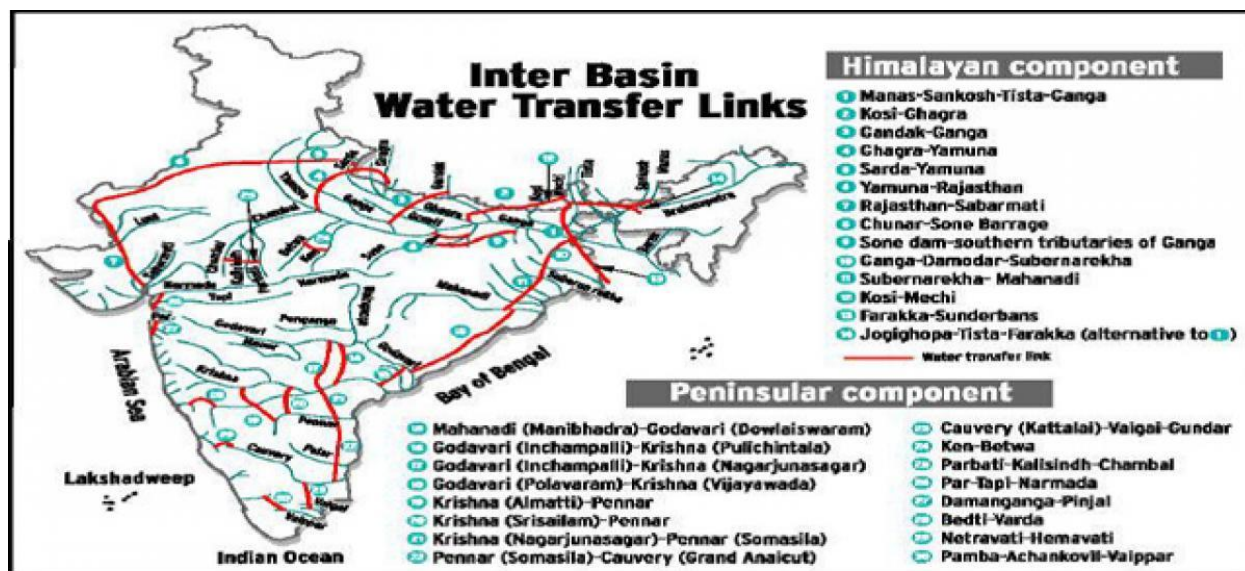
- TV screens / illumination sources
- Biomedical imaging
- Producing photons for quantum communication
- Making better and cheaper solar cells

Current Affairs Update (Oct 8-14)

National

Ken-Betwa River linking

- The **Ken-Betwa Link Project (KBLP)**, a major irrigation project in India, has recently secured its **final forest clearance** after six years.
- The Ken-Betwa Link Project (KBLP) is a river interlinking project that aims to **transfer surplus water from the Ken River in Madhya Pradesh (MP) to Betwa in Uttar Pradesh (UP)**. The project is the first under the **National Perspective Plan for the interlinking of rivers**.
- The KBLP aims to **irrigate the drought-prone Bundelkhand region**. The dam will be built within Panna Tiger Reserve and will generate 103 MW of hydroelectric power.



Source: National Water Development Agency

Shyamji Krishna Varma

- On the occasion of **Shyamji Krishna Varma's Jayanti**, the Prime Minister paid tribute to the **great revolutionary and freedom fighter**.
- Shyamji Krishna Varma was an **Indian revolutionary fighter, patriot, lawyer, and journalist**. He was born in **Mandvi, Gujarat** on **October 4, 1857**
- He was the **first Indian M.A.** and a scholar in Sanskrit and English
- He founded the **Indian Home Rule Society, India House, and The Indian Sociologist** in London

- He moved his **base from England to Paris after criticism by the British**. After the outbreak of the **First World War (1914-18)**, he moved to **Geneva in Switzerland and spent the rest of his life there. He died on March 30, 1930**

Various causes of dam failures

- **Seismic damage:** Earthquakes can subject dams to strong ground shaking, which may lead to structural damage or foundation failure. **Kobe Earthquake, Japan (1995):** While not a dam failure, the Kobe Earthquake in Japan caused damage to dams and their components.
- **Erosion and piping:** Erosion occurs when the flow of water erodes the soil or rock supporting the dam's structure. Piping, a related issue, involves the internal erosion of dam materials, creating channels through which water can escape.
- **Extreme weather events:** Intense and prolonged rainfall, hurricanes, or typhoons can result in dam failures due to increased water inflow, exceeding the dam's storage capacity. **Kedarnath Floods, India (2013):** While not a traditional dam failure, the catastrophic flooding in the Kedarnath region of Uttarakhand, India, in 2013, was triggered by heavy rainfall and the sudden release of water from a glacial lake.
- **Glacial lake outburst flood (GLOF):** In mountainous regions with glaciers, the sudden release of meltwater from a glacier-dammed lake can trigger a GLOF. These events can lead to massive floods downstream, posing a significant threat to communities and infrastructure.
- **Human factors:** This includes poor operational decisions, inadequate maintenance, conflict and war can contribute to dam failures.
- **Design limitations:** Flaws in the original design, including inadequate spillways, improper materials, or underestimated water flow calculations can lead to structural weaknesses.

Why in news? The recent collapse of the Chungthang dam in Sikkim due to the eruption of South Lhonak Lake. India is the **3rd largest dam-owning nation** in the world. There are around 5,700 large dams in the country, of which about **80% are over 25 years old**.

International

Zealandia

Zealandia is an **underwater continent** located to the southeast of Australia. It was recognized as Earth's eighth continent in 2017. Zealandia formed around **83 million** years ago during the **Late Cretaceous period** and started as part of the supercontinent **Gondwana** before breaking away.

The existence of Zealandia was **first recorded in 1642 by Dutch businessman and sailor Abel Tasman**

Zealandia began as part of the **supercontinent Gondwana**, which started breaking apart. As Zealandia began to break away from Gondwana, "**The Giant Volcanic Region**" formed – where **magma flooded**

out of cracks. Zealandia **separated from the landmasses** to its north and south, eventually becoming its own continent. Over millions of years, it underwent stretching and thinning due to tectonic forces, creating ruptures that later formed oceanic crust. Around 25 million years ago, Zealandia largely sank beneath the ocean, becoming the submerged continent we know today.

Current Conflict in Israel and the Yom Kippur War

- The Yom Kippur War, also known as the October War or Ramadan War, fought in 1973 between Israel, Egypt and Syria, is being compared to the current conflict involving Hamas and Israel.
- Israel has declared war on **Hamas after the Palestinian militant group** carried out unprecedented attacks on Israeli territory, killing and abducting hundreds of Israeli citizens.
- Hamas is a **Palestinian political and militant organization** that currently governs the Gaza Strip, one of the two Palestinian territories. Though it is headquartered in **Gaza City**, it also has a presence in the West Bank, in which **Fatah exercises control**.
- Yom Kippur is the holiest day in Judaism and Samaritanism. It occurs annually on the **10th of Tishrei**, corresponding to a date in September or early October.
- The **Yom Kippur War, also known as the Ramadan War, the October War, the 1973 Arab–Israeli War, or the Fourth Arab–Israeli War**, was an armed conflict fought from October 6 to 25, 1973, between **Israel and a coalition of Arab states led by Egypt and Syria**.
- On the holiest day on the Jewish calendar, Yom Kippur, **otherwise called the Day of Atonement**, Israel was caught off guard by invading forces from Egypt and Syria.

Significance of the Yom Kippur war:

- The Yom Kippur War marked a **significant shift as it showed that Israel**, despite its prior aura of **invincibility**, could be vulnerable in battle.
- The **heavy casualties suffered by Israel** during the war made it clear that they could be battered in combat, impacting its reputation.
- The war initiated a **peace process, leading to the Camp David Accords in 1978**, where Israel returned the Sinai Peninsula to Egypt, and the 1979 Egyptian-Israeli peace treaty, the first Arab country to recognize Israel as a state.
- However, **Syria did not benefit from the war** and ended up with no gains, while Israel expanded its occupation of the **Golan Heights**.
- In essence, the Yom Kippur War **changed perceptions about Israel's military invincibility** and paved the way for diplomatic negotiations and peace agreements in the region.



OCCUPATION AND WAR

1967

Israel defeats Egypt, Jordan, Syria and occupies the predominantly Arab east Jerusalem, the West Bank, the Gaza Strip and the Golan Heights in the **Six-Day War**

Jewish settlement of occupied territories starts as hundreds of thousands of Palestinians flee or are displaced

None of the Palestinians displaced - or their descendants - have ever been allowed to return home, as Israel said it would overwhelm the country and threaten its existence as a Jewish state

Israel still occupies the West Bank, and although it pulled out of Gaza the UN still regards that piece of land as part of occupied territory

Israel claims the whole of Jerusalem as its capital, while the Palestinians claim East Jerusalem as the capital of a future Palestinian state. The US is one of only a handful of countries to recognise Israel's claim to the whole of the city.

Network 18
creative

India-Japan Fund (IJF)

- The **National Investment and Infrastructure Fund (NIIF)** has partnered with the Japan Bank for International Cooperation (JBIC) to **establish a \$600 million India-Japan Fund (IJF)**, with the **Government of India (GoI)** and JBIC as primary investors.
- This collaboration reflects a **significant joint effort between India and Japan in the field of climate and environmental sustainability.**

- **The IJF is NIIF's first bilateral fund, with the GoI contributing 49% of the total fund, while JBIC contributes the remaining 51%.**
- The primary focus of the India-Japan Fund is on **investments in environmental sustainability and low-carbon emission strategies**. Its objective is to become a **preferred partner for encouraging increased Japanese investments in India**.

Russia to Revoke Ratification of CTBT

Russia's envoy to the Comprehensive Nuclear Test Ban Treaty Organization (CTBTO), Mikhail Ulyanov, has announced that Russia intends to revoke its ratification of the Comprehensive Nuclear-Test-Ban Treaty (CTBT). This move has raised tensions between Russia and the United States, adding to existing disputes related to Moscow's invasion of Ukraine and arms control issues between the two nuclear superpowers

Russia announced plans to revoke its ratification of the CTBT, which it originally ratified in the year 2000. Russia's aim is to align itself with the United States, which signed but did not ratify the treaty. He clarified that this revocation does not signify an intention to resume nuclear testing.

Possible Implications and Concerns

- Revoking ratification could potentially pave the way for Russia to conduct nuclear tests, marking the first such tests since 1990 when the Soviet Union carried out its last test.
- Resumption of nuclear testing by a nuclear superpower would undermine decades of non-proliferation efforts and agreements, including those established since the end of the Cold War.

About the Comprehensive Nuclear Test Ban Treaty (CTBT):

- The origins of the CTBT **can be traced back to the arms race between the United States and the Soviet Union**, which conducted **numerous nuclear tests from 1945 to 1996**, causing concerns about the environmental and health impacts of radioactive fallout.
- Various attempts to limit nuclear testing were made, **including the Limited Nuclear Test-Ban Treaty in 1963**, which prohibited tests in **the atmosphere, outer space, and underwater but allowed underground testing**.
- The CTBT, **established in 1996**, sought to **impose a complete ban on explosive nuclear testing, taking advantage of reduced geopolitical tensions after the end of the Cold War**. Despite its adoption, some countries have conducted nuclear tests **since then, including India, Pakistan, and North Korea**.
- The treaty requires **ratification by 44 specific countries with nuclear technology, and eight of them, including China, Egypt, India, Iran, Israel, North Korea, Pakistan, and the United States, have yet to do so**.

Herat (Afghanistan)

- A powerful earthquake with a magnitude of **6.3** struck **Herat province** in Afghanistan, resulting in the flattening of entire villages and causing the death of over 1,000 people.
- **Afghanistan** is prone to earthquakes because it lies near the **junction of the Eurasian and Indian tectonic plates**, making it a seismically active region.

Science-Tech & Environment

Nanozymes

They are nanomaterials that **possess enzyme-like properties**. Unlike natural enzymes, which are typically proteins, nanozymes are typically made of inorganic materials such as nanoparticles. These nanostructures can catalyze chemical reactions in a manner similar to enzymes

Researchers at the **Indian Institute of Science (IISc)** have **developed a novel enzyme mimic called NanoPtA**, with significant **potential applications in wastewater treatment and healthcare**.

In this study, the **IISc team synthesized NanoPtA, a platinum-containing nanozyme that can be converted into a powder for industrial use**. NanoPtA exhibits the **ability to degrade toxic chemicals in industrial wastewater effectively when exposed to sunlight**.

Solar geoengineering

Solar geoengineering, also referred to as solar radiation management (SRM) describes a set of proposed **approaches to reflect sunlight (back to space) to rapidly cool the Earth**. Within solar geoengineering, researchers are considering two main approaches.

Different SRM methods:

- **Stratospheric aerosol injection (SAI)**: It involves injecting tiny reflecting particles, known as aerosols, into the upper atmosphere to cool the planet.
- **Marine cloud brightening (MCB)**: It would use sea salt to stimulate cloud formation over the ocean, which would also help reflect sunlight in the region.

Why is solar geoengineering being considered?

The Paris Agreement's target **requires limiting global temperature increase well below 2°C** above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C. For this, nations need to bring net global **CO2 emissions to zero** by no later than mid-century.

Potential of Solar Geo-Engineering:

- The process is cost-effective, with **an estimated cost of \$18 billion a year** for each degree of cooling achieved.
- Whereas, **removing carbon dioxide from the atmosphere** to achieve similar cooling effects will require much more money.

Amphibian crisis

- A **global assessment** conducted by conservationists reveals that **Earth's amphibian species are facing a critical threat of extinction**.
- Of the **8,011 amphibian species assessed, 41% are now considered threatened with extinction due to various factors**, including habitat destruction, disease, and climate change.
- This situation represents a **worsening trend since the first assessment in 2004, which found 39% of amphibian species threatened**.
- Amphibians are experiencing a **more severe crisis compared to other vertebrate groups, with 27% of mammals, 21% of reptiles, and 13% of birds** also facing extinction threats in separate assessments.
- Salamanders and newts are the most threatened amphibian order, **with 60% of species facing extinction, followed by frogs and toads (39%) and caecilians (16%)**.

Dakar Declaration on Climate Change 2023

Ministers from the world's 46 least developed countries (LDCs) issued a joint Dakar Declaration on Climate Change outlining their expectations and priorities for COP28.

Key points from the declaration:

1. **Urgent Global Emissions Reductions:**
 - The declaration calls for urgent global emissions reductions to address the rapidly approaching 1.5°C global warming threshold.
2. **Increased Climate Finance:**
 - Developed countries are urged to present a clear road map for at least doubling adaptation finance delivered by 2025 through public, grant-based financing. A New Collective Quantified Goal on Climate Finance should provide new and additional resources, exceeding the current \$100 billion per year floor.
3. **Operationalizing the Loss and Damage Fund:**
 - The declaration emphasizes the need for a strong outcome operationalizing the new Loss and Damage Fund to address the impacts of climate change.

4. **Ambitious Global Stocktake:**

- The ministers call for an ambitious Global Stocktake to close the gaps in global climate action.

5. **Responsibility and Historical Emissions:**

- LDCs account for more than 14% of the global population but only about 1% of emissions from fossil fuels and industrial processes. The declaration underscores that LDCs bear the least historical responsibility for climate change and are disproportionately affected by it.

6. **Alignment with 1.5°C Goal:**

- Parties, particularly major emitters, are urged to reduce greenhouse gas (GHG) emissions urgently and significantly. 2030 targets in Nationally Determined Contributions (NDCs) should be revisited and strengthened to align with the 1.5°C warming limit.

7. **UNFCCC Centralized Carbon Market Mechanism:**

- The declaration calls for the operationalization of the UNFCCC centralised carbon market mechanism by 2024, with recognition of the needs of LDCs. Implementation of Article 6 of the Paris Agreement's capacity-building program is emphasized.

8. **Limiting Warming to 1.5°C:**

- The declaration states that limiting warming to 1.5 degrees Celsius, in line with the 2015 Paris Agreement, will be out of reach if global production and consumption patterns continue.

Psyche Mission

NASA is gearing up for an ambitious mission called Psyche, where a high-tech spacecraft will embark on a **2.2 billion mile journey** to explore an **asteroid known as 16 Psyche**. This mission, scheduled for launch on October 12, holds immense promise as it aims to delve into the mysteries of this metal-rich asteroid and gain insights into planetary cores, contributing to our understanding of Earth's formation.

Located in the outer region of the main asteroid belt between Mars and Jupiter, asteroid 16 Psyche is the focus of this mission.

The Psyche mission will also serve as a testing ground for innovative communication technology known as **Deep Space Optical Communication (DSOC)**. Unlike traditional radio waves, DSOC encodes data in photons at near-infrared wavelengths. This technology enables more efficient and high-speed communication between the spacecraft in deep space and Earth, enhancing data transmission capabilities.

Asiatic wild dog-tiger coexistence

A recent study conducted in **Assam's Manas National Park** has revealed that the **coexistence and potential cooperation** between **Asiatic wild dogs (dholes) and tigers** are influenced by factors such as **prey availability and habitat suitability**.

Dholes are an **endangered species and the only pack-living canid in India's tropical forests**. The study revealed a **positive relationship between the two species in terms of habitat use**. This unexpected finding suggests that factors **like overlapping prey availability and habitat suitability could facilitate coexistence or even cooperative behaviours between dholes and tigers**.

Parker Solar Probe's New Speed Record

NASA's Parker Solar Probe has achieved a remarkable feat, becoming the fastest human-made object in history. During its 17th orbit around the sun, the probe reached a staggering speed of 635,266 kilometers (394,736 miles) per hour, surpassing its own record set in 2021. This remarkable journey not only signifies a groundbreaking achievement in space exploration but also brings the probe closer to the sun than ever before, providing invaluable insights into the Sun's outer corona.

Launched in 2018, the Parker Solar Probe is a pioneering mission designed to gather critical data about the Sun's outer corona, which is the outermost layer of the Sun. One of the most perplexing puzzles for scientists has been understanding why the corona is hotter than the layer immediately beneath it.

Miura-1 Rocket: Europe's First Private Rocket Launch

Spanish aerospace company PLD Space has achieved a significant milestone by successfully launching its recoverable Miura-1 rocket. This achievement marks Europe's first fully private rocket launch and offers a glimmer of hope for Europe's space ambitions. The Miura-1 rocket, named after a fighting bull, conducted a suborbital test flight with the goal of gathering crucial data for future missions.

Multimodal artificial intelligence

Multimodal artificial intelligence (AI) is gaining prominence as the next frontier in AI development.

Multimodal AI systems **allow users to interact with AI through various means**, such as **images, sounds, videos, and text**. This approach is important because it **aligns more closely with how humans understand and interpret information from diverse sources**.

Working of Multimodal Artificial Intelligence:

- It involves **combining different modalities such as text and images or text and audio during training**. This enables AI systems to understand and generate content across various modalities. For example, **OpenAI's DALL.E model connects text and images to generate visual content based on text prompts**, while GPT's voice processing capabilities are rooted in Whisper, its speech-to-text translation model.

Applications of Multimodal AI:

- Multimodal AI has practical applications, such as **automatic image caption generation**, **detecting hate speech in memes**, **predicting dialogue** in videos, and even potential uses in fields like medicine, autonomous driving, and robotics.
- In medicine, **multimodal AI is useful for processing complex datasets from sources like CT scans**. In speech translation, AI models can perform text-to-speech, speech-to-text, speech-to-speech, and text-to-text translations for various languages.

Economics

GI Tags (Basohli Pashmina and Udhampur's Kalari)

- Basohli Pashmina and Udhampur's Kalari, a popular Dogra cuisine, have been awarded the prestigious Geographical Indication (GI) tag
- **Pashmina Shawl** is made from the fine wool of the **Changthangi or Pashmina goat's undercoat**. Known for extreme softness, fineness, and lightweight nature.
- **Kalari dish** is prepared using milk and results in a dense cheese. It is cooked in its own fat, seasoned with salt, and served hot alongside bun slices. Kalari is a beloved street food among ethnic Dogras
- A GI is primarily an **agricultural, natural or manufactured product**(handicrafts and industrial goods) originating from a definite geographical territory.
- Typically, such a **name conveys an assurance of quality and distinctiveness**, which is essentially attributable to the place of its origin.

Recommendations of the 52nd GST Council Meeting

The 52nd GST Council Meeting made several important recommendations:

- **Amendments in Appointment of GST Appellate Tribunals** – in the conditions for appointing the President and Members of the proposed GST Appellate Tribunals.
- **GST Rates for Millet Flour**: GST rates for food preparation of millet flour in powder form, containing at least 70% millets by weight, were specified as follows: 0% when sold in **non-pre-packaged and unlabelled form**. 5% when sold in **pre-packaged and labelled form**.
- **Exclusion of Extra Neutral Alcohol (ENA) from GST**
- **Reduced GST on Molasses**: The GST rate on molasses was reduced from 28% to 5%.
- **IGST Exemption for Foreign Going Vessels**
- **Changes in GST Rates for Services**

About GST Council: It is a constitutional body under **Article 279A (101 Constitution Amendment Act, 2016)**. **Function:** Making recommendations **on issues related to the implementation of GST**

Ethics & Society

Female Labour Force Participation Rates (LFPR)

The **Female Labor Force Participation Rate (LFPR)** measures the percentage of women within the working-age population (**typically 15-59 years old**) who are either employed or actively seeking employment.

Significance of LFPR:

- It provides insight into the **level of economic activity** among women in a particular country or region, indicating their involvement in the labour force.
- **A higher LFPR** suggests **greater participation of women** in the workforce
- **A lower rate indicates lower participation**, often influenced by factors such as cultural norms, economic conditions, and access to employment opportunities.

Links between consanguinity and genetic diseases

Consanguinity, the **practice of marrying close relatives**, is a widespread tradition still practised in many human societies, particularly in Asia and West Africa.

Prevalence: An estimated **15-20% of the world's population practices consanguinity**, with **India having numerous endogamous groups** (people marrying within the same caste or tribe).

Consanguinity and Disease: Consanguineous societies, **like the Amish population in the U.S.**, have been studied for **recessive diseases**, leading to the **discovery of new genetic diseases and insights into genetic predisposition to common disease**. Research suggests that consanguinity may increase **the risk of diseases like type-2 diabetes**.

Tele-MANAS

India's **Tele-MANAS**, a round-the-clock **mental health helpline** launched on World Mental Health Day in 2022, has received over 3,40,000 calls from 32 states and union territories. The helpline was initiated in response to the **increased mental health challenges brought about by the COVID-19 pandemic**, providing **essential mental health first-aid support**.

Sports

Hangzhou Asian Games 2022

- India achieved a historic milestone at the Hangzhou 19th Asian Games with a record-breaking medal haul of 107 medals, including 28 gold, 38 silver, and 41 bronze.

- Medals were contested across **61 disciplines**, including Non-Olympic sports such as Kabaddi, sepaktakraw, cricket, Go board game and newcomers like breaking, sport climbing and e-sports
- India's performance elevated its rank to fourth place (after China, Japan and South Korea), up from eighth in the 2018 Asian Games.
- India's medal tally expanded into new disciplines such as **roller skating, sailing, table tennis, rowing, and equestrian sports**
- The motto of Asian Games 2023 is '**Heart to heart, @ Future**'
- The 20th Asian Games will be **held in Japan in 2026 in the city of Nagoya**

Awards

Nobel Prize for Peace 2023

- **Narges Mohammadi**, an Iranian activist, has been awarded the 2023 Nobel Prize for Peace for her dedication to various causes.
- Narges Mohammadi (born 1972) is an **Iranian human rights activist**, Nobel laureate, journalist, and scientist. She's Vice President of the **Defenders of Human Rights Center** and she advocates for women's rights and civil disobedience against hijab in Iran. Mohammadi has faced imprisonment and abuse for her activism.
- Detained in Iran under charges of "**spreading anti-state propaganda**" and defamation. Sentenced to a total of **31 years in prison** and 154 lashes

Nobel Prize for Literature

Norwegian author Jon Olav Fosse has been awarded the **Nobel Prize for Literature in 2023** for his **innovative plays and prose** that 'give voice to the **unsayable aspects of the human experience**'

Notable Works: "Red Black" (1983), "Melancholy I" (1995), "Someone Is Going to Come", "The Name"

The Nobel Prize in Literature is awarded every year to **honour authors whose works focus on idealism**. The prestigious international award was conferred for the first time in **1901 to Sully Prudhomme**, in recognition of his poetic works.

Nobel Prize in Economics 2023

Claudia Goldin, a Professor of Economics at Harvard University, has been awarded the **Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel for 2023 (also known as the Nobel Prize in Economics)** for her contributions to understanding **women's labour market outcomes**. She is only the third woman to receive this honour since its inception in 1969.

Punjab GK

PUSA-44 paddy variety

The Punjab Chief Minister has announced a **ban on the cultivation of the PUSA-44 paddy variety** starting next year. **PUSA-44 was developed in 1993** and gained immense popularity among Punjab's farmers, covering **70 to 80 per cent of the state's paddy cultivation area due to its high yield.**

The reasons behind the ban on PUSA-44:

- **Extended Maturity Period:** PUSA-44 has a longer maturity period, requiring around 160 days to mature, which is approximately 35 to 40 days longer than other paddy varieties.
- **Water Conservation:** Punjab faces severe groundwater depletion, and the government aims to conserve one month of irrigation water by banning PUSA-44.
- **Stubble Burning:** **PUSA-44 exacerbates the problem of stubble burning in Punjab.** Its harvesting just before the ideal time for wheat sowing (typically at the end of October) leaves a limited timeframe of 20 to 25 days for stubble disposal before wheat sowing.

Current Affairs Update (Oct 15-21)

National

Supreme Court declines to recognize Same-Sex Marriages

- A five-judge Constitution Bench, led by Chief Justice of India D Y Chandrachud, issued a unanimous verdict declining to recognize same-sex marriages and civil unions for non-heterosexual couples.
- All five judges on the Bench, including the CJI, agreed that there is no fundamental right to marry under the Indian Constitution.
- Interpretation of the Special Marriage Act, 1954 to allow same-sex marriage using gender-neutral language was deemed unfeasible.
- Striking down gender-restrictive provisions of the SMA was rejected as it could disrupt the legal framework for interfaith and inter-caste couples.

Minority Opinion on Civil Unions

- Four of the five judges wrote individual opinions.
- Justice Bhat, Justice Kohli, and Justice Narasimha formed the majority, while CJI Chandrachud and Justice Kaul wrote minority opinions in favor of extending civil unions to same-sex couples.
- A 'civil union' offers certain legal rights and responsibilities but lacks the same recognition as marriage.
- The minority view argued that civil union status should entail a "bouquet of rights" for same-sex couples.

Cabinet Committee for Rights Consideration

- The Court acknowledged the need to examine rights for non-heterosexual couples.
- A high-level Cabinet committee was tasked with exploring rights such as joint bank accounts, beneficiary status, medical decisions, and more for same-sex spouses.

Adoption Regulations Struck Down

- The minority view by CJI Chandrachud and Justice Kaul struck down specific guidelines by the Central Adoption Resource Authority (CARA) that disallowed same-sex or unmarried couples from jointly adopting a child.
- They argued that it's discriminatory to assume that only married, heterosexual couples can provide a safe space for raising children.

Limited Changes for Queer Couples

- The judgment did not recognize same-sex marriages or civil unions but acknowledged the right to choose partners and live-in relationships.
- The court emphasized that family laws disproportionately exclude the queer community.
- The responsibility for legal reforms and inclusivity in family law was placed on the legislature.

Royalty rates for three critical and strategic minerals

The Union Cabinet approved amendments to the **Mines and Minerals (Development and Regulation) Act, 1957**, specifying royalty rates for three critical and strategic minerals: **Lithium, Niobium, and Rare Earth Elements (REEs)**.

Royalty rates are **fees paid to the government** for the extraction of minerals or resources from a specified area. **2nd Schedule of MMDRA 1957** deals with the royalty rates of minerals.

These minerals were **delisted from atomic minerals and can now be auctioned** to the private sector. The approved royalty rates are as follows:

- **Lithium** (3% of London Metal Exchange price)
- **Niobium** (3% of Average Sale Price)
- **REEs** (1% of the Average Sale Price of Rare Earth Oxide)

If not specified, the **royalty rate for minerals is 12% of the Average Sale Price (ASP)**.

Significance of fixing Royalty Rates: Encouraging indigenous mining of these minerals is crucial for **reducing imports, boosting mining sector investment, promoting economic development, and supporting India’s energy transition** and national security. The move is also expected to **create job opportunities in the mining sector**.

Operation Ajay

- India **has initiated “Operation Ajay” to evacuate its citizens from conflict-stricken Israel**.
- This marks the **second evacuation operation of the year, following Operation Kaveri**, which brought back **Indian citizens from Sudan earlier**.
- The decision to initiate Operation Ajay comes in response **to recent conflicts in the region, including a Hamas attack on Israel and the subsequent military strike on the Gaza Strip**.

Operation Name	Year	Reason for Evacuation
Operation Dost	2023	Turkey-Syria earthquake
Operation Ganga	2022	Tensions between Russia and Ukraine

Vande Bharat	2020	Covid-19 pandemic
Operation Samudra Setu	2020	Covid-19 pandemic

Inclusion of traditional medicine on WHO's list

- The Indian government is pushing for the **inclusion of Ayurveda and related traditional medicine systems** in the 11th revision of the **World Health Organization's International Classification of Diseases (ICD)** as the **second module of a supplementary chapter on traditional medicine conditions**.
- This move aims **to provide these traditional systems with a standardized language for global recognition and integration**.
- The ICD serves as a **common language for healthcare professionals worldwide, allowing them to share standardized information**.
- ICD-11 previously included **Module-1 for traditional medicine conditions originating in China**.
- The inclusion of **Ayurveda and related systems in Module-2 would allow for a more comprehensive approach to reporting adverse events and integrating traditional medicine into insurance and reimbursement systems**, in line with WHO's goals for universal health coverage.

International

Global Hunger Index

- The Global Hunger Index (GHI) is an **annual report that measures and tracks hunger at the global, regional, and country levels**. The GHI is published by the Irish **NGO Concern Worldwide** and the German **NGO Welthungerhilfe**. The GHI's goal is to **trigger action to reduce hunger around the world**
- In the **Global Hunger Index (GHI) 2023**, India has been **ranked 111th out of 125 countries**, indicating a serious level of hunger.
- The GHI score is based on four indicators, **including under-nourishment, child stunting, child wasting, and child mortality**.

Key Findings:

- **India's GHI score is 28.7 on a 100-point scale, where lower scores represent less hunger, and higher scores indicate more severe hunger**. This categorizes **India's hunger severity as "serious."**

- Globally, the **2023 GHI score is 18.3, considered moderate.**
- The report highlights **that South Asia and Africa South of the Sahara have the highest hunger levels, with GHI scores of 27.0 each.** Latin America and the Caribbean are the only regions where GHI scores worsened between 2015 and 2023.
- **East and Southeast Asia, led by China, have the second-lowest 2023 GHI score,** while Europe and Central Asia have the lowest score

RISE initiative

- The **World Bank and Japan, have launched the Resilient and Inclusive Supply-chain Enhancement (RISE) initiative in Morocco.**
- This initiative is **designed to tackle the dual challenges of job creation and climate change** by aiding **emerging markets and developing countries** in expanding their **clean-energy product manufacturing and increasing their participation in the minerals industry.**
- The initiative aims to **stimulate economic growth and generate local employment opportunities, ultimately contributing to poverty reduction.**
- This collaborative effort emphasizes the **importance of international cooperation in promoting economic growth in these countries while strengthening clean energy and critical minerals supply chains.**

Haiti

- The **United Nations Security Council (UNSC)** has approved a multinational security mission **led by Kenya** to intervene in Haiti due to a surge in deadly gang violence and instability in the country.
- **Aim:** This intervention aims to **restore security, protect critical infrastructure, and control escalating violence** in Haiti.
- **Haiti is a Caribbean country** that shares the island of Hispaniola with the Dominican Republic to its east. It's still recovering from a 2010 earthquake and has been grappling with armed groups taking control of large parts of the country.

White phosphorus

Human Rights Watch (HRW) says the **Israeli military recently used white phosphorus munitions in Lebanon and Gaza.** White phosphorus munitions can be **delivered through artillery shells, bombs, rockets, or grenades.** This substance is **colourless, white, or yellow and emits a garlic-like odour.**

White Phosphorous in war:

- While **white phosphorus is not banned by international conventions,** it is not categorized as an **“incendiary weapon”** intended to cause fires or burns.
- Instead, it is **considered a multipurpose munition.** **Protocol III of the 1980 Convention on Certain Conventional Weapons prohibits incendiaries or the use of other substances to attack**

civilian populations, but it **allows militaries to argue that white phosphorus is used only as a smokescreen, signal, or to illuminate a target.**

- **Israel has faced accusations of using white phosphorus in Gaza in the past, notably during Operation Cast Lead in 2008-2009.**

About White phosphorus:

It is a **highly toxic, wax-like substance known for its ability to burn at extremely high temperatures**, exceeding 800 degrees Celsius (1,500 degrees Fahrenheit).

It can **melt metal and is often used by militaries to create smokescreens** due to its **fast-spreading fires and thick smoke production** that can last for about seven minutes.

White phosphorus is harmful to **humans and can cause severe burns, penetrating down to the bone**. The **chemicals can be absorbed by the body, leading to dysfunction in multiple organs**, including **the liver, kidneys, and heart**

World Food Day

It is an international day celebrated every year worldwide on **October 16** to commemorate the date of the founding of the United Nations Food and Agriculture Organization in 1945. The theme for World Food Day in 2023 is **“Water is life, water is food”**.

The WWF’s report, titled **“The High Cost of Cheap Water,”** warns of a growing global water crisis that poses a **threat to \$58 trillion in economic value**, food security, and sustainability. The **World Wide Fund for Nature** is a **Swiss-based (HQ: Gland) international non-governmental organization** founded in 1961.

It’s the **world’s largest conservation organization** focuses on preserving the environment and aims to halt its degradation. WWF runs campaigns like **Earth Hour**. WWF is part of the **Foundations Platform F20**

Science-Tech & Environment

Difference between biohydrogen and green hydrogen

The key difference between biohydrogen and green hydrogen is in their sources of production:

Biohydrogen: Derived from biological sources such as biogas, and often considered a form of renewable hydrogen due to its environmentally friendly conversion process. Biohydrogen is hydrogen produced from **biological sources, typically through biogas reforming**. It converts **biogas (CH₄ and CO₂) into hydrogen**, often referred to as syngas or bio-hydrogen

Green Hydrogen: Produced through the electrolysis of water using renewable energy sources like solar or wind power, and is considered the purest form of clean hydrogen.

In August 2023, the Union Ministry of New & Renewable Energy, Government of India, provided a **definition for green hydrogen**, specifying it as having a **well-to-gate emission** (encompassing water treatment, electrolysis, gas purification, drying and compression of hydrogen) **not exceeding 2 kg CO₂ equivalent per kg H₂**. In contrast, **grey hydrogen**, on average, emits **10 kg of CO₂ per kg** of H₂ produced.

Project Nilgiri Tahr

- Tamil Nadu has launched ‘**Project Nilgiri Tahr**,’ a **wildlife conservation initiative**.
- The project **aims to protect the endangered Nilgiri Tahr**, a species native to the **Western Ghats**.
- It focuses on **understanding the population, distribution, and ecology of Nilgiri Tahr**, reintroducing **them to their historical habitats, addressing immediate threats to their survival, raising public awareness, and developing eco-tourism activities**.

AI-Based System Enhances Elephant Safety on Rail Tracks

Tamil Nadu is close to completing its **first artificial intelligence (AI)-based early warning system** designed to **protect wild elephants** from train collisions along the Ettimadai–Walayar railway section. This initiative involves **the installation of 12 e-surveillance towers** equipped with thermal imaging cameras to monitor elephant movements. Once fully functional, the system will **alert forest department staff and railway authorities** to reduce train speed, enhancing elephant safety in the region.

Pontus plate

- Scientists have recently **rediscovered the “Pontus plate,” a long-lost tectonic plate that disappeared about 20 million years ago**.
- This plate was **approximately a quarter the size of the Pacific Ocean** and once **existed beneath an ancient ocean known as the Pontus Ocean**.
- The rediscovery of the Pontus plate was **accidental, occurring during a study of rocks in Borneo**. Researchers had **originally been studying the Pacific plate when they came across rock fragments that didn’t fit with known plates’ magnetic properties**.
- Computer modelling eventually revealed that **these rock fragments belonged to a previously unknown tectonic plate, the Pontus plate**.
- This plate formed **at least 160 million years ago**, possibly even earlier, and **eventually disappeared as it was subducted beneath the Australian and Chinese plates**. This discovery **sheds light on Earth’s geological history and the movement of tectonic plates**.

New toad species

- A **new species of toad**, called **Bufoides bhupathyi**, has been discovered in the **Dampa tiger reserve of Mizoram, India**. This marks the **third species in a genus found in the north-eastern region of India**.
- The previous two species, **Bufoides meghalayanus** and **Bufoides kempfi**, were found in Meghalaya.
- To resolve taxonomic confusion, field surveys were conducted, **leading to the discovery of Bufoides bhupathyi**, which is distinct from other similar species in terms of **interdigital webbing, colouration, skin tuberculation, and the presence of ovoid, tuberculated, and depressed parotid glands**.
- The **new species is currently known to exist only in the Dampa tiger reserve** and is likely to meet the **criteria for being assessed as critically endangered according to the International Union for Conservation of Nature (IUCN)**.
- It has been named after S Bhupathy, a **prominent herpetologist who served as the principal scientist at the Salim Ali Centre for Ornithology and Natural History in Coimbatore**.

Kulasekarapattinam

- ISRO is establishing a **second spaceport in Kulasekarapattinam, Tamil Nadu**, dedicated to Small Satellite Launch Vehicles (SSLVs) developed by the private sector.
- This spaceport will be operational in about two years and will exclusively **serve the private sector, with no ISRO rocket launches planned from there**.
- The **SSLV is a cost-effective, flexible launch vehicle** capable of deploying around 500kg satellites in a **500-km orbit**. Additionally, a small space manufacturing park is planned near the spaceport, offering further support to private sector initiatives.
- **Kulasekharapatnam** is a town in the **Thoothukudi district of Tamil Nadu**. It was an **ancient port dating to the 1st century AD** and was contemporaneous to the existence of Kollam, Cheran, and Pandyan ports.

Self-Declaration of Freedom from Avian Influenza

- The **World Organisation for Animal Health (WOAH)** has approved **India's self-declaration** of freedom from **Highly Pathogenic Avian Influenza (HPAI)** in specific poultry compartments.
- This is a **significant development for India's poultry industry** and reflects the **country's commitment to maintaining high animal health and biosecurity standards**.
- **Compartmentalization**, a strategy used to establish and maintain groups of animals with specific health statuses, played a key role in this achievement.
- India adopted the **concept of poultry compartmentalization as a crucial tool to reduce the risk of disease outbreaks and facilitate the trade of poultry and poultry-related products**.
- India, one of the **top producers of eggs and poultry meat globally**, is poised to capitalize on this achievement, potentially **opening up new opportunities in the global market**.

Tilapia parvovirus

- India has reported the **presence of tilapia parvovirus (TiPV)** for the first time in **Tamil Nadu**., affecting **farm-bred tilapia fish**.
- The virus caused **mortality rates ranging from 30% to 50% in farms and 100% in laboratory settings**.
- Tilapia, considered a **“poor man’s fish,”** was introduced to **Indian freshwater bodies in the 1950s**. While **Nile tilapia, introduced in the 1970s**, is larger and widely cultivated, **the occurrence of TiPV is a concern for tilapia farming in India**. Research is ongoing to **develop a vaccine to combat TiPV and mitigate losses for fish farmers**.

Defence Systems of Israel

Iron Beam: Strengthen Israel’s air defence against short-range projectiles, drones, artillery, and mortar shells. Uses a fibre laser to destroy airborne targets.

Iron Dome: Short-range **defence system with an intercept range of 2.5 to 43 miles**. Designed to **protect populated areas**.

David’s Sling: Designed to counter medium-range missiles. Operational since 2017.- Uses the “Stunner” interceptor for medium- to long-range threats up to 185 miles.

BTSbot

A groundbreaking moment in the field of astronomy occurred when an artificial intelligence (AI) system named **Bright Transient Survey Bot (BTSbot)** autonomously detected, identified, and classified its first supernova, marking a significant milestone in the realm of space exploration.

Traditionally, the process of discovering supernovae has been time-consuming and labor-intensive. It involves the use of robotic telescopes to capture repetitive images of various sections of the night sky. Astronomers then visually inspect these images to identify new sources of light. If a potential supernova is found, follow-up observations are conducted to confirm its classification.

Economics

Multilateral Development Banks (MDBs)

MDB is a financial institution established by multiple member countries and falls under international law. E.g., International Monetary Fund, World Bank, Asian Development Bank etc.

Objectives of MDBs: Stabilizing the global financial system during the time of crisis; Providing long-term financing; Providing lower-cost financing

MDBs issue areas:

- **Adapting to Global Challenges:** MDBs must adapt to address emerging global issues like pandemics and conflicts, responding quickly to changing circumstances.
- **Resource Constraints:** MDBs face limitations in funding to meet growing demands, especially in climate change and infrastructure development.
- **Mobilizing Private Sector:** MDBs struggle to attract private sector investments, requiring risk mitigation and incentives.
- **Addressing Climate Change:** MDBs need to incorporate climate considerations into policies, strategies, and project financing for sustainable development.
- **Domination by Developed Countries:** Currently, MDBs are dominated by developed Countries (WB by USA, IMF by EU and ADB by Japan); they impose conditionality in loans; there is a lack of Transparency and Accountability.

Geographical indication tag for Goan cashew

The **cashew industry in Goa** recently received a **Geographical Indication (GI) tag**, which has significant implications for the region. The GI tag signifies that Goan cashews have unique characteristics and qualities due to their geographical origin.

Significance:

- **Differentiation from Non-Goan Cashews**
- **Export Potential**
- **Economic Contribution:** Cashew was introduced to **Goa by the Portuguese in the 16th century**, and it has since become a significant contributor to the state's economy.

Anti-money laundering: Sebi releases fresh set of guidelines

The **Securities Exchange Board of India (SEBI)** has issued a set of amendments to **strengthen anti-money laundering (AML) standards and combat finance terrorism (CFT)**. These guidelines are based on rules established under the **Prevention of Money Laundering Act of 2002**.

The key amendments include:

- **Additional Measures:** Financial groups must implement **group-wide programs to deal with money laundering**. Additional measures should be **taken if the host country does not meet AML/CFT requirements consistent with the home country's standards**.
- **Disclosing Status:** In the case of a trust, the **reporting entity must ensure that trustees disclose their status** at the commencement of an account-based relationship.
- **Identifying Beneficial Ownership**

These amendments aim to **enhance the effectiveness of AML/CFT measures and strengthen the process of identifying beneficial ownership**.

Navratna status

- **Two Central Public Sector Enterprises (CPSEs)** under the Ministry of Railways, **Ircon International Limited (IRCON)**, and **RITES Ltd**, have been granted **‘Navratna’ status**.
- **RITES Ltd**, in its **50th year of operation**, is a prominent **transport infrastructure consultancy and engineering firm in India**, offering services in various sectors such as **transportation, railways, highways, airports**.
- **IRCON**, with **47 years of experience**, specializes in railways, highways, and high-tension substation engineering and construction. The company has executed various **projects in railway construction, electrification, tunnelling, and more, both in India and abroad**.

Angel tax for start-ups

The **Central Board of Direct Taxes (CBDT)** has issued a **directive to its officers, instructing them not to carry out scrutiny of angel tax provisions** for start-ups **recognized by the Department for Promotion of Industry and Internal Trade (DPIIT)**. The directive comes in response to **concerns raised by start-ups regarding scrutiny notices for angel tax**.

Angel tax is **income tax levied at a rate of 30.6% on unlisted companies** that issue shares to **investors at a price higher than their fair market value**.

The **Finance Act 2023** amended Section 56(2)(viib) of the Income-tax Act, **colloquially known as the ‘angel tax,’** to include foreign investors. **DPIIT-recognized start-ups are exempt from the angel tax levy**.

Ethics & Society

Concept of foetal viability

It refers to the **stage of pregnancy at which a foetus has developed sufficiently to potentially survive outside the womb** with medical assistance. It varies with advancements in medical technology and typically falls between **23 to 24 weeks of gestation** in modern healthcare settings. This concept influences decisions related to late-stage abortions and the rights of the unborn child.

The Medical Termination of Pregnancy Act (MTP Act) in India allows abortion in various stages of pregnancy, and the court has previously permitted terminations beyond 26 weeks in **certain circumstances**.

Supreme Court upholds rights of the unborn child

The Supreme Court of India has **upheld the rights of an unborn child** by rejecting a **woman’s plea to terminate her 27-week-old pregnancy**.

The court cited the **violation of the Medical Termination of Pregnancy (MTP) Act**, as there was **no immediate threat to the mother or any foetal abnormality**. However, the court allowed the parents to **decide whether they wanted to give up the baby for adoption** and directed the state to bear all medical costs.

Sports

IOC amends the Olympic Charter to strengthen its human rights commitments

The International Olympic Committee (IOC) has made amendments to the **Olympic Charter** to strengthen its **human rights commitments** during its 141st Session. These changes include additional wording in the **Fundamental Principles of Olympism**.

They aim to **promote and respect human rights** across their three spheres of activity: as an organization, as the owner of the Olympic Games, and as the leader of the Olympic Movement.

Additionally, the **IOC's Framework on Fairness, Inclusion, and Non-Discrimination** aims to ensure inclusion in elite sports without discrimination based on gender identity or sex variations while preserving fair competition.

***IOC approves inclusion of Cricket in 2028 Los Angeles Olympic**

***2024 Summer Olympics: Paris; 2028 Summer Olympics: Los Angeles**

***Prime Minister, Narendra Modi, announced India's bid to host the 2036 Olympic and Paralympic Games**, expressing the nation's long-standing dream to do so. Furthermore, India will also bid to host the **Youth Olympic Games in 2029**

Significance of Hosting the Olympics for India

- **Soft Power Showcase:** Hosting the Olympics serves as a soft-power tool, as seen in post-World War Europe, post-apartheid South Africa, and Brazil.
- **Positive Image:** India aims to create a positive image following issues during the 2010 Delhi Commonwealth Games.
- **Global Ambitions:** India's bid for the 2036 Olympics reflects its global ambitions, aligning with goals like a UN Security Council seat and G-20 Presidency.
- **Sporting Confidence:** Recent sporting achievements, like the 107 medals at the Asian Games, have boosted India's confidence, stemming from Abhinav Bindra's 2008 Olympic gold.

Challenges to Consider:

- **Multi-Challenges:** Hosting such a mega event involves various challenges, including high infrastructure costs, security, cost overruns, environmental impact, geopolitical tensions, and the ethical conduct of administrators.
 - **Governance Issues:** India's hosting of the 2010 Commonwealth Games was mired in controversies and Corruption
 - **High Costs:** Costs can be exorbitant, as seen in the cases of Rio 2016 and Tokyo 2020, with the latter exceeding initial estimates by a large margin. **Recently**, Australia withdrew from hosting the **2026 Commonwealth Games** due to mounting expenditure, and Canada also withdrew its bid for the 2030 edition.
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Current Affairs Update (Oct 22-30)

National

Implications of the Gaza Crisis for India

- **Security Consequences:** The Gaza crisis can impact India's security by fueling regional instability and violent extremism
- **Foreign Policy Challenges:** India may face diplomatic challenges as its relationships with Arab moderates and Israel are tested by the crisis.
- **Defence Deals with Israel:** India and Israel have a significant defence partnership worth over USD 2 billion, but the conflict might affect it as Israel focuses on its security.
- **Energy Security:** India's reliance on Middle East oil makes it vulnerable to energy price fluctuations due to regional conflicts involving countries like Saudi Arabia and Iran
- **Impact on India-Middle East-Europe Economic Corridor (IMEC):** The conflict in the Middle East, crucial for India, could impact its interests and the newly established IMEC, which aims to connect India, the Middle East, and Europe

India's Policy on the Israel-Palestine Conflict:

- India historically **favoured Palestine due to factors like Gandhi's opposition to a Jewish state**, a significant Muslim population, and alignment with Arab countries, the **Non-Aligned Movement**, and the UN.
- In 1992, **India established diplomatic relations** with Israel while continuing to support Palestine. This marked a significant change influenced by post-Cold War dynamics.
- India's relations with Israel have strengthened across various sectors. It supports **Israel's anti-terrorism efforts**, although the contexts differ. India remains vocal about its **commitment to the Palestinian cause** and provides aid to Palestinian refugees and relief materials in the midst of ongoing tensions. India officially supports a **two-state solution with Israel and Palestine living as good neighbours**, a stance consistent with international mediation efforts.

Coral Reef Fossils in Ladakh

Geologists have made a remarkable **discovery of coral reef fossils** at an elevation of **18,000 feet above sea level in the Burtse region, Eastern Ladakh Himalayas**. These **fossils reveal the existence of ancient coral colonies** and **provide insights into a previously unknown geological past of the Burtse region**, suggesting the presence of a diverse marine ecosystem.

The findings support the idea that **the Himalayas emerged when continental plates were thrust out of the Tethys Sea about 40 million years ago**.

Significance: The discovery of coral reef fossils in Ladakh is significant because **it indicates that this region, now a high-altitude desert, was once submerged under a vast ocean.** This finding offers insights into Ladakh's geological history, the impact of tectonic activity, and ancient climate conditions.

Ethics committee of Lok Sabha

- Lok Sabha Speaker has referred a **“cash-for-query” complaint** made by a BJP MP against a Trinamool Congress member to **the Ethics Committee of the Lower House.**
- A **“cash-for-query” complaint is an accusation that someone took money in exchange for asking questions in Parliament.**
- The **complaint is based on evidence from an advocate, which he claims shows the exchange of bribes between the accused and a businessman.**
- He also pointed out that a significant number of **recent parliamentary questions were focused on the Adani Group, a conglomerate she has accused of malpractices.**

The **Lok Sabha Ethics Committee examines complaints of unethical conduct** by members of the Lok Sabha. The committee **was established in 2000 by the late Speaker G M C Balayogi.** It became a **permanent part of the House in 2015.** The committee was established in **Rajya Sabha in 1997.**

The committee's functions include:

1. Examining complaints **of unethical conduct by members of the Lok Sabha**
2. **Making recommendations**
3. Formulating a **code of conduct for members**
4. **Suggesting amendments or additions to the code of conduct**

Ramleela in Trinidad

- Ramleela, a **famous folk theatre tradition from India,** has found its way to Trinidad, where it holds cultural significance among the Indian diaspora. This theatrical re-enactment of the Ramcharitmanas, portraying the story of Lord Ram, has been performed in Trinidad, which has a significant Indian population due **to indentured labour in the 19th century.**
- In the **early 19th century, Britain abolished slavery in its colonies,** creating an **economic crisis for places like Trinidad,** which heavily **relied on slave labour in the sugar industry.**
- To address **this labour shortage,** plantation owners in Trinidad turned to **indentured labour from India, with the first group arriving in 1845.** These indentured labourers brought their culture, including the **Ramleela tradition, with them to Trinidad.**
- Trinidad and Tobago is a dual-island Caribbean nation near Venezuela, with distinctive Creole traditions and cuisines. About **37% of Trinidad and Tobago's population** are of Indian descent (mostly from Bhojpur and Awadh Region).

Gujarat's Dhordo village gets UNWTO recognition

Dhordo village in Gujarat has earned recognition from the **United Nations World Tourism Organization (UNWTO)** for being one of the **Best Tourism Villages in 2023**. Dhordo, located in the **Great Rann of Kutch**, is known for its **annual Rann Utsav**, which celebrates the **region's rich cultural heritage, traditional arts, music, and crafts**.

About UNWTO Recognition of villages:

- The **UNWTO recognizes villages that contribute to rural development, and preserve landscapes, cultural diversity, and culinary traditions**.
- These villages **excel in various areas, including cultural and natural resources, sustainability, and tourism development**.
- The **Best Tourism Villages initiative, launched in 2021**, is part of the UNWTO's **efforts to promote rural development, combat depopulation, and encourage sustainable practices through tourism**.

Namo Bharat Train

- The Prime Minister inaugurated the **first leg of the Regional Rapid Transit System (RRTS)**, India's first **dedicated mass rapid transit system for regional connectivity** called as **Namo Bharat Train**. The RRTS is designed to **operate at speeds of up to 180 km/hour and is expected to reduce the travel time between Delhi and Meerut to less than an hour**.
- RRTS is a **new rail-based, semi-high-speed, high-frequency commuter transit system** with a design speed of 180 Kmph for **better connectivity**.
- The RRTS is an **integrated, mass transit network aimed at promoting balanced and sustainable urban development** in the **National Capital Region (NCR)**.
- **Implementing Authority:** The **National Capital Region Transport Corporation (NCRTC)**, a **joint venture between the central government and the state governments of Delhi, Haryana, Rajasthan, and Uttar Pradesh**, is responsible for implementing the RRTS project across the NCR.

Operation Chakra-2

- The **Central Bureau of Investigation (CBI)** carried out a **widespread crackdown** on cyber criminals in India in an **operation known as 'Operation Chakra-2.'**
- This operation **involved searches at 76 locations across the country and was prompted by the registration of five separate cases of cyber-enabled financial fraud, including a ₹100-crore cryptocurrency scam**.
- The fraud scheme **posed as a fake crypto mining operation and targeted unsuspecting Indian citizens**. The cases were **registered based on information provided by the Financial Intelligence Unit (FIU)**.

International

Marshall Islands

- The United States signed a new **20-year agreement with the Marshall Islands** worth over \$2 billion in economic assistance.
- This deal is part of the **Compacts of Free Associations (COFAs), which involve the U.S. providing defence and economic aid to certain Pacific island nations**, and gaining military access to strategic ocean areas.
- This agreement follows similar deals with **Palau and Micronesia** and is aimed at strengthening U.S. influence in the Northern Pacific amid competition with China.

10 Years of Belt and Road Initiative (BRI)

The **Belt and Road Initiative (BRI)** is a global infrastructure development strategy launched by **China in 2013**. It aims to invest in **over 150 countries and international organizations**, creating **road, rail, and sea routes** for trade and connectivity. The initiative, often referred to as **“One Belt One Road” (OBOR)**, is a key part of China’s foreign policy and has been compared to the **American Marshall Plan**.

Objective of BRI:

The BRI is seen as a way for **China to transition to a global power and reshape** the global economic order. It further aims to enhance **global connectivity through infrastructure development** and economic cooperation.

BRI includes various **infrastructure projects like ports, railways, roads, and power stations**. It is set to be **completed by 2049**, coinciding with the centennial of the People’s Republic of China. The initiative includes two principal components: **the Silk Road Economic Belt and the Maritime Silk Road**.



India's Objection to BRI: India opposes the BRI due to **sovereignty and transparency concerns**. It boycotted BRI summits in **2017 and 2019** and hasn't endorsed **BRI joint statements by the SCO**. The main objection is the **China-Pakistan Economic Corridor (CPEC)** passing through the Gilgit Baltistan region of India, which India claims.

India-Sri Lanka ferry service

- The historic sea route between India and Sri Lanka has been revived with the launch of a passenger ferry service connecting **Nagapattinam (India) and Kankesanthurai (Sri Lanka)**, approx. 110 Km distance, with the aim of strengthening bilateral relations, promoting tourism, and boosting local trade.
- **Named 'Cheriyapani,'** the service rekindles maritime links dating back to the early 1900s.
- Previously, **Indo-Ceylon Express or Boat Mail** used to run between Chennai and Colombo but was halted in 1982 due to the Sri Lankan civil war

Sri Lanka launches Free Visa Pilot Project

The Sri Lankan Cabinet has approved a groundbreaking initiative to issue free visas to visitors from India, China, Russia, Malaysia, Japan, Indonesia, and Thailand. The move is part of a pilot project set to run until March 31, 2024, with immediate effect. This significant step aims to revive the nation's tourism industry and foster stronger international relationships.

Science-Tech & Environment

INS Imphal

INS Imphal, **India's third indigenous stealth destroyer of the Project 15B class**, was delivered to the Indian Navy four months ahead of schedule by **Mazagon Dock Shipbuilders Limited**.

Features: It's the **first warship with accommodation for women officers and sailors**, can carry 312 crew, has a **4,000 nautical mile range**, and is **armed with Brahmos missiles, Barak-8 missiles, and anti-submarine weapons**. This class of destroyers is more versatile than previous ones and capable of various maritime missions.

Project 15B: INS Visakhapatnam, INS Mormugao, INS Imphal, INS Surat

Project 15A: INS Kolkata, INS Kochi, INS Chennai

RISUG

- The **Indian Council of Medical Research (ICMR)** has successfully **tested a long-lasting male contraceptive called "Reversible Inhibition of Sperm Under Guidance" (RISUG)**.
- RISUG is a **non-hormonal injectable male contraceptive** that **blocks the production of sperm by creating a physical barrier in the vas deferens, the tube that carries sperm**.
- It **begins to work within two months of injection and remains effective for up to a decade**.
- The overall **efficacy of RISUG in achieving azoospermia (absence of sperm) was 97.3%**, and it was **99.02% effective in preventing pregnancy without any serious side effects**.
- This breakthrough in male **contraception offers a safe, effective, and long-lasting option for family planning**.

Aestivation

- **Aestivation**, is a **biological phenomenon** in which **some animals enter a prolonged state of dormancy or inactivity** during hot and dry conditions.
- It serves as a **survival strategy to conserve energy and water**. Animals undergoing **estivation typically seek shelter in cool underground burrows, crevices, or cocoons**, reducing their metabolic activity and energy consumption.
- This behaviour helps them **avoid extreme dryness and the risk of predation**.
- Examples of estivating animals include the **West African lungfish, desert tortoises, and certain land snails**.

Project Udbhav

- **'Project Udbhav'** has been launched by the **Indian Defence Minister**, aiming to **integrate ancient Indian strategic wisdom into modern military pedagogy**.

- The project, in **collaboration with the United Service Institution of India (USI)**, seeks to create an **indigenous strategic vocabulary based on India's philosophy and culture**.

About the project:

- The project will **explore under-explored strategic thinking, statecraft, and warfare from classical texts and enrich military training curricula like Chanakya's Arthashastra** (strategic partnerships, diplomacy, soft power projections, etc.) and **Thirukkural** (Ethical conduct in warfare).
- It will **focus on educating military leaders, informing senior commanders, and creating a knowledge pool for scholars and defence personnel**.
- **Ancient Indian texts and historical military campaigns and leaders will be studied to connect traditional knowledge** with contemporary military practices.

Lemru Elephant Corridor

- The Ministry of Coal have **excluded certain coal mines from development to protect forest areas, including the Lemru Elephant Corridor**. This is being done as the ministry strives to strike a balance between increasing coal production and preserving the environment.
- The Lemru Elephant Reserve (**Hasdeo Aranya forests**) in the Korba district of Chhattisgarh, aims to reduce **human-elephant conflicts as elephants** migrate from Odisha and Jharkhand. This biodiverse area, often called the lungs of Chhattisgarh, also contains significant coal deposits.
- The state government notified the reserve (Conservation Reserve) in October 2020 under Section 36A of the **Wild Life (Protection) Act, 1972 (WLPA)**.
- In India, elephant reserves and corridors have no legal sanctity under any law, including the Wildlife Protection Act (WLPA), 1972. The act mentions only national parks, wildlife sanctuaries, conservation and community reserves (collectively called Protected Areas)

NASA's Roman Space Telescope

NASA is preparing to embark on a remarkable journey into the depths of our Milky Way Galaxy using the Nancy Grace Roman Space Telescope.

Roman Telescope's Mission

- The primary mission of the Roman Space Telescope is to monitor hundreds of millions of stars in our galaxy.
- It aims to detect telltale flickers that reveal the presence of various celestial objects, including planets, distant stars, icy bodies in the outer reaches of our solar system, isolated black holes, and more.

- Scientists anticipate that this telescope will likely set a new record for identifying the farthest-known exoplanet, offering us a tantalizing glimpse into uncharted regions of our galaxy that may host diverse worlds beyond the 5,500 exoplanets currently known to us.

Economics

Farmer Producers' Organizations (FPOs)

FPOs are **voluntary organizations** controlled by their farmer-members who actively participate in setting their policies and making decisions to improve their own socio-economic situation and that of their communities.

Objectives: To Leverage **economies of scale** in production and marketing to enhance productivity through efficient, cost-effective and sustainable resource use for ensuring sustainable income-oriented farming

Issues Facing FPOs:

- **Lack of/ Inadequate Professional Management** – Trained rural manpower is scarce for professional FPO management.
- **Weak Financials** – FPOs primarily comprise small and marginal farmers with limited resources, hindering their ability to provide quality products and services initially.
- **Inadequate Access to Credit** – Credit guarantee schemes require FPOs to have a minimum of 500 shareholder members, leaving many small FPOs without access to credit benefits.
- **Lack of Risk Mitigation Mechanism** – Existing insurance schemes cover production risks for farmers but do not address business risks for FPOs.
- **Inadequate Access to Markets** – FPOs struggle with limited connections to industry players, large retailers, and other market participants.
- **Inadequate Access to Infrastructure** – FPOs lack essential facilities like transport, storage, value addition, processing, brand building, and marketing.
- **Lack of Technical Skills/Awareness** – Farmers often lack awareness of the benefits of collective farming, and there is a shortage of competent agencies to provide support.

Purple Economy & Care Economy

Care Economy: It refers to the economic activities related to providing **care and support services**, often in **healthcare, childcare, elderly care, and other areas** aimed at improving people's well-being. It encompasses both **paid and unpaid care work** and is a critical aspect of social and economic development.

Purple Economy: The purple economy is an economic order that focuses on the sustainability of caring labour. It's an alternative vision that complements the green economy. The purple economy aims to:

1. Organize the system around the sustainability of caring labour
2. Address the inequalities created by the disproportionate reliance on women's unpaid and underpaid labour
3. Contribute to sustainable development by promoting the cultural potential of goods and services
4. Contribute to a richer and more diverse cultural environment

Examples of the purple economy include Digital, Tourism, Luxury goods, and Housing.

Double Taxation Avoidance Agreement (DTAA)

The Supreme Court of India has ruled that a Double Taxation Avoidance Agreement (DTAA) cannot be enforced unless it is notified under Section 90 of the Income Tax Act. This decision may have significant implications for multinational corporations (MNCs) from Switzerland, the Netherlands, France, and other countries.

The Double Taxation Avoidance Agreement or DTAA is a tax treaty signed between India and another country (or any two/multiple countries) so that taxpayers can avoid paying double taxes on their income earned from the source country as well as the residence country

Implications:

- The decision may lead to additional tax revenue for the Indian government but could potentially strain relations with tax treaty partners.
- The ruling revolves around the interpretation of the Most Favoured Nation (MFN) clause contained in various Indian treaties with countries that are members of the Organisation for Economic Cooperation and Development (OECD).
- This clause allows for concessions in tax rates on dividends, interest, royalties, or fees for technical services, similar to concessions given to other OECD countries.

Ethics & Society

Same-Sex Marriage debate

Arguments against Same-Sex Marriage

- Many religious and cultural groups believe that **marriage should only be between a man and a woman**
- Some argue that the primary purpose of marriage is procreation, and same-sex couples cannot have biological children
- Same-sex marriage is considered to **go against the natural order of things**
- Contentious issues from such a marriage such as inheritance, tax, and property rights
- Adoption by queer couples can lead to **societal stigma, and discrimination, thus negatively impacting a child's psychological well-being** (esp. in conservative societies)

Arguments in favour of Same-Sex Marriage

- **Articles 14** (right to equality before the law), **Article 15** (right against discrimination on grounds of religion, race, caste, sex, place of birth), **Article 19** (freedom of speech and expression), and **Article 21** (protection of life and personal liberty) of the Constitution
- Same-sex couples should have the same legal rights and protections as opposite-sex couples
- Since the **biological gender is not absolute**, and gender recognition is more complex than just one's genitals. There is **no absolute concept of a man or a woman**
- There are **currently 34 countries** where same-sex marriage is legal including Australia, Finland, France, Germany, the United Kingdom, the United States of America

Strike for Gender Equality

Iceland, known for its **gender equality**, witnessed a **one-day strike by women**, including Prime Minister Katrin Jakobsdóttir, to protest gender discrimination. Despite topping global gender gap rankings for **14 consecutive years**, two major issues persist:

1. **Gender pay gap**, where women earn 21% less than men in some professions
2. **Gender-based violence** affects over 40% of women.

The goal is to **challenge societal mindsets that perpetuate these inequalities**. In 1975, Iceland's women staged their first strike, **leading to a law granting equal rights regardless of gender** a year later.

Gap in implementation of Sexual Harassment Laws at small workplaces

The Supreme Court of India has identified a significant gap in the implementation of laws against sexual harassment in workplaces, particularly at small establishments and domestic work settings. **The Sexual Harassment of Women At Workplace (Prevention, Prohibition and Redressal) Act of 2013**, commonly known as the POSH Act, requires States to appoint a district officer in every district to play a crucial role in implementing the Act.

Key Findings and Actions Taken

- Sections 5 and 6 of the 2013 POSH Act mandate that District Officers should establish Local Complaints Committees (LCCs) to receive complaints from women employed in small establishments with less than 10 workers or in cases where the perpetrator is the employer. District Officers are also responsible for appointing nodal officers under the Act in rural, tribal, and urban areas.
- The Supreme Court found that many States had not notified District Officers, rendering the law ineffective in those areas.
- The court emphasized that the District Officer plays a pivotal role in coordinating and ensuring accountability under the POSH Act.
- Several States only appointed District Officers after being alerted by the Supreme Court's examination of the issue.
- The court expressed concern that even in States where action had been taken, District Officers were merely notified without providing specific details about their roles and contact information.
- The failure to notify District Officers had a cascading impact on the appointment of LCCs and nodal officers, hindering the redressal framework for sexual harassment complaints.

Sports

FIDE World Cup

The FIDE World Cup, established in **2000 by the International Chess Federation (FIDE)**, encompasses various iterations. Since 2005, it's been a **128-player single-elimination chess tournament**, a vital part of the World Chess Championship qualification. The format includes 7 rounds of "mini-matches" with 2 games each, followed by rapid and blitz tiebreaks if needed. The final consists of 4 games before tiebreaks.

The Prime Minister recently congratulated **Raunak Sadhwani on his victory at the FIDE World Junior Rapid Chess Championship 2023**