

Current Affairs Update (Sep 1-7)

National

Simultaneous elections

The Government has formed a committee, headed by former **President Ram Nath Kovind**, to explore the possibility of **“one nation, one election,”** which refers to holding simultaneous Lok Sabha (Parliament) and state assembly elections. The concept of **“one nation, one election”** refers to holding elections to Lok Sabha and State Legislative Assemblies simultaneously, once in five years.

Background: Simultaneous elections were held in the country **during the first two decades after Independence up to 1967**. The dissolution of certain Assemblies in 1968 and 1969 followed by the dissolution of the Lok Sabha led to the disruption of the conduct of simultaneous elections.

Advantages:

- Conducting all elections simultaneously **minimizes expenses** on logistics, security, and campaigning.
- Simultaneous elections allow elected governments to **focus on governance** rather than preparing for the next election. It will help in **streamlining the election cycle to avoid policy disruptions** due to the **Model Code of Conduct**
- Ensures voters are **not subjected to multiple rounds of voting**, leading to **better turnout** and voter convenience.
- Conducting elections together **reduces overall security concerns** and enhances security setup across the country.
- Provides a **level playing field for all parties and candidates**, promoting fairness and transparency in elections.
- Simultaneous elections **reduce the impact on the education sector**, as fewer teachers are involved in the electoral process.

Challenges:

- Requires **constitutional amendments**, necessitating consensus among political parties and states, a complex and lengthy process.
- Assembly elections focus on **local issues**, and combining them with general elections may **overshadow regional narratives**.
- Conducting all elections simultaneously **involves logistical arrangements**, security deployment, voter rolls, and polling booth management, leading to administrative difficulties.

- Simultaneous **elections may favour national parties** with more resources, potentially marginalizing regional parties and issues.
- Voters may struggle to **engage with all issues simultaneously**, potentially leading to uninformed choices and undermining the democratic process.

Indian Railway Board Chairman

- **Jaya Verma Sinha** has become the **first woman to lead the Railway Board** (in the Railway Board's **118-year history**), the **top decision-making body** for India's Ministry of Railways.
- The Ministry of Railways (founded 1905; HQ: Rail Bhawan, New Delhi) functions as the **statutory authority for the Indian Railways**, a monopoly in rail transport. The **Chairman and CEO of the Railway Board** leads this organization.

R Ravi Kannan (Ramon Magsaysay Award for 2023)

- Dr R Ravi Kannan, a **surgical oncologist from Assam**, has been honoured with the Ramon Magsaysay Award for 2023.
- He received this **prestigious award for his remarkable contributions** to transforming **cancer treatment in Assam**, particularly through programs that prioritize the welfare of the people and those with limited means.
- **Ramon Magsaysay Award** was **established in 1957** and is **Asia's prestigious honor** named after **Ramon Magsaysay**, the Philippines' **third president**.

Kokborok language

- Kokborok is a **Sino-Tibetan language** spoken by about **1 million people in the state of Tripura** in northeast India.
- Kokborok is **one of the official languages of Tripura, along with Bengali**.
- Kokborok is a **relatively homogenous language with several dialects spoken in Tripura**. It is the lingua franca of most of **the 19 tribal communities of Tripura**.

International

9 Dashed Line

- Several Southeast Asian countries, including the Philippines, Malaysia, Vietnam, and Taiwan, have joined India in rejecting **China's new national map and 9 Dashed Line in the South China Sea**.
- India specifically protested **China's claims over Arunachal Pradesh and Aksai Chin**

What is a Nine-dash line?

- The nine-dash line is a **historical demarcation line on a map used by China** to assert territorial claims in the **South China Sea**.
- China asserts a claim to **90% of the South China Sea**, primarily based on the **historical U-shaped nine-dash line drawn on a map** in the 1940s and encompassing several islands, notably the **Paracels and Spratlys**.
- However, the **Permanent Court of Arbitration under UNCLOS** (United Nations Convention on the Law of the Sea) has determined that **China's claim in this region lacks a legal foundation**

World Heritage sites

World Heritage sites are **landmarks or areas of cultural, historical, scientific, or natural significance** that are recognized and designated by the **United Nations Educational, Scientific and Cultural Organization (UNESCO)**. These sites are considered to be of outstanding value to humanity, and their preservation is of global importance.

There are two main types of World Heritage sites:

Cultural Heritage Sites: These include historical buildings, cities, monuments, archaeological sites, and cultural landscapes that hold cultural and historical significance. Examples include the Pyramids of Egypt, the Historic Centre of Rome, and the Great Wall of China.

Natural Heritage Sites: These encompass natural areas, ecosystems, and geological formations that are of exceptional natural beauty or scientific importance. Examples include the **Galápagos Islands**, the Great Barrier Reef in Australia, and Yellowstone National Park in the United States.

Significance of World Heritage sites: They are **protected and preserved to ensure that they are passed down to future generations**.

Examples of leaders of Indian origin

- Rishi Sunak (PM of UK)
- Tharman Shanmugaratnam (Recently, Singapore President)
- Christine Kangaloo President of Trinidad and Tobago
- Leo Varadkar (Head of Government, Ireland)
- Prithvirajsing Roopun (President of Mauritius)
- Wavel Ramkalawan (President of Seychelles)

Export control of Dual-Use Items

The Director General of Foreign Trade emphasized the **government's commitment to enhanced export control of dual-use items** to prevent them from falling into the hands of **non-state actors and terrorists**.

What are Dual-use items?

They are **products, technologies, materials, or equipment** that can have both civilian and military or non-military applications. These items are designed or intended primarily for civilian purposes **but can also be used for military or other prohibited purposes**. Examples: precursor chemicals like sarin gas; Components like centrifuges

Currently, **the Directorate General of Foreign Trade (DGFT)** prepares a specialized **SCOMET** (speciality chemicals, organisms, materials, equipment, and technologies) list of dual-use items and these items are regulated as per **India's Foreign Trade Policy**.

The new foreign trade policy emphasizes expediting the **SCOMET licensing process** to ensure that **sensitive and dual-use goods** are traded in **compliance with international regimes**, including the **Missile Technology Control Regime**.

What is MECR (Missile and Dual-Use Export Control Regimes)?

They are voluntary agreements among **major supplier countries aimed** at preventing the proliferation of certain military and **dual-use technologies**, particularly those related to Weapons of Mass Destruction (WMD). These agreements are **independent of the United Nations** and apply only to their member countries, with **no obligation for others to join**.

India is a member of three out of the four MECRs, excluding the **Nuclear Suppliers Group**.

The four MECRs include:

- **Nuclear Suppliers Group (NSG)** for nuclear technology control
- **Australia Group (AG)** for chemical and biological technology control
- **Missile Technology Control Regime (MTCR)** for rockets and aerial vehicles related to WMD delivery,
- **Wassenaar Arrangement** for conventional arms and dual-use goods and technologies.

French laïcité

- The French government announced that the **practice of wearing abaya** would be banned in **state-run schools as it violated the principle of Laïcité**.
- **Laïcité, the French principle of secularism**, involves the complete separation of religious values from the public sphere, **emphasizing the promotion of secular values like liberty, equality, and fraternity**.
- Its aim is to **encourage tolerance and assimilation**, with religion reserved for the private sphere. The state plays a **crucial role in enforcing Laïcité principles**.

History of Laïcité:

- **Laïcité emerged following the French Revolution in 1789** but became more concrete with the **Law of 1905** during the **Third Republic**, establishing **state-run secular schools**.
- **Laïcité was not a major issue for much of the 20th century** when France was relatively homogenous. However, **demographic changes in the 1950s and 1960s due to decolonization led to tensions as immigrants from predominantly Muslim countries arrived**.

Science-Tech & Environment

Largest indigenously developed N-plant unit begins operations

- The third unit of the **indigenously developed 700-megawatt electric (MWe) nuclear power reactor** at the **Kakrapar Atomic Power Project (KAPP3) in Gujarat, India**, has started operations at full capacity.
- This marks a **significant achievement in India's civilian nuclear program**, as it is the country's first 700 MWe unit and represents a scale-up in technology.
- The reactor uses **Pressurized Heavy Water Reactor (PHWR) technology** and is seen as a **milestone in India's effort to expand its nuclear power capacity to 22,480 MWe by 2031**.
- The reactor design also incorporates **enhanced safety features, including a Passive Decay Heat Removal System**.

New species of leaf insects

- An international research team, has **identified seven previously unknown species of leaf insects, also known as walking leaves**.
- These insects belong to **the stick and leaf insect order**, which are known for their **remarkable camouflage that makes them appear like parts of plants such as twigs, bark, or leaves**. This disguise offers **protection from predators and poses challenges for researchers**.
- Genetic analysis played a key role in **identifying these "cryptic species" that cannot be differentiated based solely on their external appearance**.
- Leaf insects are **tropical insects that resemble leaves to avoid predators**. They are closely related to stick insects and are known for their remarkable camouflage. Leaf insects are found in **the forests of Asia, Papua New Guinea, Australia, and the islands of the Indian Ocean**.

Red Sand Boa

- The **red sand boa (Eryx johnii)** is a **non-venomous snake** that lives in the **dry parts of the Indian subcontinent**.

- It's also known as the **Indian sand boa**. The red sand boa is a **thick-set snake that's usually reddish-brown, known** for its **blunt tail**, which it uses to **mimic its head when it senses a threat**.
- Classified as '**Near Threatened**' by the **International Union for Conservation of Nature (IUCN)** with a **declining population trend**.
- The red sand boa is highly sought after in the illegal wildlife trade due to its **demand in the pet trade and its use in black magic**.
- A report by the **Wildlife Conservation Society (WCS)-India** has highlighted **172 incidents of seizures involving the red sand boa (Eryx johnii)** between 2016 and 2021 in India.
- The report aims to shed light on the **illegal trade of red sand boas**, particularly online, to **raise awareness and prevent further illegal collection and sale of the species**.

Kākāpō

- The kākāpō, also known as the **owl parrot**, is a **large, flightless parrot that is native to New Zealand**. Kākāpō are known for their **unique appearance**, which includes a facial disc, owl-like eyes, and a large, gray beak.
- IUCN Status: **critically endangered**.
- They only breed every few years, triggered by the availability of certain forest foods. **Rimu fruit, which is part of the kākāpō diet, is thought to trigger breeding**.

What are Flex Fuel Vehicles (FFVs) and Electrified Flex Fuel Vehicles?

Flex Fuel Vehicles (FFVs): It is designed to **run on a flexible combination of fuels**, typically **gasoline and ethanol**. These vehicles are equipped with engines that can adjust **their fuel mixture based** on the available fuel blend E.g., E20 (20% ethanol and 80% gasoline) or even higher percentages.

Electrified Flex Fuel Vehicles: They are a **more advanced version of FFVs** that offer the advantage of **being able to operate on both ethanol-based fuels and electricity**, providing increased fuel efficiency and potentially reducing emissions compared to traditional gasoline-only vehicles.

Significance:

- These vehicles offer higher ethanol use and better fuel efficiency similar to **Strong Hybrid Electric Vehicles (SHEVs)**
- **Electrified Flex Fuel Vehicles** use minimal advanced chemistry batteries to reduce dependence on imports.

Challenges:

- **Higher cost of ownership and running cost for customers**, which may affect their acceptance unless retail fuel prices are competitive.
- **Developing FFVs requires significant effort** and calibration with multiple fuel blends, making them less viable without widespread fuel availability.

LIGO-India

LIGO-India, part of the Laser Interferometer Gravitational-Wave Observatory, is set to **become a prominent astronomical observatory** in the world, aiming to detect and study gravitational waves, offering a new way to observe the universe. It will be developed in Hingoli district, Maharashtra.

Gravitational waves are **ripples in the fabric of space and time** that travel at the speed of light. They are **created by the motion of massive objects**, such as black holes or neutron stars, which **generate gravitational waves** when they orbit or collide with each other.

The science behind Gravitational waves: According to **Albert Einstein's theory of general relativity (1916)**, any object with mass warps the space-time around it. When two massive objects orbit each other or collide, they produce **ripples or waves in space-time** that propagate outward at the speed of light.

Gravitational waves are **extremely weak and difficult to detect**. They were first directly detected by the **Laser Interferometer Gravitational-Wave Observatory (LIGO) in 2015**, a century after they were predicted by Einstein's theory.

Challenges for LIGO India:

- **Funding:** Securing adequate financial resources for construction, maintenance, and research.
- **Site Preparation:** Dealing with environmental and logistical issues at the chosen site.
- **Technology Transfer:** Acquiring and adapting cutting-edge technology for Indian needs.
- **International Collaboration:** Coordinating with global partners for seamless operations.
- **Technical Challenges:** Overcoming technical obstacles in precise measurements and data analysis.

Sand Mining: Irreversible damage to Ocean benthic life

- Approximately **six billion tonnes of sand are extracted** annually from the world's oceans, causing irreversible damage to benthic life, according to a new global data platform called **Marine Sand Watch**.
- Benthic life refers to **organisms that live on or near the bottom of aquatic environments**, such as oceans, seas, lakes, and rivers. These organisms are adapted to life on the seabed or riverbed and play crucial roles in the ecosystem, including decomposing organic matter and providing food for other aquatic species.
- Some countries — including **Indonesia, Thailand, Malaysia, Vietnam, and Cambodia** — have banned marine sand export in the last 20 years, while others lack any legislation and /or effective monitoring programmes.

Invasive Alien species

- Invasive alien species are animals, plants, and microbes introduced by humans to new regions, with negative impacts on nature and often on human quality of life.
- **Examples:** IAS spread diseases like malaria, Zika, and West Nile Fever through **invasive mosquito species**.
- **Water hyacinth in Lake Victoria** has harmed fish populations and livelihoods.
- **There are 37,000 alien species** introduced to various regions and biomes worldwide due to human activities. **Among these, over 3,500 are invasive alien species**, responsible for 60% of global plant and animal extinctions.
- **Target 6 of the Kunming-Montreal Global Biodiversity Framework aims** to reduce the rate of invasive alien species introduction by at **least 50% by 2030**. While many countries have **targets related to managing invasive species**, only 17% have specific legislation addressing the issue.

Economics

Status of Rice production and export

- India is the **second-largest producer of rice** in the world, after China.
- India is the **world's largest exporter of rice**, with a **45% share**.
- **Non-Basmati rice exports** have been on a consistent upward trend over the past three years.
- **Decreased production:** The latest rice production estimate in India for the Rabi season 2022-2023 indicates a decrease of about 14% compared to the previous year.
- The government has increased the **Minimum Support Price (MSP)** for rice.

Recent government restrictions on Rice exports:

- In May 2022, the government **banned wheat exports**.
- In June 2023, restrictions on **stock holdings were imposed**.
- In September 2022, the **export of broken rice was prohibited**, and a 20% tariff was imposed on non-parboiled white grain shipments.
- In July 2023, **non-basmati white rice exports were entirely prohibited**, with only parboiled non-basmati and basmati rice allowed.
- Recently, a **20% duty was introduced on all parboiled non-basmati rice exports**.

Why is the Indian government imposing restrictions on rice and wheat exports?

- **Enhancing Domestic Supply:** The government's goal is to reduce exports to ensure an adequate supply of grains within the country. There are concerns about depleting rice stocks, especially in

light of the free-foodgrains scheme's continuation pressure (**Pradhan Mantri Garib Kalyan Anna Yojana**)

- **Impact of monsoon/El Nino:** It includes potential declines in rice production in several Indian states. El Nino may affect new crop arrivals.
- **Tackling Inflation:** Retail food inflation was at **1.5% in July**, and the government is taking measures to control rising food prices.
- **Preventing Illicit Exports:** The minimum export price rule is meant to prevent illegal exports of **non-basmati white rice** from being misrepresented as basmati rice.

PM-DAKSH

The **Pradhan Mantri Dakshata Aur Kushalata Sampanna Hitgrahi (PM-DAKSH) Yojana** is a **Central Sector Scheme** launched in **2020-21** with the goal of **enhancing the competency levels of specific target groups to make them employable**, whether for self-employment or wage-employment, thereby **contributing to their socio-economic development**.

The scheme is primarily aimed at **Scheduled Castes (SCs), Other Backward Classes (OBCs), Economically Backward Classes (EBCs), De-notified Tribes (DNTs), Safai Karamcharis (including waste pickers), and others**.

The eligibility criteria for the scheme are as follows:

- **Age:** Between **18 to 45 years**.
- **Income:** No income limit for SCs, Safai Karamcharis (**including waste pickers**), and DNTs. For **OBCs and EBCs**, the annual family income should be below **Rs. 3 lakh and Rs. 1 lakh, respectively**.

The scheme offers **various types of training programs with different durations and costs per candidate:**

- Up-skilling/Reskilling
- Short Term Training
- Entrepreneurship Development Programme
- Long Term Training

Centre asks states to formulate a logistics policy

- The central government has urged states to **create logistics policies to enhance ease of doing business and align** with the **PM GatiShakti initiative**, which aids in infrastructure project planning.
- **India has ranked 38 out of 139** countries in **World Bank's Logistics Performance Index 2023** (2018 rank of India was 44)
- **Gujarat** has topped the Logistics Ease Across Different States (LEADS) 2021 index

- **The unorganized sector** amounts to over **90% of the logistics sector**.

Need for Logistics policy in States:

- **The logistics cost in India (about 13-14 %)** is high as compared to other developed economies (8%)
- **India's logistics sector is highly defragmented** and very complex esp. of states
- This sector provides **employment to more than 22 million** people and is expected to grow at the rate of over **10% over the next 5 years**
- Logistics is the **backbone of India's international trade** and will help in the diversification of not only India's export basket but also of products and countries.

Ethics & Society

Issues because of under representation of Persons with Disabilities

- **Lack of Accurate Data:** Without including questions related to disabilities, it becomes challenging to gather accurate and up-to-date data on the disabled population in India.
- **Invisibility of Invisible Disabilities:** Many disabilities, particularly "**invisible disabilities**" like **mental health conditions**, often go unnoticed or unreported. The omission of questions related to such **conditions exacerbates the invisibility of these disabilities**.
- **Limited Policy Insights:** Policies and programs designed to support people with disabilities may not be comprehensive or targeted effectively **without a clear understanding of the disability landscape**.
- **Exclusion from Development Goals:** The United Nations Convention on the Rights of Persons with Disabilities (CRPD) and the Sustainable Development Goals (SDGs) emphasize the inclusion and empowerment of people with disabilities.
- **Barriers to Accessing Services:** People with disabilities **often face barriers in accessing healthcare, education, employment, and social services**.
- **Underreporting of Disabilities:** When individuals do not see their specific disabilities reflected in data collection efforts, **they may be less inclined to self-identify or seek support**.
- **Stigmatization and Discrimination:** When disabilities are not recognized or understood, individuals with **disabilities may face exclusion, bias, or negative stereotypes**.
- **Missed Opportunities:** Comprehensive data on disabilities can provide valuable insights into the diverse needs and experiences of people with disabilities.

Offspring of Void/voidable Marriages Entitled to Ancestral Property

- The Supreme Court has ruled that **children born from void or voidable marriages** have the **right to claim a share of their parents' ancestral property**.

- However, this right is **limited to their parents' share within the Hindu Undivided Family (HUF)** governed by **Mitakshara Law** and **does not extend to the entire HUF's property**.
- It emphasized that **these children would be considered legitimate and related by legitimate kinship under the Hindu Succession Act (HSA), 1956**.
- **Section 16(3) of the HMA, 1955** explicitly states that the conferment of legitimacy does not grant any rights to the property of anyone other than the parents.

About Mitakshara Law:

The **Mitakshara school of Hindu law** is a well-known school of thought that specifies procedures for **succession and inheritance**. The Mitakshara school of thought **states that a son, grandson, and great-grandson have a right to family property through birth**.

The Mitakshara School of Law is followed in every state in India, **except for West Bengal and Assam**. **The Hindu Succession Act of 1956 governs Hindu family law**.

Before the **2005 amendment of the Hindu Succession Act**, a female could not be a coparcener and was **not entitled to partition**.

Hunger

- **As per FAO, hunger** is the condition characterized by habitual or chronic consumption of too few calories to meet the minimum dietary energy requirements for a healthy and productive life.
- **Despite being a major food producer with extensive food security programs**, India faces **significant food insecurity**, hunger, and child malnutrition.
- **In the 2022 Global Hunger Index (GHI)**, India ranked **107th out of 121** countries, behind Nigeria and Pakistan.

Types of Hunger:

Acute hunger: This type of hunger occurs over a defined period and is often associated with crises like droughts, wars, or other emergencies. It represents a severe and immediate lack of food.

Chronic hunger: Chronic hunger refers to a **long-term state of undernourishment where the body consistently receives less food than it requires**. It is commonly linked to persistent poverty and is a pervasive issue.

Hidden hunger: Hidden hunger is a form of **chronic hunger resulting from an imbalanced diet** that lacks essential nutrients such as iron, iodine, zinc, or vitamin A. Even if caloric intake is sufficient, the absence of **critical nutrients can lead to health problems**.

Current Affairs Update (Sep 8-14)

National

G20 New Delhi Leaders' Declaration

The 18th G20 Summit was hosted by India in New Delhi on September 9-10, 2023. The theme, "**Vasudhaiva Kutumbakam**," highlighted global unity. **The G20 Leaders' New Delhi Declaration** achieved **unanimous consensus**, addressing issues like **Russia-Ukraine tensions**, sustainable development, and food security.

Highlights:

- G20 leaders aim to **eliminate hunger and malnutrition**, address rising commodity prices, and promote transparent and fair trade in agriculture.
- All states must act in line with the UN Charter. Refrain from threats or use of force.
- Call for unimpeded deliveries of **grain, food, and fertilizers/inputs** from Russia and Ukraine.
- **Global Value Chains**: A generic framework for mapping global value chains to identify risks and build resilience.
- **Creation of a working group on women's empowerment** to prioritize gender equality, women empowerment, and leadership.
- **Reaffirmation of commitment to the twin pillars of the international tax package**, including profit allocation and nexus and **global minimum taxation**.
- **Crypto-Assets**: A joint roadmap to support a **coordinated policy** and regulatory framework for crypto-assets.
- **Digital Public Infrastructure (DPI)**: Establishment of a Global DPI Repository to share best practices and experiences in DPI development and deployment.
- **Aim to triple renewable energy** capacity by 2030
- Accelerate efforts to phase down unabated coal power
- Recognition of the **need for about USD 6 trillion in the pre-2030** period for developing countries to implement their **Nationally Determined Contributions (NDCs)** for climate action.
- The **Global Biofuels Alliance (GBA)** is an **India-led initiative** promoting **biofuels' adoption globally**. It will **support India's existing biofuels programs**, including PM-JIVAN Yojna, SATAT, and GOBAR-Dhan scheme.
- Strengthening **Agricultural Market Information System (AMIS)** and **Group on Earth Observations Global Agricultural Monitoring (GEOGLAM)** to enhance transparency and avoid food price volatility.
- Agreement on **UNGA 75/1 (UNSC reforms)** for the first time in G20.

Nataraja form of Shiva

- The Nataraja form of Shiva, as a cosmic dancer, **became iconic under the Cholas and is renowned for its intricate bronze sculptures.**
- In this form, Lord Shiva is depicted as **the ‘Lord of Dance’ or Nataraja**, embodying **both creative and destructive forces.**
- The Nataraja image is encircled by a **flaming halo and has four arms.** He **holds a drum and fire in his upper hands, symbolizing creation and destruction.** Under his foot, there’s a **dwarf-like figure representing illusion**, which he crushes, **guiding humanity away from delusion.**
- Nataraja’s raised feet and gestures also **symbolize protection and reassurance**, all while he wears a **smiling expression.**

The **G20 Leaders’ Summit** featured a **towering 27-foot-tall ‘Nataraja’ statue of Lord Shiva’s dancing form.** This magnificent statue made of **‘Ashtadhatu’ (eight-metal alloy)** was crafted by **sculptors from Swamimalai in Tamil Nadu, India**, and is inspired by **three revered Nataraja idols from Chola temples.**

Banglar mati, Banglar jol

The West Bengal Assembly has **declared Poila Baishakh (April 15)**, the first day of the **Bengali calendar**, as the **statehood day and designated Rabindranath Tagore’s “Banglar mati, Banglar jol” as the state anthem.**

Significance of the song:

- The song was **written by Tagore in 1905** in response to **Lord Curzon’s partition of Bengal, which was a divisive colonial strategy to weaken the nationalist movement.**
- **Curzon’s decision to partition Bengal in 1905** aimed to create division and strife among the diverse Bengali-speaking population. However, **it had the opposite effect**, as it **united Bengalis against British rule and ignited the Swadeshi Movement**, which marked the beginning of the Indian struggle for independence.
- Tagore was a vocal critic of the partition and expressed his support for the Swadeshi Movement through his songs and poems. **“Banglar mati, Banglar jol” called for unity among Bengalis by celebrating the beauty of Bengal, its natural surroundings, language, people, and soul.**

International

African Union in G20

The African Union (AU) became a **new permanent member of the G20** during the **18th G20 Heads of State and Government Summit** in New Delhi, just three months after India proposed its inclusion.

The African Union (AU) is a continental body **consisting of 55 member states in Africa**. The AU emphasizes greater unity and solidarity among African countries. It promotes political and socio-economic integration, peace, stability, security, and human rights.

African Continental Free Trade Area (AfCFTA): Established in 2018, it seeks to create a single continental market for goods and services.

Significance: The **AU's membership in the G20** offers an opportunity to reshape **global trade, finance, and investment** structures. It provides **African interests and perspectives** with a voice and visibility in the G20, potentially influencing global policy decisions.

India-Middle East-Europe Economic Corridor (IMEE-EC)

On the sidelines of the G20 Summit in New Delhi, an MoU was signed between India, the US, Saudi Arabia, the European Union, the UAE, France, Germany, and Italy to establish the **India-Middle East-Europe Economic Corridor (IMEE-EC)**

The India-Middle East-Europe Economic Corridor (IMEE-EC) is an infrastructure development project that aims to **create connectivity through rail and shipping networks**, energy cables, and data links.

Participating nations: India, Saudi Arabia, UAE, France, Germany, Italy, USA, EU

IMEC seeks to **boost trade, clean energy, and economic growth** while providing an alternative to **China's Belt and Road Initiative (BRI)**

Benefits:

- Enhancing food security, regional supply chains, trade accessibility, environmental considerations, economic cohesion, job creation, and reduces greenhouse gas emissions.
- Reliable **cross-border ship-to-rail transit network** connecting India, the UAE, Saudi Arabia, Jordan, Israel, and Europe.
- It offers India a **crucial role in global commerce, digital communication**, and energy networks vis-à-vis China's BRI
- **Geographical Advantage:** It firmly positions India along the **trade route spanning South East Asia to the Gulf, West Asia, and Europe**.

ASEAN summit 2023

- **Prime Minister**, in his address at the **20th ASEAN-India summit in Jakarta, Indonesia**, emphasized that **ASEAN (Association of Southeast Asian Nations)** plays a **central role in India's Act East Policy**.
- ASEAN, established on **August 8, 1967**, initially consisted of **five member states: Indonesia, Malaysia, the Philippines, Singapore, and Thailand**. Over the years, it expanded to include Brunei Darussalam, Lao PDR, Cambodia, Myanmar, and Vietnam.
- ASEAN's core principles include **regional cooperation in various fields, promotion of regional peace and stability, and adherence to the principles of the United Nations Charter**.
- **India is part of the ASEAN Plus Six grouping**, which includes **China, Japan, South Korea, New Zealand, and Australia**.
- India and ASEAN signed a **Free Trade Agreement in 2010** and have seen trade growth, except during the pandemic years of 2020 and 2021.

Multilateralism

It refers to the practice of **multiple countries coming together and collaborating on global issues, challenges, and decision-making**. It involves engaging in **dialogue, negotiation, and cooperation** through **international organizations, treaties, and fora** to address common problems and pursue collective goals. Some of the multilateral fora that India is engaged in are- **The United Nations, SCO, BRICS**, etc.

The weakening of 'Old Multilateralism' in the post-Cold War era can be attributed to several factors:

- **Russian Conflicts:** Russia's aggressive actions, such as the annexation of Ukraine's Crimea in 2014 and the ongoing conflict with Ukraine, have strained international relations and created divisions.
- **China's Territorial Ambitions:** China's territorial disputes with neighbouring Asian countries, including India, Japan, the Philippines, and Vietnam, have raised concerns and contributed to regional tensions.
- **Economic Leverage:** China's use of its economic power for political and strategic gains has eroded trust among nations that depend on its economy, leading to scepticism and caution.
- **Change in Chinese Policies:** China's shift in policies under Xi Jinping, departing from the peaceful periphery and shared prosperity approach of the 1980s, has disrupted regional and global institutions, impacting stability and cooperation.

India-South Korea partnership in Indo- Pacific

The Camp David summit between the United States, Japan, and South Korea offers a **unique opportunity for India to enhance its strategic partnership** with South Korea, particularly in the **Indo-Pacific**.

Camp David summit is a series of meetings held at the Camp David presidential retreat in Maryland, USA. It's where world leaders, meet and negotiate agreements with the USA. E.g., The USA, Israel and Egypt negotiated and eventually reached the **Camp David Accords in 1978**, leading to a **peace treaty between the two countries in 1979**.

What is the Indo-Pacific?

The Indo-Pacific is a **term used to describe the region encompassing the Indian Ocean** and the western and central Pacific Ocean. It's significant for its **geopolitical and economic importance**, with several countries, including India, China, and the United States, having strategic interests in the region.

Key points of the United States, Japan, and South Korea summit:

- **Repair in Seoul-Tokyo Relations:** The trilateral meeting indicates improved relations between South Korea and Japan, recognizing the changing regional security environment.
- **Strategic Shift:** South Korea's new strategic thinking suggests a willingness to address the **China challenge and engage more actively in the Indo-Pacific**.
- **Quad Membership:** South Korea's desire to join the Quad grouping may become more feasible, with potential Quad Plus membership in the future.

Earthquake in Morocco

- A powerful earthquake struck Morocco, affecting areas including the **Atlas Mountains and the historic city of Marrakech**. Earthquakes are relatively rare in North Africa, and this was described as the strongest ever recorded in the mountain region.
- **Morocco** lies along the boundary of the **African and Eurasian tectonic plates**. Here the two massive plates interact, and their movements can result in seismic activity.
- An oblique-reverse fault is a geological fault characterized by **both horizontal and vertical movements along the fault plane**. In this type of fault, rocks on one side of the fault plane move vertically upward while also sliding horizontally in a lateral direction. This movement occurs due to the **compression of tectonic plates**, where one plate is converging into another.

Nuclear-armed submarine

- **North Korea** has introduced **its first operational "tactical nuclear attack submarine,"** known as **Submarine No. 841**, which has been **assigned to patrol the waters between the Korean peninsula and Japan**.
- This submarine, **named Hero Kim Kun Ok**, is deemed a key component of North Korea's naval force and is likely a modified version of a **Soviet-era Romeo-class submarine acquired from China** in the **1970s**.
- It is equipped with **10 launch tube hatches**, suggesting it may **carry ballistic missiles and cruise missiles**.

Strategic Partnership Council

- Prime Minister Narendra Modi and Saudi Arabia's Crown Prince Mohammed bin Salman (MBS) recently **chaired the first meeting of the India-Saudi Arabia Strategic Partnership Council (SPC)**.
- This council, **established in 2019**, aims to **enhance the relationship between the two countries** and has two main pillars: **the Committee on Political, Security, Social, and Cultural Cooperation** and the **Committee on Economy and Investments**.
- These committees **have four levels of engagement**, including **summit-level meetings, ministerial-level discussions, senior officials' meetings, and joint working groups**.
- During their recent meeting, India and Saudi Arabia agreed to **expedite the \$50-billion West Coast refinery project and identified areas such as energy, defence, semiconductor, and space for intensified cooperation**.
- **West Coast Refinery Project** aims to set up **Asia's largest refinery** in Ratnagiri, Maharashtra. It is a **trilateral project between ARAMCO (Saudi), ADNOC (UAE) and Indian companies**.

Libya

- Devastating floods in **Derna, eastern Libya, have resulted in over 5,000 feared dead** and thousands missing due to breached dams and flash floods caused by the **Mediterranean storm named Daniel**.
- A Mediterranean storm, also known as a Mediterranean cyclone or a Mediterranean low, is a type of weather system that forms over the Mediterranean Sea. Mediterranean storms can vary in intensity and impact, but they often lead to heavy precipitation, which can result in flooding, landslides, and other weather-related hazards.
- Libya is a country in the **Maghreb region of North Africa**. It is bordered by the **Mediterranean Sea to the north, Egypt to the east**, Sudan to the southeast, Chad to the south, Niger to the southwest, Algeria to the west, and Tunisia to the northwest.

Science-Tech & Environment

Human embryo

- Scientists have managed to **grow a human embryo-like structure** in a laboratory **without using traditional sperm or eggs**.
- This remarkable achievement involved using a **combination of stem cells, which can differentiate into various cell types**, and **chemicals to create an embryo-like structure that mimics** the molecular characteristics of an early human embryo.

- The process involved a **mixture of stem cells and chemicals**, with **only 1% of the mixture spontaneously forming different types of cells needed for foetal development**, including those providing nutrients, those guiding body development, and cells responsible for structures like the placenta and umbilical cord.

Importance:

- The significance of this research lies in the fact that **ethical constraints make it challenging for scientists to study the early stages of embryo development after implantation in the uterus**. These early stages are crucial because **most miscarriages and birth defects occur during this period**.
- These **lab-grown embryo-like models cannot be used for pregnancy**, and they are typically destroyed after 14 days of study, in line with legal and ethical regulations in many countries. The **14-day limit on embryo research corresponds to the point when embryos naturally complete implantation and become individuals**.
- These models have allowed scientists to **investigate genetic and environmental effects on embryo development, shedding light on genetic defects and potential treatments** for various conditions.

Forest Restoration

Forest restoration involves the **deliberate and planned process of restoring and regenerating forests** that have been degraded, damaged, or lost due to various human activities or natural causes. This process aims to **return a forest ecosystem to a healthier and more natural state**, often involving tree planting, habitat restoration, and sustainable management practices to improve biodiversity, ecosystem services, and overall forest health.

India's Pledge:

India aims to restore **21 million hectares of forest by 2030** through the **Bonn Challenge**. In 2018, a report by the government and the IUCN indicated **10 million hectares** were under restoration. **India's national forest policy targets 33% tree coverage**.

Status of forest restoration:

- According to the International Union for Conservation of Nature (IUCN), deforestation and **forest degradation contribute to around 12%** of global greenhouse gas emissions.
- **30% of forestland is degraded in India**. The total area occupied by primary forests in India has decreased by **6%**.

Current Approach to Restoration: The current global focus on **tree planting has often led to the rapid establishment of fast-growing tree plantations** e.g. Miyawaki Method; **fast-growing single species like**

eucalyptus or bamboo to quickly increase tree cover. This approach can yield quick results but also **poses risks, including invasive species and land dispossession.**

XRISM Space Telescope and SLIM Lunar Lander

- Japan's **X-ray Imaging and Spectroscopy Mission (XRISM) and Smart Lander for Investigating Moon (SLIM)** were successfully **launched by Japan.**
- XRISM is focused on **studying X-ray emissions from celestial objects** to better understand the **universe's structure and evolution.** It will observe phenomena **like black holes, neutron stars, and galaxy clusters.**
- SLIM aims to **demonstrate precision landing capabilities on the Moon,** allowing for targeted scientific investigations and safe placements of future landers.

Global Biofuels Alliance

India proposed the **creation of a Global Biofuels Alliance,** which was launched **during the G20 summit.** This initiative aims to **accelerate the transition to sustainable biofuels and reduce the world's dependency on traditional fossil fuels.**

Objective: Being set up at par with the International Solar Alliance, the biofuel alliance's focus is on accelerated adoption of biofuels, creating new biofuels, setting globally recognized standards, identifying global best practices, and ensuring industry participation.

India sees this alliance as a **means to advance energy transitions in developing countries and promote a circular economy.** The government has advanced its target to achieve 20% ethanol blending in petrol by 2025-26 from an earlier target of 2030.

Environmental & Economic significance: According to estimates from the International Energy Agency (IEA), global biofuel production would need to triple by 2030 to put the world's energy systems on track toward net zero emissions by 2050.

The global ethanol market was valued at \$99.06 billion in 2022 and is predicted to grow at a CAGR of 5.1% by 2032 and surpass \$162.12 billion by 2032.

The average cost for each biogas plant is USD 4.25 million, and with the government's target of 5,000 biogas plants, this is a huge opportunity of over USD 200 billion

Membership: A total of 19 countries and 12 international organizations have so far agreed to join the alliance, including both G20 members and non-member countries.

Founding members: India, Brazil and the US are the founding members of the alliance. The three founding members of alliance, the US, India and Brazil contribute about 85% of the global production and the 81% of consumption of ethanol.

Apart from India, Brazil and the US, the other G20 member countries supporting the initiative are Argentina, Canada, Italy, and South Africa. Bangladesh, Singapore, Mauritius, and the UAE are the G20 invitee countries.

The non-G20 interested in joining the alliance are Iceland, Kenya, Guyana, Paraguay, Seychelles, Sri Lanka, and Uganda and Finland. Further, World Bank, Asian Development Bank, World Economic Forum, World LPG Organization, UN Energy for All, UNIDO, Biofutures Platform, International Civil Aviation Organization, International Energy Agency, International Energy Forum, International Renewable Energy Agency, World Biogas Association are the interested international and multilateral organizations.

Geopolitics: China and oil producers Saudi Arabia and Russia have however decided deciding not to be part of the alliance. With an eye on the Organization of the Petroleum Exporting Countries (Opec)-plus grouping -- where both Saudi Arabia and Russia are members -- the Indian-conceptualized alliance is being positioned as a global forum to help boost demand and technology transfer for the production of biofuels and enhance trade.

About Biofuels:

Biofuels are **renewable energy sources** derived from **biomass, such as crop stubble, plant waste, and municipal solid waste**.

India, a **major oil importer**, is **working on building its capacity to produce biofuels, particularly from sugarcane and agricultural waste**. The country aims to increase the blending of ethanol in **petrol to 20% by 2025 and is establishing compressed biogas (CBG) plants**

Significance of Global Biofuel Alliance

Increased Technology Transfers: Through the GBA, India gains access to valuable technologies and international climate funds, expediting advancements in the compressed biogas sector and third-generation ethanol plant capacities.

Enhanced Ethanol Blending: India's aspiration to achieve E-20, a 20% ethanol blending with petrol by 2025-26, receives a substantial boost through the GBA. Learning from Brazil's successful E-85 model, India can leverage this platform to advance its ethanol blending initiatives, reducing emissions and energy costs.

Flex Fuel Vehicle Introduction: The alliance enables India to adopt Brazilian technologies for introducing Flex Fuel Vehicles capable of running on a range of fuel blends, including ethanol-petrol mixtures like E85.

Global Climate Action Leadership: With its active involvement in the GBA, India positions itself as a key player in global climate action.

Promotion of Biofuel Exports: India can utilize the GBA to expand its share in global biofuel production. Currently, Brazil, the US, and India collectively produce 85% of global ethanol.

Energy Independence: The establishment of the GBA aligns with India's goal of achieving greater energy independence. By promoting increased biofuel utilization, India can reduce its reliance on foreign crude oil, enhancing energy security and reducing vulnerability to external supply shocks.

Fiscal Deficit and Inflation Reduction: India's high crude oil imports contribute significantly to its import bill and inflation. The GBA's efforts to boost biofuel production through technology transfer can help India manage its fiscal deficit and lower inflation by reducing dependence on costly crude oil imports.

Job Creation: Investments in the biofuel sector, driven by the GBA, have the potential to generate employment opportunities for the youth, aligning with India's demographic dividend aspirations.

Support for Farmers: The increased use of biofuels, especially from sugarcane crops, benefits farmers by providing them with additional income

Challenges for Global Biofuels Alliance (GBA)

Technology Transfer: The alliance may encounter difficulties in accessing advanced biofuel technologies, particularly from countries like the US, known for being cautious about sharing proprietary technology.

Geopolitical Contestation: Geopolitical tensions, especially involving countries like China and Russia, could hinder the expansion of membership, as some nations may be reluctant to align with Western-led initiatives due to their geopolitical affiliations.

Funding Constraints: Securing sustainable financing for projects within the GBA may prove challenging, especially given economic downturns in countries like the US and resource scarcity faced by global institutions like the World Bank and IMF.

Import Restrictions: Policies like India's import restrictions on biofuels, as outlined in its National Biofuels Policy 2018, pose obstacles to the development of a global biofuels market. Removing such inward-looking policies will be a significant challenge for the GBA.

Environmental Concerns: The GBA must address environmental concerns related to biofuel production, such as the substantial water requirements for ethanol production from sugar. These concerns could deter participation, particularly from water-scarce regions like arid African countries.

MQ-9B predator drones

- India has **formally requested the acquisition of 31 MQ-9B Reaper or Predator-B drones** from the **United States**.

- These drones, **including their weapons packages, ground control systems, and equipment**, are part of a significant arms deal.
- These **high-altitude, long-endurance drones**, to be assembled in India by **General Atomics**, will be inducted into the armed forces over the next six to seven years.
- They are **designed for intelligence, surveillance, and reconnaissance missions** and come equipped **with air-to-ground missiles and smart bombs**.

White sambar deer

Researchers have made a **rare discovery of a “white” sambar deer** with a condition called **leucism**, resulting in **white or pale skin**, in the **Cauvery Wildlife Sanctuary in Karnataka, India**.

Leucism is a **genetic condition** that affects the **pigmentation of an animal’s skin, feathers, scales, or fur**. Unlike albinism, which causes a complete absence of pigment, **leucism results in a partial loss of pigment, leading to white or pale colouration in affected areas**.

Varuna-23

The 21st edition of the **India-France bilateral naval exercise ‘Varuna-23’** took place in the Arabian Sea. This exercise involved **guided missile frigates, a tanker, Maritime Patrol Aircraft, and helicopters** from both the Indian and French Navies.

The impact of Bt technology on cotton production in India

- **Introduction to Bt Technology (2002)**: India adopted genetically modified (GM) cotton hybrids embedded with genes from *Bacillus thuringiensis* (Bt) bacterium, which were toxic to certain pests.
- **Significant Boost in Production and Yield**: Between 2000-01 and 2013-14, Bt cotton led to a **remarkable increase in cotton production**, from **140 lakh to 398 lakh bales**, and a doubling of lint yields per hectare from **278 kg to 566 kg**.
- **Subsequent Yield Decline**: However, post-2013-14, cotton production and yields started declining, reaching about 343 lakh bales and 447 kg/hectare by 2022-23.

Shanti Swarup Bhatnagar Prize (SSB) 2022

Twelve male scientists were awarded **India’s top Shanti Swarup Bhatnagar Prize (SSB)** for Science and Technology in 2022. The awards were announced at the inaugural session of the **CSIR-NIScPR’s One Week One Lab Programme**. However, **no female scientists** have been chosen for this year. The awards were **last announced in 2021**

Shanti Swarup Bhatnagar (SSB) annual Prize for Science and Technology, established in 1957. Named after **Dr. Shanti Swarup Bhatnagar**, the founder-director of CSIR. Since its inception, **only 19 women scientists** have been the recipients of the SSB award

Project Samudrayaan

Indian scientists are gearing up for an ambitious project called **Samudrayaan**, which involves **sending three people 6,000 meters underwater in a domestically developed submersible named Matsya 6000**. This mission aims to **explore the ocean depths** of precious metals and minerals such as cobalt, nickel, and manganese.

About Matsya 6000:

Matsya 6000 has been in **development for nearly two years and will undergo its first sea trials in the Bay of Bengal** off the Chennai coast in early 2024. The submersible's design has been reviewed carefully, **taking into account materials, testing, certification, redundancy, and standard operating procedures**.

The submersible's **design includes a 2.1-meter diameter sphere made of 80mm-thick titanium alloy**, capable of **withstanding the immense pressure at 6,000 meters depth**, which is 600 times greater than sea level pressure. **The vehicle is designed to operate continuously for 12 to 16 hours, with a 96-hour oxygen supply**.

Dolly the sheep

- Ian Wilmut, **the British embryologist renowned for leading the team that created Dolly the Sheep**, the **world's first cloned mammal** from an adult cell, has passed away recently.
- Dolly the Sheep, **born in 1996**, marked a **significant scientific breakthrough in the 20th century**. Wilmut, along with his team, accomplished the unprecedented feat of making **an adult cell behave like a cell from a newly fertilized embryo**, resulting in the **creation of an animal genetically identical to the donor**.
- They achieved this by **taking a cell from the mammary gland** of a deceased adult sheep, stimulating it with **electricity and chemicals to transform its DNA into an embryo**, and then **implanting it into an empty sheep's egg, which was later placed into a surrogate sheep**.
- Dolly's birth **raised ethical debates about cloning research**, and it prompted then-U.S. President Bill Clinton to announce a ban on human cloning experiments about a year later.

Genetic engineering to control Mosquitoes

- Genetic engineering is being used to **upgrade mosquito control efforts** due to the ongoing **threat of mosquito-borne diseases**.
- Recent advancements in **genome sequencing technology** have **provided researchers with access to mosquito genomes**, particularly *Anopheles stephensi*, a major malaria vector mosquito.
- Genetic manipulation, including **gene-drive technology**, is **employed to control mosquito populations by interfering with their reproduction**.

- **Gene-drive technology**, originally conceived by Austin Burt in 2003, **alters mosquito DNA to reduce their reproductive capabilities or make them sterile**, preventing the transmission of diseases like malaria. Some approaches involve **enhancing genes in mosquitoes to produce antimicrobial substances, disrupting disease transmission**.
- **Genetically modified mosquitoes, such as OX5034**, have been released in **certain areas to reduce mosquito populations**, showing promising results in decreasing disease incidence. However, these technologies come with potential risks, such as **ecological disruptions and unintended consequences in the ecosystem**.

Potential of Robotics in India

- **India's Strengths in Future of Work:** India's strengths in Future of Work (Tech Economy 0) include robotics, AI, IoT, cloud computing, supply chain 4.0, 3D printing, big data, digital payments, etc
- **Applications in Agriculture:** Robotics in agriculture: Autonomous precision seeding, Micro-spraying robots, Weed removal robots, Drones, Robot-assisted precision irrigation.
- **Human-Automation Balance:** Balancing human interface and automation, e.g., collaborative robots (**Cobots**) working alongside skilled workers. Upskilling of **migrant workers** for greater efficiency.
- **Employment Scope:** Leading sectors: manufacturing, pharmaceuticals, packaging, FMCG, and inspection

The Ministry of Electronics and Information Technology (MeitY) in India has released a **draft "National Strategy for Robotics" (NSR) aimed** at strengthening the innovation cycle of robotic technology and **fostering India's leadership in robotics by 2030**.

The **Ministry of Electronics and Information Technology (MeitY)** will serve as the nodal agency for robotics, overseeing the NSR through the '**National Robotics Mission' (NRM)**.

According to the **World Robotics Report for the year 2022, India ranks 10th globally** in terms of annual industrial installations of robots.

Core Areas identified by NSR:

- **Manufacturing:** Logistics and Warehousing automation, Process Optimization etc.
- **Healthcare:** Surgical Robots, telemedicine area, etc.
- **Agriculture:** Crop scouting, spot Spraying, etc
- **National Security:** Combat robots, Mine Detection etc.

Economics

Financial inclusion

It means ensuring that all **individuals and businesses have access to affordable and essential financial services**, such as banking, credit, savings, and insurance, regardless of their income or location. It aims to promote economic stability, reduce poverty, and empower marginalized populations by providing them with the tools to manage their finances and participate in the formal economy.

Importance of Financial Inclusion:

- Financial inclusion is essential for reducing poverty and inequality.
- It helps strengthen the livelihoods of those at the bottom of the economic pyramid.
- It contributes to global economic growth.

Challenges in Promoting Financial Inclusion (globally):

- **Limited Access:** Around 24% of adults worldwide lack access to formal financial accounts, hindering their participation in the financial system.
- **Low Savings and Borrowing Rates:** Only 29% of adults deposit their savings in financial institutions and just 28% borrow from formal financial institutions on a global scale.
- **MSME Financing Disparities:** Micro-enterprises in developing countries face constraints due to loan application rejections or unfavourable terms (21%), while small and medium-sized enterprises experience even higher barriers (30%).
- **Gender Disparities:** Women encounter obstacles such as restrictive social norms, limited mobility, and low financial literacy, leading to a gender gap in bank account ownership, especially in low-income and developing countries.

Hallmarking

Hallmarking is like a quality stamp for jewellery and precious metal items. It tells you how pure or good the metal is.

The principal **objectives of the Hallmarking Scheme** are to protect the public against adulteration and to obligate manufacturers to **maintain legal standards of fineness**.

Hallmarking in India:

- At present two precious metals **namely gold and silver** have been brought under the purview of Hallmarking.
- Mandatory hallmarking order is applicable on **14, 18 and 22 carats of gold jewellery/artefacts** only.
- BIS assigns a **unique HUID (Hallmarking Unique ID) number** to all hallmarked items
- Consumers can verify the authenticity of hallmarked items using the **'verify HUID' feature** in the BIS Care app.

Gresham's Law

- **Gresham's Law**, named after Thomas Gresham, states that “**bad money drives out good**” when the government **fixes the exchange rate between two currencies at a level different from the market rate**.
- This leads to the **undervalued currency going out of circulation**, while the overvalued currency remains but **lacks buyers**.
- The law can **result in a currency shortage** when demand exceeds supply due to the fixed price.
- Gresham's law applies not only to **paper currencies but also to commodities**. It can cause goods to disappear from the formal market when their prices are forcibly undervalued by governments.

Ethics & Society

Malaviya Mission

- The Union Ministry for Education and Skill Development & Entrepreneurship launched the Malaviya Mission – Teachers Training Programme (under the University Grants Commission (UGC))
- It is proposed by **restructuring of existing schemes of capacity building of teachers** under the Department of Higher Education.

Objectives of the Mission:

- This initiative aims to **provide tailored training programs for teachers and enhance** the quality of education at higher educational institutions (HEIs).
- The program will **capacitate 15 lakh teachers across India through 111 Malaviya Mission centres**, formerly known as **Human Resource Development Centers (HRDCs)**.
- It seeks to make **educators future-ready, improve training quality**, build leadership skills, and align with the goals of the **National Education Policy (NEP)**.

Draft Guidelines for Prevention and Regulation of Dark Patterns

- The Union government has released **draft guidelines aimed at curbing “dark patterns” employed by online platforms**.
- These dark patterns are **deceptive strategies** used to **mislead users into taking actions they did not intend, such as making unwanted purchases or subscriptions**.
- The **guidelines define dark patterns as deceptive design patterns in user interface/experience (UI/UX) interactions that impair consumer autonomy and violate consumer rights**.

Types of Dark Pattern:

- The draft guidelines **identify ten types of dark patterns**, including **false urgency**, **basket sneaking (adding extra items without user consent during checkout)**, **confirm shaming (using fear or shame to nudge user actions)**, **forced action (compelling additional purchases)**, and **subscription traps (making cancellation difficult)**.

Personalities

Coco Gauff

Coco Gauff, a **rising tennis star**, **fulfilled her potential by winning the recent US Open title**. At just 19 years old, she became the **fourth American teenager** to achieve this feat.

Current Affairs Update (Sep 15-21)

National

Key aspects of India- Canada Bilateral Relations

- India established diplomatic **relations with Canada in 1947**. Prime Minister of India's visit to Canada in April 2015 elevated the bilateral relationship to a **strategic partnership**.
- India and Canada share **commonalities in Parliamentary structure** and procedures
- Bilateral trade between India and Canada stands **at over USD 6 billion in 2020**. Negotiations for a **Comprehensive Economic Partnership Agreement (CEPA)**.
- **Nuclear Cooperation Agreement (NCA)** signed in 2010. Joint Committee on Civil Nuclear Cooperation, restoration of nuclear cooperation.
- Cooperative and commercial relations in **space science, satellite launch services, ground support**, and the launch of Canadian nanosatellites.
- Framework for Cooperation between **India and Canada on Countering Terrorism** in 2018. **Indo-Pacific**: Both countries share a suspicion of China and support free and open navigation in international waters.
- **Large Indian diaspora in Canada**, diaspora's contribution in various sectors, political representation, cultural exchanges.
- **Cooperation in COVID-19 Pandemic**: Repatriation flights for stranded Canadians. Export of medicines and medical supplies to Canada.

Current tensions between India and Canada escalated when Canadian Prime Minister Justin Trudeau accused India of involvement in the **killing of Hardeep Singh Nijjar**, designated as a terrorist by India. India rejected the allegations and accused Canada of sheltering **Khalistani extremists**.

Constitution (One Hundred and Twenty-eighth Amendment) Bill, 2023

On September 19, the Indian government introduced the Constitution (One Hundred and Twenty-eighth Amendment) Bill, 2023, which proposes to **reserve 33% of seats for women in the Lok Sabha (the lower house of India's parliament) and state Legislative Assemblies**. This reservation will apply to seats reserved for Scheduled Castes (SCs) and Scheduled Tribes (STs) as well.

The bill is significant as it aims to increase women's representation in India's parliament and assemblies, addressing the gender imbalance in political decision-making. The 73rd and 74th Constitutional Amendments mandated one-third reservation for women in rural and urban local bodies. They took effect on April 24, 1993, and June 1, 1993, respectively.

The benefits include increased gender diversity and a broader range of perspectives in decision-making, while challenges may include ensuring effective implementation and addressing potential resistance from some quarters.

National Judicial Data Grid

Chief Justice of India D Y Chandrachud has announced that the **Supreme Court of India has now joined the National Judicial Data Grid (NJDG) portal**, which serves as a national repository of case-related data from courts across the country.

About National Judicial Data Grid:

- The **National Judicial Data Grid (NJDG)** is an **online platform** created under the **eCourts Project in India**.
- It serves as a comprehensive database that contains **information about orders, judgments, and case details from District and subordinate Courts and High Courts across the country**.
- The NJDG is managed **as part of the e-Courts project**, which is a **Centrally Sponsored Scheme**. It has been developed by the **National Informatics Centre (NIC)** in collaboration with the in-house software development team of the **Computer Cell, Registry of the Supreme Court**.

Significance:

- **Easy access to case-related information, statistics, and year-wise breakdowns of Supreme Court cases.**
- Enhancing **transparency, accountability, efficiency, coordination**, informed decision-making, and optimal resource deployment.

Project Mausam

- Project 'Mausam' is a **cultural initiative led by the Ministry of Culture** and implemented by the Indira Gandhi National Centre for the Arts (IGNCA), New Delhi. It aims to showcase a **Transnational Mixed Route (Natural and Cultural Heritage)** on the World Heritage List. The project explores **monsoon patterns, cultural routes, and maritime landscapes** in the Indian Ocean region.
- Its goals include understanding **the historical impact of monsoon** winds on interactions, shared knowledge systems, and cultural exchanges among coastal centres.
- The project fosters **cross-cultural linkages with 39 Indian Ocean countries** and focuses on cultural routes and maritime landscapes connecting different parts of the Indian Ocean littoral.

Santiniketan

- **Santiniketan**, the **renowned university town in West Bengal** established by **Rabindranath Tagore**, has been added to **UNESCO's World Heritage List**. The decision was made during the **45th World Heritage Committee Meeting held in Riyadh, Saudi Arabia**.

- Santiniketan was **originally an ashram established by Rabindranath Tagore's father, Debendranath Tagore**, where people of all castes and creeds **could meditate on the one Supreme God**.
- It has **historical and architectural significance**, including structures like **Santiniketan Griha and the Mandir (temple) with stained glass**, which are associated with the **founding of Santiniketan and the promotion of universal spiritual values**.
- **Visva-Bharati University, located in Santiniketan**, was founded by Rabindranath Tagore and offers a wide range of degree courses.
- It has been declared a **central university and an institution of national importance by an Act of Parliament in 1951**, with the Prime Minister serving as its chancellor.

Karnataka's Sacred Ensembles of Hoysalas

UNESCO has officially added Karnataka's Sacred Ensembles of Hoysalas to its prestigious **World Heritage list**. These ancient temples, previously on UNESCO's Tentative list since 2014, now gain global recognition for their exceptional cultural and historical significance. The Hoysala temples, located in the **Hassan district of Karnataka**, showcase India's rich heritage and architectural prowess.

The Sacred Ensembles of Hoysalas include renowned temples in Belur, such as the **Chennakesava Temple, and Halebid**, featuring star-shaped architectural plans and finely detailed sculptures. The Chennakesava Temple in Belur was constructed by **King Vishnuvardhana** of the Hoysala dynasty in the 12th century to commemorate his victory over the Cholas.

In addition to the Chennakesava Temple, the Sacred Ensembles of Hoysalas in Belur include Kappe Chennigaraya Temple, Veerananarayana Temple, and Ranganayaki Temple, each known for their architectural marvels.

Accession of Hyderabad to India

This year marks the **75th anniversary of Operation Polo and 'Police Action'** in Hyderabad. Founded in 1591, it became the **capital of the Qutb Shahi Kingdom** (Muhammad Quli Qutb Shah founded the city). In 1724, Nizam-ul-Mulk established the **Asaf-Jah dynasty**. Hyderabad thrived culturally, with landmarks like **Charminar and Golconda Fort**.

Accession of Hyderabad to India

Hyderabad, a significant princely state, was ruled by the **Nizams under British paramountcy**. Unlike other princely states, the **Nizam did not accede to India** at independence in 1947, aiming for independence and receiving support from Pakistan.

- **Nizam's Reluctance:** In August 1947, Hyderabad's Nizam, Mir Usman Ali, had hopes of Hyderabad remaining independent due to its wealth, historical significance, and personal ties.

- **Sardar Patel's Approach:** Sardar Vallabhbhai Patel, India's Deputy Prime Minister, handled Hyderabad cautiously. He recognized the **strategic importance of Hyderabad** and believed that pushing too hard might drive the Nizam towards joining Pakistan.
- **Role of Razakars: The Ittehad-ul-Muslimeen**, led by Qasim Razvi, became violent and extremist, forming a paramilitary group called '**razakars**' with state support. They brutally suppressed **opposition to the Nizam**.
- **Peasant Movements:** Hyderabad witnessed a satyagraha for democracy and a Communist-led peasant movement against landholdings, forced labour, and excessive taxes. These movements gained strength **against the Nizam's rule**.
- **Operation Polo:** In September 1948, the Indian Army launched Operation Polo to annex Hyderabad. The **Nizam's forces surrendered**, and the razakars were banned. This marked the end of the Nizam's rule.

Old Parliament Building

The Sansad Bhavan is **India's parliamentary seat**, home to the Lok Sabha (lower house) and Rajya Sabha (upper house). Parliament proceedings will soon shift to the new Parliament Building. Lok Sabha Speaker Om Birla officially renames the old Parliament building, previously known as Parliament House, to '**Samvidhan Sadan.**'

Historical aspects:

- **Foundation:** The foundation stone was laid on February 12, 1921, by the **Duke of Connaught**
- **Architect:** The architects, **Sir Edwin Lutyens and Sir Herbert Baker**, incorporated Indian motifs and styles into the building's design.
- **Inauguration:** The building was inaugurated on **January 18, 1927, by Lord Irwin**, the Viceroy of India at the time. It initially housed the Imperial Legislative Council.
- The Constituent Assembly of India took control after independence, and it became the Parliament of India in 1950.
- **Former Home of the Supreme Court:** The Chamber of Princes in the Parliament Building was also used by the Federal Court of India before independence. Afterwards, it served as the Supreme Court's location for over ten years before the court moved to its own building.

Steps are taken for water management in Urban Areas

- **Atal Bhujal Yojana:** For sustainable management of groundwater resources with community participation in selected water-stressed areas.
- **National Aquifer Management Program:** For mapping of aquifers, characterization, and development of aquifer management plans.
- **National Water Policy (2012):** Include provisions like rainwater harvesting, augmenting the availability of water through direct use of rainfall, etc.

- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT):** To provide tap connections to over 1 crore households in 500 cities.

International

OIML (International Organization of Legal Metrology)

India has achieved the **distinction of becoming the 13th country in the world authorized to issue Internationally Accepted OIML (International Organization of Legal Metrology) Certificates**. This accomplishment allows **domestic manufacturers in India to have their weighing and measuring instruments tested within the country** and then sell them in the international market.

The OIML is an **intergovernmental organization established in 1955**, with India becoming a **member in 1956**. It has **63 Member States and 64 Corresponding Members**.

Significance:

- Benefits **indigenous manufacturers** as they can **export their weighing and measuring instruments worldwide** without incurring additional testing fees, resulting in cost savings.
- India can support **foreign manufacturers by issuing OIML pattern approval certificates** through its certified RRSLs, **generating foreign exchange through fees and services**.
- Influence **OIML policies and provide input to the OIML Strategy**.

India now joins an exclusive group of nations, including **Australia, Switzerland, China, Czech Republic, Germany, Denmark, France, United Kingdom, Japan, Netherlands, Sweden, and Slovakia**, as the **13th country worldwide authorized to issue OIML approval certificates**.

Critical Raw Materials Act

The **European Parliament** has approved the **Critical Raw Materials Act**. The legislation aims to **reduce the European Union's (EU) reliance on China for critical minerals**, essential for **green technologies like solar panels, windmills, and electric car batteries**.

The EU **currently depends on China for 99% of rare earth metals**. The regulation sets the framework for ensuring a **secure and sustainable supply of these raw materials, diversifying imports, and increasing processing capacity along the value chain**

Critical raw materials are **natural resources** that are of **strategic importance to a country or region** due to their **economic, industrial, and geopolitical significance**. These materials are **essential for various industries**, including technology, manufacturing, energy, and defence, and their availability can impact a **nation's economic security and competitiveness**.

Examples of critical raw materials may include **rare earth elements, lithium, cobalt, graphite, platinum group metals, and certain minerals and metals** that are essential for advanced technologies and clean energy solutions.

C295 aircraft

The **Indian Air Force (IAF)** has taken delivery of the **first of 56 C295 aircraft** in a significant move to **replace its ageing Avro-748 fleet**. The C295, a **versatile tactical transport aircraft**, is set to **revolutionize India's military aircraft** manufacturing under the **'Make in India' initiative**.

The C295 aircraft, **designed by Airbus**, is a versatile **tactical transport capable of various missions**, including **troop and cargo transport, maritime patrol, surveillance, reconnaissance, close air support, medical evacuation, VIP transport, and firefighting**.

It can carry up to **nine tonnes of payload or 71 personnel at a maximum cruise speed of 260 knots**. The aircraft can operate from **unpaved, soft, and sandy/grassy airstrips** and has a **crising altitude of up to 30,000 feet**.

Science-Tech & Environment

NavIC

The Indian government has announced its intention to **make it mandatory for smartphones to integrate with India's homegrown navigation system, NavIC**. The devices must **either provide support for NavIC-powered chips or use NavIC chipsets**.

For 5G phones, **mandatory NavIC support is required by January 1, 2025**, while all other phones **operating in the L1 band**, currently using the **Global Positioning System (GPS)**, must provide **mandatory NavIC support by December 2025**

This move comes after **Apple agreed to support NavIC in some of its newly launched iPhone 15 models**. While NavIC will be encouraged for use in mobile devices, **it won't be the sole mandated navigation system, as cost and performance competitiveness will also be considered**.

NavIC is **India's indigenous alternative to GPS** and currently has **seven satellites in orbit**, with plans to expand to 12 in the future.

Banning Glue pads for rodent control

The Delhi government has **banned the manufacture, sale, and use of glue pads for rodent control**, joining several Indian states in taking this step. The ban follows **an advisory by the Animal Welfare Board of India (AWBI) in 2011 and a subsequent one in 2021**

Glue pads are considered a **cruel method of killing rodents** as animals that **get trapped in the strong glue die slowly from starvation and extreme pain.**

Rat poison, often used as an alternative to glue pads, is also **considered inhumane and poses risks to the ecosystem**, animals that feed on poisoned rats, **such as cats, snakes, mongoose, and predatory birds, can be harmed by the toxins.**

Red fire ants

- **Red fire ants**, known scientifically as **Solenopsis invicta** and **originating from South America**, have **invaded Europe**. These invasive ants are **ranked as the world's fifth-costliest species to combat.**
- Their painful stings can cause **pustules, allergies, and even fatal anaphylactic shock.** The researchers believe that **climate change may facilitate their further spread in Europe.**
- **Invasive species:** drive plant and animal extinctions, **threaten food security and exacerbate environmental catastrophes.**

New discoveries by Webb telescope

- Scientists using the **James Webb Space Telescope** have discovered **methane and carbon dioxide on the exoplanet K2-18 b.**
- **K2-18 b** is located in the **"Goldilocks zone"** around **the cool dwarf star K2-18**, where it receives **just enough starlight to maintain liquid water.**
- It's considered a **"Hycean planet,"** a hypothetical **type of water-covered planet with a hydrogen-rich atmosphere** that some scientists believe is a good candidate for the search for signs of life.
- The presence of **methane and carbon dioxide**, along with a **shortage of ammonia**, **supports the hypothesis that K2-18 b may have a water ocean beneath its hydrogen-rich atmosphere.**
- The study also suggests the possible detection of a molecule called **dimethyl sulphide, which on Earth is primarily produced by life, particularly phytoplankton in the oceans.**

Planet Mercury

NASA recently shared a **captivating image of Mercury**, the solar system's **smallest planet**, on Instagram. The picture, taken by **MESSENGER**, the first spacecraft to **orbit Mercury**, showcases the **planet's tan and blue hues, along with its cratered surface.**

Water on the Moon

- A recent study **using data from the Chandrayaan-1 mission** has suggested that **high-energy electrons in Earth's magnetosphere** might be contributing to the **formation of water on the Moon's surface.**

- The research indicates that **electrons in our planet's plasma sheet**, a region of trapped charged particles within Earth's magnetosphere, **may play a role in weathering processes on the lunar surface**, potentially leading to the formation of water.
- The study builds **upon previous research that showed oxygen in Earth's "magnetotail"** is causing **rusting on iron in the lunar polar region**.
- The analysis of remote sensing data collected by **the Moon Mineralogy Mapper** during the Chandrayaan-1 mission revealed that **water formation in the magnetotail appeared to be consistent whether the Moon was inside or outside of it**. This suggests the presence of water formation processes or sources not directly associated with solar wind protons.

Pralay

- The **Indian defence ministry** has approved the **acquisition of a regiment of 'Pralay' ballistic missiles** for deployment along the **Line of Actual Control and the Line of Control**.
- 'Pralay' has a **strike range of 150 to 500 kilometres** and can **carry a conventional warhead of 350 kg to 700 kg**.
- It is **highly versatile, capable of carrying different types of warheads**, and features advanced **technology to counter interceptor missiles**.
- It can **alter its trajectory mid-flight and is powered by a solid propellant rocket motor**.
- **Developed by the Défense Research and Development Organization (DRDO)**.

Supra Thermal and Energetic Particle Spectrometer (STEPS)

India's first solar mission, **Aditya-L1**, has begun collecting data using the Supra Thermal and Energetic Particle Spectrometer (STEPS) sub-system, one of the seven instruments on board.

STEPS stands for **Supra Thermal and Energetic Particle Spectrometer**. It is a sub-system onboard India's Aditya-L1 spacecraft and part of the Aditya Solar Wind Particle Experiment (ASPEX) payload. It is designed to measure **fast-moving charged particles generated by processes within the Sun**. STEPS helps scientists analyze the **behaviour of particles surrounding Earth** and provides valuable data for solar science and space weather research.

'Vibhav' Anti-Tank Mines

The Indian Army has recently inducted 600 self-neutralizing anti-tank mines, known as "Vibhav," into its arsenal. These indigenous anti-tank mines boosts India's defence capabilities and indigenous defence industry.

Developed indigenously in collaboration with the Defence Research and Development Organisation (DRDO), these anti-tank mines are designed to provide mobility kill capability against all types of enemy armored vehicles.

The Paris Agenda for People and the Planet

The Paris Agenda for People and the Planet (held in June this year) is a global initiative aimed at eliminating poverty, preserving the environment, and enhancing the resilience of vulnerable countries to climate change and conflicts.

The focus of the Summit: It focuses on **leveraging various sources of finance**, including official development assistance, domestic resources, and private investment, to achieve these goals.

Goal: To eliminate **poverty, preserve the planet, and empower vulnerable** countries to address crises. Achieve **\$100 billion in Special Drawing Rights (SDRs)** for vulnerable countries.

Four principles guiding the agenda:

1. No country should **choose between poverty and the planet**.
2. Recognize **diverse transition paths** for countries while working together to meet Paris Agreement goals.
3. Recognize **diverse transition paths** for countries while working together to meet Paris Agreement goals.
4. **Scale up private capital flows** to address global challenges and reduce inequalities.

Economics

Kisan Rin Portal

- The Indian government has launched the **“Kisan Rin Portal”** as part of the **Kisan Credit Card (KCC) scheme to revolutionize the agriculture sector**.
- Additionally, the government launched the **Weather Information Network Data Systems (WINDS) portal and initiated a door-to-door KCC campaign**.
- The Kisan Rin digital platform will offer a **comprehensive view of farmer data, scheme utilization progress, loan disbursement specifics, and interest subvention claims**, enhancing integration with banks for more efficient agriculture credit.

About Weather Information Network Data Systems (WINDS) portal:

- **WINDS leverages advanced weather data analytics to provide stakeholders with actionable insights for informed weather-related decisions in agriculture**. The portal includes a comprehensive manual for stakeholders to understand its functionalities, data interpretations, and effective utilization.

Ethics & Society

Biohacking

Biohacking is the practice of **modifying and enhancing human biology and physiology**, often using **technological and genetic interventions**, to improve various aspects of health, cognition, and physical capabilities.

Elon Musk's brain-chip startup, Neuralink, has received approval to begin the first human trial of its brain implant designed for paralysis patients. The trial will focus on individuals with **paralysis due to cervical spinal cord injury** or amyotrophic lateral sclerosis. Neuralink aims to implant a brain-computer interface (BCI) to allow participants to control a computer cursor or keyboard using their thoughts.

Ethical issues:

- Altering one's DNA or genes raises concerns about unintended consequences, long-term effects, and ethical boundaries.
- The potential for unsafe procedures, misuse of substances, or long-term health risks associated with biohacking.
- Biohacking may be more accessible to individuals with financial resources, creating disparities in enhancement opportunities.
- Defining ethical limits in biohacking, such as what enhancements are permissible and where to draw the line.
- The introduction of unproven treatments into the market and inadequate safety measures may harm public health.

G20/OECD Principles of Corporate Governance 2023

On September 11th (2023), the OECD launched the **revised G20/OECD Principles of Corporate Governance**, a set of international standards aimed at promoting corporate sustainability, market confidence, and financial stability.

Corporate governance essentially involves **balancing the interests of a company's many stakeholders, such as shareholders**, senior management executives, customers, suppliers, financiers, the government, and the community.

Ethical Issues with Corporate Governance in India:

- **Conflict of Interest:** The challenge of managers potentially enriching themselves at the cost of shareholders

- **Weak Board:** Lack of diversity of experience and background represents a major area of weakness for these boards.
- **Separation of ownership and management:** In the case of family-run companies, the separation of ownership and management remains a key challenge
- **Independent directors**

Key points of G20/OECD Principles of Corporate Governance 2023

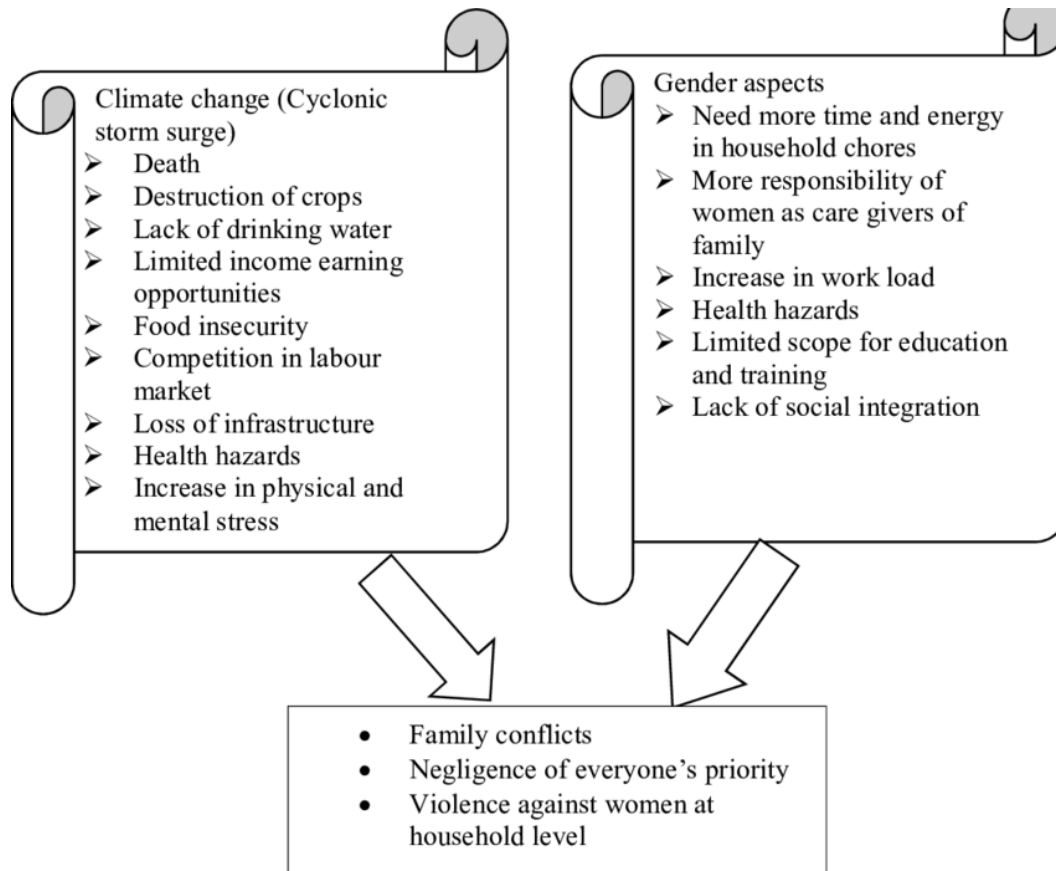
- The principles aim to **evaluate and enhance the legal, regulatory, and institutional framework** for corporate governance to support economic efficiency, sustainable growth, and financial stability.
- The principles are **non-binding and don't replace national law**
- The principles primarily focus on publicly traded companies but can benefit smaller and unlisted companies, taking into account their diversity.
- **The principles are organized into six chapters.**

Hunger-related Sustainable Development Goals (SDGs)

Hunger-related Sustainable Development Goals are the SDGs that have a **bearing on hunger status directly or indirectly**. Accordingly, these are:

- **SDG 1** – End **poverty** in all its forms everywhere (poverty-hunger interlinkage)
- **SDG 2** – Creating a **world free of hunger by 2030**
- **SDG 3** – Ensure **healthy lives** and promote well-being for all at all ages
- **SDG 6** – Ensure availability and sustainable management of **water and sanitation** for all
- **SDG 12** – Ensure sustainable **consumption and production** patterns (choice of crops and nutrition)
- **SDG 13** – Take urgent action to combat **climate change and its impacts** (climate change-related nutritional and food security issues)

Gender impacts of Climate change



Personalities

Amrita Sher-Gill

Amrita Sher-Gil's 1937 masterpiece, "The Story Teller," achieved a record-breaking sale of **Rs 61.8 crore (\$7.44 million)** on September 16, marking the highest price ever paid for a work by an Indian artist. The painting, created during a pivotal period in Sher-Gil's career, led Saffronart's Evening Sale: Modern Art, featuring over 70 artworks by prominent artists like V S Gaitonde, S H Raza, Tyeb Mehta, M F Husain, F N Souza, and Akbar Padamsee.

Prior to "The Story Teller," the most expensive Indian artwork sold at auction was **S H Raza's "Gestation,"** which fetched ₹51.75 crore.

Current Affairs Update (Sep 22-30)

National

Vanadium discovered in the Gulf of Khambhat

The **Geological Survey of India (GSI)** conducted the research and reported this potential new source of vanadium, marking the first such discovery in offshore sediments in India. This finding adds to **India's growing interest in rare metals**, following the discovery of lithium reserves in Jammu and Kashmir, further supporting initiatives for sustainable energy and technology development.

Critical raw materials are **substances that are of high economic importance** and are essential for the **production of various goods, technologies, and industries**. These materials are considered **critical due to their potential supply chain risks**, geopolitical concerns, and their importance for strategic sectors.

Significance of finding Vanadium deposits in India

- Exploration and mining activities can generate revenue and create jobs in the region
- Exporting vanadium can contribute to India's foreign exchange earnings
- India is a significant consumer of vanadium but relies on imports.
- Vanadium is crucial for the defence and aerospace industries.
- Advancements in vanadium batteries can benefit India's energy storage infrastructure.

Adi Shankaracharya

Madhya Pradesh Chief Minister recently unveiled a **108-foot-tall 'Statue of Oneness'** dedicated to the **Hindu saint Adi Shankaracharya in Omkareshwar, Madhya Pradesh**. This statue represents **Adi Shankaracharya at the age of 12** when he is believed to have **visited Omkareshwar**.

Omkareshwar, located on the **Mandhata island along the Narmada River**, is home to **two of the 12 Jyotirlingas**, sacred to **Lord Shiva**. It is also near the **Mahakaleshwara Jyotirlinga in Ujjain**. The island hosts **Shaivite, Vaisnavite, and Jain temples dating back to the 14th and 18th centuries**.

Rashtriya Vigyan Puraskar

The Government of **India** has **introduced a new set of National Awards in the field of Science, Technology, and Innovation** called "**Rashtriya Vigyan Puraskar**." These awards **aim to acknowledge exceptional contributions made by scientists, technologists, and innovators**, whether individually or in teams, across various domains of science and technology.

It is open to individuals working in government, private sector organizations, or independently, as well as to **People of Indian Origin residing abroad whose contributions have benefited Indian society.**

These awards are categorized as follows:

- **Vigyan Ratna (VR) award:** Recognizing **lifetime achievements and contributions** in any field of science and technology.
- **Vigyan Shri (VS) award:** Acknowledging distinguished contributions in any **field of science and technology.**
- **Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB) award:** Encouraging young scientists under the **age of 45 who have made exceptional contributions in any field of science and technology.**
- **Vigyan Team (VT) award:** Presented to teams **comprising three or more scientists, researchers, or innovators** who have made **exceptional contributions while working collaboratively in any field of science and technology.**

The Rashtriya Vigyan Puraskar **covers 13 domains**, including Physics, Chemistry, Biological Sciences, Mathematics & Computer Science, Earth Science, Medicine, Engineering Sciences, Agricultural Science, Environmental Science, Technology & Innovation, Atomic Energy, Space Science and Technology, and Others.

World Coffee Conference

- The **5th World Coffee Conference (WCC)** was held in Bengaluru, and organized by the **International Coffee Organization (ICO)**, a UN body focused on highlighting the economic importance of coffee.
- It is being held for the **first time in an Asian coffee-producing country.**
- One of the key topics discussed at the conference was **“regenerative agriculture,”** a holistic farming approach that emphasizes **soil health, food quality, biodiversity, water quality, and air quality.**
- **Regenerative agriculture** is a **holistic farming approach** that focuses on improving soil health, biodiversity, and sustainability by minimizing soil disturbance, diversifying crops, using cover crops, and integrating livestock. It aims to **enhance resources rather than deplete them**, by adhering to principles such as conservation tillage, crop diversification, soil cover with cover crops, and integration of livestock.

India's First Lighthouse Festival

- **India's First Lighthouse Festival** is set to begin in Goa.
- The festival will take place with the **aim of transforming historic lighthouses into tourist destinations.**
- This festival is a **part of the 'Lighthouse Heritage Tourism'** campaign, which aims to **revamp 75 historic lighthouses across India and promote them as tourist spots.**

- The initiative **aligns with Prime Minister Narendra Modi's vision to transform these lighthouses into captivating tourism sites**, showcasing their cultural significance and economic potential.

Findings of Parliament Panel on NEP

- **70% of universities** in India operate under State Acts.
- **94% of students** attend State or private institutions.
- **Issues:** Rigid academic disciplines, limited access in disadvantaged regions, shortage of local language instruction.
- **Insufficient faculty numbers**
- Concerns about the feasibility of multiple entry and exit systems (MEME)

Moody's Investors Service Raises Red Flags against Aadhaar

Moody's Investors Service, a global rating major, has expressed doubts about the reliability of India's Aadhaar, a **12-digit universal identity system**. The concerns revolve around the use of biometric technologies, particularly in **hot and humid climates**, and the resulting service disruptions. In response, the Indian government has defended Aadhaar's credibility, emphasizing its position as the world's most trusted digital ID.

Moody's acknowledges that Aadhaar, the largest digital ID program globally, plays a pivotal role in providing access to public and private services. Verification methods include fingerprint and iris scans, along with alternatives like One-Time Passcodes. Aadhaar aims to integrate marginalized groups and enhance access to welfare benefits. However, Moody's highlights challenges related to authentication and biometric reliability.

International

Three Years of Abraham Accords

Brokered by the USA, the **Abraham Accord (2020)** is a **normalization agreement between the UAE and Israel** to establish formal diplomatic relations. The accord was later joined by **Bahrain, Sudan, and Morocco** and in exchange Israel would suspend its plans to annex parts of the occupied West Bank. With this accord, **UAE becomes the third Arab nation** to recognize Israel after Egypt (in 1979) and Jordan (1994)

Significance: Decision to promote a **stable future for West Asia**. Trade between Israel and other West Asian countries **increased by 74%** between 2021 and 2022. The **Prosperity Green & Blue agreement between Israel, the UAE, and Jordan** determined that a solar field to supply 600 megawatts of electricity to Israel and a desalination plant in Israel would deliver 200 million cubic meters of water to Jordan.

Five Eyes Alliance

- **Five Eyes Alliance:** The Five Eyes Alliance refers to an **intelligence-sharing partnership** among five countries: **the United States, the United Kingdom, Australia, Canada, and New Zealand.**
- These nations collaborate **closely on intelligence matters, sharing information to protect their shared national interests.**
- **Origins of the Alliance:** The alliance traces its origins back to **World War II when the UK and the US decided to share intelligence after successfully breaking German and Japanese codes.**
- It began as the **Britain-USA (BRUSA) agreement**, later evolving into the **UK-USA (UKUSA) agreement**, with **Canada joining in 1949 and New Zealand and Australia in 1956.**
- The Five Eyes countries, particularly the US, the UK, and Australia, are viewed as close to India. They also have significant Indian and Indian-origin populations and have experienced instances of pro-Khalistan activities. However, their historical ties to Canada and the alliance structure mean they are unlikely to offer outright support to either India or Canada in this dispute.

Lithium blocks in Argentina

- India is on the verge of finalizing agreements for the **acquisition of five lithium blocks** in Argentina through the State-owned joint venture, **KABIL.**
- Argentina, as part of the **“Lithium Triangle”** along with **Chile and Bolivia**, is a significant producer of lithium, holding the **world’s third-largest lithium reserve.**
- **KABIL** is a joint venture, involving **NALCO, MECL, and HCL**, and is focused on identifying and acquiring strategic minerals overseas for India’s use. It is also exploring opportunities for lithium partnerships and acquisitions in other **Latin American nations** like Chile and Brazil, as well as in Australia for lithium and cobalt exploration.

Shi Yan 6 to visit Sri Lanka

In a recent development, the United States has expressed its concern to Sri Lanka about the impending arrival of a **Chinese research vessel**, raising similar concerns shared by India. During a meeting between US Under Secretary and Sri Lankan Foreign Minister at the UN General Assembly session in New York, the topic of the Chinese research ship ‘Shi Yan 6’ came to the forefront.

The ship is described as a **“scientific research vessel”** equipped with a 60-member crew, conducting research in oceanography, marine geology, and marine ecology. While Beijing sought Colombo’s permission for the ship’s docking, the final date and port remain uncertain.

India’s objection to Chinese vessels docking in Sri Lanka stems from security concerns. India perceives Chinese ships in close proximity to its mainland as **potential security threats**, suspecting espionage activities even when their stated purpose is scientific research.

Science-Tech & Environment

Geospatial intelligence

It is the **collection and integration of data from various technologies** like satellites, sensors, and aerial images to create real-time maps and simulations. It aids in identifying and managing threats, supporting emergency response, environmental monitoring, logistics, and more.

Geospatial technology uses tools like **GIS** (Geographic Information System), **GPS** (Global Positioning System), and Remote Sensing for geographic mapping and analysis of Geospatial data.

Key applications of geospatial intelligence:

- Monitoring natural disasters such as Cyclones, and hurricanes to allocate resources efficiently, issue timely storm warnings, and order evacuations as needed.
- Assisting in **post-disaster efforts by identifying damaged areas**, assessing the extent of impact, locating access points for first responders, facilitating efficient **search-and-rescue operations** and the distribution of aid.
- Tracking **climate-related variables like temperature**, precipitation, and ice to anticipate and prepare for environmental disturbances, including heatwaves, floods, and polar ice melt.
- Reporting on **military movements, and troop deployments**, and providing valuable spatial data for civilian applications such as global supply chain optimization and logistics management.
- Supporting the **development of autonomous vehicles** by offering high-resolution imagery for road analysis, and traffic management.
- Creating **virtual replicas of real-world systems**, such as cities and buildings, which can be updated in real-time to simulate changes in various conditions, aiding **decision-making across different sectors**, including military and urban planning.

Limitations of using Geospatial technology:

- **Hacking information** – The primary reluctance to share stems from the concern that terrorists or criminals could use such information.
- **Privacy issue** – India doesn't have a dedicated data protection policy in that context use of Geospatial data may cause privacy issues.
- **Lack of data availability and sharing constraints** – The unavailability of foundation data, especially at high resolution, is also a constraint. Further, the lack of clarity on data sharing and collaboration prevents co-creation and asset maximization.

Phosphorus

- India is facing a critical shortage of phosphorus, **which is essential for fertilizers but also a major environmental pollutant**. The phosphorus shortage is due to its limited availability in geological formations and its contamination of water bodies when not properly managed.
- Currently, only a few countries, **such as Morocco and the Western Sahara region, control most of the world's phosphorus reserves, raising geopolitical concerns**.
- A significant issue is **the coexistence of cadmium**, a harmful heavy metal, with phosphorus in some deposits. **Cadmium-laden fertilizers are often used in agriculture, leading to health concerns, including heart disease**.
- **India is the world's largest importer of phosphorus, primarily from cadmium-laden deposits in West Africa**.
- Moreover, only a small **portion of mined phosphorus is used in food production, with a significant amount lost to water bodies as agricultural runoff**. Most of the phosphorus consumed by people **ends up in sewage, exacerbating environmental problems like algal blooms and fish deaths**.

Formation of Pink Diamond

- Western Australian scientists have connected pink diamond formation to the Earth's first supercontinent (Vaalbara or Nuna) and events **1.3 billion** years ago.
- Pink diamonds are a **rare and highly coveted type of diamond** known for their stunning pink or reddish-pink colour. Pink diamonds are exceptionally rare, and their rarity, combined with their captivating beauty, makes them extremely valuable.
- Pink diamonds get their distinct colour from **unique structural irregularities in the crystal lattice of the diamond**, rather than impurities like nitrogen or boron, which give other coloured diamonds their hues (such as in the case of Yellow and blue diamonds)
- The **Argyle diamond mine in Western Australia** was one of the primary sources of pink diamonds (over 90% of production), although it **ceased production in 2020**. Pink diamonds from the Argyle mine were particularly famous for their **quality and colour intensity**.
- Pink diamonds were formed as a result of the breakup of Earth's first supercontinent, Vaalbara, through **intense geological forces from colliding tectonic plates** that caused their **crystal lattices to twist and bend**. The critical event that **turned once-colourless diamonds** into pink was a monumental collision between **Western Australia and Northern Australia**.

Tardigrade

Tardigrades are **tiny eight-legged animals that are extremophiles**, capable of surviving in extreme conditions for **up to 30 years without food or water**. When faced with harsh environments, they **enter a state of suspended animation called the "tun" state**, where their bodies **dry out and appear lifeless**. Their diet primarily consists of **plants**, but some tardigrades are **predatory carnivores**. Tardigrades can be found in **various ecosystems** beyond just aquatic environments.

Researchers at the Cochin University of Science and Technology (Cusat) have discovered a **new species of marine tardigrade in Mandapam**, south-east Tamil Nadu.

This tiny creature, measuring in micrometres, is known for its **resilience and survival abilities** and is often referred to as a **‘water bear.’** The newly identified species belong to the **genus Batillipes** and has been **named Batillipes kalami** in honour of the late former President and scientist **A.P.J. Abdul Kalam**.

Samudra Prahari

The Indian Coast Guard (ICG) Pollution-Control Vessel **‘Samudra Prahari’** conducted a **Pollution Response Table-Top exercise and demonstration at Khlong Toei Port in Bangkok**, Thailand, showcasing India’s maritime expertise and commitment to addressing shared challenges, particularly marine pollution.

The visit under the **India-ASEAN initiative aligns** with India’s commitment to regional security and growth (SAGAR) and the theme of India’s G20 Presidency **‘Vasudhaiva Kutumbakam – One Earth, One Family, One Future.’**

Perovskite

- Perovskite solar cells are **cheaper, lighter, and more efficient than traditional silicon-based cells**.
- However, **they face challenges related to a drop in efficiency and energy** output during the manufacturing process. The researchers **identified an aluminium oxide that minimizes this efficiency drop during the conditioning of perovskite solar cells**.
- Perovskite has been **recognized as a “miracle material” with the potential to revolutionize various industries, including renewable energy**.
- Recent advancements have **enabled the creation of self-healing solar panels and improved efficiency when combined with silicon in tandem cells**.

NASA’s OSIRIS-Rex

- A NASA space capsule carrying the **largest sample ever collected** from an asteroid landed on **Utah’s Test and Training Range**.
- The capsule was released from **the OSIRIS-REx spacecraft**, which had been in space for seven years and collected the **sample from the asteroid Bennu**. Scientists will use this sample to learn more about the origins of the solar system.
- The OSIRIS-REx spacecraft, renamed **OSIRIS-APEX (OSIRIS-Apophis Explorer)**, **did not return to Earth’s surface**. Instead, it separated from the sample return capsule and will continue its mission to study another near-Earth asteroid named **Apophis when it comes close to Earth in 2029**.

Veerangana Durgavati Tiger Reserve

- **Madhya Pradesh**, known as the “**tiger state**” of India due to its substantial tiger population, has officially designated a **new protected area** for these magnificent creatures called the ‘**Veerangana Durgavati Tiger Reserve.**’ This newly established **reserve becomes the seventh tiger reserve in the state.**
- Madhya Pradesh has consistently held the title of the “tiger state,” with its tiger population **increasing from 526 in 2018 to 785 in the 2022 census.**

Nilgiri tahr

- The **Tamil Nadu Forest Department** is planning to conduct a comprehensive census of the endangered **Nilgiri tahr**, along with Kerala.
- There are believed to be a **little over 3,100 Nilgiri tahrs in the Western Ghats region.**
- For the first time, **drones may be used in the census as Nilgiri tahrs** prefer montane grasslands with steep and rocky terrains at altitudes between 300 and 2,600 meters above sea level.

Economics

Patents

- Patents are **government-issued exclusive rights that grant inventors or assignees** the sole authority to utilize, make, sell, or license their invention for a limited period, **typically 20 years.**
- Patents are granted for **new and useful inventions** and are intended to encourage innovation by providing **legal protection and exclusive rights** to inventors.
- **Granted by:** Controller General of Patents, Designs and Trade Marks (**CGPDTM**) under the DPIIT (Ministry of Commerce & Industry)
- Patents in India are governed by “**The Patent Act 1970,**” which was amended in 2005 to comply with **TRIPS** (Trade-Related Aspects of Intellectual Property Rights).

Criteria for issuing patents in India include:

- **Novelty:** The invention must be new and not previously published or publicly known or used in India.
- **Non-Obviousness:** It should involve an inventive step, representing a technical advancement compared to existing knowledge, and not obvious to a person skilled in the relevant field.
- **Industrial Use:** The invention should be capable of industrial application.

Old Pension Scheme (OPS)

Several Indian states reverting to the Old Pension Scheme (OPS) from the New Pension Scheme (NPS) have been cautioned by an RBI article, which deems this move a “**major step backwards**” in fiscal

management. States such as Rajasthan, Chhattisgarh, Jharkhand, Punjab, and Himachal Pradesh have switched to OPS.

Fiscal management refers to the process of planning, organizing, and controlling a government's finances to ensure **responsible and effective use of public funds**. It involves activities such as **budgeting, revenue collection, expenditure allocation, and debt management** to achieve economic stability and meet government objectives.

Observations by RBI:

- **Reverting to the Old Pension Scheme (OPS) might briefly reduce** state expenses, but it will **surpass the New Pension Scheme (NPS)** contributions by the 2030s.
- This shift could inflate the pension burden by around **4.5 times** compared to NPS.
- By 2060, this **additional OPS burden could reach about 1% of GDP** annually for states.
- This move goes against the global trend of adopting defined contribution plans and is considered fiscally unsustainable.

MSMEs

Micro, Small and Medium Enterprises [“MSMEs”] are small to **medium-sized businesses** that typically have a limited number of employees and generate moderate levels of revenue.

MSMEs are **defined or classified** in accordance with the **MSME Development Act of 2006**.

- **Micro:** Investment < 1 crore & Turnover < 5 crore
- **Small:** Investment < 10 crore & Turnover < 50 crore
- **Medium:** Investment < 50 crore & Turnover < 250 crore

Status of MSMEs in India:

- **Around 19 million MSMEs** which employ over 131 million (over 13 crore) individuals are registered on the **Udyam portal of which** about 96 % are classified as micro, about 3 % as small, and 0.4% as medium enterprises.
- **27% of the MSMEs** are engaged in manufacturing and 73% are in services

Basel-III capital framework

The **Reserve Bank of India (RBI)** has introduced **new norms based on the Basel III capital framework** for **All India Financial Institutions (AIFIs)**, which **will take effect from April 2024**.

India has **five AIFIs under RBI regulation**: Export-Import Bank of India (**EXIM Bank**), National Bank for Agriculture and Rural Development (**Nabard**), National Bank for Financing Infrastructure and Development (**NaBFID**), National Housing Bank (**NHB**), and Small Industries Development Bank of India (**SIDBI**).

The key provisions of the new norms are as follows:

- **Capital Adequacy:** AIFIs will be required to maintain a minimum total capital of 9 per cent by April 2024. This includes a minimum tier-I capital of 7 percent and common equity tier-I (CET-1) capital of 5.5 percent.
- **Consolidation of Financial Subsidiaries:** All financial subsidiaries, except those involved in insurance and non-financial activities (both regulated and unregulated), **must be fully consolidated for the purpose of capital adequacy.**
- **Investment Caps:** The RBI has imposed limits on AIFIs' investments in capital instruments of banking, financial, and insurance entities, **capping them at 10 percent of their capital funds.**
- **Equity Investment Limits:** AIFIs' equity investment in a single entity cannot exceed 49 percent of the equity of the investee.
- **Capital Planning and Risk Management:** AIFIs are advised to **focus on effective and efficient capital planning and long-term capital maintenance.**

Indian Standards on Biofuel to aid GBA's Clean Energy Goals

- The **Bureau of Indian Standards (BIS)** has announced that **Indian standards on biofuels** will significantly support the **objectives of the Global Biofuel Alliance (GBA).**
- BIS has developed **nine Indian standards on biofuels**, including specifications for **anhydrous ethanol, biodiesel, biogas, biodiesel-diesel fuel blends, hydrous ethanol, E85 fuel, E20 fuel, aviation turbine fuel containing synthesized hydrocarbons, and ethanol as a fuel for spark-ignition engine-powered vehicles.**
- Additionally, BIS is working on a **standard for paraffinic (green) diesel derived from 2G feedstock.**

Green hydrogen-run bus

- **Indian Oil Corporation (IOC)** has introduced **India's first green hydrogen-powered bus**, which emits **only water vapour as its by-product.**
- **Green hydrogen is an environmentally friendly option** as it only emits water vapour when burned and has three times the energy density of other fuels. It requires **50 units of renewable electricity and 9 kg of deionized water to produce one kilogram of green hydrogen.**

Ethics & Society

Green Nudge

A Green Nudge is a **subtle intervention or persuasion technique designed** to influence individuals to **make environmentally friendly choices** without limiting their options. These nudges **encourage eco-conscious behaviour** and have been effective in addressing **environmental issues** by guiding people toward sustainable decisions.

Zomato's "no-cutlery" option; Government's LiFE movement, promoting environmentally conscious living

Nudge theory, developed by economist **Richard Thaler**, underlies this concept. It involves placing **small stimuli** to encourage decisions that benefit individuals in the long term. E.g., In governance, nudge policies are used in programmes such as the Swachh Bharat Mission, GiveltUp campaign, and **Beti Bachao Beti Padhao (BBBP)**, etc.

Reasons for Rising Student Suicide

- **Social Stigma**: not enough discussion about depression and suicides
- Academic Pressure
- Relationship breakdown.
- **Lack of adequate support**
- **High expectations** from Students.
- **Mental Issues**: Anxiety disorder, depression, personality disorder.

Authors vs. OpenAI

- Prominent authors, including John Grisham and George R.R. Martin (of Games of Thrones fame), are suing **OpenAI in a proposed class-action lawsuit**, accusing the company of training its AI chatbot ChatGPT on their work without permission.
- The Authors Guild, representing U.S. authors, filed the lawsuit, asserting that **authors should control how their works are used by generative AI** to preserve literature.
- Authors accuse OpenAI of **using their work without permission**, raising concerns about intellectual property rights.
- **OpenAI and other AI defendants** argue that their data usage falls under **fair use, sparking a debate** about the boundaries of copyright law in the AI era.
- AI-generating content resembling authors' work could potentially mislead readers

Odhuvars

- The Government of Tamil Nadu appointed **15 ‘odhuvars’ to government-controlled Hindu temples**, including **five women odhuvars**, a “milestone in the journey for equality.”
- Odhuvars sing **devotional hymns in Tamil Nadu’s Hindu temples** but are not priests. They are in the service of **Lord Shiva** by singing his praise from **Thirumurai** in Saivite temples. They sing **devotional hymns** but do not enter the sanctum sanctorum.
- Another progressive decision by the Tamil Nadu Government: The recent appointment of **three women priests in the state’s temples**.

Personalities

Dr. Swati Nayak

- **Indian scientist Dr. Swati Nayak**, working at the International Rice Research Institute (**IRRI**), has been awarded the **2023 Norman E. Borlaug Award for Field Research and Application by the World Food Prize Foundation**.
- Nayak is recognized for her **innovative work in engaging smallholder farmers in demand-driven rice seed systems**, focusing on **climate-resilient and nutritious rice varieties**.
- This award is given to **exceptional scientists under 40 who contribute to food and nutrition security and hunger eradication, in memory of Nobel laureate Dr. Norman Borlaug**, known as the chief architect of the Green Revolution.