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IQRA Wisdom Leads To Success

Monthly Current Affairs – November 2023

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Art and Culture

More than 15 products from Uttarakhand bag GI tags

Context: From a local brick-tea to textiles made from a Himalayan plant, over 15 products from Uttarakhand have been given the coveted GI tag by the Geographical Indications Registry.

Key Highlights

Product Name	Description
Berinag tea	• It is a sought-after blend of tea made from the leaves of a plant that grows in the wild in the Himalayas. • The leaves are compressed into a solid mass and sold.
Bichuu buti fabrics	• They are made from Himalayan nettle fibers which are hollow. • This allows them to create a natural insulation by accumulating air inside. • Therefore, it is an ideal clothing material for both winter and summer.
Uttarakhand mandua	• It is a finger millet that is grown in the Garhwal and Kumaon regions. • It is a part of the staple diet for many areas in Uttarakhand.
Jhangora	• It is a home-grown millet commonly cultivated in the rain-fed areas of the Himalayas in Uttarakhand.
Gahat	• An important pulse that grows in the dry regions of the State. • It has been used by practitioners of Ayurveda and traditional medicine due to its medicinal properties.
Uttarakhand lal chawal	• It is a type of red rice that is cultivated organically in the Purola region.
Uttarakhand kala bhat	• It is a black soybean that is grown at an altitude of 1000-1700m AMSL. • It is organic, distinctively aromatic, and a source of dietary fiber, protein & iron.
Malta fruit	• Also known as the Himalayan Sweet Orange, it is grown in the Himalayan valleys. • It has numerous health benefits and a high nutritional value.
Chaulai (Ramdana)	• It is a grain consumed when fasting due to its nutritional value. • It is also known as Rajgira and Amaranth.
Buransh juice	• It is obtained from the red flowers of the Buransh tree (Rhododendron arboreum). • It is consumed as squash or juice.
Pahari toor dal	• It is a variety of toor dal (pigeon pea) that is grown in the high-altitude valleys of Uttarakhand and Himachal Pradesh.
Likhai	• It is an ancient wood carving tradition of the Kumaon region of Uttarakhand. • It is mainly found in the form of religious, folk, and tantric motifs on doors and windows.
Nainital mombatti	• These are handmade decorative wax candles from Nainital in Uttarakhand. • They were extremely popular across India, making Nainital the candle capital of India.
Rangwali pichhoda	• It is a traditional outfit worn by women during religious and cultural. Ceremonies in Kumaon.

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	• It is made of a yellow fabric with large red circular motifs printed on it and a 'Swastik' in the center.
Ramnagar Nainital litchis and Ramgarh Nainital peaches	• They are distinctly flavored fruits grown in the Nainital district in Uttarakhand.
Chamoli wooden Ramman masks	• Mask making or Mukhota is a traditional craft of carving masks out of wood. • These masks portray characters from mythological tales and are used in ritual theatre performances, especially during Ramman religious festivals and in other religious ceremonies performed by villagers.
Almora Lakhori mirchis	• It is an indigenous chili variant that was first grown in a village called Lakhora in Uttarakhand. • It has a distinctive wrinkle and yellow color and is considered to be quite hot.

In Malerkotla, a Begum's last wish remains unfulfilled

Context: Hidden amidst the ruins of Punjab's Malerkotla town lies the 19th-century Mubarak Manzil Palace, a poignant symbol of the state's indifference towards its rich heritage.

- Beyond its architectural significance, this palace holds a deep cultural and emotional connection for both Sikhs and Muslims alike.
- However, despite its historical value, the restoration of this magnificent structure has languished in bureaucratic inertia.

About Mubarak Manzil Palace

Historical Significance

- The Mubarak Manzil Palace dates back to the 19th century and stands as a testament to the region's historical heritage.

Cultural Significance

- Beyond architecture, the palace holds immense cultural and emotional importance for Sikhs and Muslims, serving as a shared legacy.

Unfulfilled Hope

- Begum Munawwar-ul-Nisa, the last surviving member of Malerkotla's royal family, passed away recently, with her desire to witness the palace's restoration remaining unfulfilled.

Delayed Restoration Efforts

Congress Government's Approval → **Family Disputes and Financial Constraints** → **Unfulfilled Promises**

- **Congress Government's Approval:** In 2021, the previous Congress government granted approval for the acquisition and preservation of the palace, kindling hopes for its revival.
- **Family Disputes and Financial Constraints:** The palace had fallen into disrepair due to family disputes and financial limitations. Begum Nisa, after resolving the disputes, appealed to the State government to take over and restore the palace.
- **Unfulfilled Promises:** Although Begum Nisa and her family entrusted 29 rooms of the palace to the government's care, the restoration work has yet to commence. Despite expert assessments in 2022, progress has been stalled, leaving the heritage in disrepair.

Cultural Significance

- **Guru Gobind Singh's Blessing:** Malerkotla holds a significant place in Sikh history as it was Nawab Sher Mohammed Khan who protested against the execution of Guru Gobind Singh's younger sons, Sahibzada Zorawar Singh and Sahibzada Fateh Singh, in 1705. Guru Gobind Singh blessed the town to live in peace.
- **Sikh Reverence:** Sikhs deeply respect Malerkotla's royal family for their historical role. The restoration of the palace is considered a fitting tribute to their legacy.

Kozhikode: How Kerala Got Onto UNESCO's City Of Literature List

Context: Kozhikode was recently inducted into the UNESCO Creative Cities Network as the City of Literature. The city that organizes the Kerala Literature Festival is also home to many well-known authors and publishing houses.

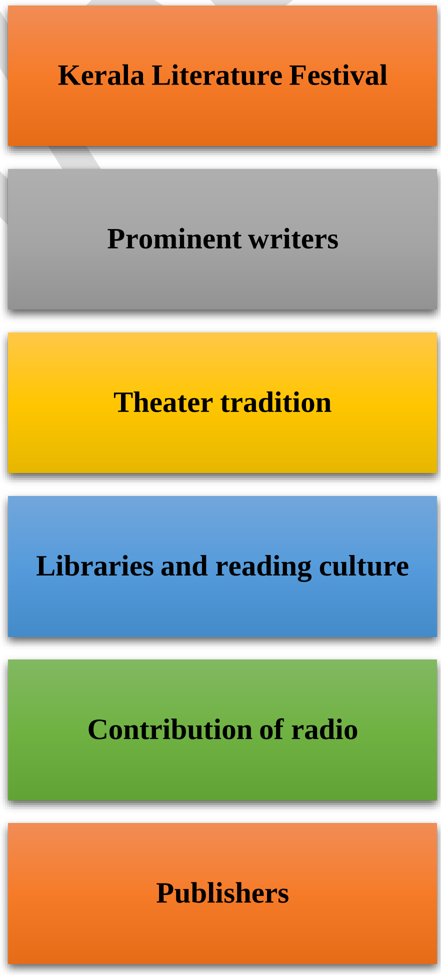
How has Kozhikode been recognized?

- In 2023, Kozhikode was designated the City of Literature and joined the UNESCO Creative Cities Network.
- Kozhikode became India's first literary city after being added to the list.
- Prime Minister Narendra Modi also complimented the people of Kozhikode on their accomplishments.

Why was Kozhikode designated as a City of Literature?

The city was honored for its commitment to include literary culture and creativity in its development initiatives.

- **Kerala Literature Festival:** The annual Kerala Literature Festival is held at Kozhikode Beach, and the city also hosts several smaller book festivals throughout the year.
- **Prominent writers:** Kozhikode has been home to some of Malayalam literature's most prominent authors, including Sahitya Akademi award winners S K Pottekatt and M.T. Vasudevan Nair, as well as Padma Shri award winner Vaikom Mohammed Basheer. Appu Nedungadi, the author of the first Malayalam novel Kundalatha, was born in Kozhikode in 1887.
- **Theater tradition:** Kozhikode's theater culture is alive and well. Famous playwrights include Thikkodiyan, a Sahitya Akademi Award winner, and K.T. Muhammed, a Sangeet Natak Akademi Award winner. Kozhikode's theatre culture is also strongly tied to Malayalam cinema, with prominent performers and authors engaged in both disciplines.
- **Libraries and reading culture:** There are about 500 libraries in the city. The big audiences at the KLF and the city's adoration of authors demonstrate the city's reading culture.
- **Contribution of radio:** The Kozhikode station of All India Radio has important contributions to the city's literary culture. P. Bhaskaran, composer K. Raghavan, author Uroob, poets Akkitham and N.N. Kakkad, and Thikkodiyan have all worked there and contributed to the public's love of books and reading.
- **Publishers:** Kozhikode is home to several well-known publishers who have fostered emerging Malayalam writers, contributing to the language's literary wealth. M T Vasudevan Nair edits the Mathrubhumi Weekly published in Kozhikode.



How do cities become part of the Creative Cities Network?

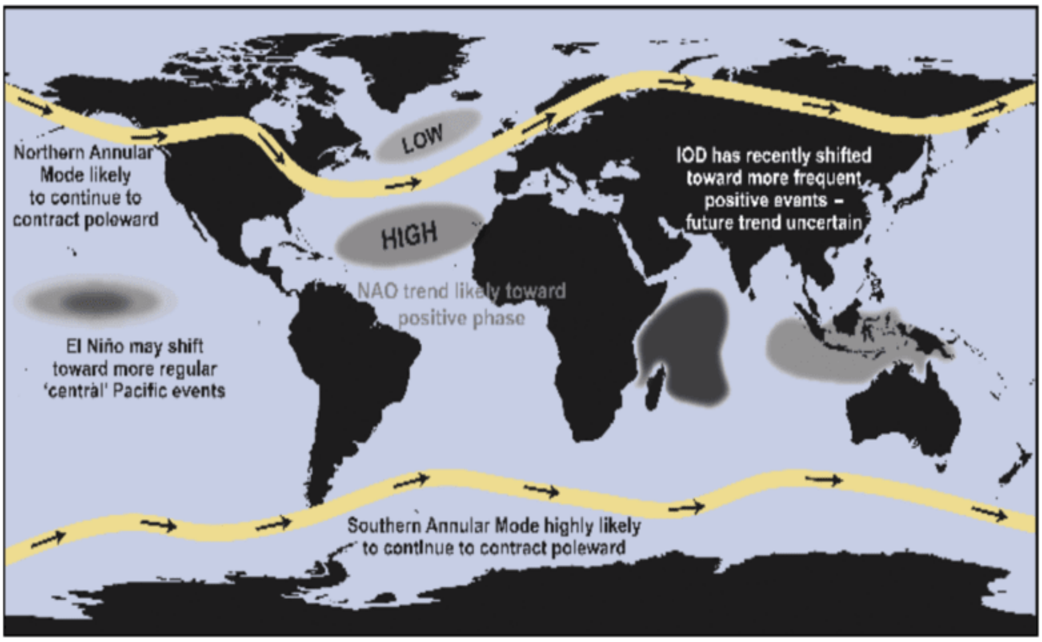
- Cities from UNESCO's Member States and Associate Members may apply when UNESCO launches the Calls for Applications to join the Creative Cities Network.
- A statement of purpose signed by the Mayor of the city, a letter of support from the relevant National Commission for UNESCO, and other needed documents should be included in the application.
- A city may be named a UNESCO Creative City based on its cultural and creative assets and the substance, effect, and potential reach of its planned action plan.
- The proposal must demonstrate the city's ability to contribute to the Network's overall vision and objectives and its dedication to UNESCO's mandate and priorities, such as the 2030 Agenda for Sustainable Development.
- Following an internal technical pre-screening and an external evaluation by UNESCO-designated independent experts specialized in the seven creative fields and other cultural and creative sectors and urban development, the Director-General of UNESCO is responsible for the designation of the cities.
- To ensure their full engagement and active contribution, designated cities must agree to complete the quadrennial Membership Monitoring Report.
- Conditions: UNESCO reserves the right to limit the Call for Applications based on certain geographical or thematic priorities.
- A maximum of two applications from the same country and in two distinct creative sectors were permitted for the 2023 Call.
- Applications from the Network's under-represented regions, primarily Africa and the Arab States, have been encouraged.
- Cities that have presented two straight rejected bids to the UNESCO Creative Cities Network must wait four years before submitting a new application.

Geography

Southern Annular Mode

Context: Recently, the Indian National Centre for Ocean Information Services (INCOIS) has discovered that the Southern Annular Mode (SAM), an important climate pattern, plays a pivotal role in shaping the sea conditions across the Indian Ocean.

- The Southern Annular Mode (SAM) refers to the non-seasonal north-south movement of the strong westerly winds prevailing in the mid-to-high latitudes of the southern hemisphere.
- This belt of westerly winds is linked to storms and cold fronts that move from west to east, resulting in rainfall for southern Australia.



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- The phenomenon is alternatively known as the **Antarctic Oscillation**.
- **SAM exhibits three phases**: neutral, positive, and negative.
- Each positive or negative SAM event typically spans one to two weeks, with the possibility of longer durations.
- The time gap between positive and negative events is variable, ranging from a week to a few months.
- The impact of SAM on rainfall is highly variable, influenced by both season and region.

Significance of SAM

- Comprehensive knowledge of SAM enhances coastal planning, empowering coastal communities to proactively anticipate and respond to the effects of evolving sea conditions.
- SAM insights contribute to more effective resource management by optimizing the utilization of marine resources, ensuring their sustainable use and conservation.
- Understanding SAM patterns strengthens disaster preparedness initiatives, facilitating a timely and efficient response to potential ocean-related disasters.

Indian National Centre for Ocean Information Services (INCOIS)

- Established in 1999, INCOIS operates as an autonomous organization under the Union Government.
- It falls under the purview of the Ministry of Earth Sciences and is headquartered in Hyderabad.
- INCOIS is tasked with delivering optimal ocean information and advisory services to government agencies, society, industry, and the scientific community.
- This mandate is fulfilled through sustained ocean observations and continual enhancements achieved via systematic and focused research efforts.

Sand And Dust Storms Are Increasing, Human Activities Contribute 25% Emissions: UNCCD

Context: According to the United Nations Convention to Combat Desertification (UNCCD), human activity—primarily agriculture—is responsible for 25% of the world's dust emissions.

Background

A quarter of the world's dust emissions are attributed to human activity, according to the UNCCD.

- Agriculture, which involves actions like changing land use, deforestation, and diverting water for irrigation, is the primary anthropogenic source.
- These storms affect human health, the environment, and the economy profoundly; they are not only natural occurrences.
- They have a thousand-kilometer range and can impact locations distant from their origins.
- In addition to lowering visibility and harming crops, the storms are known to induce respiratory problems and other health problems.

UNCCD

A significant international agreement known as the United Nations Convention to Combat Desertification (UNCCD) was created to address the problem of desertification and lessen the effects of drought, especially in arid and semi-arid regions and dry sub-humid areas.

- **Origins and Background:** The Earth Summit in Rio de Janeiro in 1992 led to the creation of the UNCCD in 1994. It is the first legally enforceable international agreement that connects sustainable land management to challenges of the environment and development.
- **Goals and Purpose:** The primary aim of the UNCCD is to prevent desertification and lessen the consequences of drought by means of national and international collaboration.
- **Global Application and Reach:** The UNCCD is an international convention that primarily targets Africa. There are 197 country parties as of right now.
- **Partnerships and Cooperation:** To address the interrelated problems of land degradation, climate change, and biodiversity loss, it cooperates with the other two Rio Conventions, the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC).

- Many of the Sustainable Development Goals (SDGs) of the United Nations are hindered by the storms.
- Among other things, they have an impact on water availability, ecological health, and agricultural output.

What do dust and sand storms mean?

- Strong winds that carry a lot of sand and dust particles from the ground into the atmosphere are what define sand and dust storms as meteorological phenomena.
- Due to the long-distance movement of particles, they are mainly found in dry and semi-arid regions, but they can also influence locations that are distant from their sources.
- They frequently start in arid, desolate areas with easily picked-up loose sand and dust. Dry lake bottoms, deserts, and desolate areas are a few examples.
- Strong winds that can lift dust and sand particles off the ground are the first step in the process. Once in the air, these particles can travel great distances.
- Even though they are natural occurrences, human actions like land degradation, deforestation, and irresponsible water management can make them more frequent and intense.

Sources and Factors Affecting Dust and Sand Storms

Drylands

The world's drylands, which are inherently vulnerable to severe storms, account for over 75% of dust emissions.

Hyper-Arid Regions

Due to their minimal rainfall, these regions are major producers of dust.

Topographic Depressions in Arid Environments

These types of terrain can collect sand and dust, which powerful winds can subsequently raise.

Dry Ancient Lake Beds

These places are easily the source of dust particles because they have little vegetation.

Human-caused variables

The primary human-caused source, accounting for 25% of the world's dust emissions, is agriculture. Changes in land use and the diversion of water for agricultural purposes are two practices that have a big impact.

Abandoned Cropland

Dust storms may originate from these lands.

Water Use in Agriculture

This causes water bodies to diminish, which opens up new sand and dust storm sources. One such example is the conversion of the Aral Sea into the Aralkum Desert.

Additional Factors

- Impact on Human Health
- Degradation of the Environment
- Economic Costs
- Lack of Awareness and Policy
- Early Warning Systems
- Global and Local Sources
- Effect on Goals of Sustainable Development
- Exacerbation by Climate Change
- Challenges with Quantification

- **Impact on Human Health:** They may negatively affect people's health. For example, in March 2021, a storm in Mongolia caused 8,000 people to be impacted, ten people to die, and 1.6 million cattle to go.
- **Degradation of the Environment:** These storms have the potential to harm the environment seriously. They change the quality of the air and spread dust to new locations by lifting tiny particles to enormous heights and moving them over great distances. They reduce the productivity and yields of pastures, cattle, crops, and trees, causing agricultural damage. They can cover crops in dust, which hinders their ability to photosynthesize and harms livestock's health.
- **Economic Costs:** In addition to the expense of prevention and adaptation efforts, the storms have an economic impact due to livestock and agricultural losses. Storms can affect regional climates and possibly affect global weather patterns, which can lead to climate change.
- **Lack of Awareness and Policy:** At the moment, there is no comprehensive policy in place to manage the risks associated with dust and sand storms. This disparity impedes the creation of successful mitigation, adaptation, and preventive plans.
- **Early Warning Systems:** In order to respond to approaching storms and provide timely alerts, it is imperative to establish risk monitoring and early warning systems. Risk Governance and Investment Challenges: Increasing investment in sand and dust storm risk reduction and impact mitigation measures, especially in agriculture, is necessary, as is strengthening risk governance.
- **Global and Local Sources:** Human activities like as deforestation, agriculture, and land-use change account for 25% of SDS emissions, with natural sources such as drylands providing the remaining 25%.
- **Effect on Goals of Sustainable Development:** Eleven out of the seventeen Sustainable Development Goals are threatened by sand and dust storms, demonstrating their profound and wide-ranging effects on sustainable development.
- **Exacerbation by Climate Change:** Extreme wind events, greater aridity, and more frequent and severe droughts are some of the ways that climate change exacerbates sand and dust storms.
- **Challenges with Quantification:** It is challenging to comprehend the extent of sand and dust storms completely and to formulate focused solutions, as many of their effects are poorly quantified.

Cyclone Midhili

Context: Cyclone Midhili, which is moving north-northeastwards across the Bay of Bengal, is forecast to intensify with gusts of up to 85 kmph and make landfall on Bangladesh's Khepupara coast.

About Cyclone Midhili

The Maldives named the cyclonic storm 'Midhili'.

- Cyclone Midhili was heading north-northeastward at 25 kilometers per hour over the northwest and adjacent northeast Bay of Bengal.
- The cyclone was located approximately 30 kilometers south-southwest of Khepupara, Bangladesh, and 250 kilometers southwest of Chittagong, Bangladesh.
- It is projected to make landfall near Khepupara on the Bangladesh coast, with stormy winds accompanying it.
- It is accompanied by an upper air cyclonic circulation across the southwest Bay of Bengal and neighboring Sri Lanka, as well as a cyclonic wind area in the south Andaman Sea.
- Parts of Nagaland, Manipur, Mizoram, and Tripura were forecast to get heavy to extremely heavy rain.
- West Bengal's coastal areas, particularly North 24 Parganas, have been warned of probable devastation.

Cyclones

Cyclones are large-scale air masses that rotate around a strong low-pressure center. They are distinguished by inward spiraling winds that revolve counterclockwise in the Northern Hemisphere and clockwise in the Southern.

Cyclone Formation Favorable Conditions

Warm Sea Surface Temperatures	**Water Vapor in the Atmosphere**	**Low Wind Shear**	**A Pre-Existing Weather Disturbance**	**Coriolis Effect**

- **Warm Sea Surface Temperatures:** Sea surface temperatures must be around 26°C or greater. This heat provides the energy required for the cyclone to form. Warm, moist air rising from the ocean surface causes the production of cumulus clouds, which can develop into a cyclone given the correct conditions.
- **Water Vapor in the Atmosphere:** High humidity, particularly in the lower and middle tropospheres, promotes the formation of clouds and thunderstorms within the cyclone.
- **Low Wind Shear:** Wind shear (changes in wind speed and direction with height) is critical. High wind shear might cause the cyclone's structure to be disrupted.
- **A Pre-Existing Weather Disturbance:** A cyclone is frequently formed from an existing disturbance in the atmosphere, such as a tropical wave, which offers an initial structure for storm formation.
- **Coriolis Effect:** The Coriolis Effect is required to generate the spin in the cyclone. It becomes effective at least 5 degrees south of the Equator. Cyclones normally occur at least 5° distant from the Equator because the Coriolis action is too weak near the Equator to generate cyclonic rotation.

Initiatives from the Government

- **National Cyclone Risk Mitigation Project:** Implementing structural and non-structural measures to reduce the effects of cyclones and safeguard vulnerable communities.
- **The Integrated Coastal Zone Management (ICZM) Project** aims to improve coastal residents' livelihoods and maintain the coastal ecosystem, particularly mangrove conservation.
- **Coastal Regulation Zones (CRZ):** Designates specific coastal areas as CRZs in order to regulate development activity in these areas.
- **Cyclone Color Coding:** The India Meteorological Department (IMD) established a weather warning system that uses multiple colors to warn people about imminent natural disasters.

Agriculture

Measures On To Expand Cultivation Of GI-tagged Onattukara Sesame

Context: Kerala officials have announced an expansion of the Onattukara sesame cultivation region. Onattukara sesame is a medically beneficial kind of Sesame with a GI tag.

What exactly is Onattukara sesame?

It is a type of Sesame that is grown in the Indian state of Kerala.

- It is currently grown on 600 hectares of land spread among 43 local bodies in the districts of Alappuzha, Kollam, and Pathanamthitta.
- It bears a GI tag because of its unusual features.
- The GI tag is registered to the Onattukara Vikasana Agency (OVA).
- This kind of sesame oil provides additional health benefits.

Medicinal Effects

It has more Vitamin E and antioxidants than other varieties of Sesame grown in other places.

- Onattukara sesame's higher antioxidant concentration aids in the battle against free radicals, which harm body cells.
- It contains oleic acid, linoleic acid, palmitoleic acid, and other nutrients that promote excellent health.
- It has a lot of unsaturated fat, which is great for heart patients.
- Other sesame types grown in the region include the Traditional Ayali variety, Kayamkulam-1, Thilak, Thilathara, and Thilarani kinds.
- The Onattukara Regional Agricultural Research Station (ORARS) created all of the non-traditional cultivars.

Initiatives implemented to promote Onattukara sesame

The OVA has stated that it intends to increase the region's sesame cultivation area to 2,000 hectares.

- A project to financially motivate farmers producing Sesame on their farms and homesteads inside the Thekkekara Krishi Bhavan borders in Mavelikara has been initiated.
- The local Krishi Bhavan, Onattukara Vikasana Agency, Onattukara Regional Agricultural Research Station, Krishi Vigyan Kendra, Kayamkulam, and Mavelikara Thekkekara panchayat initiated it.

- Individuals, farming collectives, Kudumbashree groups, self-help organizations, and joint liability groups would be rewarded for sesame cultivation.
- Financial help of 40% is among the incentives. Under the initiative, the Thekkekara Krishi Bhavan would distribute seeds to farmers.
- The OVA would purchase the Sesame produced under the plan at market pricing.
- Farmers and farming groups have also been permitted to use the Thekkekara Karshika Karma Sena's labor and tractor for agricultural chores like as field preparation.

Other Steps

The OVA intends to buy Sesame from farmers for $300 per kilogram.

- In January 2023, the OVA encouraged the government to declare a minimum support price for Onattukara sesame purchase.
- It also proposed to the Union Ministry of Panchayati Raj and the Kerala government that a sesame oil processing and value-addition factory be established at the ORARS.
- It also includes the expansion of the Kulasekharapuram processing unit, which will aid in the selling of Onattukara brand sesame oil.
- Steps have also been taken to engage with Oushadhi, Ayurveda resorts, and entrepreneurs in order to increase sesame product marketing through e-commerce and foreign markets.

Impact of GI tag on Onattukara sesame

Farmers have reaped the greatest benefits from the GI designation.

- **Price:** Because Onattukara sesame is a GI-tagged commodity, its price has grown in domestic and international markets, benefiting farmers and other stakeholders.
- **Acreage:** It is expected that this would boost sesame acreage in the region, resulting in increased production.
- **Popularity and awareness:** The GI label has increased public knowledge of its medicinal benefits, resulting in increased demand for both local requirements and exports.

What is a GI tag?

- A geographical indicator, or GI, is a label placed on products that have a specific geographical origin and have traits or a reputation that stem from that origin.
- It is a type of intellectual property (IPR).
- It must have a good reputation and distinguishing characteristics of the region of origin, and it is typically registered on products produced by rural, marginal, and indigenous populations over decades.
- Only registered users are permitted to use a GI-tagged product's product name.
- It does not, however, entitle the holder to restrict someone from producing a product using the same processes as those specified in the regulations for that indication.
- The Geographical Indication Registry, part of the Ministry of Commerce and Industry's Department of Industry Promotion and Internal Trade, issues GI tags.
- A GI tag registration is only valid for ten years. However, it can be renewed for another ten years at any time.

Polity

Enemy Property: Butler Palace To Turn Into A Tourist Haven

Context: Butler palace to turn into a tourist haven, which was left deserted and in darkness for many decades. It was built a century ago, in a mix of Rajasthani and Indo-Mughal styles.

About Butler Palace

- The palace, originally built as the official residence of the Commissioner of Avadh, Harcourt Butler, in 1915, was owned by the royal family of Mahmudabad.

- By its own account, the family migrated to India in the 13th century and settled in erstwhile Avadh, current Lucknow, in the 16th century, and owed allegiance to the Mughals.
- Mohammed Amir Ahmad Khan, the king at the time of Independence, migrated to Pakistan, while his son Mohammad Amir Mohammad Khan, stayed on in India as a citizen, fighting a legal battle over several properties, including Butler Palace.
- After the India-Pakistan war in 1965, Butler Palace was declared "enemy property" by the Government of India.
    - After being declared enemy property in the 1960s, the premises were handed over to the Uttar Pradesh government, who used it as a sales tax office.
    - In the 1980s, it was given to the Indian Council of Philosophical Research, an organisation under the Union Human Resource Development Ministry.
    - The Enemy Property Act, 1968, which came later, made the stand more binding. This is one of the 361 "enemy properties" in Lucknow alone, say authorities, with many originally belonging to the Mahmudabad family.

About Enemy Property

- The enemy properties are those left behind by the people who took citizenship of Pakistan and China after leaving India during the partition and after 1962 war.
- The enemy properties are vested with the Custodian of Enemy Property for India (CEPI), an authority created under the Enemy Property Act 1968.
- The **2017 amendment to the Act** (Enemy Property (Amendment and Validation) Act, 2017) stated that the successors of those who migrated to Pakistan and China ceased to have a claim over the properties left behind in India.
- The amended law stated that enemy property should continue to vest in the Custodian even if the enemy, enemy subject, or enemy firm ceases to be an enemy due to death, extinction, business winding up, or change of nationality or if the legal heir or successor is an Indian citizen or a citizen of a non-aggressive country.
- Of the **total 9,406 enemy properties** in India, 9,280 are left behind by Pakistani nationals and 126 properties by Chinese nationals.
- **Maximum number of enemy properties is in Uttar Pradesh** - 4,991. **Bengal** has 2,735, and **Delhi** has 487.

- It was only last month, however, that the Lucknow Development Authority (LDA) got the go-ahead to spruce up the place for tourism.
- The authorities are rejuvenating the Butler lake, for which the LDA already had the rights, by constructing pathways along the perimeter, landscaping, lighting, and starting a cafeteria for visitors.
- The authority plans to renovate and strengthen Butler House and construct a musical fountain in front.
- Up to ₹5 crore each has been allocated for work on the palace and the lake. "
- The project will be completed in roughly four months. It will serve as a tourist place along with a heritage look.

CBI an independent agency, not a limb of the Union govt.

Context: The Union government claimed in the Supreme Court on Thursday that the Central Bureau of Investigation (CBI) was its own boss and the government had no control whatsoever over the probe agency in the registration, investigation, and prosecution of cases.

What is CBI?

- Central Bureau of Investigation (CBI) is the premier investigating police agency in India.
- It provides assistance to the Central Vigilance Commission and Lokpal.
- It functions under the superintendence of the Deptt. of Personnel, Ministry of Personnel, Pension & Public Grievances, Government of India – which falls under the prime minister's office.
- However for investigations of offences under the Prevention of Corruption Act, its superintendence vests with the Central Vigilance Commission.

- It is also the nodal police agency in India which coordinates investigation on behalf of Interpol Member countries.
- Its conviction rate is as high as 65 to 70% and it is comparable to the best investigation agencies in the world.
- The CBI is not a statutory body but derives its power to investigate from the Delhi Special Police Establishment Act, 1946.
- The establishment of the CBI was recommended by the Santhanam Committee on Prevention of Corruption (1962–1964).

How is the Director of CBI Appointed?

- Director, CBI as Inspector General of Police, Delhi Special Police Establishment, is responsible for the administration of the organisation.
- Till 2014, the CBI Director was appointed on the basis of the DSPE Act, 1946. In 2003, DSPE Act was revised on Supreme Court's recommendation in the Vineet Narain case.
- A committee that had members from Central Vigilance Commission, Secretaries from Home Ministry, Ministry of Personnel and Public Grievances would send recommendations to Central Government for the appointment of CBI Director.
- In 2014, the Lokpal Act provided a committee for appointment of CBI Director: Headed by Prime Minister, Other members – Leader of Opposition/ Leader of the single largest opposition party, Chief Justice of India/ a Supreme Court Judge.
- Home Ministry sends a list of eligible candidates to DoPT. Then, the DoPT prepares the final list on basis of seniority, integrity, and experience in the investigation of anti-corruption cases, and sends it to the committee.
- Director of CBI has been provided security of two year tenure, by the CVC Act, 2003.

Challenges are Faced by the CBI

Political Interference: The Supreme Court of India has criticised the CBI by calling it a "caged parrot speaking in its master's voice", due to excessive political interference in its functioning.

It has often been used by the government of the day to cover up wrongdoing, keep coalition allies in line and political opponents at bay.

Delayed Investigations: It has been accused of enormous delays in concluding investigations – For example, the inertia in its probe against the high dignitaries in Jain hawala diaries case [of the 1990s].

Loss of Credibility: Improving the image of the agency is one of the biggest challenges till now as the agency has been criticised for its mismanagement of several cases involving prominent politicians and mishandling of several sensitive cases like Bofors scandal, Hawala scandal, Sant Singh Chatwal case, Bhopal gas tragedy, 2008 Noida double murder case(Aarushi Talwar).

Lack of Accountability: CBI is exempted from the provisions of the Right to Information Act, thus, lacking public accountability.

Acute shortage of personnel: A major cause of the shortfall is the government's sheer mismanagement of CBI's workforce, through a system of inefficient, and inexplicably biased, recruitment policies – used to bring in favoured officers, possibly to the detriment of the organisation.

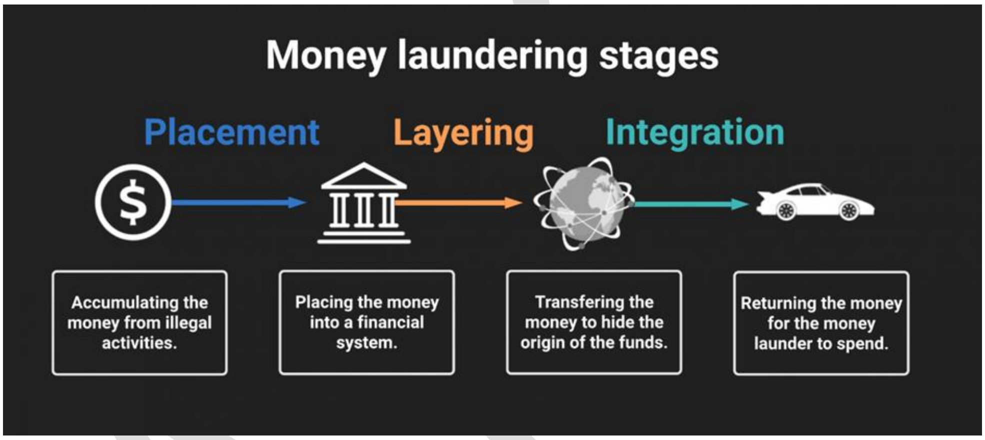
Limited Powers: The powers and jurisdiction of members of the CBI for investigation are subject to the consent of the State Govt., thus limiting the extent of investigation by CBI.

Restricted Access: Prior approval of Central Government to conduct inquiry or investigation on the employees of the Central Government, of the level of Joint Secretary and above is a big obstacle in combating corruption at higher levels of bureaucracy.

Prevention of Money Laundering Act (PMLA), 2002

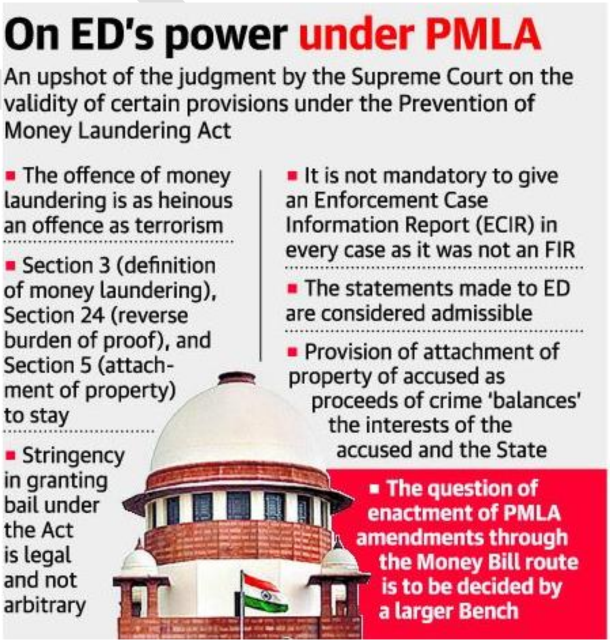
Context: Mr. Sibal raised concern that the amendments made to the anti-money laundering law in 2019 had armed the Enforcement Directorate (ED) with unbridled powers of summons, arrest, raids and attachment of property and made bail nearly impossible while shifting the burden of proof of innocence onto the accused rather than the prosecution.

- Money laundering involves the transformation of substantial sums of money acquired through criminal activities, such as drug trafficking or terrorist financing, to give the impression that it originates from a lawful source.
- Significant profits are generated from various criminal activities, including illegal arms sales, smuggling, drug trafficking, prostitution rings, insider trading, bribery, and computer fraud schemes.
- This, in turn, provides an incentive for money launderers to legitimize their unlawfully obtained gains through the process of money laundering.
- The funds resulting from criminal activities are commonly referred to as 'dirty money,' and money laundering is the method employed to convert this 'dirty money' into a seemingly 'legitimate' form.



Objective of PMLA

- The primary goal of PMLA is to address and combat instances of money laundering within India.
- It aims to prevent and control the act of money laundering effectively.
- PMLA also focuses on the confiscation and seizure of properties acquired through laundered money.
- Additionally, it is designed to handle any other issues directly associated with money laundering within the country.



Impacts of Money laundering

Economic Distortion	**Loss of Tax Revenue**	**Corruption and Organized Crime**	**Security Risks**

- **Economic Distortion**: The economy can be adversely affected by money laundering through the distortion of asset prices and the misallocation of resources.
- **Loss of Tax Revenue**: Money laundering contributes to the government's loss of tax revenue since illicit funds evade taxation.
- **Corruption and Organized Crime**: Money laundering is frequently linked to corruption and organized crime, fostering an environment where illicit funds undermine the rule of law.
- **Security Risks:** Money laundering poses security risks as it can be utilized to finance terrorism and other illegal activities.

Review Petition

Context: Recently, the Supreme Court agreed to consider a request for an open court hearing regarding a petition seeking a review of its majority judgment in October, which had denied the legalization of same-sex marriage.

- As per the Constitution, a Supreme Court decision attains the status of the law of the land, rendering it final and ensuring a definitive basis for the resolution of future cases.
- Despite its finality, the Supreme Court possesses the authority to reevaluate its judgments or decisions, as stipulated in Article 137 of the Constitution.
- This authority, however, is not absolute and is bound by the Supreme Court's Rules outlined in Article 145, as well as any legislation enacted by the parliament.
- In accordance with the Supreme Court Rules of 2013, a review petition must be filed within 30 days of the judgment or order under scrutiny. The petition is heard by the same Bench that originally delivered the decision.
- The purpose of a review is not to reexamine the entire case but to rectify glaring errors that may have led to a miscarriage of justice.

Who can file a review petition?

- Individuals beyond the original parties involved in a case have the right to submit a review petition.
- It is not restricted solely to the parties initially engaged in the legal proceedings.
- According to the 1996 rules established by the Supreme Court, a review petition must be submitted within 30 days from the date of the judgment or order.
- Adherence to this timeframe is essential for the proper processing of the review request.

Governance & Social Justice

How Cargo Transport Can Be Improved?

Context: By attaching two to three parcel vans in all popular trains, ensuring their timely movement and tweaking freight tariff rules, the Indian Railways should be able to load substantial general cargo tonnage in the coming years.

- In 2018-19, before the onset of COVID-19, the IR loaded 62 million tonne (MT) of general cargo consisting of 45 MT of general goods, 12 MT of domestic containers and 5 MT of parcels, earning a total of ₹8,247 crore with the average earnings per tonne being ₹1,339 for goods and ₹3,384 for parcel.
- However, general cargo loading is nowhere near what a Rail India Technical and Economic Service (RITES) study had projected in 2008 for the next ten years — between 194 to 292 MT depending on the IR's efforts.

The Need To Give Up Parcel Trains

- The IR's current strategy for moving general cargo is two-pronged — the parcels are moved either by passenger trains or special heavy parcel van (VPH) trains.
- However, these approaches appear to have gone haywire as loading leased parcel vans and full parcel trains fell by 15% and 8% respectively.

THE GIST

- An analysis of 15 origin to destination pairs indicates that both premium (P) scale rates and Rajdhani (R) rates, after adding the first and last mile costs, are higher than truck rates, an exception being cargo moved to destinations in the northeast.
- Also, after 15 years of privatisation, domestic cargo moved by containers is a mere 1% of the IR's loading and 0.3% of the total freight in the country.
- General cargo is segmented into three categories — highly time sensitive (HTSG), medium time sensitive (MTSG) and low time sensitive (LTSG).

Reasons For The Decline In The Parcel Segment

High tariff: an analysis of 15 origin to destination pairs indicates that both premium (P) scale rates and Rajdhani (R) rates, after adding the first and last mile costs, are higher than truck rates, an exception being cargo moved to destinations in the northeast.

Other factors: improper terminals, inconsistent weighbridges intensified by excessive penal charges, unreliable transit times, complex booking and delivery mechanisms and self-imposed environmental restrictions.

VPH parcel trains are proving counterproductive and should be given up. A matching covered wagon (more technically a Covered Bogie Wagon Type with Air Brake and Heavy Load (BCNHL)) carries 700% more cargo with 45% more volume. Even if we reduce the P scale rates by half, the revenue generated would be 3.5 times that of the VPH rake.

The Inadequacy Of Containerisation

Another great hope for the IR was the expected fillip to general cargo movement by private container train operators (CTOs) through containerisation.

- However, after 15 years of privatisation, domestic cargo moved by containers is a mere 1% of the IR's loading and 0.3% of the total freight in the country.
- High haulage rates is one of the reasons of such under-performance. The problem perhaps also lies in the risk involved in developing the market as it would inevitably involve losses over a period of time.
- Furthermore, sustaining a developed market is also difficult as predatory pricing by other CTOs can wean the market away.
- The problem for carriage of general cargo by the IR is that a shipper can either only send a few tonnes under parcel tariff or thousands of tonnes under freight tariff.
  - General cargo has thousands of buyers and sellers and usually their shipment sizes are a few to hundreds of tonnes. The IR is therefore, not their choice as it has no service to meet their needs.
  - Asking these shippers to book a freight train is akin to asking a passenger travelling by the Rajdhani express to come with a load of passengers before a berth is booked.

The Road Ahead

General cargo is segmented into three categories — highly time sensitive (HTSG), medium time sensitive (MTSG) and low time sensitive (LTSG).

- **HTSG cargo** is mostly valuable goods or perishables and they should continue to be moved by passenger trains.
  - Attaching two to three parcel vans in all popular trains would easily double the parcel loading capacity and these parcel vans can bring around five times the revenue of sleeper coaches and around two times that of AC coaches.
- **MTSG and LTSG cargo** are price-sensitive and this cargo should be moved under the IR freight rates, which are lower than truck rates.
  - Even after the addition of first and last leg costs there is a cost-benefit to shippers. However, the problem lies in getting a full train load.
  - Shippers should be permitted to book individual wagons with provision to run a train to the schedule even if the train is not fully loaded. The assurance of timely movement would certainly attract shippers to the IR.
- Running such freight trains does not require any change in policy, only change in mindset. **Changing of freight tariff rules** would be required by adding freight of any kind (FAK) for wagon loads to the tariff table. Indents for a single wagon should be encouraged.

- To **incentivise volumetric loading**, tariff may also be moderated by increasing charges in slabs as per quantity loaded.
- Finally, the **IR needs to encourage cargo aggregators** by changing the existing freight forwarder policy.
- In the long run **new kinds of stocks** to optimise pay load and speed would also be required which the IR and the rolling stock industry are fully capable to design and deliver.

Opportunities were missed in the past. But now with a more concerted effort, the IR should be able to load substantial general cargo tonnage in the coming years.

NCERT To Introduce Electoral Literacy Content In Textbooks

Context: In a bid to address voter apathy among young Indians, the National Council of Educational Research and Training (NCERT) will introduce and update textbooks to include content on electoral literacy and will advise the State Education Boards and other Boards to follow suit.

- The measures are part of a memorandum of understanding signed between the **Election Commission of India (EC) and the Education Ministry**, aiming to address issues such as voter apathy among young Indians.
- Beginning with Classes 6 to 12 in all schools, this integration will also extend to the curricular framework for all colleges and universities and it will be tailored to suit different disciplines and credited accordingly.

Long-Term Vision

- It is **aimed** at extending the EC's flagship Systematic Voters' Education and Electoral Participation (SVEEP) in schools and colleges.
- The **MoU aims to address** issues such as voter apathy among urban and young Indians.
- A senior official in the EC said almost 297 million of the 910 million electors did not vote in the Lok Sabha election in 2019, causing concern.
- Therefore, this MoU is signed with the **long-term vision** of instilling electoral literacy in the young people through the educational institutions.
- This **initiative is expected to help** in the Election Commission's endeavour to address the urban and youth apathy, leading to better electoral participation in the next general elections.
- The **document also focuses on** the orientation and training of teachers in effectively imparting electoral literacy in classrooms, establishing electoral literacy clubs (ELCs) in schools and colleges and encouraging various activities to promote voter awareness among students.
- It also **seeks to evolve** a robust mechanism to fulfil the aspirational goal of the EC to hand over the voter ID cards to every student immediately on attaining the age of 18.

Democracy Room

Inclusion of electoral literacy section in the curriculum for adult literacy and basic education, and designating one of the rooms in every senior secondary school as "democracy room" for the regular display of voter education materials and the conduct of Continuous Electoral and Democracy Education (CEDE) activities throughout the year are some of the other salient points in the document.

Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)

Context: The Union government's scheme to provide 5 kg of free foodgrains every month to 80 crore Indians, which is slated to end this December, will be extended for another five years, Prime Minister Narendra Modi said.

Key Highlights

- The **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY)** was introduced in 2020 as a **pandemic relief measure**, providing 5 kg of free foodgrains per beneficiary a month in addition to the 5 kg of subsidised foodgrains they were entitled to under the National Food Security Act.
- In December 2022, as PMGKAY came to an end after multiple extensions, the Union Cabinet decided to make NFSA rations free for one year. That will now be extended further, the PM announced.

- **Nodal Ministry for PMGKAY:** The scheme is run by the Department of Food and Public Distribution under the Ministry of Consumer Affairs, Food and Public Distribution. The Ministry of Finance is the nodal ministry.

Significance of the PMGKAY Scheme

Hunger Reduction → Address Farm Distress → Urban Poverty Reduction

- **Hunger Reduction:** The scheme will reduce the problem of hunger among the population, especially during the time of distress.
- **Address Farm Distress:** The acquisition of rice and wheat under MSP will address the issue of falling prices of food grains for farmers.
- **Urban Poverty Reduction:** The issue of poverty in urban areas can be reduced to some extent by reducing the burden of food on families.

Concerns Associated with PMGKAY

Identifying Beneficiary → Financial Burden → Increase in Fiscal Deficit → Price Rise

- **Identifying Beneficiary:** The beneficiaries of the scheme are identified based on the last census (2011), which makes it rather inconsistent with the current conditions.
- **Financial Burden:** Large sums of money is needed to keep the scheme running. Additional pressure from weather and rising agricultural costs make it difficult.
- **Increase in Fiscal Deficit:** The fiscal deficit of the government needs to be near the 6% mark. However, it will be difficult to adhere to.
- **Price Rise:** The scheme may further cause rise in prices of rice and wheat as the grains are acquired through MSP. The MSP prices usually increase every season.

Move Towards e-FIR, But With Caution

Context: The Law Commission of India, in Report No. 282, recommended that "in cases where the accused is not known, registration of an e-FIR should be allowed for all cognisable offences". If the accused is known, as a preliminary step, registration of an e-FIR may be allowed for cognisable offences wherein the punishment provided under the Indian Penal Code (IPC) and other laws is up to three years.

- The verification of the complainant, the Commission said, could be done by verifying the mobile number through an OTP and mandating the uploading of valid ID proof such as Aadhaar.
- It also said that the name of the suspect on the centralised national portal is to be secured until the e-FIR is signed by the complainant.
- Further, in case the registered information is not signed by the informant deliberately within the prescribed time, the information shall be deleted within two weeks.

An e-FIR

The Commission has not demystified the concept of an 'e-FIR'.

- The procedure laid down in the Report says that the police station will check the contents of information received from the portal to verify whether a cognisable offence is made out as recommended.
  - Only then will the received information be entered in the prescribed format within three days.
- In other cases (punishable with more than three years of imprisonment), the conventional method prescribed under the IPC needs to be followed.
- In the next step, the police officer is required to get the signature of the complainant within three days to register an e-FIR.

  - Otherwise, the e-FIR shall not be registered, reasons shall be communicated, and the said information shall be automatically deleted after two weeks from the portal.
- The procedure is given only for cases where the accused is known.
- Though the Commission mentioned that eight States are lodging an e-FIR, it did not discuss any of the models adopted by those States, particularly the method of obtaining signatures.

It is thus clear that the concept of 'e-FIR' is nothing but obtaining information/complaint through electronic means using a common national portal and then getting the information/complaint signed by the complainant physically within three days to convert the complaint into an actual FIR.

- It is obvious that the 'e-FIR' is not an automatically registered FIR using electronic means, including electronic signature of the complainant.
- The online facility will have only limited efficacy. Also, any investigation done prior to the actual registration of the FIR shall not be an investigation undertaken in the true spirit of the Code of Criminal Procedure.

Two Benefits Of Obtaining Complaints Electronically

First, the police will have to take cognisance of the complaint as the system will automatically generate receipt. This will ensure almost free registration of crime.

Second, they will not be able to change the contents of the complaint.

Human Intervention Is Crucial

While most of the eight States are registering FIRs using the Crime and Criminal Tracking Network and Systems or State portals, mostly in property offences where the accused is unknown, the Law Commission has recommended e-FIR for all cognisable offences where the accused is not known, without discussing other related aspects.

- For example, the accused may initially be unknown in a case of kidnapping where not only immediate medical examination of the victim may be important, but also timely visit to the scene of crime.
- In fact, interaction with a police officer is valuable in solving blind crimes.
- An experienced police officer may extract a lot of information from the complainant or victim, which may help in finding the culprit.

Though the option to approach a police station for reporting any cognisable offence shall always be open, the legally permissible period of three days may give a false impression to a common man that it will not affect his case in that period.

- The complainant may not understand the nuances of a crime.
- Therefore, only cases where human interaction can be postponed for a limited period without having an adverse impact on the case may be permitted to be registered electronically.

E-Authentication Technique

- The Commission has also not discussed using the 'e-authentication technique or digital signature' as defined in the Information Technology (IT) Act, 2000, for signing complaints.
- Under the Act, any information 'rendered or made available in an electronic form; and accessible so as to be usable for a subsequent reference' is legally acceptable.

- Similarly, any electronic record can be authenticated by 'such electronic signature or electronic authentication technique which is considered reliable...'
- Thus, one can imply that in case a paper-based signed complaint is to be replaced by an equivalent document in electronic form, one must affix electronic signature or use e-authentication technique notified by the government in the Second Schedule to the IT Act.
    - In 2015, 'e-authentication technique using Aadhaar e-KYC services' was notified in the Second Schedule as a legally recognised technique. This is widely used by the income tax department to facilitate filing of returns electronically.
- The law also recognises 'digital signature' which uses an asymmetric cryptosystem and hash function.
    - Without affixing digital signature or using e-authentication technique, an electronic record transmitted to the police would legally be considered not more than an unsigned complaint.
    - Therefore, it would be better if the use of e-authentication technique is mandated for the verification of complainant, and an e-FIR is registered immediately.

Personal data of 815 million Indians got breached

Context: Recently, Resecurity, an American cyber security company, said that Personally Identifiable Information (PII) of 815 million Indian citizens, including Aadhaar numbers and passport details, were being sold on the Dark Web.

- The threat actors selling the data claimed it was sourced from the Indian Council of Medical Research (ICMR), which has been subjected to numerous Cyber-Attack attempts with 6,000 incidents being reported in 2022.

Dark Web

- The dark web refers to sites that are not indexed and only accessible via specialized web browsers. Significantly smaller than the tiny surface web, the dark web is considered a part of the deep web.
- Using our ocean and iceberg visual, the dark web would be the bottom tip of the submerged iceberg.
- The dark web is intentionally hidden and can only be accessed with special software, configurations, or authorization, making it a realm of the internet that is not easily accessible to the average user.

Admission Help Line: +91 9823256625 & 9579247470 (WhatsApp)
Email: info@iqraias.com, support@iqraias.com

Personally Identifiable Information (PII)
- Personally Identifiable Information or PII is information that when used alone or with other relevant data, can identify an individual.
- PII may be direct identifiers like passport information or quasi-identifiers that can be combined with other information to successfully recognise an individual.

Government's Response
- India's IT Minister for State shared that Computer Emergency Response Team (CERT-In) is investigating reports of the data leak. He said the government ecosystem will take time to transition to a bullet proof set-up, one which manages data and keeps it in a safe and responsible manner.
- UIDAI says that all Aadhaar holders' data is safe and secure in the Central Identities Data Repository (CIDR) of UIDAI and that they have never been breached in all its years of existence. It further added that UIDAI uses advanced security technologies to keep data safe and keeps upgrading them to meet emerging security threats and challenges.

Access to Sensitive Data
- Threat actors selling stolen data on the dark web declined to specify how they obtained the data without which any effort to identify the source of the data leak would be speculative.
- Lucius, the second threat actor found selling data online claimed to have access to a 1.8 terabyte data leak impacting an unnamed "India internal law enforcement agency". However, the claim is yet to be authenticated.
- Data samples observed by researchers contain multiple references to UIDAI (Unique Identification Authority of India) and Aadhaar cards, as well as voter ID cards. It is also possible that threat actors successfully breached a third-party aggregating these details.

Threats Arising from Leaked Information
- India being one of the fastest growing economies of the world, ranked 4th globally in all malware detection in the first half of 2023, according to a survey from Resecurity.
- The unrest in West Asia and increase in attacks by threat actors capitalizing on the chaos exposed personally identifiable data significantly, increasing the risk of digital identity theft.
- Threat actors leverage stolen identity information to commit online-banking theft, tax frauds, and other cyber-enabled financial crimes

What can users do to safeguard their personal information?
- Users should approach emails for unknown sources with caution as stolen information may be used to target users in phishing campaigns.
- It is advised to change existing user IDs and passwords to ensure that stolen data cannot be used for launching cyberattacks.
- Users should also implement two-factor authentication for all their accounts and inform the authorities concerned in case they notice any suspicious activity in their online accounts.

Governor Over Bills

Context: The Supreme Court recently ruled that the Governor of Tamil Nadu does not have discretion to withhold bills that have been re-passed by the State Legislative Assembly.

- **Article 200**: This provision of the Indian Constitution, outlines the process by which a bill approved by a State's Legislative Assembly is presented to the Governor for approval.

- **The Governor has the authority to either approve the bill,** withhold approval, or reserve the bill for the President's consideration.
- Additionally, the Governor can return the bill to the Legislative Assembly with a message, requesting reconsideration.
- **Article 201**: this Article specifies that when a bill is reserved for the President's consideration, the President can either approve or withhold approval of the bill.
- Furthermore, the President can instruct the Governor to return the bill to the Legislative Assembly for further review.

Related Supreme Court Decisions

- **In the case of Shamsher Singh v. State of Punjab (1974)**, it was established that Governors can act solely on the "advice" of the Council of Ministers, where the Chief Minister serves as the head of the Council.
- **According to the ruling in Purushothaman Nambudiri v. State of Kerala (1962)**, the framers of the Constitution did not intend for a bill pending assent to lapse in the event of the dissolution of the House.
- **As determined in the case of Nabam Rebia and Bamang Felix v. Dy. Speaker (2016),** Governors have discretionary power only in deciding whether a bill should be reserved for the President's consideration.

Important Facts About Governor

- Articles 153 to 167 in Part VI of the Constitution pertain to the State Executive, encompassing the Governor, Chief Minister, Council of Ministers, and the Advocate General of the State.
- Each state has its own governor; nevertheless, the 7th Constitutional Amendment Act of 1956 enabled the appointment of a single individual as the governor for two or more states.
- Unlike the President, the Governor is not elected directly by the people or indirectly by a specifically constituted electoral college.
- The Governor's term of office spans five years from the date of assuming office.

SATHEE Portal

Context: Recently, the Education Ministry announced plans to write to all states, urging aspirants for the upcoming Joint Entrance Examination to utilize the newly launched portal SATHEE for effective exam preparation, with the exam just 45 days away.

- SATHEE has introduced a 45-day crash course to assess aspirants' preparation levels.
- As of now, approximately 5,000 students from Kendriya Vidyalayas, Navodaya Vidyalayas, and CBSE-affiliated schools have enrolled on the platform.
- The development of SATHEE is a collaborative effort involving the University Grants Commission (UGC), Ministry of Education, and IIT Kanpur.
- Study materials on the SATHEE site will be available in multiple languages, including English, Hindi, and various regional languages.
- The platform utilizes Artificial Intelligence (AI) for student interaction and can be personalized to match each student's learning pace. SATHEE's integrated AI chatbot assists students in aligning with their specific learning needs.

Features of SATHEE

- Study materials designed for entrance exams, such as JEE and NEET.
- Video solutions available in regional languages for entrance exams.
- Webinars providing preparation ideas for JEE and NEET entrance exams.
- Narratives of students' challenges and accomplishments.
- Interactive "Solve with Me" sessions.
- Inspirational motivational sessions.

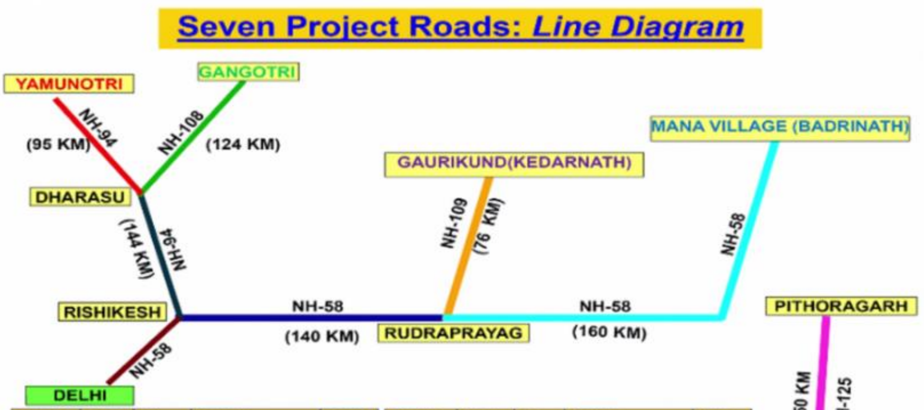
National Education Policy's (NEP) 2020

- The NEP 2020 is the inaugural education policy of the 21st century, supplanting the thirty-four-year-old National Policy on Education (NPE) from 1986.
- Constructed upon the fundamental principles of Access, Equity, Quality, Affordability, and Accountability, this policy is in harmony with the 2030 Agenda for Sustainable Development.
- The primary objective is to metamorphose India into a dynamic knowledge society and a global knowledge superpower, aptly tailored to meet the needs of the 21st century.

Siklyara Tunnel

Context: Recently, a platform of 10 Central trade unions voiced its distress over the authorities' failure to take responsibility for the Silkyara tunnel collapse in Uttarkashi district of Uttarakhand, where forty-one workers have been trapped since November 12.

- The **tunnel, designed to connect Silkyara to Dandal gaon** in Uttarkashi district, has a total length of 4.5 km.
- As part of the Char Dham all-weather road project, this double-lane tunnel is considered one of the longest, with the goal of reducing the travel distance from Uttarkashi to Yamunotri Dham by 26 kilometres.
- Progress on the tunnel construction includes 2.3 km completed from the Silkyara side, 1.6 km from the Barkot end, and approximately 400 meters of tunnel yet to be constructed.
- The incident occurred within the Silkyara Tunnel on the Uttarkashi-Yamnotri Road, where workers have been trapped.
- The collapse took place approximately 270 meters from the entrance on the Silkyara side.



PAKG.NO	LENGTH	NH	LOCATION	LEGEND
PACKAGE-1	140 KM	NH-58	RISHIKESH-RUDRAPRAYAG	
PACKAGE-2	160 KM	NH-58	RUDRAPRAYAG-MANA VILL.	
PACKAGE-3	144 KM	NH-94	RISHIKESH-DHARASU	
PACKAGE-4	124 KM	NH-108	DHARASU-GANGOTRI	

PAKG. NO.	LENGTH	NH	LOCATION	LEGEND
PACKAGE -5	95 KM	NH-94	DHARASU-YAMUNOTRI	
PACKAGE -6	76 KM	NH-109	RUDRAPRAYAG-GAURIKUND	
PACKAGE -7	150 KM	NH-125	PITHORAGARH-TANKPUR	

In Building Himalayan Tunnels, Support and Monitoring Key

Context: The collapse of the Silkyara-Barkot tunnel in Uttarakhand's Uttarkashi district, which trapped 41 workers, emphasizes the significance of support and monitoring in Himalayan tunnel construction.

The occurrence raises concerns about whether enough support structures were in place and whether the excavation operation was adequately monitored.

About the Silkyara-Barkot Tunnel

The Silkyara-Barkot Tunnel is a major infrastructure project planned to increase connectivity along the Yamunotri National Highway in Uttarakhand, India's Himalayan area.

- The tunnel is 4.5 kilometers long in total. It will connect Silkyara to the Uttarkashi district's Dandal-gaon.
- The tunnel intends to reduce travel time and distance between Barkot and Yamunotri, one of the four Char Dham pilgrimage locations.
- The double-lane tunnel is one of the longest in the Char Dham all-weather road project, and it will shorten the 26-kilometer route between Uttarkashi and Yamunotri Dham.
- The tunnel is designed to make transport safer and more reliable by avoiding dangerous mountain roads that are prone to landslides and closures.
- Support and monitoring are critical in the construction of Himalayan tunnels.

Geological Challenges in Tunnel Construction

Shear Zones | Weak Rock Masses | Ground Stresses | Geological Surprises

Slope Destabilisation | The presence of faults | Rock Weathering

- **Shear Zones:** These are places where two rocks move together, causing crushing and modifying rock characteristics. Crushed rock in shear zones may change behavior due to the presence of clay or weathering over time.
- **Weak Rock Masses:** Recognising weak rock masses is a common problem. To prevent collapses, these weak areas must be protected during construction.
- **Ground Stresses:** An important element is the behavior of shear zones under underground stresses. These stresses can have an impact on the rock's stability and, thus, the tunnel structure.
- **Geological Surprises:** Unexpected geological circumstances are always possible, which means that frequent monitoring and the design process must be flexible and responsive.
- **Slope Destabilisation:** Excavation can destabilize slopes in mountainous areas, increasing the danger of landslides and collapses.
- **The presence of faults:** The presence of the Barkot thrust—a significant fault line—in the Silkyara-Barkot tunnel implies the possibility of shear zones, which pose a concern to tunnel stability.
- **Rock Weathering:** The rocks at the Barkot curve were reported to be weak to moderately weathered, indicating lower rock strength, which can be a significant obstacle in tunnel construction.

What Is the Importance of Monitoring?

- The primary importance of monitoring is to ensure the safety of workers and future users. Continuous monitoring can detect early indicators of structural weakness or failure, allowing for disaster-avoidance measures to be implemented.
- Monitoring is critical for managing shear zones, which are locations where the rock has been weakened by movement and crushing. Real-time data on the behavior of these zones can direct tunnel reinforcing and inform the design process.
- Continuous data collection during construction is essential for understanding the tunnel's response to excavation and stress. This information can assist engineers in understanding geological issues and developing more effective support structures for present and future projects.
- Regular monitoring can detect geological surprises that were not visible during the early mapping and planning processes.
- Monitoring ensures that the tunnel construction follows the design criteria, particularly when it comes to the installation of support components such as steel ribs, rock bolts, and shotcrete.
- The presence of escape tunnels and clearly defined escape routes is an important safety feature that can be monitored and maintained.
- As the tunnel is excavated, the load on the rock changes, and monitoring devices can provide instant input to engineers, allowing them to adjust their tactics accordingly.

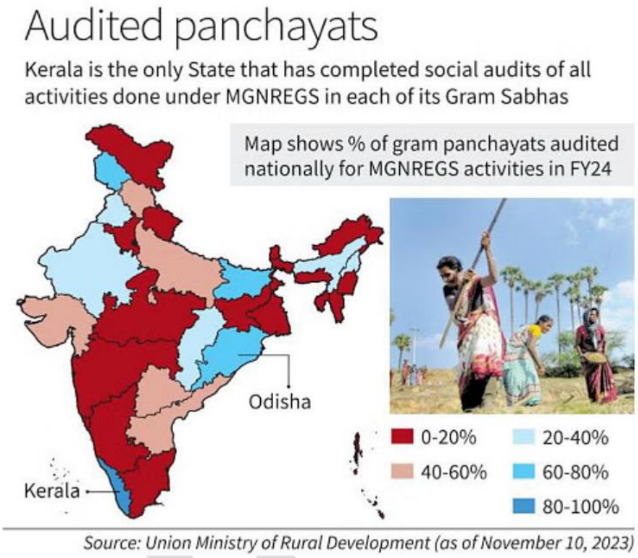
MGNREGS Audit Crosses 50% Local Bodies In Just Six States

Context: Recently, the Management Information System (MIS) on Social Audit maintained by the Union Ministry of Rural Development (MoRD) revealed that only six of the 34 states and UTs have completed social audit of works done under the MGNREGS in more than 50% of gram panchayats.

Key Highlights

- In the country, only six out of the 34 States and union territories have successfully conducted social audits for works completed under the MGNREGS in more than 50% of gram panchayats.
- Kerala stands out as the sole State in the country to achieve 100% coverage of its gram panchayats through social audits.

- Among the states that have completed social audits in more than 50% of Gram Panchayats are Bihar (64.4%), Gujarat (58.8%), Jammu and Kashmir (64.1%), Odisha (60.42%), Uttar Pradesh (54.97%), and Telangana (40.5%).
- Himachal Pradesh (45.32%), and Andhra Pradesh (49.7%) have completed social audits in nearly half of the gram panchayats, along with Telangana.
- On the other hand, the completion of social audits was notably low in Madhya Pradesh (1.73%), Mizoram (17.5%), Chhattisgarh (25.06%), and Rajasthan (34.74%).



MGNREGS

- The National Rural Employment Guarantee Act (NREGA) was officially declared in September 2005.
- In 2009, an amendment was introduced to the Act, resulting in its renaming as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA).
- The primary mandate of MGNREGA is to ensure a minimum of 100 days of guaranteed wage employment during a financial year for every rural household whose adult members willingly engage in unskilled manual work.
- In accordance with the provisions of Mahatma Gandhi NREGA, the Mahatma Gandhi National Rural Employment Guarantee Scheme (Mahatma Gandhi NREGS) was established to implement the Act and ensure the fulfillment of the guarantee.
- MGNREGS operates as a Centrally-Sponsored Scheme, implying that both the Central government and the State governments jointly fund the scheme.
- The Ministry of Rural Development is the concerned authority overseeing the implementation and functioning of MGNREGS.

Centre Extends Uapa Ban On Eight Meitei Extremist Organisations

Context: The Union Home Ministry reaffirmed the ban against eight "Meitei extremist organizations" under the Unlawful Activities Prevention Act (UAPA) for their support of Manipur's military independence from India.

Which organizations are prohibited?

Among the prohibited organizations are the following names:

- People's Liberation Army, known as PLA, and its political wing, the Revolutionary Peoples' Front (RPF);
- the United National Liberation Front (UNLF) and its armed wing, the Manipur Peoples' Army (MPA);
- the Peoples' Revolutionary Party of Kangleipak (PREPAK) and its armed wing, the 'Red Army';
- the Kangleipak Communist Party (KCP) and its armed wing, also called the 'Red Army';
- the Kanglei Yaol Kanba Lup (KYKL);
- the Coordination Committee (CorCom), and
- the Alliance for Socialist Unity Kangleipak (ASUK).

Reasons for the Ban

- The Central government believes that these groups have been engaging in activities that are detrimental to India's sovereignty and integrity.
- They are employing and engaging in armed means to achieve their objectives and attacking and killing security forces, police, and civilians in Manipur.

- It stated that the government believes the organizations are unlawful associations and that their actions damage India's sovereignty and integrity.
- They are trying to spread anti-national activities in cooperation with groups hostile to India's sovereignty and integrity; carry out killings of civilians and target members of the security services and obtain and import illegal weapons and ammunition from across international borders.

About the UAPA, or Unlawful Activities Prevention Act

- The purpose of the Unlawful Activities Prevention Act of 1967 is to stop associations engaged in illegal activities within India successfully.
- Any action a person or organization conducts to undermine India's sovereignty and territorial integrity is considered unlawful.
- The Act allows the central government to declare any activity illegal by publishing an official gazette.
- Both Indian natives and foreign nationals may be charged under UAPA. It will apply to the criminals similarly even if the crime is done outside of India, on foreign soil.

What happens if the ban is not extended?

- If there is no immediate stop to the activities- the militants plan to "mobilize their cadres for escalating their secessionist, subversive, terrorist, and violent activities; propagate anti-national activities in collaboration with forces hostile to India's sovereignty and integrity; engage in killings of civilians and targeting of police and security force personnel."
- Extort and collect significant quantities of money from people for their illegal conduct and procure and transport illicit armaments and ammunition across international borders.

Centre to Invite Bids for 20 Critical Minerals Blocks

Context: The Indian government intends to solicit bids for 20 important mineral blocks, including mines for lithium and graphite. This program is part of India's larger strategy to improve its mining and processing capabilities. Recent discoveries of lithium and rare earth elements in numerous locations in India.

What are Critical Minerals?

- Critical minerals are a class of minerals critical to a country's economic and national security yet face supply constraints.
- These minerals are essential in producing high-tech products, military equipment, renewable energy technology, and a variety of other key industrial applications.
- The supply of these minerals is frequently concentrated in a few nations, which can lead to supply chain fragility.
- Rare earth elements (REEs), lithium, graphite, niobium, and cobalt are common examples.
- Many vital minerals are required for renewable energy technologies and play an important role in the global transition to cleaner energy and achieving net-zero emissions targets.

India's Critical Minerals List

In a strategic step, the Centre has designated 30 key minerals as crucial to the country's economic development and national security. These are the minerals:

Antimony	Beryllium	Bismuth	Cobalt	cadmium gallium	Germanium	Graphite	Hafnium	Indium
Lithium	Molybdenum	Niobium	Nickel	PGE	Phosphorous	REE Potash	Rhenium	Silicon
Strontium	Tantalum	Tellurium	Titanium Tin	Tungsten	Zirconium Vanadium	Selenium	Cadmium	

India's Critical Mineral Roadmap

Focus on Specific Minerals	The auction primarily targets important minerals, particularly lithium and graphite, which are essential for various technical and energy uses.
National plan Development	Following the auction, a national plan will be developed to effectively mine and treat these vital minerals.
Economic and national security	The move is critical for India's economic development and national security, notably in the global technology and renewable energy industries.
Policy Support	To go along with this program, the government has set royalty rates for these minerals, with 3% for lithium and niobium and 1% for Rare Earth Elements (REEs).
Alignment with Environmental Goals	This plan is also consistent with India's commitment to energy transition and its goal of achieving net-zero emissions by 2070, emphasizing the importance of these minerals in renewable energy technology.

International Relations

The Agartala-Akhaura rail link

Context: Prime Minister Narendra Modi and his Bangladeshi counterpart Sheikh Hasina virtually inaugurated the rail link between Agartala and Akhaura (in Bangladesh).

- It serves to re-establish connectivity between Bangladesh and India's northeast through Tripura.
- Through this link, States of northeast India can also be connected to ports of Bangladesh.
- Bangladeshi PM Ms. Hasina too highlighted that the long-awaited project would help energise connectivity and commerce in India's northeast and Bangladesh.

What Is The Rail Link About?

- The 12.24 km long rail line constituting of about 6.78 km dual gauge rail line in Bangladesh and 5.46 km in Tripura, would link the latter to Akhaura in its immediate neighbourhood and thereby, its broader rail network.

- In November, Prime Minister Narendra Modi and Bangladeshi counterpart Sheikh Hasina inaugurated the Agartala-Akhaura rail link, connecting India's northeast with Bangladesh.
- The rail link consists of a 12.24 km dual gauge rail line, reducing travel time between Agartala and Kolkata from 31 hours to 10 hours.
- The project aims to enhance connectivity, boost trade, and strengthen ties between the two countries.
- It supports India's 'Act East Policy' and 'Neighbourhood First Policy' and promotes small-scale industries and tourism in the region.
- The project cost was around ₹862.58 crore on the Indian side, with funding from various sources.
- The idea of the rail link dates back to 1974 and gained momentum in 2010 when the memorandum of understanding was signed.

- Nischintapur in West Tripura would serve as the international immigration station, that is, provide facilities to process immigration-related scrutiny for passengers.
  - Additionally, in September, the Central Board of Indirect Taxes and Customs (CBIC) had declared Nischintapur as a Land Customs Station (LCS).
  - It refers to any notified place meant for the clearance of goods imported or to be exported by land or inland water.
- Other than the international transit, once completely operational, the project would also reduce the travel time between Agartala and Kolkata from about 31 hours at present to 10 hours.
- The existing commute distance between the two cities is 1,581 km and a requires a re-route via Guwahati and Lumding in Assam. This would be curtailed to 460 km.
- The project also is in continued adherence to the Central government's 'Act East Policy' and 'Neighbourhood First Policy'.
- As was pointed out by the Northeast Frontier Railway (NFR) earlier, it would help the growth of small-scale industries in the border area, boost tourism in Northeast India and more importantly, help local producers with quicker import and export of items.
- In June, NFR had anticipated the project would be completed at a total cost of ₹862.58 crore on the Indian side. Ministry for the Development of the Northeast Region provided the funds.
- In addition to this, India's Ministry of External Affairs (MEA) provided the Bangladeshi government an assistance of ₹392.52 crore for work on the other side.
- The construction on the Indian side was done by public sector enterprise Indian Railways Construction International Ltd with Texmaco Rail and Engineering working on the Bangladeshi side.

Significance of Rail Link

- ✓ The Akhaura-Agartala rail link which will reduce the travel time and distance between India's Northeastern States and Kolkata by providing connectivity through Bangladesh, helps realise the potential of this physical continuity.
- ✓ It will also help India to access the Port of Chattogram in Bangladesh through shorter routes and thus benefit overseas trade.

How Many Connectivity Routes Are Operational Now?

As of now, **five broad gauge connectivity routes are operational** entailing links with Bangladesh – all of them from West Bengal. These include

- Gede railway station (West Bengal) to Darsana (Bangladesh)
- Benapole to Petrapole (West Bengal)
- Singhabad (West Bengal) to Rohanpur
- Radhikapur (West Bengal) to Birol and Haldibari (West Bengal) to Chilahati.
- Work is underway to connect Mahihasan railway station in Assam to Shahbazpur in Bangladesh.

Trade & People-To-People Ties

Trade between the two countries have been on a consistent growth trajectory.

- There is an interchange of close to 100 cargo trains per month and approximately 2.66 metric tonnes were sent to Bangladesh in the previous financial year.

- The major commodities of export include stone, food grains, China clay, gypsum, maize, onion and other essential items, as and when required, from India.
- As for people-to-people ties, it is facilitated by three passenger trains, namely, Kolkata-Dhaka Maitree Express, Kolkata-Khulna Bandhan Express and New Jalpaiguri-Dhaka Mitali Express.

Jaishankar Hopes India And The U.K. Will Find Mutually Beneficial ‘Landing Point’ For Trade Deal

Context: Recently, Indian External Affairs Minister S. Jaishankar expressed hope that India and the United Kingdom might find a mutually beneficial landing point for the two nations' Free Trade Agreement (FTA).
India and the United Kingdom have been working to reframe their relationship in light of the 'Roadmap to 2023' plan, announced in 2021.

What has the Minister of External Affairs said?

- **Mutual landing point:** The External Affairs Minister hoped that the negotiating teams from India and the United Kingdom could reach a mutually advantageous deal for the two countries' Free Trade deal.
- **Agenda 2030:** India and the United Kingdom attempted to recast their relationship in light of the 'Roadmap to 2023'. Prime Minister Narendra Modi and then-U.K. Prime Minister Boris Johnson announced the Roadmap to 2023 in May 2021. It intends to strengthen the India-UK collaboration in various areas, including connectivity, defense, health, trade, and climate action.
- **Collaboration is required:** The Minister noted that India and the United Kingdom had comparable interests on various topics and desired further engagement between the two countries. He also commended the United Kingdom for assisting India with successfully hosting the G-20 Summit in 2023. He also noted India and the United Kingdom's partnership on vaccine development during the COVID-19 epidemic.

Agreement on Tariffs and Trade

- A Free Trade Agreement (FTA) is an agreement between two or more countries to decrease trade barriers between them.
- Goods and services can be bought and sold across international borders with minimal government tariffs, quotas, subsidies, or bans impeding their interchange under an FTA framework.
- Preferential Trade Agreements, Comprehensive Economic Cooperation Agreements, and Comprehensive Economic Partnership Agreements (CEPA) are the three types of FTAs.

India-UK Free Trade Agreement

- The talks for a free-trade agreement (FTA) between India and the United Kingdom began in January 2022, intending to end talks by Deepavali (October 24, 2022).
- However, the deadline was missed due to political changes in the United Kingdom.
- The agreement contains 26 chapters that address products, services, investments, and intellectual property rights.
- Virtual discussions are taking place between India and the United Kingdom, with the countries intending to negotiate for potential free trade agreements to address differences such as automobiles, medical devices, and professional mobility.

Expectations from the FTA

- India has requested expanded access to the UK market for its trained people in sectors such as IT and healthcare and market access for various items with zero customs charges.
- The United Kingdom has asked India to reduce import charges on scotch whiskey, vehicles, lamb meat, chocolates, and several confectionary items.
- The United Kingdom also wants increased prospects for UK services in Indian markets, particularly in telecommunications, legal, and financial services.

Points of contention

- Points of contention include origin rules, intellectual property rights (IPRs), social security agreements, duty concessions on electric vehicles, scotch whiskey, lamb meat, chocolates, certain confectionary items, and norm liberalization in service sectors such as banking and insurance.
- India has raised alarm about any measures to reduce the production of generic medicines, a critical life-saving intervention.

Treaty on Bilateral Investment

- The proposed bilateral investment treaty (BIT) is being discussed separately between India and the United Kingdom.
- Although both countries have yet to address their differences over the dispute resolution mechanism, the pact might assist in encouraging and protecting investments in both countries.
- India has urged that all domestic court options be exhausted before international arbitration.
- The FTA is vital for India since it could be a model for future negotiations with the EU and EFTA countries.

UNSC Adopts Resolution Calling For Urgent Humanitarian Pauses Throughout Gaza

Context: The United Nations Security Council recently passed a resolution in the Israel-Hamas war calling for humanitarian pauses in Gaza to allow humanitarian aid to reach the region. The UN Security Council also requested the immediate and unconditional release of all hostages held by Hamas and other terrorist organizations.

What is the most recent UN Security Council resolution?

- The UN Security Council has called for an immediate and protracted humanitarian pause and the establishment of humanitarian corridors in the Gaza Strip.
- All stakeholders were urged to facilitate prompt, rapid, and secure humanitarian access to the region by international humanitarian law.
- It emphasized that UN humanitarian organizations and their implementing partners must be allowed to ensure the continuing, adequate, and unfettered provision of vital commodities and services in Gaza.
- The Council also endorsed a resolution demanding the unconditional and immediate release of all hostages held by Hamas and other groups, including minors.

About Resolution

- Malta drafted the resolution, and 12 countries voted in favor of it.
- The United States, Russia, and the United Kingdom abstained from voting on the resolution, and none of the member countries voted against it.
- The resolution was the UN Security Council's first to use the term "Hamas."

Resolution's Shortcomings

- Lack of clarity on the halt length: A previous document version had advocated a five-day break within 24 hours of the resolution's adoption.
- The passed resolution, however, does not clearly define the duration, despite UN officials claiming that the halt must be long enough for humanitarian agencies to gather the required resources.
- The resolution does not call for a quick ceasefire in the fighting.
- Russia has denounced this because people cannot be evacuated or supplied during a violent battle.
- No criticism of Hamas: The United States and the United Kingdom have criticized the resolution for failing to denounce Hamas cross-border assaults.

Why have the United States, the United Kingdom, and Russia abstained?

- The United Nations of America: According to the United States Ambassador to the United Nations, the United States could not vote in favor of a resolution that did not denounce Hamas or reaffirm member nations' ability to respond to terrorist attacks against their citizens.
- The United States, on the other hand, expressed its support for the quick and unconditional release of all captives in the region.
- According to UN diplomats, the United States has consistently rejected the phrase "ceasefire" in all negotiations.

- The United Kingdom's Permanent Representative to the United Nations agreed on the importance of providing relief to those in need but lamented that the resolution did not criticize Hamas, so it abstained from voting on it.
- Russia: Despite the resolution's inadequacies, the Russian Permanent Representative Ambassador did not vote against it because of the urgent need for humanitarian help.

Indo-Pacific Regional Dialogue

Context: The Indo-Pacific Regional Dialogue was recently held in New Delhi on the 15th and 17th of November, 2023. The session, which was attended by specialists from India and other stakeholder countries, discussed a variety of Indo-Pacific topics.

How does the Indo-Pacific Regional Dialogue work?

- The Indo-Pacific Regional Dialogue is an annual high-level global maritime strategy conference organized by the Indian Navy in collaboration with its major knowledge partner, the National Maritime Foundation.
- **Aim:** Examine the Indo-Pacific region's current geopolitical condition. It also aims to identify opportunities and challenges coming from the Indo-Pacific region's regional and global players' activities and responses.
- The Conference is an important part of India's foreign policy, particularly in terms of its Indo-Pacific strategy.
- The IPRD first took place in 2018.

2023 Edition

- The Indo-Pacific Regional Dialogue 2023 was held in New Delhi from the 15th to the 18th of November.
- The event was attended by speakers from 16 countries, students, military practitioners, intellectuals, renowned citizens, diplomats, and think tanks from India and overseas.
- Theme: The Impact of Geopolitics on Indo-Pacific Maritime Trade and Connectivity.

Areas of discussion

- **Maritime Connectivity Nodes:** China's Impact on Indo-Pacific Maritime Connectivity Maritime Connectivity through Shipping and Trade Private Industry in the Safety and Security of Indo-Pacific Maritime Trade and Shipping Maintaining a Rules-based, Safe, and Secure Environment Indo-
- **Pacific:** The IPRD followed the Goa Maritime Conclave, which the Indian Navy organized through the Naval War College in Goa between the 29th and 31st of October.
- **Maritime Security in the Indian Ocean Region:** Transforming Common Maritime Priorities into Collaborative Mitigation Frameworks. It aimed to emphasize the necessity of harmonization as well as capacity and capability building in the Indian Ocean Region (IOR) in order to accomplish the SAGAR (Security and Growth for All in the Region) goal.

What happened during the Dialogue?

- During the Dialogue, the Union Minister of State for External Affairs stressed the Indo-Pacific region's historical significance.
- Although India has historical and profound ties to the seas due to its ancient culture and rich maritime legacy, its nautical competency has decreased over time.
- As a result, India needed to take the essential steps to resurrect Indian maritime capabilities.
- The Minister used the 1982 UN Convention on the Law of the Sea as an example of international collaboration in the marine domain.
- She emphasized the necessity of following the rules established by consensus in the international arena.
- India had pushed for the Global South and attempted to enhance North-South cooperation, as seen by how it championed Global South problems and held the Global South Summit during its G-20 presidency.

Other topics of debate include

- Operating a Regional MDA (Maritime Domain Awareness) Network in the Indo-Pacific; Cooperative Regional Solutions to Address Disruptions of the Maritime Rules-based Order; Preventing the Spread of Maritime Lawfare in the Indo-Pacific; Enhancing Underwater Domain Awareness Across the Indo-Pacific; Building a

Consensual Rules-based Maritime Order in the Indo-Pacific through Multilateral Engagement of Minilateral Constructs.
- Indian Prime Minister Narendra Modi addressed three major themes of marine infrastructure building in his presentation to the UN Security Council in 2021.

China Is The Biggest Security Anxiety For India And Australia

Context: Recently, Australian Defence Minister Richard Marles stated at the 2+2 Summit that China was both India's and Australia's greatest commercial partner and a security issue. The 2+2 Dialogue is a meeting between the two nations' Foreign and Defence Ministers with the goal of enhancing the bilateral strategic relationship.

Concerning the India-Australia partnership

The India-Australia alliance is vital to the region's peace, security, and development.
- India and Australia have also been striving to strengthen business ties through a Comprehensive Business Cooperation Agreement.
- Recent events involving Chinese technology and human rights breaches have strained Australia-China relations. In contrast, India's relations with China have been strained due to border skirmishes and Chinese claims on Indian land.
- India has expressed worry over China's efforts to strengthen connections with Sri Lanka, such as extending the China-Myanmar Economic Corridor (CMEC) to Sri Lanka and assisting with debt restructuring and its possible influence on India's economy and foreign policy. China is India and Australia's greatest security concern.

What was the recent 2+2 summit between India and Australia about?
- **China:** According to Australia's Deputy Prime Minister, China is the country's largest trading partner and a security issue for both India and Australia. Because of China's growing assertiveness in the region, the India-Australia strategic cooperation is important both bilaterally and for the Indo-Pacific region's security, stability, and prosperity.
- **Strategic alignment and transformation:** As maritime neighbors, India and Australia share a common history, democratic traditions, mutual respect for the values of the rule of law and freedom of expression, and soft power synergies such as cricket. As a result, India and Australia's bilateral relationship has grown to become more closely aligned than ever before in their history.
- **Economic ties:** India and Australia's Economic Cooperation and Trade Agreement (ECTA) comes into force in December 2022. As a result, trade between the two countries will expand in 2023. The 14th Foreign Ministerial Framework Dialogue (FMFD) will evaluate the two countries' ongoing negotiations for a Comprehensive Economic Cooperation Agreement (CECA).
- **Quad:** India and Australia are partners in the Quadrilateral Security Dialogue, which aims to strengthen Indo-Pacific regional security and economic cooperation. The Indian External Affairs Ministers have described the QUAD as helpful to the Indo-Pacific region and the two countries' bilateral relationship.

What issues have been raised in the relationship?

India and Australia's bilateral relationship has faced several regional and global difficulties.

Challenges to the rule of law	**Visa issues**	**Russia-Ukraine crisis**	**Uranium Supply Issues**	**Violence against Indian Diaspora**

- **Challenges to the rule of law:** India and Australia, as comprehensive strategic partners, must plan for any exceptions to the rule of law. This encompasses human-engineered scenarios as well as humanitarian assistance and catastrophe relief.
- **Visa issues:** India has expressed worry about the challenges and constraints in acquiring visas for Indian students and professionals interested in studying or working in Australia.

- **Russia-Ukraine crisis:** India and Australia have taken opposing stances on Russia's invasion of Ukraine. Australia has condemned Russia's conduct and has sided with the United States and its allies. India, on the other hand, has refrained from criticizing Russia. As a result, there have been disagreements in the two countries' bilateral Dialogue.
- **Uranium Supply Issues:** India and Australia have had uranium supply issues. The first shipment of Uranium from Australia to India was made in 2017, but it was deemed inadequate.
- **Violence against Indian Diaspora:** In recent years, there has been an upsurge in the frequency of attacks on Indian Diaspora and temples.

India Becomes Chair of International Sugar Organisation (ISO) for 2024 to Lead Global Sugar Sector

Context: India has been elected as the International Sugar Organisation (ISO) Chair for 2024. This appointment underscores India's rising prominence in the global sugar industry. The news was made during the ISO's 63rd council meeting, which was held in London.

What exactly is the International Sugar Organisation (ISO)?

The International Sugar Organisation (ISO) is a non-governmental organization founded in 1968 as part of the United Nations International Sugar Agreement.

- The ISO is made up of countries active in sugar production, consumption, and commerce.
- The ISO's principal goals are to ensure global sugar market stability, facilitate trade among member countries, and promote sustainable and efficient sugar production and consumption practices.
- Its goal is to improve the global sugar economy through a variety of ways, such as policy proposals, market analysis, and research.
- In recent years, the ISO has become increasingly focused on promoting ecologically friendly growing techniques, energy efficiency, and the use of sugar byproducts in the sugar business.

Position of India in Global Sugar Sector

Global Sugar Consumption and Production Leadership	• India is the world's largest user and second-largest producer of sugar. India's sugar trends have a significant impact on the worldwide market, accounting for around 15% of global sugar consumption and 20% of global sugar production.
Influence in the Eastern Hemisphere	• India, like Brazil in the Western Hemisphere, is a market leader in the Eastern Hemisphere's sugar business.
Commitment to Green Energy and Ethanol Production	• After the United States and Brazil, India ranks third in ethanol production. The recent considerable growth in ethanol blending and production illustrates India's dedication to green energy and its capacity to use surplus sugar for long-term purposes.
Sugar Industry Modernization and Diversification	• The Indian sugar industry has experienced modernization and expansion, with an emphasis on sustainable and successful business strategies. The industry has also taken advantage of the potential of byproducts, resulting in new revenue sources.
Response to the COVID-19 Pandemic	• The Indian sugar industry's resilience was on display during the COVID-19 pandemic. Despite the lockdowns, the mills continued to operate and made important contributions by making hand sanitizers to suit domestic demand.

Managing Domestic Sugar Prices	• Despite worldwide sugar price increases, India has managed to keep domestic sugar retail prices stable and consistent, with just a minor increase, thereby safeguarding consumers without burdening the sector.
International Collaborations and Knowledge Sharing	• India is extending its expertise globally through institutes such as the National Sugar Institute in Kanpur. It works with nations including Indonesia, Nigeria, Egypt, and Fiji to share the most recent innovations and best practices in the sugar industry.
Fair Cane Pricing Practices	• India is unusual in giving the highest cane price to farmers while preserving profitability and operating self-sufficiently without the support of the government.

Military Exercises, Defence & Security

MiG-21 Fighter Jets Being Phased Out

Context: On October 31, 2023 MiG-21 fighter jets of the No. 4 squadron 'OORIALS' of the Indian Air Force (IAF) flew one last time over Uttarlai in Rajasthan.

- The squadron has been operating the MiG-21 since 1966 and is now being re-equipped with the Sukhoi-30 MKI aircraft.
- The IAF is now at 31 fighter squadrons as against the sanctioned strength of 42 squadrons.

THE GIST

- On October 31, 2023 MiG-21 fighter jets of the No. 4 squadron 'OORIALS' of the Indian Air Force (IAF) flew one last time over Uttarlai in Rajasthan.
- Last year, the No. 51 squadron 'swordarms' based in Srinagar was phased out. It was the same squadron of which Gp Capt (then Wg Cdr) Abhinandan Varthaman was part of and saw action in February 2019, a day after the Balakot air strike.
- In the last few years, the IAF has inducted two squadrons of the indigenous LCA Tejas and two squadrons of Rafale fighter jets procured from France which pushed the squadron strength to over 30.

What Role Did The Mig-21 Jets Play?

- The MiG-21 was the first supersonic fighter in service of the IAF and was inducted in 1963 and has participated in all major conflicts since.
- More than 800 variants of the supersonic fighter have been inducted into service, and it remained the frontline fighter jet of the IAF for a long time.
- For instance, the No.4 squadron has served the country for approximately six decades and has significantly contributed to the war effort during Indo-Pak conflicts.
- The IAF now has two MiG-21 squadrons in service comprising the upgraded Bison variants, the No. 3 squadron 'Cobras' at Bikaner and No. 23 squadron 'Panthers' at Suratgarh, which will be phased out by 2025.
- MiG-21 fighter aircraft will be replaced with the indigenous Light Combat Aircraft (LCA)-Mk1A.
- According to the IAF website, during the 1971 War of Bangladesh, the MiG-21s showed its true grit.
- On the 1999 Kargil conflict, the IAF says that night operations were carried out using ingenuity and imagination; at times, excellent results were achieved by the aircraft using little else but a stop watch and a GPS receiver. These operations had a significant effect on the enemy's resilience, stamina and very will to fight.
- In the course of six decades, the MiG-21 fleet saw over 400 accidents claiming the lives of around 200 pilots. The IAF was to phase out the MiG-21s much earlier but it was extended as newer inductions especially the LCA Tejas were delayed.

What About The Mig Replacement?

- In the last few years, the IAF has inducted two squadrons of the LCA Tejas and two squadrons of Rafale fighter jets procured from France which pushed the squadron strength to over 30.

- In January 2021, the IAF signed a contract with Hindustan Aeronautics Limited (HAL) for 83 LCA Mk1A which it will start receiving from early 2024 onwards.
- A larger LCA-Mk2 as well as the fifth generation Advanced Medium Combat Aircraft (AMCA) are under development.
- As they take time to be available in large numbers, it is the LCA-Mk1A which will form the bulk of the force.
- Last month, ACM Chaudhari had said that they are looking to procure an additional 97 LCA-Mk1A at an estimated cost of ₹67,000 lakh crore, making a total of 180 Mk1A variants.

Pakistan and China Navies to carry out Joint Sea Patrol

Context: China and Pakistan are now carrying out the third edition of the Sea Guardian-3 bilateral naval exercise in the northern Arabian Sea. According to Chinese media, the two countries will also carry out their first combined maritime patrol. It is expected that the exercise will take place between the 11th and the 17th of November.

Significance of the Exercise

- During the two-plus-two ministerial dialogue that took place between India and the United States on the topic of maritime security in the Indo-Pacific region, New Delhi announced that it would be joining the Combined Maritime Forces (CMF), a multilateral grouping led by the United States and based in Bahrain. Pakistan is also a member of the CMF. The exercise takes place just one day after the dialogue.
- Only a few days have passed since Russia and Myanmar conducted their initial naval exercise in the Andaman Sea, and now this drill is taking place.
- An electric, diesel-electric submarine of the Type 093 Song class has been dispatched by the People's Liberation Army (PLA) Navy of China for the drill.
- One of the first coordinated maritime patrols between China and Pakistan will occur, and observers will be traded between the two countries. Anti-submarine patrol planes from Pakistan will be joined by Chinese observers later on.
- In addition to the conventional submarine, the People's Liberation Army Navy has dispatched the guided-missile destroyer Zibo, the guided-missile frigates Jingzhou and Linyi, two shipborne helicopters, and the supply ship Qiandaohu, which is the lead ship of the Type 903 replenishment ships.
- A total of nine ships, three shipborne helicopters, four fighter jets, and one marine patrol aircraft have been dispatched by the Pakistan Marine Corps.

About Russia and Myanmar Naval Exercise

- Senior General Min Aung Hlaing, the leader of the coup in Myanmar, met with Russian Navy Chief Admiral Nikolai Evmenov as the two nations prepared to conduct their first combined maritime drills off the coast of Myanmar's Andaman Islands.
- As a result of the coup that took place in February 2021, which resulted in a violent conflict that resulted in the deaths of around 4,200 civilians and the displacement of hundreds of thousands, Myanmar and Russia have become closer.
- Beginning on November 7 and continuing through November 9, the first-ever Myanmar-Russia Maritime Security Exercise (MARUMEX) will occur in waters 85 nautical miles (157 kilometres) west of Myeik.
- At the same time, as marine security measures will be the primary focus of the drills, the prevention of air, surface, and subsurface threats will also be considered.

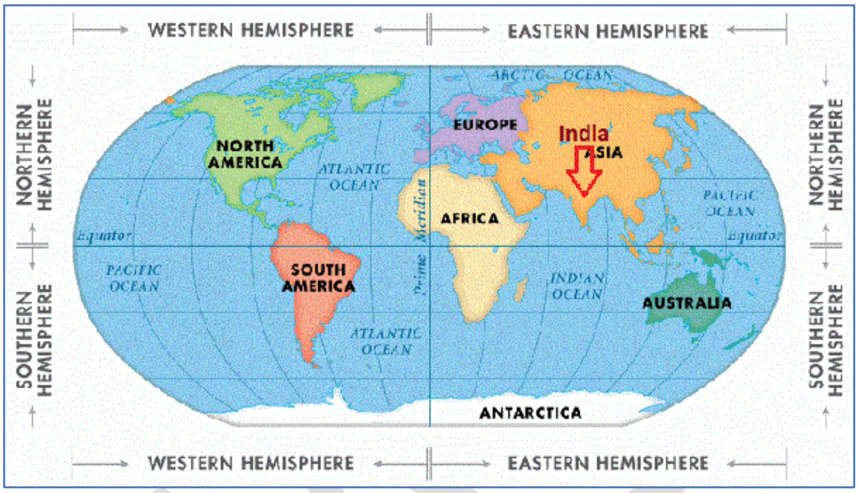
Environment

Decline in Water Availability in the Southern Hemisphere

Context: Driven in part by large-scale atmospheric climate modes, the Southern hemisphere accounts for more than 95% of the recent decline in global water availability, according to a new study.

- Global land water availability has varied due to climate change and increased human water use.

- The water availability across the Southern hemisphere decreased across the study period. In the Northern hemisphere, there is negligible change in land water availability.



Key Highlights

- The new analysis reveals a **strong decrease in water availability** in South America, most of Africa, and central and north western Australia.
- However, some regions such as the southern part of South America will have more water available.
- South America includes the Amazon rainforest, which is a key regulator for the climate, as well as a globally important habitat for species and home to many Indigenous communities.
- Drying of the rainforest would reduce vegetation and increase the risk of fire. This would be bad news for humans and animals that live in the forest, and has the potential to release billions of tons of carbon currently locked into forest vegetation and soils.
- The experts suggest the **principal cause** is the weather phenomenon known as **El Nino**, which occurs every few years when ocean water in the eastern Pacific is warmer than usual.

El Nino	
About	It is the name given to the occasional development of warm ocean surface waters along the coast of Ecuador and Peru.
Frequency	El Niño events occur irregularly at intervals of 2–7 years, although the average is about once every 3-4 years.
Impact of El Nino across the globe	El Nino impacts ocean temperatures, the speed and strength of ocean currents, the health of coastal fisheries, and local weather.

A New Mushroom Species from the Western Ghats

Context: A tiny, fragile-looking mushroom sporting a honey-yellow 'cap' found on the campus of the Jawaharlal Nehru Tropical Botanic Garden and Research Institute (JNTBGRI) at Palode in Thiruvananthapuram, Kerala has been identified as a new species.

- Turning the spotlight once again on the remarkable Western Ghats biodiversity, the discovery also gives fresh impetus to the study of the region's fungal diversity.

Key Highlights

- The new species belongs to the genus Candolleomyces.
- The new species has been named Candolleomyces albosquamosus - 'albosquamosus' for the white woolly scale-like structures on its pileus or cap.
- Delicate in build, the mushroom grows to a height of just about 58 mm.
- Seven species of the genus Psathyrella reported earlier from India are now recognised as Candolleomyces.
- The discovery of a new species of the genus Candolleomyces in India is special given that there are only 35 species in this genus worldwide.

Ecological Significance

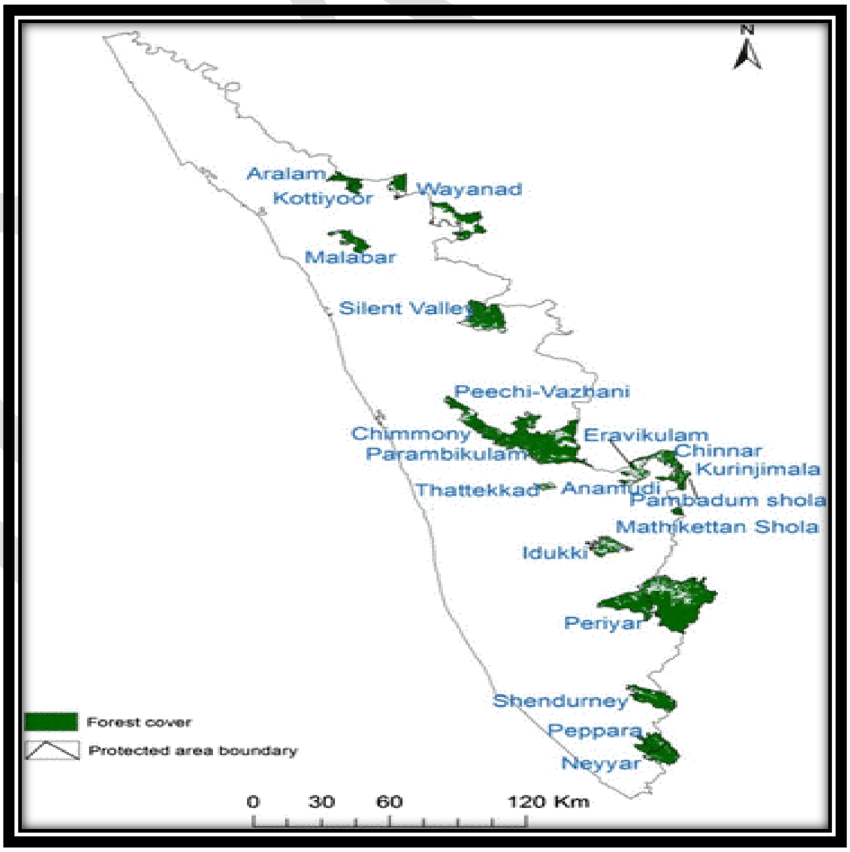
- Mushrooms like Candolleomyces albosquamosus play a crucial role in decomposing plant litter in tropical forests, contributing to the ecosystem's nutrient cycling.
- The discovery highlights the ecological importance of secondary saprophytic fungi in the forest ecosystem.

'Maoists' open fire at Aralam Wildlife Sanctuary

Context: Suspected Maoists reportedly opened fire at the Aralam Wildlife Sanctuary in Kannur in Kerala. The attack occurred inside the sanctuary, near Chavachi.

About Aralam Wildlife Sanctuary

- Aralam Wildlife Sanctuary is the **northernmost wildlife sanctuary** of Kerala (in the Kannur District).
- It is **55 km² in area** and located on the western slope of the **Western Ghats**.
- It was established in 1984 with its headquarters near Iritty.
- The sanctuary **borders** Wayanad-Brahmagiri, Wayanad's north slopes, Karnataka's Brahmagiri Wildlife Sanctuary, and Coorg's forests, with Katti Betta as its highest peak.
- It is nestled amidst the serene **Cheenkanni River** and the beautiful adjoining forests of Brahmagiri Hills.
- This is the **only protected area of** the West Coast Tropical Evergreen forest of Dipterocarpus-Mesua-Palaquium type.
- The presence of **Malabar Slender Loris** (Loris lydekkerianus malabaricus) with other five primate species is one of the main highlights of the sanctuary.
- Aralam Wildlife Sanctuary is listed as one of the **"Important Bird Area (IBA)"** by BirdLife International in 2003.
- The sanctuary is home for One Red data book species **Nilgiri Wood- Pigeon Columba elphinstonii**.



Environmental Factors Determine Height of Children

Context: In a significant finding, scientists have discovered that environmental factors play a greater role than genetic variants in determining the height of children in low- and middle-income countries (LMICs) in contrast to those from European nations, where genetic aspects predominate in regulating childhood height.

- This was expounded in a study carried out by the Hyderabad-based Centre for Cellular and Molecular Biology (CSIR-CCMB) along with several other national and international institutions.
- The study was recently published in the journal Nature Communications.

Key Highlights

- While **human height is strongly influenced by** fixed genetic and variable environmental factors, the authors of the study noted that the contribution of modifiable epigenetic factors is under-explored.
- **Epigenetic factors** are external influences, including lifestyle, nutrition and environment that affect the way genes work.
    - Epigenetic changes affect gene regulation and alter gene expression but not the DNA sequence.
- Many **environmental factors**, including socio-economic status, nutrition and infection load are believed to influence childhood growth which plays a critical role in determining one's height.
- Quoting the **World Health Organization, 2021 estimates** which indicated that a large proportion of stunted children reside in LMIC, particularly in South Asia and sub-Saharan Africa where undernutrition and associated co-morbidities are more prevalent compared to high income countries (HICs), the study observed "this offers a potential explanation for the disparity in height variation attributed to non-genetic factors between LMIC and high-income countries".
- Although the impact of environmental exposure during early childhood is believed to be quite significant with long-term consequences, there are no genome-wide epigenetic investigations on height in childhood especially in low and middle income countries.
- Epigenetic processes such as DNA methylation and histone modifications can influence gene expression.
    - Methylation basically is chemical modification of DNA molecule used by cells to regulate gene expression.
    - It can be influenced by environmental factors such as diet, drugs, stress, exposure to chemicals and toxins.
- In this study, the scientists did an epigenome-wide association analysis and genome-wide association study to independently investigate links between DNA methylation and genetic variants with childhood height in five cohorts—three from India, one from Gambia and another one from the U.K.
- The scientists found a novel, robust association between methylation in the SOCS3 gene and height in children from low and middle income countries which was replicated in the HIC cohort but with a lower effect size.
- "Overall, our study provides strong evidence of genome-wide DNA methylation associations with height in children from LMIC", the study observed.
- Interestingly, the established 12,000 genetic variants were also associated with height in Indians but their effect was lower compared to the European and American counterparts.
- The genetic risk variations are similar for Europeans and Indians, although the magnitude differs between the two ancestries. However, the genetic risk appears to have been modified due to environmental factors in children in LMIC.
- The environmental cues that trigger the epigenetic processes in children in low and middle income countries are different in Indians and thus not influencing the epigenetic regulation of height in Europeans.

Nugu Wildlife Sanctuary

Context: The National Tiger Conservation Authority (NTCA) recently recommended to the authorities that the Nugu Wildlife Sanctuary abutting the Bandipur Tiger Reserve be declared as a core critical tiger habitat.

Location	Economic Distortion is situated to the north of Bandipur National Park in Mysore District, Karnataka.

Size and Features	Encompassing an area of approximately 30 square kilometers, the northern section of the sanctuary is occupied by the Nugu Reservoir. This reservoir is constructed across the Nugu River, a tributary of the Cauvery.
Wildlife Sanctuary Declaration	In 1974, Nugu was designated as a Wildlife Sanctuary. Subsequently, in the years 2003-2004, the Nugu Wildlife Sanctuary area was incorporated into the Nilgiri Biosphere Reserve.
Rainfall Patterns	The region experiences rainfall from both the south-west and north-east monsoons, with an average annual precipitation of around 1000mm.
Vegetation	Dry and deciduous, with intermittent patches of plantations.
Flora	Anogeissus latifolia, Tectonia grandis, and Terminalia tomentosa. Additionally, the forest canopy is dominated by medicinal and commercially valuable trees such as Emblica officinalis, Santalum album, Albizia spp., and Dendrocalamus strictus.
Fauna	Ephants, leopards, jungle cats, wild pigs, spotted deer, sambar deer, barking deer, mouse deer, jackals, hares, common mongooses, common otters, small Indian civets, common palm civets, and porcupines.

National Tiger Conservation Authority (NTCA)
- The NTCA operates as a statutory body under the Union Ministry of Environment, Forest, and Climate Change.
- The Wild Life (Protection) Amendment Act, 2006 conferred statutory status upon the NTCA, amending the Wild Life (Protection) Act, 1972.
- The NTCA plays a crucial role in addressing both administrative and ecological concerns related to the conservation of tigers, establishing a statutory foundation for the protection of tiger reserves.
- It enhances institutional mechanisms to safeguard ecologically sensitive areas and protect endangered species.

Plastic-free Planet: On Penultimate day of INC-3, Contact Groups Complete 1st Review of 'Zero Draft'

Context: The UNEP Intergovernmental Negotiating Committee (INC-3) recently held its third session with the goal of producing an International Legally Binding Instrument to combat plastic waste, notably in marine areas. Delegates from all over the world were evaluating the Zero Draft text and the Synthesis Report.

What is the Intergovernmental Negotiating Committee?

The Intergovernmental Negotiating Committee (INC) seeks to provide a wide instrument that includes obligations, measures, and voluntary methods, as well as a financing system with stable and predictable financial resources for implementation.
- The United Nations Environment Assembly in Nairobi in February 2022 decided to create an international legally binding instrument against plastic pollution.
- Between 2022 and 2024, the Intergovernmental Negotiating Committee (INC) was formed to create an international legally binding instrument on plastic pollution, notably in the maritime environment.
- It should be integrated across industries and value chains, and it should be founded on considerations of the full plastic lifespan.
- The document must address marine, terrestrial, and water plastic pollution, as well as encourage sustainable plastic manufacturing and consumption via environmentally sound waste management strategies based on circular economy concepts.
- The INC intends to involve stakeholders at the sub-national, national, regional, and global levels across the value chain of plastics production, including manufacturing, usage, recycling, and disposal.
- As part of securing a strong and effective global plastics treaty, the INC will be assisted by the IUCN, which has prior knowledge of international negotiations and activities involving the implementation of circular economies locally, regionally, and internationally.

- The third session of the Intergovernmental Negotiating Committee (INC-3), a global gathering aimed at producing an International Legally Binding Instrument to combat plastic pollution, especially its impact on the marine environment, is referred to as INC-3.

Delegates from several nations gathered at INC-3 to analyze and discuss the Zero Draft text and Synthesis Report.

Highlights of the INC-3

- **Revision of the Zero Draft Text:** Delegates debated amended sections of the Zero Draft text and the Synthesis Report. The Zero Draft is an important document that details the proposed content and organization of the worldwide plastic pollution convention.
- **Contact Group Formation:** The INC Chair formed three contact groups to focus on various portions of the zero draft. These groups were critical in reviewing various aspects of the text and giving recommendations.
- **Submissions and Proposals:** There were over 300 written submissions, and numerous proposals were debated. These submissions aided in the creation of a new iteration of the Zero Draft, which was scheduled to be distributed during the session's evening hours.

Focus Areas of Contact Groups

- Group 1 was co-facilitated by representatives from Palau and Germany and focused on primary plastic polymers, chemicals, and polymers of concern. They looked at submissions on waste management, marine plastic pollution, and transition options.
- Group 2 reviewed implementation and compliance issues, led by Australia and Ghana. They worked on both a "clean version" and a version with tracked revisions of the draft.
- Group 3 focused on the treaty's preamble, principles, and scope, which were co-facilitated by Indonesia and France. Based on the United Nations Environment Assembly decision and member input, they proposed alternative solutions for these areas.

Other Important Points

- **Key Agreements and Discussions:** There was a universal agreement to begin conversations with the preambular text of the UNEA resolution. Delegates debated numerous choices for principles and breadth, reflecting the treaty's many methods and coverage features.
- **Overall Development:** Delegates have finished the initial assessment of the updated sections of the Zero Draft, according to senior counsel Andres Castillo. The language was amended, deleted, substituted, and expanded during the debates. Castillo stressed the necessity of robust intersectional cooperation between INC-3 and the following session, INC-4, in moving the treaty forward. The INC's goal is to complete discussions by the end of 2024, having begun work in 2022.

Parties to CITES Urged to Take Stringent Steps on Jaguar, Big Cat Conservation

Context: Members of the Convention on International Trafficking in Endangered Species of Wild Fauna and Flora (CITES) recently joined forces to combat the illegal trafficking and poaching of jaguars and other large cats.

About Jaguars (Panthera onca)

Jaguars are among the most powerful felines, with their distinctive rosette-patterned tawny coats.

- They are the world's third-largest cat species, after tigers and lions, and the largest in the Americas.
- These cats differ from most house cats in that they are at ease in water, thrive in moist habitats such as rivers, lakes, and wetlands, and are skilled swimmers capable of crossing large rivers.
- Jaguars are active both at night and throughout the day.
- Geographically, they range from Mexico to Argentina, with Brazil home to over half of the world's jaguar population.
- Their native habitats include wet and dry woods, savannahs, and shrublands.
- In terms of conservation, they are included on the IUCN Red List as 'Near Threatened' and are listed on CITES Appendix I.

What are the major issues and threats?

Jaguar Components Illegal Trade → Jaguar poaching → Human-Jaguar Conflict and Habitat Loss → Captive Tiger Population and Illegal Trade

- **Jaguar Components Illegal Trade:** There is a sizable illegal market for Jaguar components and derivatives. This trade is a severe danger to the species, causing population declines.
- **Jaguar poaching:** These creatures are targeted by poachers for their skins, bones, and other body parts, which are lucrative in the illegal wildlife trade.
- **Human-Jaguar Conflict and Habitat Loss:** Jaguar habitat degradation and fragmentation, as well as unfavorable interactions between humans and jaguars, are all contributing to the species demise. Because habitat loss makes jaguars more susceptible, this exacerbates the poaching problem.
- **Captive Tiger Population and Illegal Trade:** There is also an emphasis on captive tigers, with parties demanding stronger compliance and enforcement of legislation. This includes limiting captive breeding and ensuring that tigers are not bred for trade in their parts and derivatives.

What are the Jaguar Conservation Efforts?

Elimination of Poaching and Illegal Trade	Reduced Habitat Loss and Fragmentation	Negative Human-Jaguar encounters	Stopping illicit Killing and trading	Conservation Effort Alignment and Demand Reduction	Coexistence and Alternative Livelihoods
Creation of an Intergovernmental Platform for Jaguar Conservation	Establishment of Monitoring Methods	Jaguar Conservation Roadmap 2030 Implementation	Jaguar Landscape Assessment	Identifying Additional Threats	

- **Elimination of Poaching and Illegal Trade:** The primary focus is on implementing comprehensive enforcement regulations to eradicate jaguar poaching, treating jaguars as a priority species for enforcement operations, and enacting wildlife crime prevention measures.
- **Reduced Habitat Loss and Fragmentation:** The survival of jaguars needs to reduce habitat loss and fragmentation.
- **Negative Human-Jaguar encounters:** Efforts are underway to reduce negative encounters between humans and jaguars, which frequently result in conflict and harm to both sides.
- **Stopping illicit Killing and trading:** This includes stopping the illicit Killing and trading of jaguars, which poses a serious threat to their population.
- **Conservation Effort Alignment and Demand Reduction:** The emphasis here is on coordinating diverse conservation efforts, developing measures to lower demand for jaguar items in illegal commerce, and supporting behaviour change.
- **Coexistence and Alternative Livelihoods:** This includes fostering human-jaguar coexistence and developing alternative livelihoods to lessen the incentives for killing jaguars and trading their parts and derivatives.
- **Creation of an Intergovernmental Platform for Jaguar Conservation:** An initiative is underway to establish an intergovernmental platform to assist states in jaguar conservation and effectively achieve these goals through a continental action plan.
- **Establishment of Monitoring Methods:** An important goal is to establish methods to monitor illegal jaguar killings and to include local communities and indigenous people in enforcement activities.
- **Jaguar Conservation Roadmap 2030 Implementation:** This includes reinforcing international commitments to jaguar conservation, designating conservation units and corridors, obtaining long-term funding, and blocking illegal commerce.

- **Jaguar Landscape Assessment: Understanding** population size, density, trends, habitat quality, and the presence or absence of jaguars in 80 jaguar landscapes for effective conservation activities.
- **Identifying Additional Threats:** Human-animal conflict, habitat loss due to wildfires, infrastructure development, agriculture, and a decrease in prey supply are all potential hazards to jaguars.

What is the 2030 Jaguar Conservation Roadmap?

- **Synergetic Implementation of International Commitments:** The roadmap emphasizes the importance of coordinated and collaborative actions in carrying out international commitments connected to jaguar conservation.
- **Continental Working Programme and Intergovernmental Platform:** A proposal to establish an international platform as well as a continental action plan to combat illegal jaguar hunting and trade.
- **Jaguar Landscape Evaluation:** The plan calls for the evaluation of 80 jaguar landscapes in order to determine the most effective conservation measures. This assessment would concentrate on determining the size, density, trends, habitat quality, and the presence or absence of jaguars.
- **Threats to be Addressed:** Identifying and reducing jaguar hazards such as human-animal interactions, habitat loss owing to wildfires, infrastructural development, agricultural expansion, and decreased prey availability.
- **Monitoring and Community Engagement:** Creating methods to track illegal jaguar killings and collaborating with local communities and indigenous people to help enforcement activities.
- **Behavior Change and Alternative Livelihoods:** Encouraging behavior change, fostering cohabitation, and developing alternative livelihoods to reduce jaguar hunting and trading in their parts and derivatives.

Economy

Directive on Deepfakes

Context: The Indian government instructed "social media intermediaries" to remove morphed videos or deepfakes from their platforms within 24 hours of a complaint being filed, in accordance with a requirement outlined in the IT Rules 2021.

What are Deepfakes?

Deepfakes have been around since 2017 and refer to videos, audios or images created using a form of artificial intelligence called deep learning.

- The term became popular when a Reddit contributor used publicly available AI-driven software to impose the faces of celebrities onto the bodies of people in pornographic videos.
- Deepfake tech, with the help of AI tools, allows semi and unskilled individuals to create fake content with morphed audio-visual clips and images.
- Researchers have observed a 230% increase in deepfake usage by cybercriminals and scammers, and have predicted the technology would replace phishing in a couple of years.

How Does Deepfake Technology Work?

The technology involves modifying or creating images and videos using a machine learning technique called generative adversarial network (GAN).

The AI-driven software detects and learns the subjects' movements and facial expressions from the source material and then duplicates these in another video or image.

To ensure that the deepfake created is as close to real as possible, creators use a large database of source images. This is why more deepfake videos are created of public figures, celebrities and politicians.

The dataset is then used by one software to create a fake video, while a second software is used to detect signs of forgery in it.

Through the collaborative work of the two software, the fake video is rendered until the second software package can no longer detect the forgery.

This is known as "unsupervised learning", when machine-language models teach themselves. The method makes it difficult for other software to identify deepfakes.

Why Do People Create Deepfake Content?

Negative Use

The technology could potentially be used to incite political violence, sabotage elections, unsettle diplomatic relations, and spread misinformation. This technology can also be used to humiliate and blackmail people or attack organisations by presenting false evidence.

Positive Use

The technology has been used by the ALS Association in collaboration with a company to use voice-cloning technology to help people with ALS digitally recreate their voices in the future.

What Do Laws In India Say About Deepfakes?

- India's IT Rules, 2021 require that all content reported to be fake or produced using deep fake be taken down by intermediary platforms within 36 hours.
- The Indian IT ministry has also issued notices to social media platforms stating that impersonating online was illegal under Section 66D of the Information Technology Act of 2000.
- The IT Rules, 2021, also prohibit hosting any content that impersonates another person and requires social media firms to take down artificially morphed images when alerted.

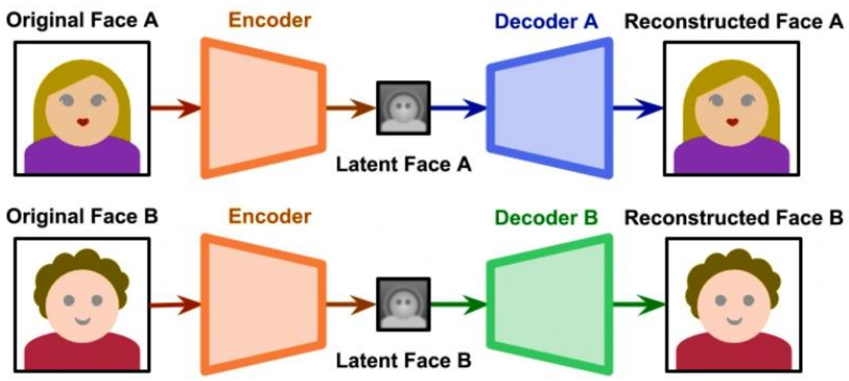
How Have Other Countries Reacted?

- The EU has issued guidelines for the creation of an independent network of fact-checkers to help analyse the sources and processes of content creation.
- The U.S. has also introduced the bipartisan Deepfake Task Force Act to counter deepfake technology.

Deepfake Technology

Context: Recently, the Minister for Electronics and Information Technology announced that the government would establish regulations to address deepfakes, synthetic media that replicates authentic images, video, and audio.

- The term "Deepfake" denotes synthetic media that undergo digital manipulation to seamlessly substitute one person's appearance with another.
- Powerful techniques from machine learning and AI, including deep learning and Generative Adversarial Networks (GANs), are employed in the creation of Deepfakes.
- Deepfake technology finds application in diverse fields, including entertainment, education, art, and activism, showcasing its versatility and potential uses.



Legal framework in India

- The legal framework concerning artificial intelligence (AI) in India currently falls short in effectively addressing the diverse issues arising from AI algorithms.
- There are limited provisions within the Indian Penal Code (IPC) and the Information Technology Act, 2000 that could potentially be applied to combat the malicious use of deepfakes.
- Section 500 of the IPC specifically deals with punishment for defamation.
- Sections 67 and 67A of the Information Technology Act target sexually explicit material presented in explicit form.
- The Representation of the People Act, 1951, incorporates provisions that prohibit the creation or dissemination of false or misleading information about candidates or political parties during an election period.
- However, these existing regulations do not adequately address the potential threats posed by deepfake content. Notably, China is among the few nations that have implemented regulations explicitly prohibiting the use of deepfakes.

Wholesale Prices Remain In Deflation Zone In October

Context: The Wholesale Price Index (WPI) recently reported that wholesale prices in the country remained in the deflationary zone in October for the seventh consecutive month.
According to the WPI, inflation fell to -0.52% in October, down from -0.26% in September.

The Wholesale Price Index Trends

- Based on the all-India WPI, the annual inflation rate in October 2023 is -0.52%, compared to -0.26% in September 2023.
- Wholesale price inflation was 8.4% in October 2022, resulting in a strong base impact for the index in October 2023.
- In October, the WPI increased 0.4% month on month.

Reasons for the negative inflation rate

- It is mostly due to price decreases in chemicals and chemical products, electricity, textiles, basic metals, food goods, paper and paper products, and other commodities.
- The wholesale food index increased by 1.07% in October 2023 compared to October 2022, while food prices increased by 1% from September.
- On the other hand, the price patterns of items in the food basket were different.

- Some commodity prices, such as onions and legumes, posed dangers to retail inflation, which had fallen to 4.87% in October.

Month-to-Month Changes in Major WPI Groups

- Primary Articles (Weight 22.62%): The index increased by 1.15% from 182.4 in September to 184.5 in October 2023.
- Minerals (7.81%) and Food Articles (1.33%) prices climbed in October 2023, while Crude Petroleum and natural Gas (-0.60%) and Non-food Articles (-0.24%) prices decreased.
- Fuel & Power (Weight 13.15%): The index improved by 0.65% from September to 154.1 in October 2023.
- However, fuel and electricity prices were 2.5% lower than in 2022.
- Mineral oil prices increased (1.28%), but electricity prices fell (-0.73%) in October compared to September 2023.
- Crude petroleum and natural gas inflation fell to 2.2% in October from 15.6% in September.
- Manufactured Products (Weight 64.23%): In October 2023 and September 2023, the index remained at 140.3.
- The year-on-year inflation rate fell to -1.1 percent in October, down from -1.3% in September.
- Food prices increased monthly in manufacturing food goods, chemicals, chemical products, motor cars, trailers and semi-trailers, textiles, and other non-metallic mineral products.
- Prices for basic metals, manufactured metal goods (excluding machinery and equipment), rubber and plastic products, and other transport equipment fell in October 2023 compared to September 2023.

Food Price Index at Wholesale

- The Wholesale Food Price Index is the country's most extensively used inflation indicator.
- It tracks changes in the pricing of a basket of wholesale items sold and traded in bulk by wholesalers to other wholesalers.
- It does not focus on things purchased by consumers.
- It is released by the Union Ministry of Commerce and Industry's Office of the Economic Adviser.
- **Base year:** In 2017, the All-India WPI base year was changed from 2004-05 to 2011-12.

Important Terms

- **Inflation Rate:** In the context of WPI, the inflation rate is the difference between WPI estimated at the beginning and end of the year. The percentage increase in WPI over a year shows the annual inflation rate.
- **Deflation:** A drop in the overall price level of products and services. When the inflation rate falls below 0%, this is referred to as negative inflation.
- **Base Effect:** The base effect is the impact of the prior year's inflation on the current year's pricing levels. For example, if inflation was low in the previous year, even minor price increases in the present period could result in abnormally high inflation rates.

Can Dollarisation Save An Economy of Argentina?

Context: Javier Milei, the victor of Argentina's presidential elections, recently promised to de-dollarize the country's economy by replacing the peso with the dollar, slashing government spending, and abolishing the Central Bank. The Argentine economy has seen more than 100% inflation, resulting in a decrease in purchasing power and a rise in poverty.

What exactly is Dollarization?

Dollarization refers to the substitution of a local currency for a foreign currency, such as the dollar, in any of its functions.

- **Significance:** Dollarization reduces the chance of a sudden, significant depreciation of the country's currency, lowering the risk premium associated with its international borrowing.
- **Types:** The use of foreign currency as a unit of account, a means of exchange, or a store of value is referred to as asset dollarization.
    - Currency substitution is the use of foreign currency as a medium of exchange. Transactions can still be made with local money.

- Liability dollarization refers to a country's relatively substantial foreign currency debt commitments. In this case, the country's assets are rarely dollarized, but loans are primarily in foreign currency.
- Full Dollarization occurs when a country abandons its currency in favor of another country's currency as a means of payment and unit of account.
- Dollarization was intended as a means of achieving global economic stability and prosperity via exchange rate regimes. Ecuador, Panama, and El Salvador have all benefited economically from Dollarization.

Why have governments pushed for Dollarization?

Hyperinflationary solution

- Dollarization interrupts the feedback loop between rising prices and rising money supply, assisting in the fight against hyperinflation.
- The replacement of the indigenous currency ensures that people with entrenched political interests cannot control the money supply.
- Price increases would be slowed as consumption demand fell due to the difficulty in obtaining cash.

Effect on growth

- Dollarization would encourage the economy to focus on exports while also making it easier for foreign money to enter the country because tiny economies can only access the dollar through foreign trade or capital inflows.
- This would attract international capital, which prefers to invest in stable-currency economies.
- The dollar's value stability will allow both foreign and domestic economic agents to develop long-term plans for economic activity.

What are some of the issues raised by Dollarization?

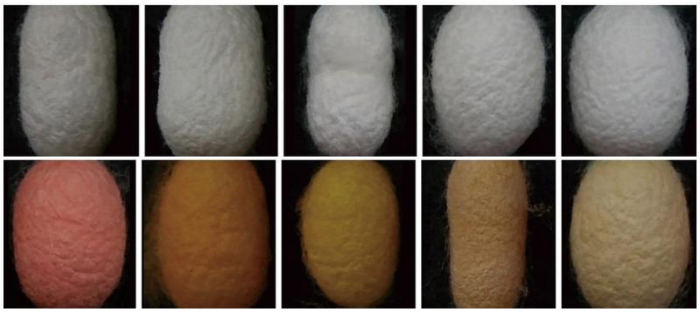
Loss of policy clout	Overdependence on a single currency has the following risks	Geopolitical disputes in the United States	China factor	Central banks' loss of power

- **Loss of policy clout:** When a country adopts the dollar as its currency, the monetary supply no longer influences the money supply. Countries would be unable to employ depreciation to promote exports in terms of foreign trade. Some experts argue that this is a good thing because the government will have to use productivity-boosting strategies to combat recessions rather than changing exchange rates.
- **Overdependence on a single currency has the following risks:** Overdependence on a single currency may expose the country to risks connected with currency volatility, changes in US monetary policy, and potential sanctions or limitations imposed by the US. Because of the US government's chronic budget deficits, there has been heightened concern about the value of the dollar and inflation.
- **Geopolitical disputes in the United States:** In recent years, the United States has been involved in various geopolitical conflicts, including the wars in Iraq and Afghanistan, which have impacted the dollar.
- **China factor:** China has been marketing the renminbi as an alternative to the dollar.
- **Central banks' loss of power:** Following the advent of Dollarization, central banks became powerless bodies.

Science & Technology

Where do domesticated silkworm cocoons get their wild colours from?

Context: Silk, often referred to as the "queen of fibres," has been valued for its beauty and luxury for ages. Researchers have revealed the genetic factors behind the cocoon colors and adaptations of silk-producing insects, and how they have transformed the silk industry. Domestication can affect a species in intricate ways, forcing genetic innovation as well as handicaps.



THE GIST

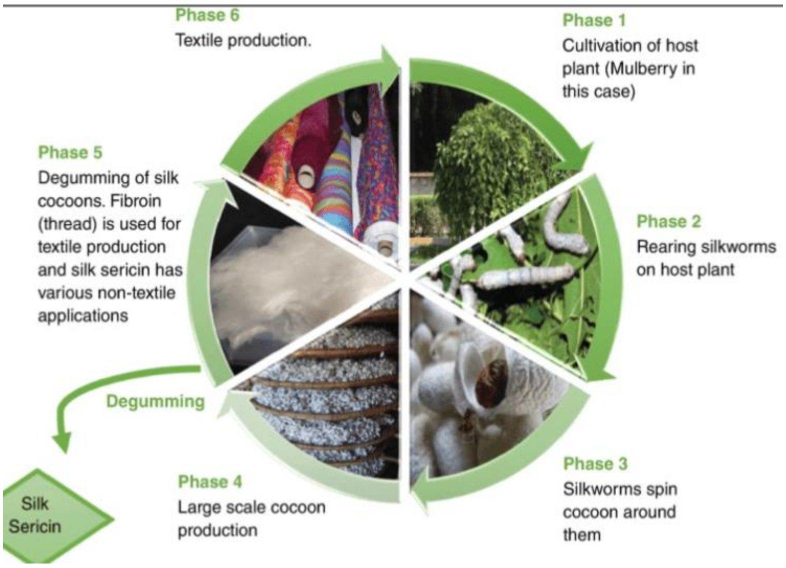
The ancestral mulberry moth makes brown-yellow cocoons. Domesticated silk moth cocoons come in an eye-catching palette of yellow-red, gold, flesh, pink, pale green, deep green or white

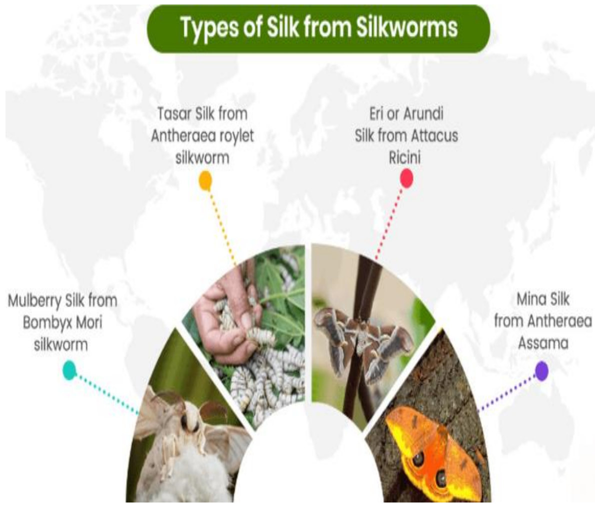
Differently coloured cocoons arise from mutations in genes responsible for uptake, transport, and modification of carotenoids and flavonoids. The mutant strains have become a valuable resource for scientists to study the molecular basis of how, in a relatively short span of 5,000 years, artificial selection generated such spectacular diversity

A yellow-red cocoon requires the *Y* gene, which encodes a protein that transports carotenoids from midgut to the silk glands. Other genes encode proteins that selectively absorb specific carotenoids. Mutations in one or more of these genes produce the yellow, flesh-coloured, rusty, and pink cocoons

About Silk Production

- Silk, the queen of fibers, is produced from the cocoons of the silk moth (Bombyx mori).
- Humans domesticated it more than 5,000 years ago in China, from the wild moth (Bombyx mandarina).
- The ancestral moth is today found in China, the Korean Peninsula, Japan, and far eastern Russia, whereas the domesticated moth is reared all over the world, including in India.
- India is the world's second-largest producer of raw silk after China.





Types of Silk

Wild Silk	Non-mulberry silk	Domesticated silk moth cocoons
•It includes the muga, tasar, and eri silks – which are obtained from other moth species: namely, Antheraea assama, Antheraea mylitta, and Samia cynthia ricini. •These moths survive relatively independently of human care, and their caterpillars forage on a wider variety of trees.	•These silks have shorter, coarser, and harder threads compared to the long, fine, and smooth threads of the mulberry silks. •It comprises about 30% of all silk produced in India.	•It comes in an eye-catching palette of yellow-red, gold, flesh, pink, pale green, deep green or white.

Cocoon's pigments

- The pigments are derived from chemical compounds called carotenoids and flavonoids, which are made by the mulberry leaves.
- Silkworms feed voraciously on the leaves, absorb the chemicals in their midgut, and transport them via the haemolymph – arthropods' analogue of blood – to the silk glands, where they are taken up and bound to the silk protein.
- Mature caterpillars then spin out the silk proteins and associated pigment into a single fibre.
- The caterpillar wraps the fibre around itself to build the cocoon.

Mutant strains a valuable resource

- The differently colored cocoons arise from mutations in genes responsible for the uptake, transport, and modification of carotenoids and flavonoids.
- The mutant strains have become a valuable resource for scientists to study the molecular basis of how artificial selection generated such spectacular diversity.

Combinations behind the colors

- Researchers at Southwest University in Chongqing, China found that the formation of a yellow-red cocoon requires the Y gene, which encodes a protein that transports the carotenoids from midgut to the silk glands.
- Mutations in one or more of these genes produce yellow, flesh-colored, rusty, and pink cocoons.
- If the Y gene is mutated, the flavonoids are absorbed but the carotenoids are not, resulting in green cocoons.
- The green is dark or light depending on whether genes for other proteins that enhance flavonoid uptake are normal or mutated.
- If both carotenoids and flavonoids are not taken up, the cocoons remain white.

Like golden retrievers, basmati rice, and alphonso mangoes, silk is the pinnacle of domestication. Presently, scientists possess the means to create and contrast genetically identical hybrid silk moths, with the only distinction being the inactivation of one of a gene's two parental versions: ancestral or domesticated. This opens up the possibility for scientists to decipher all the important steps leading to the domestication of the silk moth, gene by gene.

Starry Euclid Images Spur Probe Of "Dark Universe"

Context: The first photographs obtained by the newly launched Euclid space telescope have been released by European astronomers. These ground-breaking photographs reveal Euclid's remarkable capabilities, displaying its ability to observe billions of galaxies up to 10 billion light years away.

What is the Euclid Mission?

- The Euclid project, led by the European Space Agency (ESA) in collaboration with NASA, attempts to decipher the enigmatic forces of dark matter and energy, which comprise 95% of the universe.
- The Euclid Space Telescope has a 1.2-meter primary mirror, which allows it to take precise views of galaxies.
- It has two major scientific instruments: a visible-wavelength camera (VIS) and a near-infrared camera and spectrometer (NISP).
- Euclid aspires to shed light on the underlying forces influencing the cosmos by charting the distribution and evolution of galaxies.

Mission Scope and Timeline

- Euclid is a space project outfitted with a powerful telescope and cutting-edge research instruments.
- The mission will operate for six years when it will thoroughly study the sky.

Spacecraft and Launch

- Euclid was launched from Cape Canaveral, Florida, on July 1, 2023, using a SpaceX Falcon 9 rocket.
- The spaceship carries the Euclid Space Telescope, which is meant to view galaxies at various wavelengths.

Dark Energy and Dark Matter Research

- The surprising acceleration of the universe's expansion is explained by dark energy, which was discovered in 1998.
- The purpose of Euclid is to offer a more precise measurement of this acceleration, possibly revealing fluctuations across cosmic history.
- Dark matter, as determined by its gravitational impact on galaxies and clusters, is critical to their survival.

Remarkable Images taken by Euclid

Sharper and Clearer: These photographs have been hailed as the sharpest, demonstrating Euclid's precision and capacity to catch tiny cosmic details.

- **Perseus cluster:** Euclid's studies cover four regions of our surrounding cosmos, including the huge Perseus cluster, which is only 240 million light-years away and contains around 1,000 galaxies.
- **Horseshoe Nebula:** Euclid provides a unique viewpoint on celestial wonders such as the Horseshoe Nebula, a location where new stars are formed. Scientists believe that ordered formations such as the Perseus cluster could only have developed if dark matter existed. The gravitational influence of dark matter on galaxies, including their rotation and the development of huge cosmic structures, is inferred.

About Mission

The mission highlights that our comprehension of the universe is limited to only 5% of the matter we can see. The rest of the universe is "dark" because it emits no electromagnetic radiation, yet its effects on visible matter are obvious.

- **The Role of Dark Matter:** Dark matter is thought to influence galaxies' rotation, galaxy cluster cohesion, and the construction of cosmic structures, lending credence to its existence.
- **The Mysteries of Dark Energy:** When the universe's accelerated expansion was discovered in the 1990s, dark energy, an even more perplexing force, was hypothesized. In 2011, this unexplained energy was given the Nobel Prize.

Mission Ahead

- **Creating a 3D Map:** After initial commissioning and overcoming technological obstacles, Euclid will build a 3D map that covers around one-third of the sky. This map will illustrate tiny differences caused by the dark universe.
- **Cosmic Web Exploration:** Scientists want to understand the development and distribution of galaxies within the cosmic web, a network of cosmic structures that make up the universe, by learning more about dark energy and dark matter.

What India can expect from the 'Rashtriya Vigyan Puraskar' awards?

Context: The Ministry of Science and Technology has launched the 'Rashtriya Vigyan Puraskar' (RVP), which is on par with the Padma and other national prizes.

What exactly is the Rashtriya Vigyan Puraskar (RVP)?

- The Vigyan Ratna Awards will recognize lifelong achievements and contributions in any science and technology sector.
- The Vigyan Shri Awards will recognize outstanding achievements in any science and technology sector.
- The Vigyan Team Awards will be granted to a team of three or more scientists/researchers/innovators who have made exceptional contributions while working in a team in any science and technology sector.
- Vigyan Yuva-Shanti Swarup Bhatnagar (VY-SSB): These are India's highest multidisciplinary science awards for young scientists (up to 45 years old).
- They are named after Shanti Swarup Bhatnagar, the great scientist and visionary who founded and directed the Council of Scientific and Industrial Research (CSIR).

Criteria

- The prizes are based on various criteria, including technological advancements and collaborative team activities.
- Except for the Vigyan Yuva-SSB prize, the RVP does not impose age limitations, consistent with initiatives to remove ageism and gender prejudices.
- Nominations for this bouquet of awards will be accepted each year on January 14th and remain open until February 28th (National Science Day).
- These awards will be announced every year on May 11th (National Technology Day). The award ceremony for all categories will be held on August 23rd (National Space Day).

Significance

- It recognizes and invites participation from people of Indian origin living in other countries, recognizing the global impact of Indian scientific brilliance.
- The new awards will be available to a broader range of "scientists, technologists, and innovators (or teams) working in government, private sector organizations, or individuals working outside of any organization."
- In addition to discovery-based research, the new awards will have broader eligibility criteria, such as technology-led ideas or products. The RVP also contains a series of team prizes (Vigyan Team) to recognize scientific research's increasingly collaborative, cross-disciplinary, translational, and intersectional nature.
- Except for the Vigyan Yuva-SSB prize, which is open to scientists over 45, the other RVP awards do not have an age limit while specifically committing to ensuring fair gender representation.

Gamma-Ray Burst In Faraway Galaxy Disturbed Earth's Upper Atmosphere

Context: Researchers recently concluded that gamma rays from a supernova explosion two billion years ago created a substantial disturbance in Earth's ionosphere in 2022. The European Space Agency's Integral space observatory, numerous Earth-orbiting satellites, and lightning monitors in India all observed the disruption. Although this specific gamma-ray burst had no negative impact on Earth, scientists have argued that a particularly powerful explosion in the Milky Way could result in mass extinctions.

What are Gamma-ray bursts?

Gamma-ray bursts are extraordinarily bright flashes of gamma rays, the most powerful kind of light in the electromagnetic spectrum. They've been described as the most powerful explosions ever seen in the universe.

- **Cause:** Gamma-ray bursts are thought to occur when huge stars collapse into neutron stars or black holes or when neutron stars merge. These cosmic disasters can result in the discharge of massive amounts of energy. They can last anywhere from a few milliseconds to several hours, but they usually only last a few seconds. The burst of gamma rays that impacted Earth's atmosphere in 2022 lasted roughly 13 minutes.

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- **Released energy:** The amount of energy released during the burst could be more than the Sun's whole 10-billion-year lifetime. Following the original burst, an afterglow is observed at longer wavelengths, including as X-ray, ultraviolet, optical, infrared, and radio.

What impact did the 2022 gamma burst have?

After traveling through the universe, the gamma-ray burst that happened about two billion years ago caused a substantial disturbance in Earth's ionosphere.

- This explosion was determined to be the strongest of its sort ever recorded.
- The disruption was noticed by the European Space Agency's Integral (International Gamma-Ray Astrophysics Laboratory) space observatory and other satellites.
- The China Seismo-Electromagnetic Satellite (CSES), or Zhangheng, a Chinese-Italian mission launched in 2018, was used to study the consequences of the gamma-ray burst.
- The CSES's Electric Field Detector equipment assisted scientists in measuring the electric field with high precision.
- The gamma rays created a significant fluctuation in the electric field of the ionosphere, comparable to that seen during a solar flare event.
- The ionosphere was affected for several hours, according to instruments on Earth, and the disturbance reached the lowest levels of the ionosphere.

Health

The Reason for Falling Fertility Levels

Context: Fertility levels have dropped drastically across the world in recent decades, particularly in developed Asian countries such as Japan, South Korea and Singapore.

- A common reason cited for falling fertility levels is the rise in living costs, which makes it hard for people to afford many children.
- The truth, however, is that people across the world today enjoy higher living standards than ever before, yet have far fewer children than their ancestors who were much poorer.
- In "When social status gets in the way of reproduction in modern settings," it has been argued that evolutionary mismatch may be the reason behind falling fertility levels despite the rise in living standards over time.

Modern Times, Old Habits

Evolutionary mismatch refers to the phenomenon wherein traits that worked to the favour of an organism's survival in the past become disadvantageous to survival chances in modern times.

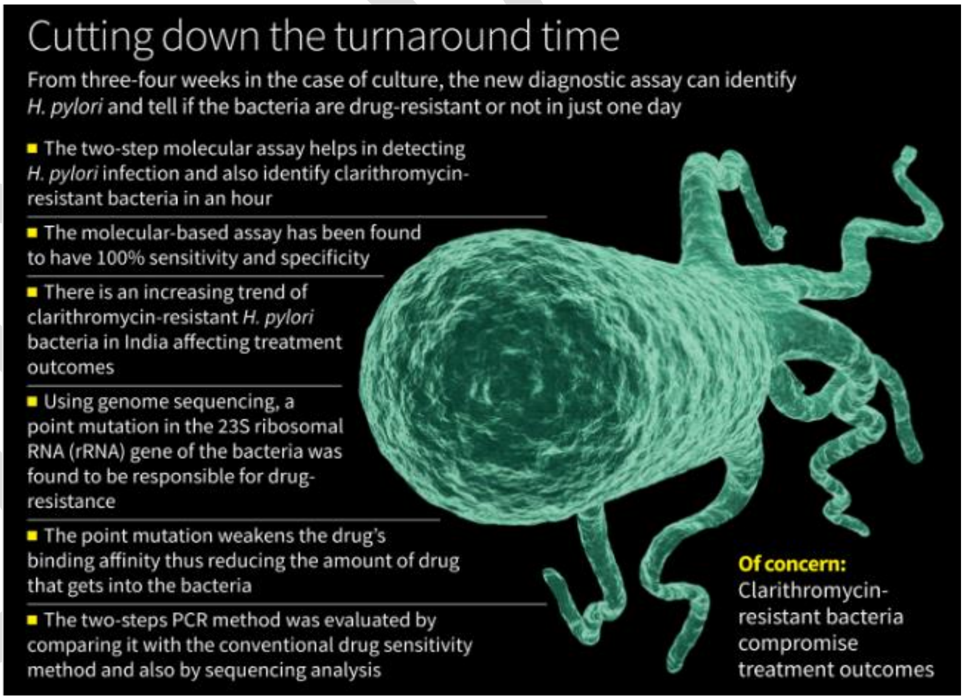
- The researchers note that human beings evolved to seek social status because it improved their access to resources, and thereby their ability to attract mates of the opposite sex and produce offspring bearing their genes.
- Such status seeking behaviour, while it worked well to improve the survival or reproductive success of people in the past, may be working against them in modern settings, they argue.
- In ancient hunter gatherer societies, which were egalitarian in nature, gaining status did not require hoarding more resources than others but rather depended on one's contribution to the group.
- And since these groups were small in size and family-based, fierce competition to seek social status was discouraged.
- In such an environment, while there was still competition for higher social status, the cost of such status seeking behaviour was kept minimal by the social setting.
- In modern societies, individuals exhibit their social status mainly through the hoarding of more resources. And unlike primitive societies in which individuals had to compete against only a small group of people, people today have to compete for higher social status against a much larger pool characterised by extreme wealth disparities. This can have adverse consequences.

- The authors cite the example of East Asian countries today with extremely low fertility levels where people may ironically enjoy an abundance of resources yet choose to delay or permanently stall reproduction because they want to compete for higher social status.
    - Education, career and wealth are common markers of status in East Asian societies, and people in these societies are found by the researchers to value social status more than those in the West. This leads to over-investment in status seeking and underinvestment in reproduction.
- It should also be noted that the perceived cost of raising children can rise as people compete for social status based on resources.
    - Take the case of educating children. Even though average education may be sufficient to impart enough skills to children, parents may opt for higher degrees that are unnecessary simply because these degrees offer better social status to their children.
    - Parents may also prefer expensive schools for kids because they offer social status. This 'rat race' to gain higher social status, the researchers argue, can compromise reproduction.

NICED Makes Quick Detection of Drug-Resistant H. pylori Possible

Context: Since it takes weeks to know drug resistance through culture, drug-resistant studies of H. pylori are seldom carried out here; empirical treatment using clarithromycin drug is routinely used without knowing the drug-sensitivity.

- A two-step PCR-based assay of a small region of the Helicobacter pylori (H. pylori) bacteria can help detect H. pylori infection and also identify clarithromycin-resistant bacteria and those which are drug-sensitive in six-seven hours has been developed by a team of researchers from the National Institute of Cholera and Enteric Diseases (ICMR-NICED), Kolkata.
- Since H. pylori bacteria grow slowly, it takes about a week to culture the bacteria and a couple of more weeks to test for drug-sensitivity, which the new diagnostic assay bypasses.
- The molecular-based assay has been found to have 100% sensitivity and specificity. There is an increasing trend of clarithromycin-resistant H. pylori bacteria in India leading to a decreasing success rate in treating the infection.



Risk Factors

- Most of the infections caused by the bacterium H. pylori are asymptomatic, 10–15% of them develop peptic ulcer disorders or stomach cancer.
- In India, H. pylori infections affect 60-70% of the population.
- H. pylori infection is often acquired during childhood and remains in the stomach throughout life if not treated with antibiotics effectively.

- So, if someone suffers from gastroduodenal diseases along with the detection of H. pylori infection, eradication of the bacteria provides the most effective treatment.
- Importantly, H. pylori infection is one of the robust known risk factors for gastric cancer.

As it takes three-four weeks to culture the bacteria and carry out drug-sensitivity tests, drug-resistant studies of H. pylori are seldom carried out in India.

- So, the conventionally used empirical treatment using clarithromycin is routinely used without knowing the drug-sensitivity.
- The growing incidence of clarithromycin-resistant bacteria is a big concern and has to be addressed as it is the most important reason for treatment failure.
- The NICED researchers undertook the study to identify the root cause of resistance toward clarithromycin and to develop a molecular-based technique for rapidly detecting antibiotic resistance.
    - The team from NICED turned to genome sequencing to identify that the drug resistance was due to a **point mutation (A to G mutation at 2143 position) in the 23S ribosomal RNA (rRNA) gene** of the bacteria.
    - To confirm that the point mutation was indeed responsible for drug-resistance, the researchers isolated and amplified 617 base pairs that contained the point mutation and transferred the base pairs to drug-sensitive bacteria.
    - The drug-sensitive bacteria carrying the point mutation became resistant to the drug thus confirming that the point mutation was indeed responsible for developing resistance towards clarithromycin.
    - To further confirm the role of point mutation in drug resistance, the team sequenced the bacteria that had become drug-resistant after the base pairs were transferred and found that the point mutation was present in the bacteria.

Bioinformatics study revealed that drug-resistant and drug-sensitive strains had very different binding affinity for the drug — the drug's binding affinity to the mutant was weaker compared with drug-sensitive bacteria.

- Due to weak binding, less amount of the drug is able to get into the bacteria and so is unable to kill them.
- The point mutation is thus responsible for the clarithromycin resistance.
- The DNA template used for assay was prepared by amplifying a small segment containing the point mutation from bacteria isolated directly from biopsy samples.
- The DNA template prepared from bacteria isolated directly from biopsy samples was validated with the DNA template prepared from bacteria that was cultured.
- This was done to confirm the validity of the DNA template prepared from bacteria taken from biopsy samples. The DNA template was used for the PCR-based assay.

The researchers developed a two-step PCR-based assay to first detect H. pylori infection and then to differentiate resistant isolates from sensitive ones directly from biopsy samples.

- In the initial step of PCR, the 617 base-pair segment containing the point mutation was amplified using DNA templates isolated from biopsy samples.
- In the second PCR step, 183 base pairs amplified by the first PCR step are used as a template.
- For the second PCR step, two allele-specific primer sets have been designed by exploiting the point mutation in the resistant strains.
- The clarithromycin-resistant strains will get amplified only by the resistant-specific primer and not with the sensitive-specific primer.
- Similarly, the sensitive strains will get amplified only by the sensitive-specific primer and not the resistant-specific primer.

The two-steps PCR method was evaluated by comparing it with the conventional drug sensitivity method and also by sequencing analysis, which showed 100% sensitivity and specificity.

Monkeypox Virus Is Evolving Due To Human Transmission

Context: A new analysis shows that the monkeypox, or mpox, virus is rapidly diverging into several lineages characterized by mutations resulting from continued interaction with the human immune system, suggesting that the virus has been circulating in humans since 2016.

- The sustained transmission among people marks a fundamental shift in monkeypox epidemiology as a zoonosis, "highlight the need for revising public health messaging around monkeypox and outbreak management and control".

Monkeypox Virus	
About	• Monkeypox is a viral zoonotic disease with symptoms similar to smallpox, although with less clinical severity. • The infection was first discovered in 1958 following two outbreaks of a pox-like disease in colonies of monkeys kept for research — which led to the name 'monkeypox'.
Outbreaks	• It was first reported in 1958, in monkeys in the Democratic Republic of Congo (DRC) and in humans in 1970, also in the DRC. • In 2017, Nigeria experienced the largest documented outbreak, 40 years after the last confirmed case. • Subsequently, the disease has been reported in many West and Central African countries.
Symptoms	• Infected people break out in a rash that looks a lot like chicken pox. But the fever, malaise, and headache from Monkeypox are usually more severe than in chicken pox infection. • In the early stage of the disease, Monkeypox can be distinguished from smallpox because the lymph gland gets enlarged.
Transmission	• Primary infection is through direct contact with the blood, bodily fluids, or cutaneous or mucosal lesions of an infected animal. Eating inadequately cooked meat of infected animals is also a risk factor. • Human-to-human transmission can result from close contact with infected respiratory tract secretions, skin lesions of an infected person or objects recently contaminated by patient fluids or lesion materials. • Transmission can also occur by inoculation or via the placenta (congenital monkeypox).
Vulnerability	• It spreads rapidly and can cause one out of ten deaths if infected.
Treatment and Vaccine	• There is no specific treatment or vaccine available for Monkeypox infection, • But the European Union has recommended a Small Pox Vaccine, Imvanex to treat monkeypox after the WHO declared monkeypox a global health emergency.

Impact Of Diabetes On Your Liver

Context: November 14 is observed across the world as **Diabetes Day**. A senior diabetologist delves into an emerging concern related to his field — the liver.

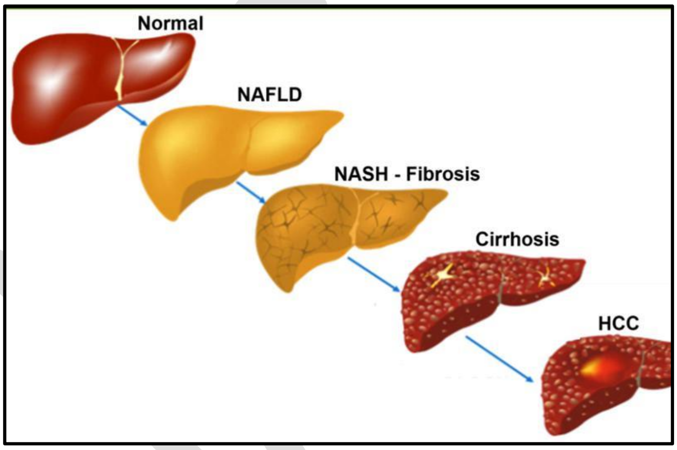
- The prevalence of diabetes is growing rapidly all over the world and in India.
- According to a recent ICMR-INDIAB Study published by us in the Lancet Diabetes Endocrinology, the number of people with diabetes in India now stands at 101 million.
- In addition, there are 136 million people with prediabetes.
- It is well known that uncontrolled diabetes can lead to complications affecting the eye, kidney, heart, feet and nerves.

Connection Between Diabetes And The Liver

The liver is a store house or a factory for various products and one of them is glucose.

- When there is excess glucose in the body, it gets deposited in the liver as glycogen.

- Moreover, the excess fat in the blood circulation (triglycerides and free fatty acids) also gets deposited in the liver and this is called 'Fatty Liver'.
- Epidemiological studies at the Madras Diabetes Research Foundation have shown that over 50% of people with type 2 diabetes have some degree of fatty liver.
- When there is excess fat in the liver, this leads to a condition called 'Hepatic Insulin Resistance'. What this means is that the body's insulin cannot function properly and that the action of insulin in the liver is considerably reduced.
    - This leads to increased release of glucose from the liver, which is referred to as 'Hepatic Glucose Production'.
    - The early morning increase in glucose levels i.e. increase in the fasting plasma glucose is mainly attributed to this increased hepatic glucose production.



- The relationship between fatty liver and type 2 diabetes is bidirectional. Thus, fatty liver can lead to type 2 diabetes and type 2 diabetes can promote fatty liver.
- Our studies have shown that if both obesity and diabetes are present, over 80% of such individuals will have fatty liver.
- While fatty liver by itself is not dangerous, very often it leads to inflammation of the liver, a condition known as Non-alcoholic 'Steatohepatitis' or NASH.
- Up to this stage it is probably reversible. However, at the next stage, it can progress to cirrhosis of the liver which is irreversible and can be fatal.
- Some people with cirrhosis of the liver even go on to develop hepatocellular carcinoma (HCC). The link between diabetes, fatty liver, cirrhosis and HCC is being increasingly recognised.

Today non-alcoholic fatty liver (NAFLD) is recognised as a complication of diabetes and also as a cause of diabetes. Recently there is a shift in the treatment of diabetes from a glucose centric approach, to a wider metabolic based care.

- Indeed, 'diabetes care' is slowly evolving into 'metabolic care' with the liver taking centre stage, along with the heart and kidney.
- Thus, while choosing antidiabetic medications, those beneficial to the liver, heart and kidneys are preferred.

Recently the close association of metabolic syndrome (a term used to refer to a combination of diabetes, hypertension and central obesity) and NAFLD has been recognised and internationally, the term NALFD is being replaced with 'Metabolic dysfunction-associated fatty liver disease' (MAFLD).

How Can We Treat MAFLD?

The best way is lifestyle modification.	A healthy diet consisting of less calories, carbohydrate and fat but more vegetable protein and fibre is a powerful tool to lose weight and treat excess fat in the liver.	Adequate exercise (e.g. walking, jogging, swimming etc.) along with yoga can also help shed extra kilograms.

It has been shown in research trials that by profound calorie restriction (about 800 calories /day), excess fat in the liver can melt away even within a week! This can lead to reversal of diabetes and other metabolic abnormalities within a few days or weeks, even before significant weight loss is achieved.

Today, we also have specific medicines which can help reduce fatty liver and reverse liver changes even at the NASH stage.

- It is therefore important to identify early changes in the liver to prevent progression to its more advanced stages like cirrhosis or carcinoma.
- Apart from check-ups for eyes, kidneys, heart, feet and nerves, the liver should also be included in the annual work up of all individuals with diabetes.

Functional Foods

Context: The book "Indian Food", points out that dry fruits like almonds, pistachio, cashew, walnut, apricot and pomegranate were known since the time of the sage Charaka (100 BC), the father of Ayurvedic Medicine, who pointed out their value in health and nutrition.

- A recent paper confirm this using almonds as the queen of dry fruits. Almonds are regarded as the epitome of healthy foods because they are a rich source of protein, monounsaturated fatty acids, dietary fibre, vitamin E, riboflavin, and essential minerals as well as phytosterols and polyphenols.

Functional food

The growing body of clinical evidence suggests that almond, which can be bought in any dry fruits shop, consumption is associated with several health benefits. Other dry fruits that also offer health benefits are cashew nuts, raisins, walnuts, dates, apricots and pistachio. Besides dry fruits, 'wet fruits' such as bananas, grapes, guavas, oranges and mangoes offer health benefits.

- Such healthy foods are also called 'functional foods', since they offer health benefits beyond their nutritional value.
    - Functional foods are defined broadly as foods that provide more than simple nutrition; they supply additional physiological benefit to the consumer.
    - Some types contain supplements or other additional ingredients designed to improve health.
- Some examples are oats, and millets like bajra, ragi, jowar, and soya proteins, besides the fruits.
- The Hyderabad-based National Institute of Nutrition (NIN) offers periodic reports on the nutritive values of Indian foods, and what a healthy adult should eat to stay healthy.
    - Children in particular should eat a lot of dry and wet fruits, and foodgrains of nutritive value.
    - Besides what NIN has suggested, the Health line website suggests many functional foods that should be in the daily diet. This site is well worth reading.

A Healthy Diet

- The best way would be to use not just rice or wheat in our daily diet, but include **millets** in the main item.
- When we cook curry, using vegetables, let us use turmeric, cinnamon, ginger and garlic.
- Add butter and ghee, but not in excess.
- Curd contains several antioxidants. Drinking coffee and tea, though no more than a few cups per day, is also useful since they contain antioxidants.
- Children, in particular, should drink several cups of milk daily, while adults can limit it to three cups.
- In addition, let us eat dry and wet fruits often, at least once a week.
- If you are a non-vegetarian, you can eat eggs, fish, chicken and mutton, since they offer rich sources of minerals and fats of value.

Brief About Millets

Millet is a collective term that includes several small-seeded grasses such as sorghum, pearl millet, finger millet, foxtail millet, and little millet. It is an important crop in Indian agriculture and society, providing food security, nutrition, cultural significance, livelihoods, and environmental sustainability.

Importance of Millets

Drought Tolerance	Nutritional Benefits	Ecological Benefits	Economic Benefits

- **Drought Tolerance**: Millet's are naturally adapted to dry and arid conditions, making them a suitable crop for regions with limited rainfall.
    - They require minimal water and are capable of growing in poor soil conditions, making them a reliable crop even during times of drought.
- **Nutritional Benefits**: Millets are an excellent source of essential nutrients such as protein, fiber, vitamins, and minerals.
    - They are gluten-free, low glycemic index, and have high antioxidant activity, which makes them a healthy alternative to rice or wheat.
- **Ecological Benefits**: Millets have a shallow root system and require minimal fertilizers, making them an environmentally friendly crop.
    - They also act as a natural barrier against soil erosion, and their short growth cycle allows for crop rotation, which helps in maintaining soil health.
- **Economic Benefits**: Millets are an important crop for small-scale farmers as they require minimal investment and have a low input cost.
    - They also have a high market demand due to their nutritional benefits, making them a lucrative crop for farmers.

The Zika Genome And Insights Into The Era Of Emerging Outbreaks

Context: The dengue virus and its equally infamous cousin, the Zika virus, together infect up to around 400 million people every year.

- The Zika virus and genomic studies of it have opened fascinating windows into our knowledge of the infectious disease and its relevance in the context of emerging outbreaks.

THE GIST

Researchers isolated the virus in 1947 from monkeys in the Zika forest in Uganda. The first human cases were detected in 1952 in Uganda and Tanzania. There have since been outbreaks around the world, largely confined to the tropics

Diagnosis is mostly through genetic testing. An antibody-based test would be complicated because antibodies produced by the infection can cross-react with those of the dengue, yellow fever, and West Nile viruses

Researchers in Tsinghua University suggested in *Cell* that infections of two viruses in primates encourage specific microbes to grow on the skin by suppressing an antimicrobial peptide on the skin. These microbes produce acetophenones that could provide a chemical cue to mosquitoes attracting them towards the individual and supporting transmission of the viruses

The Zika virus

- The Zika virus is a mosquito-borne flavivirus.
- Most infections in humans are asymptomatic or with mild symptoms, including fever, rash, and joint pain.
- The outbreak was characterized by an alarming increase in the number of microcephaly cases in newborns, prompting the World Health Organisation to declare it a public health emergency of international concern in early 2016.
- From Africa, the Zika virus has spread to Asia, Pacific islands, to the Americas, and beyond. The disease has of late been in the headlines with multiple outbreaks in the last few years in multiple Indian states, including, more recently, Kerala and Karnataka.
- A significant number of insights have come from the Zika virus's genome.
- Researchers sequenced the complete genome first in 2007. It has more than 10,000 bases of single-stranded RNA.

- The genome is also peculiar: it encodes for a large polyprotein, which is further cleaved into capsid, membrane precursor (prM), envelope, and seven non-structural proteins.
- The diagnosis of a Zika virus infection is mostly through genetic testing.
- An antibody-based test would be complicated because antibodies produced by the infection can cross-react with those of the dengue (DENV), yellow fever, and West Nile viruses.

Epidemiology and surveillance

- The Zika virus has an RNA genome, and thus a very high potential to accumulate mutations. The tools, techniques, and modalities we've developed to track the evolution, genetic epidemiology, and molecular underpinnings of transmission and pathogenesis could be extended to Zika virus outbreaks as well.
- Genomic studies have suggested that the Zika virus has two lineages: African and Asian.

Zika and microcephaly

- The small heads of children born to infected mothers has been one of the more alarming complications of a Zika virus infection.
- Earlier, based on studies with mice, researchers had suggested that a mutation in one of the precursor membrane proteins, called prM, of the Zika virus was associated with microcephaly.
- However, while the large outbreak in South America was caused by lineages of the virus with the specific mutation, only a subset of the relevant pregnancies resulted in microcephaly.
- The Zika-microcephaly hypothesis also suffered when researchers recorded microcephaly in Thailand following infections of the Asian lineage of the Zika virus that lacked the mutation.
- Foetal Zika virus infections were associated with heavy viral loads during pregnancy, and the viral load strongly influenced foetal growth.
- Taken together, the findings underscore the importance of the viral load and DENV infections for the occurrence of microcephaly.

Making it attractive

- In a recent study in Cell that infections of two viruses in primates encourage specific microbes to grow on the skin by suppressing an antimicrobial peptide, RELM, on the skin.
- These microbes produce acetophenones, which are volatile molecules that could provide a chemical cue to mosquitoes, attracting them towards the individual and supporting forward transmission of the viruses.
- The researchers also reported that administering isotretinoin could upregulate RELM and reverse this phenomenon.

Zika virus and DENV interactions have also been an interesting area of research. A significant body of evidence suggests that a Zika virus infection can significantly increase the risk for severe dengue.

As climate change helps drive the spread of vector borne diseases, and global warming brings environmental conditions that favour them to new places, our genomic technologies and such deep insights into the molecular pathogenesis of these viruses will be an important guiding light.

Report & Index

WHO Global TB Report

Context: There was a major global recovery in the number of people diagnosed with TB and treated in 2022, after two years of COVID-related disruptions, says the just-released WHO Global TB Report.

- While this has started to reverse or moderate, TB remains the world's second leading cause of death from a single infectious agent, and global TB targets have either been missed or remain off track.
- The net reduction from 2015 to 2022 was 8.7%, far from the WHO End TB Strategy milestone of a 50% reduction by 2025.

Key Highlights

- The reported global number of people newly diagnosed with TB was 7.5 million in 2022.
    - This is the highest number since WHO began global TB monitoring in 1995, above the pre-COVID baseline (and previous historical peak) of 7.1 million in 2019, and up from 5.8 million in 2020 and 6.4 million in 2021.
- The number in 2022 probably includes a sizeable backlog of people who developed TB in previous years, but whose diagnosis and treatment was delayed by COVID-related disruptions that affected access to and provision of health services, according to the report.
- India, Indonesia and the Philippines, which collectively accounted for nearly 60% of the reduction in the number of people newly diagnosed with TB in 2020 and 2021, recovered to above 2019 levels in 2022.
- TB caused an estimated 1.30 million deaths in 2022, again almost back to the level of 2019.
- COVID-related disruptions are estimated to have resulted in almost half a million excess deaths from TB in the three years 2020–2022.

Findings Related to India

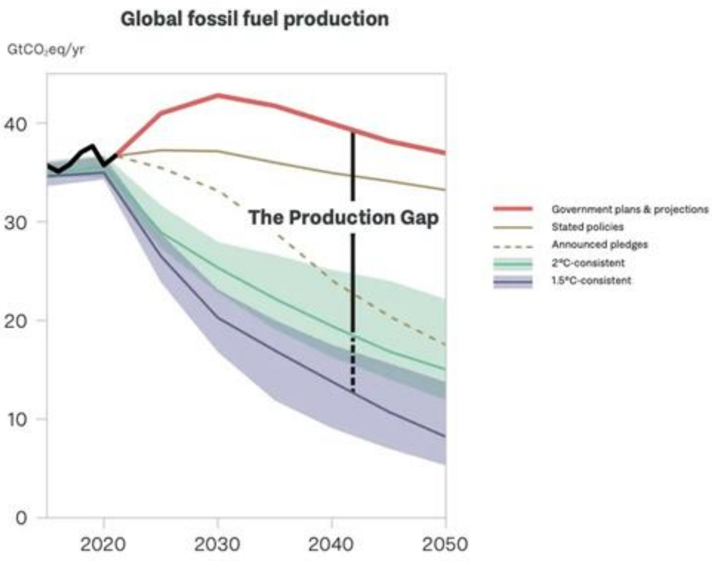
- TB Case Fatality Ratio in India: India reported a case fatality ratio of 12%, indicating that 12% of TB cases in the country resulted in death.
    - The report estimates that 3,42,000 TB-related deaths occurred in India in 2022, with 3,31,000 among HIV-negative individuals and 11,000 among those with HIV.
- Multidrug-Resistant TB (MDR-TB): India recorded 1.1 lakh cases of multidrug-resistant TB (MDR-TB) in 2022, highlighting the continued challenge of MDR-TB as a public health crisis.

Recommendations of the Report

- Urgent action is required to end the global TB epidemic by 2030, a goal that has been adopted by all Member States of the United Nations (UN) and the WHO.
- **Universal Health Coverage (UHC)** is essential to ensure that all people who need treatment for TB disease or infection can access these treatments.
- **Multisectoral action** is also needed to address TB determinants such as poverty, undernourishment, HIV infection, smoking, and diabetes to reduce the number of people acquiring infection and developing TB disease.

UNEP Production Gap Report

Context: Notwithstanding the global consensus among countries that fossil fuel emissions must be eliminated, a new report says that many governments plan to produce twice as much fossil fuels in 2030 than would be consistent with limiting warming to 1.5 degrees Celsius, and 69% more than that would be consistent with 2 degrees Celsius.



- This comes in the backdrop of 151 governments having pledged to achieve Net-Zero emissions – or no net emissions from 2050-2070.
- The latest forecasts suggest that despite promises by governments made as part of the 2015 Paris Agreement that global coal, oil, and gas demand will peak this decade, even without new policies, their forecasts would lead to an increase in global coal production until 2030, and in global oil and gas production until at least 2050, creating an

ever-widening fossil fuel production gap over time.

COP Summit in Dubai

At least 190 countries are expected to convene in Dubai, for the annual Conference of the Parties, to thrash out timelines to abate fossil fuel emissions, accelerate the adoption of renewable energy and pay vulnerable countries to help them weather the effects of global warming.

- The Production Gap Report was released which is prepared by the Stockholm Environment Institute (SEI), Climate Analytics, E3G, International Institute for Sustainable Development and the UN Environment Programme (UNEP) to assess governments' planned and projected production of coal, oil, and gas against global levels consistent with the Paris Agreement's temperature goal.
  - The report analyses emissions trends for 20 major fossil-fuel-producing countries: Australia, Brazil, Canada, China, Colombia, Germany, India, Indonesia, Kazakhstan, Kuwait, Mexico, Nigeria, Norway, Qatar, Russia, Saudi Arabia, South Africa, the UAE, the U.K., and the U.S.
  - We find that many governments are promoting fossil gas as an essential 'transition' fuel but with no apparent plans to transition away from it later.

Production Gap Report

Specifications	Details
Prepared by	UNEP, Stockholm Environment Institute (SEI), Climate Analytics, E3G AND International Institute for Sustainable Development.
First Launched in	2019
Aim	To track the discrepancy between governments' planned fossil fuel production and global production levels consistent with limiting warming to 1.5°C or 2°C
Key Focus of the report	The report analyzes emissions trends for 20 major fossil-fuel-producing countries. One among them is India.

Recommendations of the Report

Increase transparency in the plans, projections and support for fossil fuel production. Align those plans with national and global climate goals;

Aim for a near total phase-out of coal production and use by 2040 and a combined reduction in oil and gas production and use by three-quarters by 2050 from 2020 levels.

OECD Report on Climate Change

Context: The OECD report indicates that economically advanced nations failed to meet their pledged annual climate finance target of $100 billion for developing countries in 2021. This has sparked concerns regarding commitment and trust in climate financing.

Key Findings of Report

- **Total Climate Finance Increase**: In 2021, the overall climate finance extended and mobilized by developed nations for their developing counterparts reached USD 89.6 billion, marking a noteworthy 7.6% surge from the previous year.
- **Rise in Public Climate Finance**: Public climate finance, comprising both bilateral and multilateral contributions, nearly doubled from USD 38 billion to USD 73.1 billion over the 2013-2021 period. This segment constituted the majority of the total USD 89.6 billion in 2021.

- **Private Climate Finance Mobilization**: Private climate finance, with comparable data available from 2016 onward, totaled USD 14.4 billion in 2021, constituting 16% of the overall climate finance.
- **Decline in Adaptation Finance**: Adaptation finance witnessed a decrease of USD 4 billion (-14%) in 2021, resulting in its share of total climate finance dropping from 34% to 27%.
  - This decline raises concerns about the capacity of developing nations to address both mitigation and adaptation requirements.
- **Loan Dominance in Climate Financing**: In 2021, the public sector mobilized USD 73.1 billion through bilateral and multilateral channels, with USD 49.6 billion provided as loans.
  - This reliance on loans, rather than grants, raises concerns about exacerbating debt stress in less affluent countries, impacting their ability to effectively tackle climate challenges.
- **Financial Assistance Needs**: Developing countries are estimated to require approximately $1 trillion annually in climate investments by 2025, with the figure rising to around $2.4 trillion each year between 2026 and 2030.

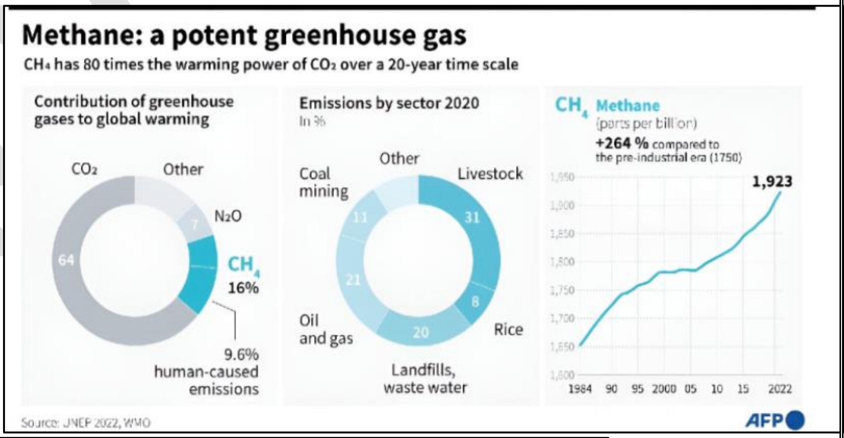
Organisation for Economic Co-operation and Development (OECD)

- OECD is an association of 38 member countries, most being rich developed nations that attract migrant workers and students.
  - India is not a member of OECD.
- **Founded:** 1961, by 18 European nations, plus the United States and Canada.
- **Headquarters**: Paris, France.
- **Members**: The majority of OECD members are high-income economies with a very high Human Development Index (HDI) and are regarded as developed countries.
- **Aim**: Fostering economic development and cooperation and fighting poverty through the promotion of economic stability.

Methane Emissions

Context: Climate talks often revolve around reducing the most dangerous greenhouse gas CO2. But other powerful heat-trapping methane emissions are also likely to be discussed in the 28th Edition of the Conference of Parties (COP28 – Dubai Climate Conference).

- Methane holds the position of the second most significant human-induced greenhouse gas (GHG) after CO2, accounting for around 20% of global emissions.
- China, the United States, Russia, India, Brazil, Indonesia, Nigeria, and Mexico collectively contribute nearly half of all human-induced methane emissions.
- Given methane's powerful greenhouse gas characteristics and its shorter atmospheric lifespan compared to carbon dioxide, substantial reductions have the potential to swiftly and significantly mitigate its impact on atmospheric warming.



Greenhouse gas	Chemical symbol	Lifetime (years)	(GWP)
Carbon dioxide	$C0_2$	5-200	1
Methane	CH_4	12	21
Nitrous oxide	N_20	114	310
Sulphur hexafluoride	SF_6	3 200	23 900
CFC-12	CCl_2F_2	102	6200-7100
HCFC-22	$CHClF_2$	12	1300-1400
Perflouromethane	CF_4	50 000	6500

Methane

- **Composition**: Methane, with the chemical formula CH4, is the most basic hydrocarbon, comprising a single carbon atom and four hydrogen atoms.
- **Utility**: It serves as a globally employed fuel due to its flammable nature.
- **Greenhouse Gas**: Methane qualifies as a potent greenhouse gas.
- **Warming Potential**: Over its initial 20 years in the atmosphere, methane possesses over 80 times the heat-trapping capacity of carbon dioxide.

Emission by India

- India holds the position of the fourth-largest emitter of methane globally, trailing behind China, the United States, and Russia.
- According to the Global Methane Tracker 2022, the majority of methane emissions in India, approximately 61%, stem from the agriculture sector. The energy sector contributes 16.4%, and waste accounts for 19.8% of the total methane emissions.

Delhi Most Polluted City In World: Swiss Survey

Context: IQAir has released the Air Quality Index (AQI).

Important findings of the IQAir Air Quality Index (AQI)

- **Most Polluted City:** Delhi was the world's most polluted city. Lahore, Pakistan, came after. Fireworks contributed to air pollution in portions of Delhi that was 30 times higher than the World Health Organization's (WHO) permissible standards.
- **Other Indian Cities in the Top 10 Polluted Cities:** Kolkata was ranked fourth, with Mumbai ranking ninth.
- **Cleanest City:** Mexico City has been named the world's cleanest city.

About IQ Air

- It is a Swiss air quality technology firm that specializes in protecting airborne contaminants and developing air quality monitoring and air cleaning solutions.
- The pollution levels are weighted averages, which means that a country's population affects the pollution figures presented.
- PM 2.5 is a term used to describe ambient airborne particles with a diameter of 2.5 micrometres emitted from many sources and have been related to negative health impacts such as cardiovascular disease, respiratory sickness, and early mortality.

CPCB (Central Pollution Control Board)

- It is a statutory organization established in 1974 by the Water (Prevention and Control of Pollution) Act.
- Furthermore, the CPCB was given powers and functions under the Air (Prevention and Control of Pollution) Act of 1981.
- It functions as a field formation and also provides technical services to the Ministry of Environment and Forests under the provisions of the Environment (Protection) Act of 1986.
- The CPCB's primary functions, as outlined in the Water (Prevention and Control of Pollution) Act of 1974 and the Air (Prevention and Control of Pollution) Act of 1981, are to promote the cleanliness of streams and wells in various areas of the States by preventing, controlling, and decreasing water pollution, and to improve air quality and prevent, control, or abate air pollution in the country.

World is Severely Off Track to Limit Planet-Heating Emissions, says UN

Context: The United Nations has warned that the world is falling far behind in efforts to reduce greenhouse gas emissions and prevent climate change. According to the UN, current climate pledges will only slightly lower emissions by 2030, far below the required levels.

Highlights from the UN Assessment Report

- **Minor Emission Reduction Progress:** According to the research, nearly 200 nations' present climate pledges have made minimal progress, particularly in decreasing emissions this decade.
- **Inadequate Carbon Emissions Reduction:** The combined climate strategies of these nations are anticipated to result in a 2% reduction in carbon emissions below 2019 levels by 2030.
- **Far below the necessary targets:** This reduction is far less than required to limit global warming. According to the UN's Intergovernmental Panel on Climate Change (IPCC), a 43% reduction in emissions is required to restrict warming to the Paris Agreement target of 1.5°C since the pre-industrial era.

IPCC

- The Intergovernmental Panel on Climate Change (IPCC) is a United Nations-sponsored scientific body dedicated to providing the world with objective, scientific information about human-induced climate change, its natural, political, and economic impacts and risks, and potential response options.
- The World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) founded it in 1988.
- The IPCC evaluates climate change research and synthesizes it into reports that are essential tools for governments and policymakers worldwide. Climate change research, impacts, adaptation, and mitigation are all included in these studies.
- The IPCC's reports are important in international climate change debates, informing national and international policy and decision-making processes.

Paris Agreement

- The Paris Agreement is a historic international agreement signed in 2015 by nearly every nation as part of the United Nations Framework Convention on Climate Change (UNFCCC).
- Its principal goal is to combat climate change and its negative consequences.
- The Paris Agreement's fundamental goal is to enhance the global response to climate change by keeping global temperature rise below 2 degrees Celsius over pre-industrial levels this century.
- It is also working to minimize the temperature increase to 1.5 degrees Celsius.
- While the Paris Agreement does not set enforceable emission targets for each country, it does require governments to make their best efforts to reach their NDCs and to strengthen these efforts in the coming years.
- The Agreement also intends to improve countries' ability to deal with climate change's effects and give ongoing and expanded international help for adaptation to developing countries.
- The Paris Agreement is noteworthy because it is a worldwide agreement that covers more than 97% of global greenhouse gas emissions and reflects a huge commitment to work together to tackle climate change.

Greenhouse Gases Hit Record High In 2022: UN

Context: The recently issued by the World Meteorological Organization's 19th Greenhouse Gas Bulletin revealed that the concentration of greenhouse gases in the atmosphere had reached record levels and was expected to climb further.

Greenhouse Gas Bulletin 2023 Findings

- **Increase in greenhouse gas concentrations**: The atmospheric concentration of greenhouse gases (GHG) reached new highs in 2022.
- In 2022, the levels of the three major greenhouse gases – carbon dioxide, methane, and nitrous oxide – exceeded previous records.
- Temperatures have risen as the quantity of heat-trapping gases in the atmosphere has increased.
- The worldwide average temperature in 2022 was 1.15 degrees Celsius, higher than the 1850-1900 norm, and 2023 is expected to be the warmest year on record.
- Extreme weather events such as high heat and rainfall, ice melt, sea level rise, and ocean heat and acidity could result.
- This is expected to increase socioeconomic and environmental consequences.

- Compliance with the Paris Agreement: As part of the Paris Agreement (2015), countries agreed to limit global warming to "well below" 2 degrees Celsius above average levels estimated between 1850 and 1900, preferably 1.5 degrees Celsius.
- However, existing greenhouse gas concentrations suggest temperatures will far surpass the Paris targets by the end of the century.
- **Consumption of fossil fuels**: The Bulletin stated that consumption of fossil fuels should be curtailed as soon as possible.
- **War's impact**: The World Meteorological Organization has cautioned that the ongoing battles in Gaza and Ukraine have diverted world attention away from the core threat of climate change.
- According to some experts, finances, and attention devoted to climate change mitigation and adaptation could be transferred to war operations.

Greenhouse Gas Emissions

- **Greenhouse effect**: The greenhouse effect is the impact of greenhouse gases in the planet's atmosphere, trapping heat radiated by the earth's surface.
- They were called after greenhouses, which are structures that trap heat from the sun and are used to cultivate fruits, vegetables, and flowers.
- Carbon dioxide, methane, nitrous oxide, hydrochlorofluorocarbons (HCFCs), hydrofluorocarbons (HFCs), and ozone are examples of these gases that trap incoming terrestrial radiation and prevent it from reaching the earth's atmosphere.

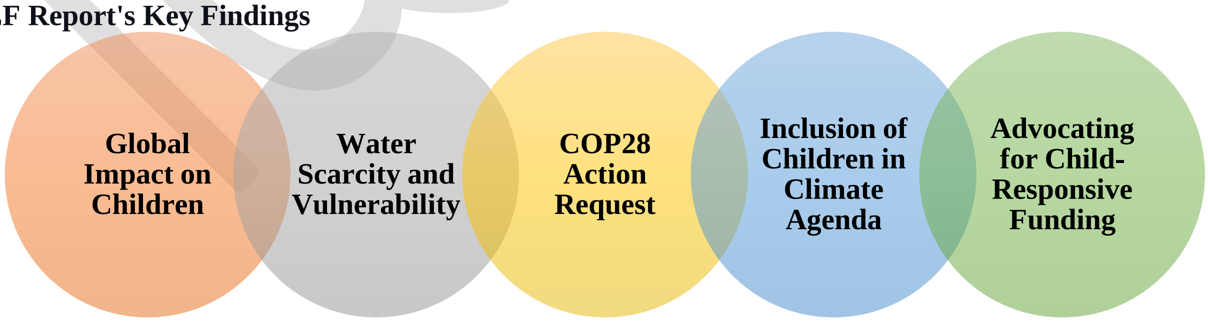
Greenhouse Gas Concentrations In 2022

- Carbon dioxide, methane, and nitrous oxide account for 150%, 264%, and 124% of pre-industrial levels (before 1750).
- 418 parts per million CO2
- According to the WMO, worldwide average CO2 concentrations in 2022 were 50% higher than in the pre-industrial era and are expected to rise further in 2023.
- Because CO2 has a long life, temperature levels will persist for decades even if emissions are lowered to zero.
- Methane concentration: 1,923 parts per billion
- The increase in methane concentrations in the atmosphere is poorly understood.
- 336 parts per billion for nitrous oxide.
- Nitrous oxide levels in the atmosphere have surpassed record levels due to rising greenhouse gas concentrations.

Nearly a Billion Children Globally Exposed to Extremely High Water Stress: UNICEF Report

Context: According to a recent UNICEF assessment, nearly a billion children globally will be subjected to high or extremely severe water stress by 2022. Climate change may worsen the situation, emphasizing the significance of focusing on children in global responses.

UNICEF Report's Key Findings



- **Global Impact on Children:** By 2022, over half of the world's children, or 953 million, will have been subjected to high or extremely high water stress. Climate change is expected to exacerbate the situation.

- **Water Scarcity and Vulnerability:** According to the research, 739 million children were subjected to high or extremely high water scarcity, and 436 million children were exposed to high or extremely high water vulnerability.
- **COP28 Action Request:** Catherine Russell, Executive Director of UNICEF, stressed the importance of COP28 in putting children at the center of the global response to climate change. The research builds on the 2021 Children's Climate Risk Index (CCRI), indicating that 559 million children are exposed to high heatwave frequency and around 470 million children face high or extremely high drought risk in 2022. These figures might affect all 2.02 billion children worldwide by 2050.
- **Inclusion of Children in Climate Agenda:** The paper advocates for including children and intergenerational equity in the Paris Climate Change Agreement's Global Stocktake and final decision on the Global Goals of Adaptation.
- **Advocating for Child-Responsive Funding:** In advance of COP28, UNICEF pushes for making the Loss and Damage Fund and funding arrangements child-responsive, recommending that child rights be incorporated into the fund's governance and decision-making processes.

What Exactly Is Water Stress?

- Water stress is the difficulty in getting sources of fresh water for use due to a variety of circumstances, many of which are related to environmental, social, economic, and political concerns.
- It happens when the demand for water exceeds the available supply during a specific period or when poor quality limits its use.
- Natural and human causes both influence water stress.
- Climate change is compounding the situation by causing weather patterns to shift, resulting in more severe and frequent droughts and floods that impair water supplies.
- Overuse of water resources, pollution, and ineffective water management techniques all contribute significantly to water stress.
- Addressing water stress necessitates comprehensive management and conservation policies, long-term practices, and collaboration among various sectors and communities.

Measures Suggested by UNICEF

Child-Centric Global Response	**Integration in the Global Stocktake**	**Inclusion in the Global Goal on Adaptation (GGA)**	**Child-Responsive Financial Arrangements**

- **Child-Centric Global Response:** Emphasizing the importance of putting children at the heart of the global response to climate change.
- Inclusion in the COP28 Agenda: Advocating for COP28 to be a watershed moment in the fight against climate change by prioritizing children.
- **Integration in the Global Stocktake:** UNICEF advocates for the inclusion of children's issues and intergenerational fairness in the Global Stocktake, a mechanism for evaluating progress toward the Paris Climate Change Agreement's goals.
- **Inclusion in the Global Goal on Adaptation (GGA):** Advocating for the inclusion of children and climate-resilient vital services in the Paris Agreement's decision-making on the Global Goal on Adaptation.
- **Child-Responsive Financial Arrangements:** In advance of COP28, UNICEF proposes transforming the Loss and Damage Fund, as well as other financial arrangements, to be child-responsive. Child rights must be incorporated into the fund's governance and decision-making processes. UNICEF intends to unveil the Sustainability and Climate Action Plan in order to energize efforts to protect vulnerable children and address gaps in global responses to climate problems.

Climate Risk Index for Children (CCRI)
The UNICEF-developed Children's Climate Risk Index (CCRI) is a comprehensive instrument for measuring and mapping children's exposure to climate and environmental dangers, shocks, and stresses.

- The CCRI's goal is to give a thorough understanding of children's exposure and vulnerability to the effects of climate change. This aids in prioritizing activities to assist those most vulnerable.
- It gathers geographical data and other risk indicators to map children's exposure to climate-related shocks such as heatwaves, water scarcity, cyclones, vector-borne diseases, riverine and coastal flooding, air pollution, and lead contamination.
- Based on aggregated data, the CCRI assesses countries on a scale of low to extremely high risk, indicating the areas where children are most vulnerable.
- According to the CCRI supplement for 2023, one in every three children, or nearly 739 million worldwide, now live in places with severe or very high water scarcity. Climate change is projected to exacerbate the situation.
- Over the next three decades, an estimated 4.2 billion infants will be born in populations sensitive to climate change stressors such as disease spread, air pollution, problems controlling body temperature, and dehydration risk.
- India is ranked 26th on the Children's Climate Risk Index (CCRI) among countries where children are very vulnerable to the effects of climate catastrophe.

Important Days

World Thrift Day

Context: World Thrift Day is observed on October 31 to promote saving money and developing a sense of financial prudence.

About World Thrift Day

- Established on 31st October 1924 by the World Savings and Retail Banking Institute (WSBI) founding fathers as the ‘World Thrift Day’, the World Savings Day has been marked ever since.
- World Thrift Day is celebrated every year on 31st October worldwide to promote savings and financial security of individual and nation as a whole.
- World thrift day was established to inform people all around the world about the idea of saving their money in a bank rather than keeping it under their mattress or at home.
- In India due to death of late Prime Minister Indira Gandhi on the same day in 1984, this day is being celebrated on 30th October.

World Thrift Day 2023

- This year, the theme of World Thrift Day is “Saving prepares you for the future”, closely linked with last year’s theme that focused on the importance of savings.
- This year, as in the past, WSBI launched an awareness raising campaign, much in harmony with similar actions conducted by saving banks across the world.
- This kind of awareness raising campaigns and the subsequent increase in savings are especially meaningful to build “resilient” generations which is something that we all need regardless of where we live in this world. We believe that individual savings makes the society advance, as it is a collective movement.
- Encouraging the young generation to plan their finances will not only give them freedom and security, two things that are vital for them, but also it will help build a strong society aware of the importance of savings.
- The central message of the campaign is to "Conquer your Tomorrow" through savings!

Key Highlights
It so happens that our vast universe’s scheme of operations also has an economical character. That is, our universe is thrifty as well.

- Physicists generally attribute this to the principle of least action. Action in physics is defined by the change in energy of a system over time.
- The conservation laws in physics follow from the principle of least action. They imply that all energy is conserved, as is the total momentum. Nothing is deleted or destroyed, only conserved.
- All the phenomena that happen, from the subatomic world to the galaxies, follow the path of least action.
- The word 'least' here doesn't mean minimality. Instead, it means that a physical system between any two points in space-time evolves along a path that minimises or maximises the action depending on the outcome of the process.
- The basic idea is that nature has a certain purpose to fulfil and thus follows an economical path. This is one of the most profound and far-reaching ideas in physics.
    - From the motion of planets around the sun to a ball thrown in the air, bodies go for the path that minimises the action involving their energy.
    - Such selection happens naturally, without any 'planning'. Water vapour is perfectly aerodynamic in the air but when it falls as rain, they do so as elongated spheres spreading out as little as possible to avoid increasing their surface tension.

World Psoriasis Day

Context: This year's theme for World Psoriasis Day observed was 'Access for all'. Dermatologists treating psoriasis say lack of awareness about the condition and treatment leads to stigmatisation, even pushing people to consider ending their lives.

- Psoriasis patients contend with lack of awareness, bad lifestyle choices and poor insurance cover.

Key Highlights

Psoriasis is an autoimmune disease that manifests as rashes usually on the face, elbows, knees and later spreads across the skin.

- There are many kinds of psoriasis and among them the most common is psoriasis vulgaris.
- But there are also severe manifestations, leaving patients bed-ridden or with gnarled fingers.
- The condition could be inherited, as in the case of 56 year old patient, who was first diagnosed with arthritic psoriasis 15 years ago. He is among the 30% of patients who have joint involvements. He underwent physiotherapy to stem further damage to his gnarled fingers.
- The medication of Psoriasis id very expensive. Over the years patients can become resistant to medicines and the condition relapses. Also, psoriasis is a disease spectrum whose treatment cost could depend on the stage and type of disease.
- It is a non-communicable auto immune disease that occurs due to inflammation as the body attacks the skin through various mediators, for various reasons.
- The lifestyle induced disease can be mitigated by exercise and controlling obesity. Alcohol and smoking worsen psoriasis.
- Change in lifestyle in our country could be a reason cases are increasing. Increased awareness has resulted in more patients seeking help.

Psoriasis is also linked to cardiovascular events, as certain cytokines and TNF alpha affect blood vessels producing atherosclerotic blocks.

- Patients are prone to diabetes, abnormal lipids and hypertension adds to it. Many of them are unable to exercise. More aggressive inflammation worsens the risk of all associated morbid events.

Psoriasis is mediated by signals of inflammation exchanged by cells called interleukins and cytokines. Abdominal fat produces adipokines, interleukin 6 and TNF alpha, all of which adversely affect the outcome of psoriasis. Losing this fat and maintaining ideal weight is vital. Exercise and diet control, low carb diet, avoiding sugar and dairy foods are advised by doctors.

In developed countries insurance covers treatment for severe psoriasis whereas in India it is still regarded as a cosmetic disease, the exception being joint involvement.

The epidermis has five layers and it takes 40 to 50 days to complete a cycle for dead cells to be replaced. In psoriatic patients it is reduced to 10 days. Generally, more men than women have the condition with 15-20% chances of an offspring contracting it, if one parent is affected. Psoriasis worsens in winter and many medications can trigger or induce psoriasis.

About Psoriasis

- It is a chronic autoimmune condition that causes the rapid buildup of skin cells. This buildup of cells causes scaling on your skin's surface.
- It causes a rash with itchy, scaly patches, most commonly on the knees, elbows, trunk and scalp.
- It is a common, long-term (chronic) disease with no cure. It can be painful, interfere with sleep and make it hard to concentrate.
- The condition tends to go through cycles, flaring for a few weeks or months, then subsiding for a while. It is not contagious.

Causes	• An **over-reactive immune system that creates inflammation** in your skin causes psoriasis. • If you have psoriasis, your immune system is supposed to destroy foreign invaders, like bacteria, to keep you healthy and prevent you from getting sick. Instead, **your immune system can mistake healthy cells for foreign invaders**. • As a result, **your immune system creates inflammation or swelling**, which you see on the surface of your skin as skin plaques.
Common signs and symptoms	• **Raised, inflamed patches of skin** that appear red on light skin and brown or purple on dark skin; • **Whitish-silver scales or plaques on the red patches** or grey scales on purple and brown patches; • **Dry skin that may crack** and bleed; • **Soreness around patches**; • **Itching and burning sensations** around patches; • **Thick, pitted nails**; • Painful, swollen joints;

Treatment	It **has no cure**. **Treatments aim to**
	• **Reduce inflammation** and scales;
	• **Slow the growth of skin cells;**
	• **Remove plaques;**
	• **Common psoriasis treatments include**:
	    • **Steroid creams**.
	    • **Moisturizers** for dry skin.
	    • Medication to slow skin cell production (anthralin).
	    • **Medicated lotions** or shampoos.
	    • **Vitamin D3 ointment**.
	    • Vitamin A or retinoid creams.

Other Important Days

Date	Event	Details and Significance
1 November	World Vegan Day	World Vegan Day is observed to raise awareness about the benefits of a vegan diet and veganism in general. The first Vegan Day was held on November 1, 2023.
1 November	Rajyotsava Day (Karnataka Formation Day)	Rajyotsava Day which is also known as Karnataka Rajyotsava or Kannada Rajyotsava or Kannada Day or Karnataka Day is celebrated on 1st November every year. On 1st November 1956, all Kannada language-speaking regions of South India were merged to develop the State of Karnataka.
2 November	Parumala Perunnal	Kerala's glorious festival is one of the most well-known celebrations in India's evergreen state. Parumala Perunnal Kerala is a festival that brings Kerala to a halt. Parumala Perunnal Kerala is celebrated in an accessible location, making it easier for tourists to visit and find grace on the occasion.
3 November	World Jellyfish Day	As this is the season when jellyfish will start their migration to the shores of the northern hemisphere, World Jellyfish Day has been set to fall in the springtime in the southern hemisphere.
5 November	World Tsunami Awareness Day	World Tsunami Awareness Day is observed on November 5th to highlight the dangers of tsunamis and to emphasize the importance of early warning systems in minimizing the damage caused by natural disasters.
6 November	International Day for Preventing the Exploitation of the Environment in War and Armed Conflict	The United Nations General Assembly declared on November 5, 2001, that the 6th of November would be observed as the 'International Day for Preventing the Exploitation of the Environment in War and Armed Conflict.'
7 November	Infant Protection Day	Every year on November 7th, Infant Protection Day is observed to raise awareness about the importance of protecting, promoting, and developing infants.
7 November	National Cancer Awareness Day	National Cancer Awareness Day is observed to raise awareness about cancer and to make it a global health priority.
8 November	World Radiography Day	Radiographers worldwide can use the day and the days around the date to promote radiography as a career, as a vital contribution to modern healthcare, and as a chance to increase public awareness of diagnostic imaging and radiation therapy.
9 November	National Legal Services Day	In India, the 9th of November is observed as National Legal Services Day to raise awareness among people in areas where legal literacy is lacking. The Legal Services Authorities Act was enacted in 1995, and people have been aware of the lack of legal literacy since then.
9 November	Uttarakhand Foundation Day	Uttarakhand was founded on November 9, 2000. Uttarakhand is known as "Dev Bhumi," or "Land of Gods." Uttarakhand Foundation Day was observed on November 19th. Initially known as Uttaranchal, the state's name was formally changed to Uttarakhand in 2007.
10 November	World Usability Day (2nd Thursday in November)	This year, World Usability Day is on November 10th. The day brings together various communities to celebrate how we can make our world a better place for everyone.

Date	Event	Details and Significance
10 November	**World Science Day for Peace and Development**	World Science Day for Peace and Development is an international day that recognizes the importance of science in society and is observed on November 10 each year. It also emphasizes the importance of involving the general public in discussions about emerging scientific issues.
11 November	**Armistice Day (Remembrance Day)**	In France, November 11th is observed as Armistice Day, also known as Laemistice de la Premiere Guerre Mondiale. This day is also used to commemorate the end of World War I. Some countries also observe this day as Remembrance Day. An armistice was also signed on November 11, 1918, at Compiegne in northern France, between the Allied Forces and Germany.
11 November	**National Education Day**	It is observed on November 11th to commemorate the birth anniversary of India's first Education Minister, Maulana Abul Kalam Azad. From 1947 to 1958, the Minister was also the first education minister of independent India.
12 November	**World Pneumonia Day**	World Pneumonia Day is observed on November 12th to raise awareness about Pneumonia and its prevention. This is considered the world's leading infectious disease, with children under the age of five being the most affected.
13 November	**World Kindness Day**	Every year on November 13th, World Kindness Day is observed. The main goal of this day is to allow everyone to reflect on and follow one of the most important and unique human principles. This day also promotes small acts of kindness, which bring people together.
14 November	**World Diabetes Day**	The 14th of November is designated as World Diabetes Day. The primary goal of this day is to raise public awareness about the impact of diabetes disease, its prevention, and diabetes education.
15 November	**Jharkhand Foundation Day**	Jharkhand was formed on November 15, 2000. The Bihar Reorganization Act established Bihar as the 28th state of India.
15 November	**World Chronic Obstructive Pulmonary Disease Day or World COPD Day**	Every year on November 17th, World Chronic Obstructive Pulmonary Disease Day, or World COPD Day, is observed. This year's theme is "Healthy Lungs - Never More Important."
16 November	**International Day for Tolerance**	The International Day of Tolerance is observed to raise awareness about the importance of tolerance by encouraging mutual understanding among cultures and peoples. By resolution 51/95, the UN General Assembly invited UN Member States to observe the International Day of Tolerance on November 16, 1966.
16 November	**National Press Day**	Every year on November 16th, National Press Day is observed to recognize and honour the Press Council of India (PCI). The day celebrates the existence of a free and accountable press in the nation.
17 November	**International Students Day**	The Nazi troops established International Students Day on November 17, 1939. On this day, there were 9 student leaders, and the students' bravery during this incident was exceptional.
17 November	**National Epilepsy Day**	National Epilepsy Awareness Day is November 17th. In this regard, the primary goal is to raise public awareness of epilepsy disease, its symptoms,

Date	Event	Details and Significance
		and its prevention. Epilepsy is thought to be a chronic brain disorder marked by recurrent seizures or "fits."
19 November	**World Toilet Day**	Every year on November 19th, World Toilet Day is observed. This day is primarily about inspiring people to address the global sanitation crisis and achieve Sustainable Development Goal (SDG) 6, which promises sanitation for all by 2030. According to UNICEF and WHO, approximately 60% of the global population, or approximately 4.5 billion people, do not have toilets at home or do not know how to properly dispose of toilet waste.
19 November	**International Men's Day**	The main theme of International Men's Day is to promote men's and boys' health. Every year on November 19th, International Men's Day is observed, and this day highlights the major issues confronting men worldwide.
20 November	**Universal Children's Day**	Every year on November 20th, Universal Children's Day is observed. This day is primarily intended to promote international cooperation, raise awareness among children worldwide, and improve children's welfare. On November 20, 1954, Universal Children's Day was established.
20 November	**World Day of Remembrance for Road Traffic Victims**	Every year, the third Sunday of November is designated as World Day of Remembrance for Road Traffic Victims. This day emphasizes how the number of annual road traffic fatalities has increased. There has been an increase in road traffic injuries, and there are now some leading killers of people aged 5 to 29 years.
21 November	**World Television Day**	Every year on November 21st, World Television Day is observed. According to the UN, on this day, the daily role of television is highlighted as it presents various issues that affect people. This day is observed as the acceptance of the impact and reach of geo-televisual communication on the global scenario.
25 November	**International Day for the Elimination of Violence against Women**	Every year on November 25th, the International Day for the Elimination of Violence Against Women is observed. This day was established by the United Nations General Assembly in 1993. Violence against women is defined as any act of gender-based violence that causes physical, sexual, or psychological harm or suffering to women, including threats.
26 November	**National Milk Day**	It is observed on 26 November to commemorate the birth anniversary of Dr. Verghese Kurien, the father of India's White Revolution.
26 November	**Constitution Day of India**	Every year on November 26th, India observes Constitution Day, also known as Law Day or Samwidhan Divas. On November 26, 1949, India's Constituent Assembly adopted the Indian Constitution. This took effect on January 26, 1950.
28 November	**Red Planet Day**	Red Planet Day is observed annually on November 28. Red Planet Day commemorates the Mariner 4 spacecraft's launch on November 28, 1964.
29 November	**International Jaguar Day**	The 29th of November each year is designated as International Jaguar Day. The largest wild cat in North America is honoured as an emblem of sustainable development, an umbrella species for the preservation of biodiversity, and a part of the rich cultural heritage of Central and South America.

Important Editorials of the Month

Loss and Damage Funds

Why in News?

Loss and Damage Fund is in sharp focus due to the upcoming UNFCCC Conference of Parties (COP 28) to be held in the UAE. After tough negotiations at COP 27 in Egypt in 2022, it was agreed that Loss and Damage Fund (LDF) must be provided to nations vulnerable to or impacted by climate change consequences.

- COP28 has overseen the commitment of $475mn to the loss and damage fund. The European
- Union has committed around $275million, UAE has pledged $100 million, Germany and the UK pledged $100 million and$75 million respectively. The US will contribute $17.5 million and Japan has committed $10million for the Loss and Damage Fund.

There are three pillars of dealing with climate change.

Mitigation	• Mitigation measures refer to the actions which must be taken to limit climate change. • For Ex- Cutting greenhouse gas emissions
Adaptation	• Adaptation measures refer to the proactive actions taken by countries to cope with the changes induced by climate change. • For Ex- Great Green Wall Initiative in the Sahel and West Africa to reduce global warming effect in Africa.
Loss and Damage	• Loss and Damage refers to the irreversible consequences of climate change. It represents the climate change impact that can't be avoided or mitigated through adaptation efforts. • For Ex- Floods in Pakistan or risk of submergence of Maldives due to rising sea levels.

Loss and Damage Fund

The Loss and Damage Fund is to fund the poorer nations (Small Island Nations like Tonga, Fiji) that have made negligible contribution to climate change but are more vulnerable to extreme climate events.

THE GIST

- Loss and Damage represents the irreversible consequences of climate change: impacts that can't be avoided or mitigated through adaptation efforts.
- At the 19th Conference of the Parties (COP 19) to the United Nations Framework Convention on Climate Change (UNFCCC) in Warsaw, Poland, in 2013, representatives of member countries formally agreed to establish the L&D fund.
- The L&D fund was conceived as a critical component of global climate action, recognising that some of the consequences of climate change are irreversible and beyond the capacity of vulnerable nations to handle.

What is "loss and damage"?

The phrase refers to costs already being incurred from climate-fuelled weather extremes or impacts, like rising sea levels

- Climate funding so far has focused on cutting CO2 emissions, while a third of it went towards helping communities adapt to future impacts

- Loss and damage funding is expected to cover the cost of damage that countries cannot avoid or adapt to
- A report by 55 vulnerable countries estimated that their combined climate-linked losses in the last two decades totalled $525 billion, or 20% of their collective GDP. This could go upto $580 billion per year by 2030
- Vulnerable countries and campaigners argue that rich countries that caused the bulk of climate change with their historical greenhouse gas emissions should pay

Source: Reuters

Principle behind the Fund

- The fund is based on the “polluters pay principle“. Polluter Pay principle makes the polluter liable for paying the cost of remedial action and compensation for the victims of environmental damage caused by their actions.
- Thus, the rich and developed nations, which are majorly responsible for industrial emissions, must pay the poorer nations that have made negligible contribution to global warming.

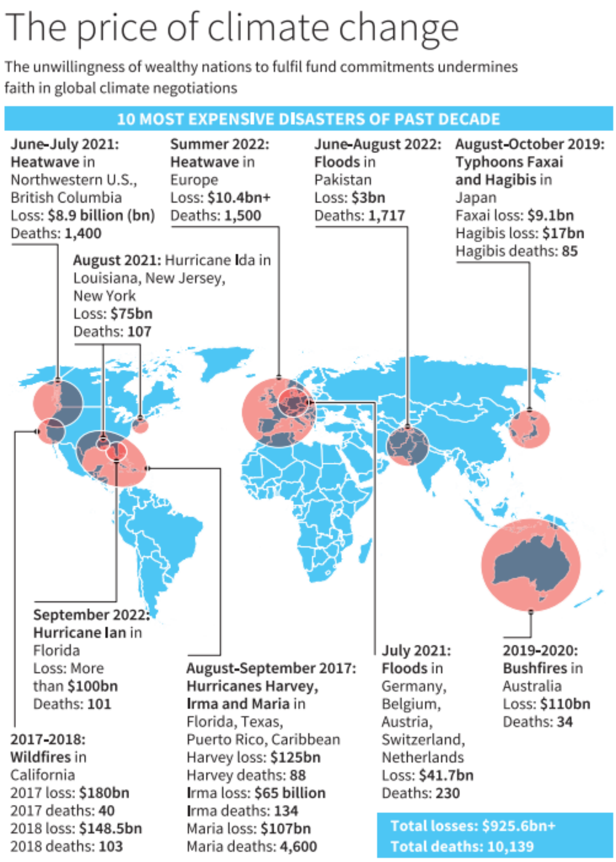
Genesis of the LDF

The movement of Loss and Damage Fund (LDF) is a three-decade old movement which was first initiated by the island nation of Vanuatu and the Alliance of Small Island States. The progress made at various UNFCCC Conference of Parties (COP) are as follows-

COP 19, 2013	At COP 19 in Warsaw, representatives of member countries formally agreed to establish the L&D fund.
COP 25, 2019	Santiago Network for L&D was set up, but the developed countries didn’t commit any funds
COP 26, 2021	Glasgow Dialogue on finance for L&D was established to continue discussions over the next three years on the fund.
COP 27, 2022	At COP 27, the member states agreed to set up the L&D fund and a Transitional Committee (TC) to figure out how the new funding mechanisms under the fund would operate. The TC was also to prepare recommendations that countries would consider, deliberate on, and potentially adopt by COP 28.

Challenges with operationalization of the Loss and Damage Fund

- Hosting of the fund at the World Bank
- Reluctance of Developed countries to contribute to the fund
- Rejection of Common But Differentiated Responsibilities (CBDR) principle
- No Commitment over the size of the Fund
- Assessment of Losses
- Inclusion of Developing Countries
- Lean Financial Health of the Developed Countries
- Lack of devolution formula



The Transitional committee (TC) formed after COP 27, has been encountering several challenges to get the Loss and Damage Fund operationalized. The key issues are mentioned below-

- **Hosting of the fund at the World Bank**: The World Bank charges an exorbitant overhead fee for maintaining any fund with it. The developing countries want a dedicated funding mechanism and an independent secretariat.
- **Reluctance of Developed countries to contribute to the fund**: The developed nations, particularly the U.S., have remained non-committal about being primary donors to the fund.
- **Rejection of Common But Differentiated Responsibilities (CBDR) principle:** The developed countries have rejected references to the CBDR, equity, and liability in the fund's draft. This has watered down the spirit and intent of the L&D fund.
- **No Commitment over the size of the Fund**: There has been no consensus over the size of the fund.
- **Assessment of Losses**: The true assessment of losses is a contentious issue, as it is difficult to ascertain how much of the damage is due to climate change and how much is due to governance failure. Ex- Estimation of loss due to Pakistan flood.
- **Inclusion of Developing Countries**: India also wants the inclusion of Developing countries in the fund (as discussed in the introduction of the article).
- **Lean Financial Health of the Developed Countries**: The US, UK, France are all facing economic slowdown and rise in public debt. For ex- UK's Debt has increased over 100 % of its GDP.
- **Lack of devolution formula**: No specific devolution formula has been evolved to transfer the Loss and Damage Funds among the Small islands and Developing countries.

Implications Of The Impasse Over The Loss And Damage Fund

Threatens climate justice
- The impasse over the fund threatens climate justice and exacerbates the suffering of vulnerable communities in developing nations.
- These vulnerable communities have contributed minimally to global emissions, but today bear the maximum brunt of climate change.

Increase humanitarian crises
- The delay in implementation of the fund will increase humanitarian crises like food shortages, human displacement and conflict.

Worsen the environmental crises
- Without adequate L&D funds, there will also be limited capacity to address environmental degradation and the loss of vital ecosystems.
- This will further worsen environmental crises which are already causing irreversible harm to the earth.

Internal conflicts
- Conflicts and tensions emerge in vulnerable nations due to climate change, which can spill across borders. For Ex- Central American Caravan.

Increase of divide between the developed and developing nations
- This impasse has created a substantial divide between wealthy and impoverished nations with regard to climate reparations and their historical responsibilities of global warming.

Breakdown of diplomatic efforts
- This deadlock shows the failure of the international community to collectively address the contentious issue of climate change and other pressing global issues.

Advantages of Loss and Damage Fund

Holistic coverage of losses due to climate change

- Loss and Damage not only includes the economic losses but also the human casualties, and the degradation of ecosystems and cultural heritage.
- Hence, the fund will comprehensively cover all the losses due to climate change.

Ensures Climate Justice

- The fund ensures climate justice to the vulnerable communities of Small Island nations and least developing countries, who have paid the price without even polluting the environment.

Shift of Direction of climate finance

- Climate finance has till now focused only on mitigation and adaptation.
- Two-third of the finance has gone into climate change mitigation and one third has gone into adaptation.
- The LDF draws the focus of climate finance towards reparations for the loss and damage.

India's Related Initiatives

National Adaptation Fund for Climate Change (NAFCC)

- It was established in 2015 to meet the cost of adaptation to climate change for the State and Union Territories of India that are particularly vulnerable to the adverse effects of climate change.

National Clean Energy Fund

- The Fund was created to promote clean energy, and funded through an initial carbon tax on the use of coal by industries.
- It is governed by an Inter-Ministerial Group with the Finance Secretary as the Chairman.
- Its mandate is to fund research and development of innovative clean energy technologyin the fossil and non-fossil fuel-based sectors.

National Adaptation Fund

- The fund was established in 2014 with a corpus of Rs. 100 crores with the aim of bridging the gap between the need and the available funds.
- The fund is operated under the Ministry of Environment, Forests, and Climate Change (MoEF&CC).

Way Forward

Sustenance of political commitment for LDF | **Windfall tax on oil and gas companies' profits** | **International insurance pool** | **Implementation of the "Global Shield Scheme against climate risks"**

- **Sustenance of political commitment for LDF:** Sustained political pressure on the issue of LDF will yield fruitful results, similar to the Green Climate Fund.

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- **Windfall tax on oil and gas companies' profits:** The windfall tax on oil and gas companies profit's can be used to fund the Loss and Damage Fund.
- **International insurance pool:** In the time being, till the developed countries do not commit to grants, the option of creating an international insurance pool to fund the loss and damage can be explored. The Insurance policies must must insulate stability from climate disaster.
- **Implementation of the "Global Shield Scheme against climate risks":** The German-backed "Global Shield Scheme against climate risks" was also one of the outcomes of COP 27. The Shield is aimed at increasing pre-arranged finance to be disbursed before or just after disasters happen. Till the LDF is not operationalised, this scheme needs to be implemented vigorously.

The L&D fund was conceived as a critical component of global climate action. So to achieve climate justice, rich countries must deliver finance in line with what is fair and just to the Small Islands and Least Developing countries.

Telecommunications Bill, 2023

Why in News?

The Telecommunications Bill, 2023 aims to consolidate laws for wireless networks, simplify procedures, and address challenges in the digital landscape.

Key Highlights

- The introduction of the Telecommunications Bill, 2023, inches closer to achieving the Union government's long-standing aim of consolidating the law for wireless networks and Internet service providers, with a 46-page statute that leaves existing regulatory structures largely intact, while simplifying bureaucratic procedures such as applying for licences and permits for telecom operators.
- Licensing processes are set to be digitised, and telecom operators will have a new way of dealing with non-compliance with their licence terms, while also having access to district- and State-level authorities for permissions and dispute resolution when setting up their equipment and optical fiber networks on public and private properties.
- The Bill also lets the satellite Internet industry — long touted as a way for at least some remote areas to get net connectivity — breathe a sigh of relief, as there is clarity that it will not need to bid for spectrum, thus putting India on similar footing with other countries.
- The Bill has been welcomed by industry bodies for streamlining their regulatory landscape and promoting their ease of doing business, and could possibly give the much-needed regulatory stability and enabling environment for the next phase of telecom expansion.
- Over half of India's population is on the margins of the connected world, and the Bill could help.
- But issues persist: the expansive definition of telecom brings in its ambit a range of services, and state authority over them raises concerns of privacy and surveillance.
- These concerns are not merely academic considering past allegations of state-sponsored snooping. The Bill tries to deal with spamming concerns, but its proposed solutions require additional compromises to privacy.
- The issues of surveillance reform and Internet shutdowns have massive implications, and must not be avoided just because they are contentious. The government must address these concerns with an open mind, considering the vast powers that the text of the Bill grants it.
- When the last draft was publicly floated for consultation, responses from industry bodies and the public were withheld from scrutiny.
- To further reassure the public of its clean motives, the government must scrupulously conduct rule-making with absolute transparency and consultation.
- This is especially important as many of the Act's provisions need subordinate legislation notified by the Department of Telecommunications before they come into force.

- The telecommunications landscape has evolved dramatically since the Telegraph Act was first passed in the 19th century, and regulation and lawmaking of the Internet world need to comprehensively address all the issues that have come with this digital explosion.

Key provisions of the Telecommunications Bill 2023

Authorization for Telecom-related Activities	**Changes in the Allocation of Spectrum**	**Powers of Interception**	**Digital Bharat Nidhi**
Dispute Settlement	**Biometric Authentication of Users**	**Territorial Applicability**	

- **Authorization for Telecom-related Activities**: Obtaining prior approval from the central government is mandatory for (i) providing telecom services, (ii) establishing, operating, or expanding telecom networks, or (iii) possessing radio equipment. The Bill allows the government to take back the spectrum that is unutilised, and also allow for the sharing, trading, and leasing of spectrum.
- **Changes in the Allocation of Spectrum**: Spectrum will be assigned by auction, except for certain specified uses. In some specific use cases, spectrum will be allocated on an administrative basis. These include: (i) national security and defence, (ii) disaster management, (iii) weather forecasting, (iv) transport (railways, etc.), (v) satellite services such as DTH and satellite telephony, and (vi) BSNL, MTNL, and public broadcasting services.
  - **Note**: Supreme Court in 2012 had ruled that there should be competitive auctioning for distribution of natural public-owned resources such as spectrum. Since then, spectrum had been allocated only through the bidding process.
- **Powers of Interception**: Government can suspend, assume control of, or oversee any telecom service in case of public emergency or national security concerns.
- The Bill empowers the central and state governments or a government authorised officer to seek interception, disclosure, and suspension of powers in case of a public emergency or interest or safety.
- **Digital Bharat Nidhi**: An earlier fund to provide telecom services in underserved areas has been renamed as Digital Bharat Nidhi, expanding its usage to include R&D.
- **Dispute Settlement**: A tiered structure for settling disputes – involving an adjudicating officer, designated committee of appeals and the Telecom Disputes Settlement and Appellate Tribunal (TDSAT) on top.
- **Biometric Authentication of Users**: Entities have been mandated to carry out biometric authentication of their users as a measure to curb fraud.
- **Territorial Applicability**: It now extends to offences committed outside India if the offence in question involves a telecom service provided in India.

Significance of the Telecommunications Bill 2023

Replaces Archaic Laws	**Provides Clarity for Satellite broadband services**	**Takes Away Executive Discretion**	**Technology-based Solutions for Governance**	**Simplification of Bureaucratic Procedures**	**Does Not Interfere with OTT**

- **Replaces Archaic Laws**: The Bill seeks to replace the Indian Telegraph Act (1885), the Wireless Telegraphy Act (1933), and the Telegraph Wires (Unlawful Possession) Act (1950), which are colonial-era archaic laws that need reforms, given that the telecom sector has changed significantly in the last few years.
- **Provides Clarity for Satellite broadband services**: It provides clarity for satellite broadband services, an emerging field of telecom that is expected to expand connectivity to remote areas. It aligns India with international norms and sets the stage for global players to enter. It will also help drive innovation, create opportunities for startups, and strengthen the country's position in the global satellite market.
- **Takes Away Executive Discretion**: An earlier draft stated that spectrum could be assigned through auction, administrative processes and "any other manner as may be prescribed." In the 2023 bill, this has been limited to just auction or administrative processes.
- **Technology-based Solutions for Governance**: For instance, there is a provision of online dispute resolution for grievance redressal which will usher in ease of doing business.
- **Simplification of Bureaucratic Procedures**: Provisions such as applying for licences and permits for telecom operators have been simplified (through digitisation). For instance, currently, the telecom department issues more than 100 types of licences, registrations, and permissions. The Bill seeks to club many of those in a single authorisation process. This will give the much-needed regulatory stability and enabling environment for the next phase of telecom expansion.
- **Does Not Interfere with OTT**: The Bill has stopped short of extending to telecom-adjacent services (such as OTT). This will prevent overregulation of the sector.

Concerns About Telecommunication Bill

Privacy Concerns: To curb fraud, entities are mandated to carry out biometric authentication of their users. This raises concerns related to the privacy of users.

Ambiguity in Definition: The new definition of 'telecommunication services' has been kept generic and is prone to wide interpretations.

The specific reference to OTT communication services has been removed from the definition of 'telecommunication services.

Possession of Network: The Telecommunication Bill 2023 gives the government the authority to "take temporary possession" of the network.

According to experts, the government needs to define "possession" and specify how long a "temporary" term would last.

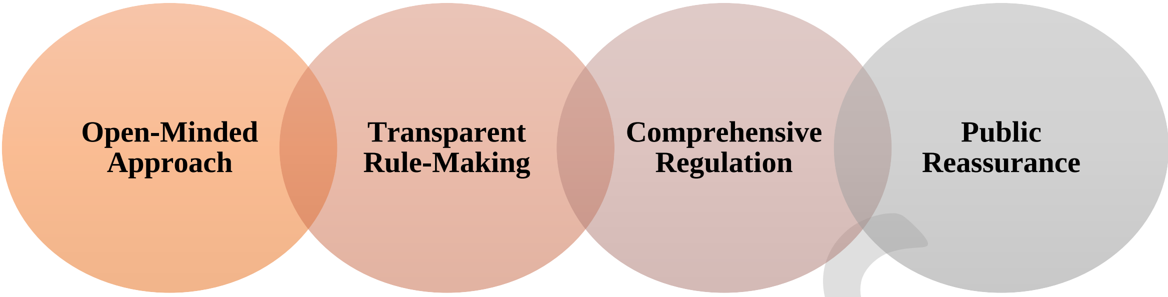
Potential Misuse of Power: The Telecommunication Bill 2023 empowers the central and state governments to suspend communication during any public emergency' or 'in the interest of public safety'. This power could be misused to curb dissenting voices.

Restrictive Powers of TRAI: The draft also seeks to allow the appointment of private sector corporate executives for the role of TRAI chairperson. This shift might limit TRAI's role with no industry watchdog having a neutral and independent approach crucial for fostering progressive and positive growth in the telecom sector.

Spectrum allocation: Private telecom companies are divided on this matter.

- During TRAI's consultation process in June this year Elon Musk's Starlink, Amazon's Project Kuiper, and India's Tata Group opposed allocation of satellite spectrum through auction. Meanwhile, Bharti Airtel and Reliance Jio supported spectrum auctions.

Way Forward



- **Open-Minded Approach**: The government should address privacy concerns with an open mind, acknowledging the significant powers granted by the bill.
- **Transparent Rule-Making**: To reassure the public, the government must conduct rule-making with absolute transparency and consultation, especially for subordinate legislation by the Department of Telecommunications.
- **Comprehensive Regulation**: Given the digital evolution since the 19th century, regulations must comprehensively address issues arising from the Internet's dramatic growth.
- **Public Reassurance**: The government must ensure public trust by actively involving industry bodies and the public in the rule-making process, acknowledging the evolving telecommunications landscape.

India and Bhutan

Why in News?

The decision by India and Bhutan to focus on infrastructure and connectivity during talks between Prime Minister Narendra Modi and Bhutan's fifth King Jigme Khesar Namgyel Wangchuck is an important marker towards more bilaterally driven regional initiatives.

Key Highlights

- A joint statement speaks of completing surveys for the Kokrajhar-Gelephu rail link that connects Bhutan to Assam, and beginning discussions on another Bhutan to West Bengal rail link, while also facilitating Bhutan-Bangladesh trade, with yet another rail link, and upgrading checkpoints along the India-Bhutan border.
- These plans foretell a future that could well change the development story of the region, including West Bengal and the northeast, Bhutan's south and east dzongkhags (districts), as well as Northern Bangladesh.
- Bhutan's economy has been dependent on hydropower and tourism revenues, and has been particularly hit by the COVID-19 pandemic as well as worries over global warming.
- A lack of opportunities has also led to emigration by educated youth and professionals. The new project proposed by the king, to build a Special Economic Zone at Bhutan's southern border with Assam, and an airport at Gelephu, are expected to drive growth and investment to the kingdom.
- In addition, Bangladesh's signing of a Preferential Trade Agreement with Bhutan in 2020 could increase Bhutanese export of local produce and build more markets for Indian and Bangladeshi producers in the sub-region.
- India's "energy exchange", which is bringing more Bhutanese and Nepali hydropower suppliers online, while planning to distribute energy to Bangladesh and Sri Lanka, will drive intra-regional growth and revenues.
- This would also power New Delhi's attempt at bridging the economic gap with the northeast, while drawing development partners like the World Bank and donor countries like Japan into the creation of a "sub-regional hub".
- Efficient and time-bound execution is, therefore, key to such ambitious plans. Given India's problems with Pakistan and sanctions on Myanmar for the 2021 coup blocking the path for trade and land connectivity to the East, working with other countries on India's periphery to build connectivity, markets and energy links is the

most sustainable way forward. In the longer term, geopolitical conflicts and anti-globalisation trends are forcing regional groupings to be more cohesive, something South Asia has not been able to achieve as yet.

- As India worries about China's push into South Asian trade, infrastructure projects and strategic ties, including concerns over a Bhutan-China boundary agreement's overhang over Doklam and India's "Chicken Neck" (Siliguri Corridor) route, these are ideas which will offer more security and prosperity for the countries involved, with particular benefits for Bhutan, India's traditionally trusted partner in the region.

India-Bhutan Bilateral Relations

Bhutan shares its border with four Indian states:

- Assam, Arunachal Pradesh, West Bengal and Sikkim with a length of 699 km and serve as a buffer between India and China.

Treaty of Friendship and Cooperation

- The basic framework of India-Bhutan bilateral relations was the Treaty of Friendship and Cooperation signed in 1949 between the two countries.
- It called for peace between the two nations and non-interference in each other's internal affairs. The Treaty was revised in 2007.
- However, Bhutan agreed to let India guide its foreign policy and both nations would consult each other closely on foreign and defence affairs.

Diplomatic relations

- The diplomatic relations were established in 1968 with the establishment of a special office of India in Thimphu.

Institutional mechanisms

- There are a number of institutional and diplomatic mechanisms between India and Bhutan in areas such as security, border management, trade, transit, economic, hydro-power, development cooperation, water resources etc.

India has constructed three Hydroelectric Projects (HEPs) in Bhutan

- Chukha HEP,
- Kurichhu HEP
- Tala HEP which is operational and exporting surplus power to India.
- Recently, India completed a 720 MW Mangdechhu Hydroelectric Power Project and both sides are in process of expediting the completion of other ongoing projects including the 1200MW Punatsangchhu-1 & 1020MW Punatsangchhu-2.

Trade

- The trade between the two countries is governed by the India-Bhutan Trade and Transit Agreement 1972. India is Bhutan's largest trading partner.

Maitri Initiative

- Bhutan is the first country to receive the Covishield vaccines under India's Vaccine Maitri Initiative.

Significance of Bhutan for India

Strategic Importance	Economic Importance	Cultural Importance	Environmental Importance

- **Strategic Importance**
  - Bhutan shares its borders with India and China, and its strategic location makes it an important buffer state for India's security interests.

- India has provided Bhutan with assistance in areas such as defense, infrastructure, and communication, which has helped to maintain Bhutan's sovereignty and territorial integrity.
- India has helped Bhutan build and maintain its border infrastructure, such as roads and bridges, to strengthen its defense capabilities and ensure its territorial integrity.
- In 2017, during the Doklam standoff between India and China, Bhutan played a crucial role in allowing Indian troops to enter its territory to resist Chinese incursions.

- **Economic Importance**
  - India is Bhutan's largest trading partner, and Bhutan's major export destination.
  - Bhutan's hydropower potential is a significant source of revenue for the country, and India has been instrumental in assisting Bhutan in developing its hydropower projects.
  - India also provides Bhutan with financial assistance for its development projects.
- **Cultural Importance**
  - Bhutan and India share strong cultural ties, as both countries are predominantly Buddhist.
  - India has provided assistance to Bhutan in preserving its cultural heritage, and many Bhutanese students come to India for higher education.
- **Environmental Importance**
  - Bhutan is one of the few countries in the world that has pledged to remain carbon-neutral, and India has been a key partner in helping Bhutan achieve this goal. India has provided assistance to Bhutan in areas such as Renewable energy, forest conservation, and sustainable tourism.

Challenges in the India-Bhutan Relations

Threat of swapping Doklam → **Bhutan's issue of brain drain** → **Negative sentiments**

- **Threat of swapping Doklam**
  - Bhutan and China have signed a cooperation agreement outlining the functioning of a new joint technical team for the delimitation and demarcation of the boundary.
  - There are concerns in India that a deal between Bhutan and China could include swapping Doklam – located close to the tri-junction between India, Bhutan and China – for disputed territories in the north.
  - With Doklam under its control, China could exert more pressure on India; Chinese forces could easily sever India's connection to the eastern part of their disputed border.
- **Bhutan's issue of brain drain**
  - The Bhutanese government is worried about the number of Bhutanese migrating overseas as youth unemployment in 2021 reached 21%.
  - India too needs to pay more attention to this brain drain, as, in the past, Bhutan's elite would have been educated in India.
  - India stands to lose its edge in Bhutanese policy-making and public narrative, and thus the projects outlined stand to benefit Delhi and Thimphu in keeping the talent within.
- **Negative sentiments**
  - Much of the negative sentiments, wrong information about India, are on social media in Bhutan. Some in Bhutan feel that Indians are using security issues as an excuse to keep Bhutan under India's control.
  - Parallely, China is employing all kinds of tools, instruments, methodology to attract the Bhutanese — through trade, their modern cities, and scholarships.

Way Forward

- India can help Bhutan to boost its economy by investing in infrastructure development, tourism, and other sectors. This will not only help Bhutan to become self-reliant but also create employment opportunities for its people.

- India and Bhutan can promote cultural exchange programs to foster greater understanding and appreciation of each other's culture, art, music, and literature.
- A visa-free movement of peoples from both countries can strengthen sub-regional cooperation.
- India and Bhutan can strengthen their strategic cooperation to address shared security concerns. They can work together to combat terrorism, drug trafficking, and other transnational crimes.

Impact of Climate Change on India

Why in News?

As India gets ready for the 28th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP28), it is important to examine how climate change affects the country's health.

Key Highlights

- India's inadequate health systems make our population particularly vulnerable to the impact of climate risks on health. Climate change affects health directly, causing more sickness and death.
- In more indirect ways, it affects nutrition, reduces working hours, and increases climate-induced stress.
- The precipitating factors continue to be unrelenting. One estimate suggests that if global temperature were to rise by 2°C, many parts of India would become uninhabitable.
- All nations during the Paris Agreement agreed to cap the rise in temperature at 1.5°C. Clearly, we have failed. The year 2023 saw the highest temperatures and heat waves in recorded history.
- The situation is likely to worsen for the planet. Climate emergencies — extreme heat, cyclones, floods — are expected to occur with increasing regularity. These will interfere with food security and livelihoods and sharpen health challenges.

Double burden

- The double burden of morbidity that India faces from communicable and non-communicable diseases will be worsened by climate change.
- It could facilitate the growth of vectors such as mosquitoes, sandflies, ticks, and as yet unknown ones, and change the seasonality of infection through changes in their life cycle.
- It could also facilitate the introduction of vectors and pathogens into areas where they did not exist before, such as mosquitoes in the Himalayan States.
- Heat also alters the virulence of pathogens. Reduced availability of food and water and the decrease in nutritional value of food increases vulnerability to diseases.
- Epidemics commonly occur after floods, but extended warm periods also promote the proliferation of water and food-borne pathogens and diseases.
- Less well recognised is the impact of climate change on non-communicable diseases and mental health, both of which are poorly managed in India.
- Heat, physical exertion, and dehydration, a constant state for labourers, could lead to kidney injuries, which are rising in India due to uncontrolled diabetes.
- Chronic Obstructive Pulmonary Diseases are exacerbated by increased and extended episodes of air pollution. The risk of dying from pulmonary disease increases by 1.8–8.2% during a heat wave and hospitalisation rates will go up by 8% for every 1% increase in temperature above 29°C.
- Depression, aggravated by stress generated by the change in weather conditions, and Post Traumatic Stress Disorder invariably accompany a climate emergency.
- These are rarely recognised in India, much less addressed.
- India is urbanising at a rapid pace, in an unplanned manner. Urban areas, not tempered by urban greenery and open spaces and filled with asphalt roads and heat-retaining buildings that physically block air circulation, bear the worst ill effects of climate change due to the urban heat island effect. (Urban areas are warmer than surrounding rural areas, especially at night).

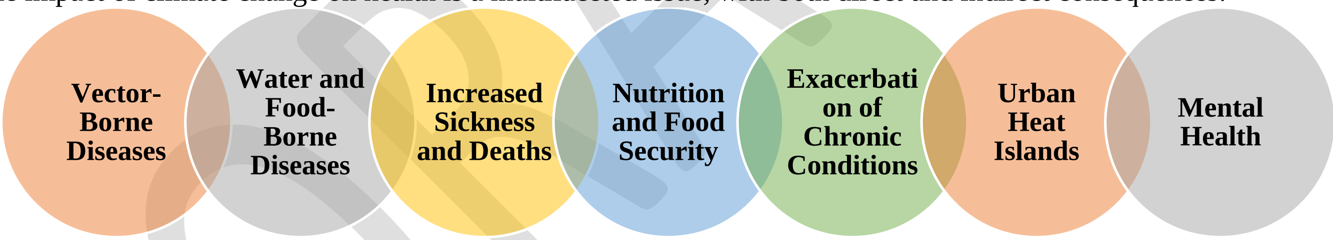
- Climate change puts further pressure on the weak urban primary health system, already suffering the ill effects of air pollution; urban planning that discourages physical activity; and work-related and cultural stress.
- Mitigation efforts begin with understanding the direct and indirect pathways by which climate change impacts health and assessing the burden.
- Currently, the health information systems are not modified to gather this data. Since the impact is accentuated by socio-economic conditions, having systems in place for social support and health services will reduce the impact.
- But the benefits from upstream interventions that focus on better urban planning, green cover, water conservation, and public health interventions will be much larger — not only for health but for many determinants of health.

Action at all levels

- Action to control climate change needs to happen at global, regional, and local levels. Pathways of climate change and their impact will determine the appropriate area of intervention.
- To achieve this, India has to recognise climate change and its impact on health as a problem that can be and needs to be addressed.
- Researchers who work in this area need to come up with policy options for action. National, State, and local governments have to decide to act on the policy options that have been generated by research.
- Only when the three streams of problematisation, policy options, and political decision-making come together is meaningful change likely to happen.
- It will be worthwhile to examine if these necessary conditions have been satisfied before expecting a change in the status quo on climate change and its impact on health.

Impact of climate change on India

The impact of climate change on health is a multifaceted issue, with both direct and indirect consequences:



- **Vector-Borne Diseases**: Warmer climates favor the spread of diseases like malaria and dengue fever, as they create more hospitable environments for vectors like mosquitoes.
- **Water and Food-Borne Diseases**: Flooding and higher temperatures can lead to outbreaks of diseases like cholera and diarrhoea.
- **Increased Sickness and Deaths**: Extreme weather events, like the record heat waves in India in 2023, directly contribute to higher rates of illness and mortality.
- **Nutrition and Food Security**: Climate change affects agriculture, leading to reduced food availability and quality. This can cause malnutrition, especially in vulnerable populations.
- **Exacerbation of Chronic Conditions**: Increased pollution and heat can worsen respiratory illnesses, cardiovascular diseases, and other chronic conditions.
- **Urban Heat Islands**: Dense urban areas with minimal greenery can become significantly hotter than surrounding areas, intensifying the health impacts of heatwaves.
- **Mental Health**: The stress of dealing with climate change impacts, including financial strain and displacement, can exacerbate mental health issues.

Government Initiatives To Overcome This Issue

India is actively addressing climate change and its health impacts through several initiatives:

- **Climate Change and Health Hub in Delhi**: India, in collaboration with the Asian Development Bank, launched this hub with an aim to enhance knowledge sharing, foster partnerships, and drive innovations in managing climate-related health challenges.
- **National Health Mission**: Targeted at underserved areas, this mission combats communicable and non-communicable diseases, including those exacerbated by climate change, through prevention and control measures.
- **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)**: In 2018, the government introduced the AB-PMJAY), a major health initiative aimed at providing universal healthcare coverage to the economically weaker sections. This scheme seeks to revolutionize healthcare in India, with goals of reducing poverty, boosting productivity, and enhancing social justice.
- **National Action Plan on Climate Change (NAPCC)**: Aimed at fulfilling India's Nationally Determined Contribution (NDC), the action plan addresses various dimensions of climate change. This plan encompasses missions focused on solar energy, water management, sustainable agriculture, sustainable habitats, greening initiatives, etc.

Climate Change and Health Hub in Delhi

National Health Mission

Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)

National Action Plan on Climate Change (NAPCC)

Way Forward

- Mitigation efforts begin with understanding the direct and indirect pathways by which climate change impacts health and assessing the burden.
- Currently, the health information systems are not modified to gather this data.
- The benefits from upstream interventions that focus on better urban planning, green cover, water conservation, and public health interventions will be much larger — not only for health but for many determinants of health.
- Action to control climate change needs to happen at global, regional, and local levels.
- Pathways of climate change and their impact will determine the appropriate area of intervention.
- India has to recognise climate change and its impact on health as a problem that can be and needs to be addressed.
- Researchers who work in this area need to come up with policy options for action.
- National, State, and local governments have to decide to act on the policy options that have been generated by research.
- When the three streams of problematization, policy options, and political decision-making come together, meaningful change is likely to happen.

Biosphere Reserves Are Evolving As Pockets Of Hope

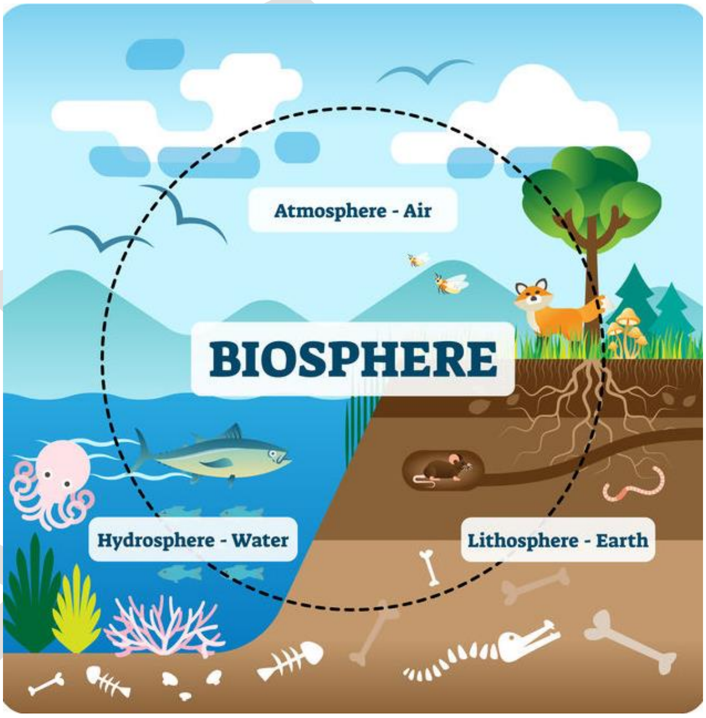
Why in News?

World Biosphere Reserve Day is celebrated on November 3 each year to raise awareness of the importance of biosphere reserves and to promote their conservation and sustainable use.

- On the second anniversary of World Biosphere Reserve Day, it is important to reflect on the progress made in conserving and sustainably using these vital ecosystems.
- On the second anniversary of World Biosphere Reserve Day, UNESCO successfully wrapped up the 10th South and Central Asian Biosphere Reserve Network Meeting (SACAM) in Chennai, India.

- The SACAM was held in collaboration with the Ministry of Environment, Forests, and Climate Change, Govt of India, and the National Centre for Sustainable Coastal Management.
- Under the theme 'Ridge to Reef', SACAM served as a forum for sharing expertise and nurturing partnerships in the domain of sustainable environmental practices within the South and Central Asia region.

Biosphere Reserves (BR)



- BR is an international designation by UNESCO for representative parts of natural and cultural landscapes extending over large area of terrestrial or coastal/marine ecosystems or a combination thereof.
- These are 'Science for Sustainability support sites' designated to reconcile the conservation of biodiversity, the quest for economic and social development and maintenance of associated cultural values.
- Biosphere reserves receive support from various UN entities (such as the UNDP, UNEP), and the International Union for Conservation of Nature (IUCN).
- As per UNESCO's records, there are presently 748 biosphere reserves spread across 134 nations, which includes 22 sites that cross national borders, fostering cooperation among neighbouring countries.
- These reserves have a positive influence on the lives of over 250 million individuals in 134 countries, with as many as 12 million of them located within India.

Key Organizations

UNESCO (United Nations Educational, Scientific and Cultural Organization)

Initiator and supporter of the Man and the Biosphere (MAB) Programm Designates and recognizes biosphere reserves globally, promoting conservation and sustainable development.

United Nations Development Programme (UNDP)

Collaborates with biosphere reserves to support sustainable development initiatives.

United Nations Environment Programme (UNEP)

Engages in activities to enhance environmental sustainability within biosphere reserves.

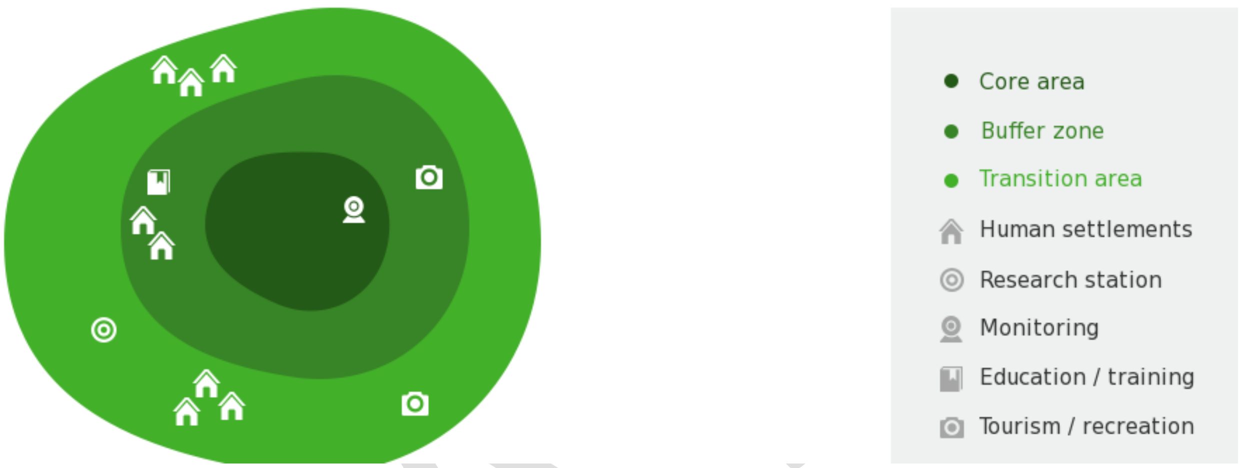
International Union for Conservation of Nature (IUCN)

Supports UNESCO in biodiversity conservation efforts and sustainable development.

Criteria for Designation of Biosphere Reserve

- A site must contain a protected and minimally disturbed core area of value of nature conservation.
- The core area must be a bio-geographical unit and should be large enough to sustain a viable populations representing all trophic levels.
- The involvement of local communities and use of their knowledge in biodiversity preservation.
- Area's potential for preservation of traditional tribal or rural modes of living for harmonious use of the environment.

The three zones that characterise a Biosphere Reserve are



Regulation of Biosphere Reserves

Strictly Protected Core Zone	Buffer Zone	Outermost (Transition) Zone
• At the centre of every biosphere reserve, there is a core zone that is subjected to strict protection. • This core zone serves as a habitat for various plant and animal species while safeguarding the overall ecosystem by preserving water, soil, air quality, and the entire biota.	• Surrounding the core zone, there is a buffer areawhere people coexist with nature in a harmonious manner. • This zone also serves as a laboratory for scientists to conduct research on natural phenomena and as a platform for training and education purposes.	• The outermost edge is the transition zone where communities practise socio-culturally and ecologically sustainable human activities.

Steps For Biosphere Conservation

- In the Island of Principe Biosphere Reserve, Sao Tome and Principe in Africa: Schoolchildren have been equipped with stainless steel bottles for drinking water
  - So the daily production and consumption of single-use plastic bottles can be completely avoided.
- World Biosphere Reserve Day is celebrated on November 3 each year to raise awareness of the importance of biosphere reserves and to promote their conservation and sustainable use.

Conservation at Local level

- **In the Sundarban Biosphere Reserve in India:** local communities are working together to manage mangrove forests and protect the biodiversity of the region.
- **In the Gulf of Mannar Biosphere Reserve in India**, local communities, including women, are contributing towards conservation efforts by forming self-help groups, while the youth are getting engaged in eco-tourism.
- **The Gulf of Mannar Biosphere Reserve Trust** has introduced the concept of 'plastic checkpoints'.
    - Community members check all vehicles and tourists for plastic waste, which is collected, recycled and used for the construction of roads.

UNESCO's Man and the Biosphere Programme (MAB)

- The MAB is an intergovernmental scientific programme that aims to establish a scientific basis for enhancing the relationship between people and their environments.
- It combines the natural and social sciences with a view to improving human livelihoods and safeguarding natural and managed ecosystems.
- It promotes innovative approaches to economic development that are socially and culturally appropriate and environmentally sustainable.
    - For example, in the Island of Principe Biosphere Reserve, Sao Tome and Principe in Africa, schoolchildren have been equipped with stainless steel bottles for drinking water.
    - This is an attempt to completely avoid the daily production and consumption of single-use plastic bottles.
- MAB's World Network of Biosphere Reserves is a dynamic and interactive network of sites of excellence that foster harmony between people and nature for sustainable development through

Participatory dialogue
Knowledge sharing
Poverty reduction and human well-being improvements
Respect for cultural values
Society's ability to cope with change

Importance of Biosphere Reserves

Strictly protected core zone in biosphere reserves:
It functions as a laboratory for scientists
Transition zone
Biosphere reserves are supported by other united nations agencies
They are home to a wide variety of ecosystems
Provide opportunities for sustainable economic development
Carbon sinks

- **Strictly protected core zone in biosphere reserves:** providing habitat for flora and fauna, and protecting water, soil, air, and biota as a whole ecosystem.
- Buffer zone surrounding the core zone, where people live and work in harmony with nature
    - **It functions as a laboratory for scientists** to study nature, and for training and education.
- **Transition zone** where communities practice socio-culturally and ecologically sustainable human activities.
- **Biosphere reserves are supported by other United Nations agencies**

  - For example: The United Nations Development Programme, the United Nations Environment Programme, as well as the International Union for Conservation of Nature.
- According to UNESCO: There are currently 748 biosphere reserves across 134 countries, including 22 transboundary sites, enhancing the friendly cooperation between neighboring countries.
- **They are home to a wide variety of ecosystems** — from tropical rainforests to alpine deserts, and thereby provide home to countless unique and endangered plants and animals species.
- They play a vital role in the protection of biodiversity and ensuring the sustainable use of natural resources.
- They **provide opportunities for sustainable economic development**.
- Biosphere reserves have become crucial in our fight against climate change.
  - They are home to many of the world's carbon sinks helping to absorb carbon dioxide from the atmosphere.
  - **Carbon sinks**, like forests and the ocean, provide solutions in implementing adaptation strategies to fight climate change.

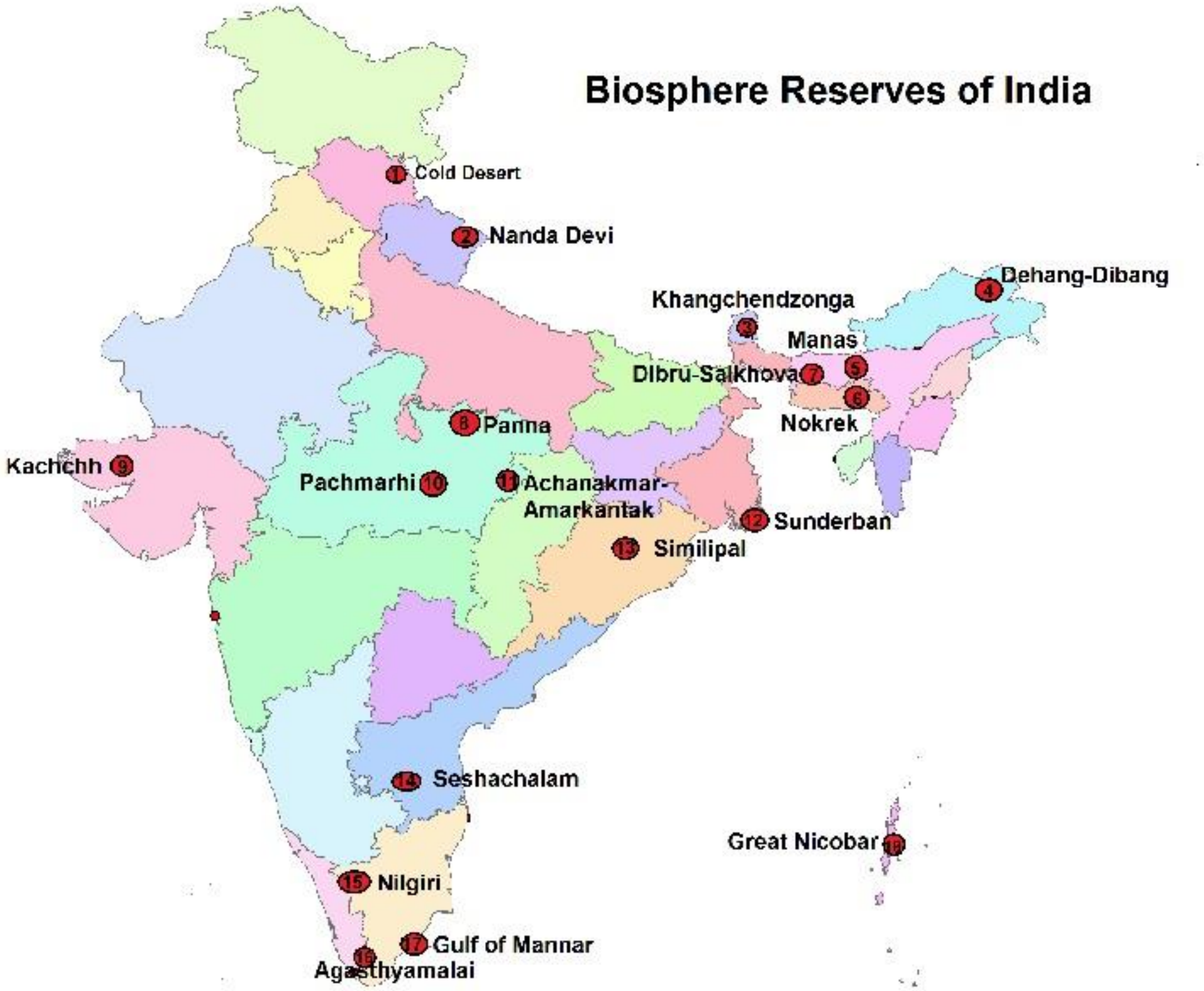
Challenges and Concerns

- **Anthropogenic Pressures:** Human-induced pressures on biosphere reserves, such as pollution, habitat destruction, and overexploitation, pose significant threats to biodiversity.
- **Climate Change Impact:** The increasing impacts of climate change, including rising temperatures and extreme weather events, challenge the resilience of biosphere reserves and their ability to support diverse ecosystems.
- **Lack of Funding:** Many biosphere reserves face financial constraints, hindering effective conservation efforts and the implementation of sustainable development projects. Adequate funding is crucial for long-term success.
- **Deforestation, invasive species, and land use changes** like mining pose significant challenges.
- **Urbanization and population growth** contribute to increased exploitation.

How many Biosphere Reserves are in India?

There are 18 biosphere reserves in India:

Cold Desert, Himachal Pradesh	**Nanda Devi, Uttrakhand**	**Khangchendzonga, Sikkim**	**Dehang-Debang, Arunachal Pradesh**	**Manas, Assam**
Dibru-Saikhowa, Assam	**Nokrek, Meghalaya**	**Panna, Madhya Pradesh**	**Pachmarhi, Madhya Pradesh**	**Achanakmar-Amarkantak, Madhya Pradesh-Chhattisgarh**
Kachchh, Gujarat (Largest Area)	**Similipal, Odisha**	**Sundarban, West Bengal**	**Seshachalam, Andhra Pradesh**	**Agasthyamala, Karnataka-Tamil Nadu-Kerala**
	Nilgiri, Tamil Nadu-Kerala (First to be Included)	**Gulf of Mannar, Tamil Nadu**	**Great Nicobar, Andaman & Nicobar Island**	



There are total 12 biosphere reserves of India which have been recognized internationally under Man and Biosphere Reserve program:

Nilgiri (First to be included)	Gulf of Mannar	Sunderban
Nanda Devi	Nokrek	Pachmarhi
Similipal	Achanakmar - Amarkantak	Great Nicobar
Agasthyamala	Khangchendzonga (Added under Man and Biosphere Reserve Program in 2018)	Panna, Madhya Pradesh (The latest included BR)

Way Forward

- Biosphere reserves are vital for the future of our planet. They are a living testament to the resilience of nature, that even amidst human activity, finds a way to flourish.
- In times of global challenges such as climate change, biodiversity loss and sustainable development, the role of biosphere reserves becomes even more important.
- Despite these sites being the most vital ecosystems protecting nature, these oases are not without threats such as deforestation, invasive species and land use changes such as mining.
- With increasing urbanization and constant growth of the world population, exploitation by humans is ever increasing.
- On this second anniversary of World Biosphere Reserve Day, it is important to reflect on the progress that has been made in conserving and sustainably using these vital ecosystems.
- The UNESCO Man and the Biosphere (MAB) programme enhances the human-environment relationship through combining natural and social sciences to improve livelihoods, safeguard ecosystems, and promote sustainable economic development.

The Challenge of Maritime Security In The Global South

Why in News?

The Global South faces a complex and evolving maritime security environment, with threats ranging from piracy, terrorism, illegal fishing, drug trafficking, and environmental degradation, to great power rivalry.

- According to Charles Darwin, the ability to adapt and adjust to the changing environment is the key to human survival and progress.
- He believed that it is not the strongest or most intelligent species that survives, but the one with the capacity to be resilient and adaptable.
- This notion of resilient adaptability has been proven true over time, and it is particularly relevant in the maritime domain where dealing with emerging challenges requires a flexible approach.
- Examples: Ukraine's growing use of asymmetrical tactics against Russia in the Black Sea, and China's deployment of maritime militias in the South China Sea.

Why there is the demand for maritime security?

- Against Unconventional Security Threats: Such as illegal fishing, natural disasters, marine pollution, human and drug trafficking, and the impact of climate change.
- Rise in illegal, Unreported, and Unregulated Fishing: It is due to faulty policies such as bottom trawling and seine fishing.
- Environmentalists highlight three reasons i.e., lenient regulations that allow for the misuse of resources, lax implementation of the law by security agencies, and the harmful impact of subsidies by which smaller fishermen shift to motorized trawling.

New Threats In The Maritime Domain

- Security Challenges
- Unconventional security threats
- State Preparedness
- India voicing Global South
- Zero-sum competition
- Security agenda
- Challenges of Global South
- Littoral States issues

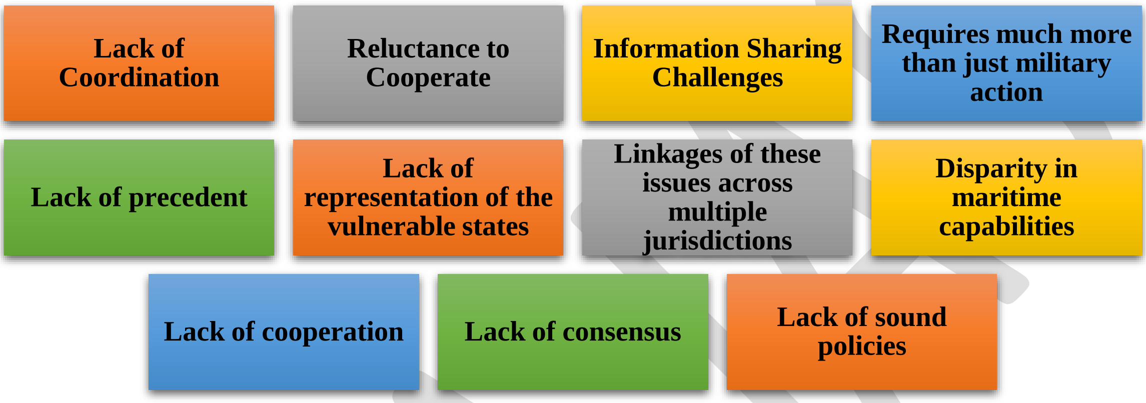
- **Security Challenges**: In recent years, hard security challenges in the maritime domain have acquired a new, menacing dimension.
    - Whether with Ukraine's growing use of asymmetrical tactics against Russia in the Black Sea.
    - China's deployment of maritime militias in the South China Sea, there is an unmistakable element of improvisation.
    - The radical new tactics at sea involve the use of grey-zone warfare, land attack missiles, and combat drones.
- **Unconventional security threats**: The bulk of the demand for maritime security in recent years has come from states facing unconventional security threats, such as illegal fishing, natural disasters, marine pollution, human and drug trafficking, and the impact of climate change.
- **State Preparedness**: States must be prepared to commit capital, resources, and specialist personnel over prolonged periods to meet security needs.
- **India voicing Global South**: Throughout its G20 presidency, India has sought to emphasise the concerns of the Global South in discussions to find solutions to the most pressing issues in the maritime domain.
    - Yet, there is no functioning template to fight non-traditional threats at sea.
    - Sustainable development goals in the littorals remain unrealised, as voices from littoral states in Asia, Africa, and the Southern Pacific are ignored by the developed countries.
- **Zero-sum competition**: There is a widespread perception in the Global South that the zero-sum competition among powerful nations in the Indo-Pacific has been to the detriment of the developing world.
- **Security agenda**: The contemporary security agenda is an interconnected set of objectives involving national, environmental, economic, and human security goals.
- **Challenges of Global South:** This phenomenon is particularly pronounced in the Global South, which finds itself especially challenged in meeting the objectives of marine governance.
    - What is more, rising sea levels, marine pollution, climate change, and natural disasters have had a disproportionate impact on less developed states, placing them in a position of vulnerability.
- **Littoral States issues**: Worryingly, littoral states in Asia and Africa have unequal law-enforcement capabilities and lack the security coordination required to jointly combat maritime threats.

Significance of Maritime Security for India

- India has a long coastline of over 7,000 km, which makes it vulnerable to various threats such as piracy, terrorism, smuggling, illegal fishing, and environmental degradation.
- India needs to protect its coastal and offshore assets, such as oil and gas installations, fishing grounds, and ports, from these threats.
- India's economy depends largely on the sea, as over 70% of its trade value and nearly 95% of its trade volume is carried by sea.

- India also imports most of its energy needs from the sea, especially from the Gulf region.
- Therefore, India needs to ensure the security and freedom of navigation of the Sea Lanes of Communication (SLOCs) in the Indian Ocean and beyond, which are vital for its economic growth and energy security.
- India has a strategic interest in the Indian Ocean Region (IOR), which is home to many friendly and cooperative countries, as well as some potential adversaries.
- India has historical, cultural, and diasporic ties with many countries in the IOR, and also invests in their development and security.

Challenges in Maritime Governance



- **Lack of Coordination:** Littoral states in Asia and Africa face challenges in coordinating their efforts to combat maritime threats. Unequal law-enforcement capabilities and varying security priorities hinder effective collaboration.
  - E.g. ASEAN countries often show reluctance to call out China's hegemonial actions in the South China Sea.
- **Reluctance to Cooperate:** Some littoral states resist maritime cooperation with foreign agencies, aiming to reduce reliance on external assistance. This reluctance can impede the development of comprehensive and coordinated security measures.
- **Information Sharing Challenges:** While there is a willingness to share information, there are limitations in the extent of collaboration, with states often sharing only the minimum required for common security goals.
  - E.g. Even though India and the USA have signed several agreements on Information sharing but still there are reluctance to information sharing due to some security and sovereignty concerns.
- **Requires much more than just military action:** States must instead be prepared to commit capital, resources, and specialist personnel over prolonged periods to meet security needs.
- **Lack of precedent**: There is no functioning template or a previous example to fight non-traditional threats at sea.
- **Lack of representation of the vulnerable states**: Rising sea levels, marine pollution, climate change, and natural disasters have had a disproportionate impact on less developed states. Voices from these littoral states in Asia, Africa, and the Southern Pacific are ignored by the developed countries.
- **Linkages of these issues across multiple jurisdictions**: The cross-jurisdictional linkages (spread across various sovereign countries) between these diverse areas make them challenging to manage.
- **Disparity in maritime capabilities**: Littoral states in Asia and Africa have unequal law-enforcement capabilities required to jointly combat maritime threats.

- **Lack of cooperation**: Many of these countries have varying security priorities and are not always willing to leverage partner capabilities to combat threats such as piracy, armed robbery, and maritime terrorism. Priority is given to political and strategic autonomy over cooperation.
- **Lack of consensus**: Implementing a collaborative strategy is challenging since it requires maritime agencies to improve interoperability, share intelligence, and agree on a regional rules-based order. There is a lack of consensus in the Global South regarding this.
- **Lack of sound policies**: Policies such as lenient regulations; lax implementation of the law; and subsidies that incentivise smaller fishermen to shift to motorised trawling contribute to the rise of unconventional threats.

India's Approach

India's Maritime Vision 2030
- It sets out a 10-year blueprint for the maritime sector, envisaging the development of ports, shipping, and inland waterways as a way of generating growth and livelihoods.

India's Indo-Pacific Oceans Initiative
- It rests on seven pillars including maritime ecology, marine resources, capacity building, disaster risk reduction, and maritime connectivity. It acknowledges that countries need collective solutions to their common problems, especially since they remain economically interdependent.

Bangladesh's Document on the Indo-Pacific
- It has guiding principles and objectives for a developmental approach to maritime security, focused on the provisioning of goods and services, and the protection of marine resources.

Africa
- They are also focussing on a thriving Blue Economy and a secure maritime domain.

Initiatives Taken by India to Enhance Maritime Security

Capacity Augmentation of Maritime Security Agencies	Enhanced Technical Surveillance of Coastal and Offshore Areas	Establishment of Mechanisms for Inter-Agency Coordination	Integration of the Fishing and Coastal Communities
Security and Growth for All in the Region (SAGAR)	Indian Ocean Naval Symposium (IONS)	Indian Ocean Rim Association (IORA)	

- **Capacity Augmentation of Maritime Security Agencies:** This includes the modernization and expansion of the Indian Navy, Coast Guard, and Marine Police to enhance their capabilities for surveillance and patrol of the nation's maritime zones.
    - It also involves the acquisition of advanced platforms, systems, and equipment such as aircraft carriers, submarines, frigates, helicopters, radars, and satellites.
- **Enhanced Technical Surveillance of Coastal and Offshore Areas:** This includes the implementation of various projects and schemes such as the Coastal Surveillance Network, the National Command Control Communication and Intelligence Network, the National Automatic Identification System, and the National Maritime Domain Awareness Project.

- These aim to provide a comprehensive and integrated picture of the maritime domain and enable timely detection and response to any threats or incidents.

- **Establishment of Mechanisms for Inter-Agency Coordination**: This includes the creation of various bodies and committees such as the National Committee for Strengthening Maritime and Coastal Security, the National Maritime Security Coordinator, the Joint Operations Centres, and the Coastal Security Operations Centres.
  - These aim to facilitate effective coordination and information sharing among various stakeholders involved in maritime security such as the Navy, Coast Guard, Customs, Intelligence, Fisheries, and Ports.
- **Integration of the Fishing and Coastal Communities:** This includes the implementation of various measures such as the issuance of biometric identity cards, the installation of transponders and distress alert transmitters, the conduct of community awareness and education programs, and the provision of livelihood and welfare schemes.
  - These aim to involve the fishing and coastal communities in the maritime security framework and enhance their security and well-being.
- **Security and Growth for All in the Region (SAGAR)**
- **Indian Ocean Naval Symposium (IONS)**
- **Indian Ocean Rim Association (IORA)**

Way Forward

Enhancing maritime security cooperation among like-minded countries	**Developing a common code of conduct**	**Strengthening the role and capabilities of the coast guards and other maritime law enforcement agencies**	**Addressing the root causes and drivers of non-conventional threats**

- **Enhancing maritime security cooperation among like-minded countries**, through bilateral, trilateral, or multilateral mechanisms, such as the Quadrilateral Security Dialogue (Quad), the Indian Ocean Rim Association (IORA), and the ASEAN Regional Forum (ARF).
  - Such cooperation can include information-sharing, joint exercises, capacity-building, interoperability, and coordination of responses to common threats.
- **Developing a common code of conduct** or a set of norms and rules for the maritime domain, based on the principles of international law, especially the United Nations Convention on the Law of the Sea (UNCLOS).
  - Such a code of conduct can help to prevent or manage disputes, reduce tensions, and promote confidence-building measures among the maritime actors.
- **Strengthening the role and capabilities of the coast guards and other maritime law enforcement agencies,** as they are often the first responders to non-conventional threats, such as piracy, smuggling, trafficking, and pollution.
  - They can also play a vital role in enhancing maritime domain awareness, safeguarding the sovereignty and rights of coastal states, and providing humanitarian assistance and disaster relief.
- **Addressing the root causes and drivers of non-conventional threats**, such as poverty, inequality, corruption, governance, and climate change, through sustainable development, regional integration, and multilateral cooperation. These can help to improve the livelihoods, resilience, and security of the coastal communities, and reduce the incentives and opportunities for criminal activities.

Maritime security is more than a matter of hard military action and law enforcement, which requires a collaborative strategy among nations to improve interoperability, share intelligence, and agree on a regional rules-based order.

Fleet Electrification To Tackle Urban Pollution

Why in News?

The air quality index (AQI) in many Indian cities has entered the red zone several days this year. Millions of people have to face serious health hazards due to recurring increases in air pollution. It is clear that mitigation strategies have to be prioritised.

- As per two seminal studies pertaining to Delhi, the Urban Emission (2015) and the TERI study (2018), a significant contributor to urban smog is PM2.5 and PM10 pollution, which is caused by the transport and construction sector.

Urban Pollution in India

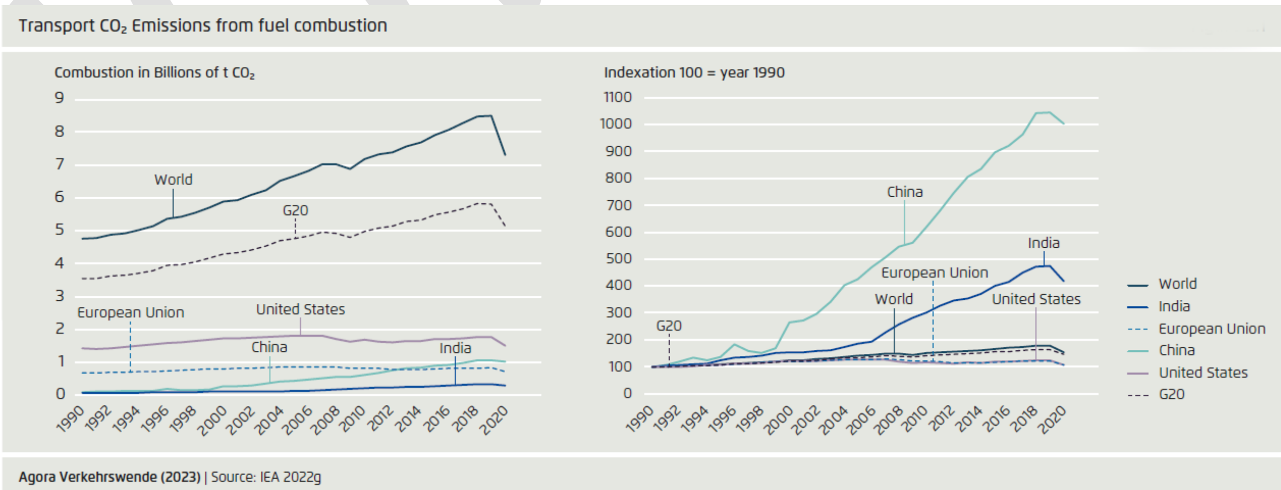
Concerns of Air Quality	• The air quality index (AQI) in many Indian cities has entered the red zone several days this year. • Millions of people have to face serious health hazards due to recurring increases in air pollution.
Role of transport and construction sector	• As per two seminal studies pertaining to Delhi, the Urban Emission (2015) and the TERI study (2018), a significant contributor to urban smog is PM2.5 and PM10 pollution, which is caused by the transport and construction sector.
Contribution of freight movement	• About 9 lakh new trucks are added to Indian roads every year to an already running fleet of 70 lakh trucks. • India carries over 2 trillion tonne kilometres of freight on trucks, annually. • These trucks consume over one-fourth of Indian oil imports and contribute to over 90% of road transport CO2 emissions.

Necessity for Electrification of Road Transport in India

- **Air Quality Improvement**
- **Reduced Dependence on Fossil Fuels**
- **Global Climate Change Mitigation**
- **Potential Source of Economic Growth**
- **Urban Planning and Livability**

Air Quality Improvement

- Globally, the transport sector contributes about 25% of CO_2 emissions from fuel combustion and 15% of Greenhouse Gas (GHG) emissions.



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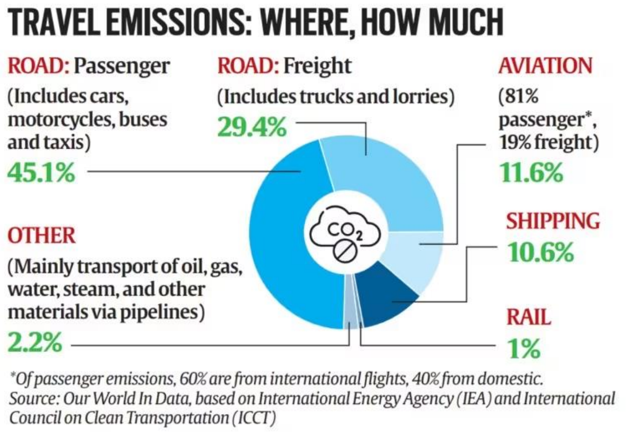


- According to the latest International Transport Forum Report, by 2050 global CO_2 emissions from transport will increase by 16%, even if today's political commitments are fully implemented.
- Out of the 50 most polluted cities in the world, 35 are in India.
- Electrification of road transport can reduce criterion air pollutants, specifically NOx and PM2.5, which is important for improving ambient air quality, particularly in densely populated cities.

Reduced Dependence on Fossil Fuels

- Transport is heavily reliant on oil, with 95% of demand met by petroleum products. Just under half of India's oil demand is accounted for by transport.
- Electrification decreases this dependence, promoting cleaner and more sustainable energy sources. By diversifying the energy sources for transportation, electrification enhances energy security.

Global Climate Change Mitigation

- Electrifying road transport aligns with global efforts to combat climate change.
- Electric vehicles generally have lower carbon emissions, supporting India's commitment to reducing greenhouse gas emissions.
- In 2021, various researchers claimed that electrical vehicles in India produced approximately 19-34% fewer GHG emissions than gasoline cars.

Potential Source of Economic Growth

- India is the world's fourth largest car manufacturer, making EVs a potential source of economic growth and exports. The Indian government is committed to achieving 30% electrification of total mobility by 2030.
- Electric mobility creates jobs and innovation in battery manufacturing, renewable energy, and charging infrastructure.

Urban Planning and Livability

- Electric vehicles can help decongesting cities by promoting shared mobility and compact design.
- It may open avenues for pedestrian-friendly spaces, cycling infrastructure, and efficient public transportation, contributing to overall urban livability.

Advantages of Electric Vehicles	Challenges of Electric Vehicles
• **Lower operating costs**: Electric vehicles have lower fuel costs and require less maintenance than traditional gasoline-powered vehicles. • **Environmental benefits**: EVs produce zero emissions and can significantly reduce air pollution and greenhouse gas emissions. • **Energy independence**: As more renewable energy sources are used to power EVs, it can reduce dependence on fossil fuels.	• **High initial cost**: The upfront cost of EVs is still higher than traditional gasoline-powered vehicles, making it difficult for many consumers to afford them. • **Limited charging infrastructure**: The lack of charging infrastructure makes it difficult for EV owners to travel long distances. • **Battery technology**: The current battery technology still has some limitations, such as limited driving range and long charging time.

- **Improved performance:** EVs have instant torque, which means they can accelerate quickly, and have a smoother and quieter ride.
- **Government incentives**: Many countries and local governments offer tax credits, rebates, and other incentives to encourage the purchase of EVs.
- **Cost reduction**: The cost of EVs is constantly reducing as the technology improves and economies of scale increase.
- **Convenience**: Many electric vehicles have the ability to charge at home using a standard electrical outlet, eliminating the need to visit a gas station.
- **Energy security**: EV's use domestic electricity to power the car, reducing the need for oil imports.

- **Limited domestic manufacturing capabilities**: India currently lacks the domestic manufacturing capabilities for electric vehicle components and batteries, making it dependent on imports.
- **Lack of awareness**: There is still a lack of awareness about the benefits of EVs among the general public in India.
- **Lack of standardization**: The lack of standardization in charging infrastructure and lack of uniformity in regulations across states and union territories is a challenge.
- **Power Grid infrastructure**: India's power grid infrastructure is not fully developed and is not capable of handling the high-power demand of EV charging stations.

Challenges in Electrification of Road Transport in India

Decarbonization of Power Generation	Lifecycle Carbon Emissions of EVs	Technology Barriers to Electrification	Financing Challenges Faced by the EV Sector	Need for better infrastructure	Low Market Penetration

Decarbonization of Power Generation

- Policies for decarbonization of road transport through electrification without decarbonization of power generation will merely shift pollution from the tailpipes of vehicles to smokestacks of thermal power generators.
- Without any pollution control measures in place, heavy reliance on coal power plants to generate electricity for electrical vehicles can result in up to multiple times higher emissions of SO2.

Lifecycle Carbon Emissions of EVs

- Recent research concluded that EVs must be driven 200,000 km before their "whole of life" carbon emissions equal that of an internal combustion engine vehicle.
- "Whole of Life" carbon missions is the total carbon emissions produced over the entire life cycle of a product, process, or system, including manufacturing, use, and disposal.
- The large quantity of energy needed to manufacture a lithium-ion battery and the typical weight of an EV which is on average 50% higher than a similar ICE (Internal Combustion Engine) vehicle that requires more steel and aluminium in the frame are among the reasons.

Technology Barriers to Electrification

- The production of lithium-ion batteries, which are a key component of EVs, requires specific minerals and rare earth elements.
- India currently relies heavily on imports for battery manufacturing, leading to supply chain challenges.

Financing Challenges Faced by the EV Sector

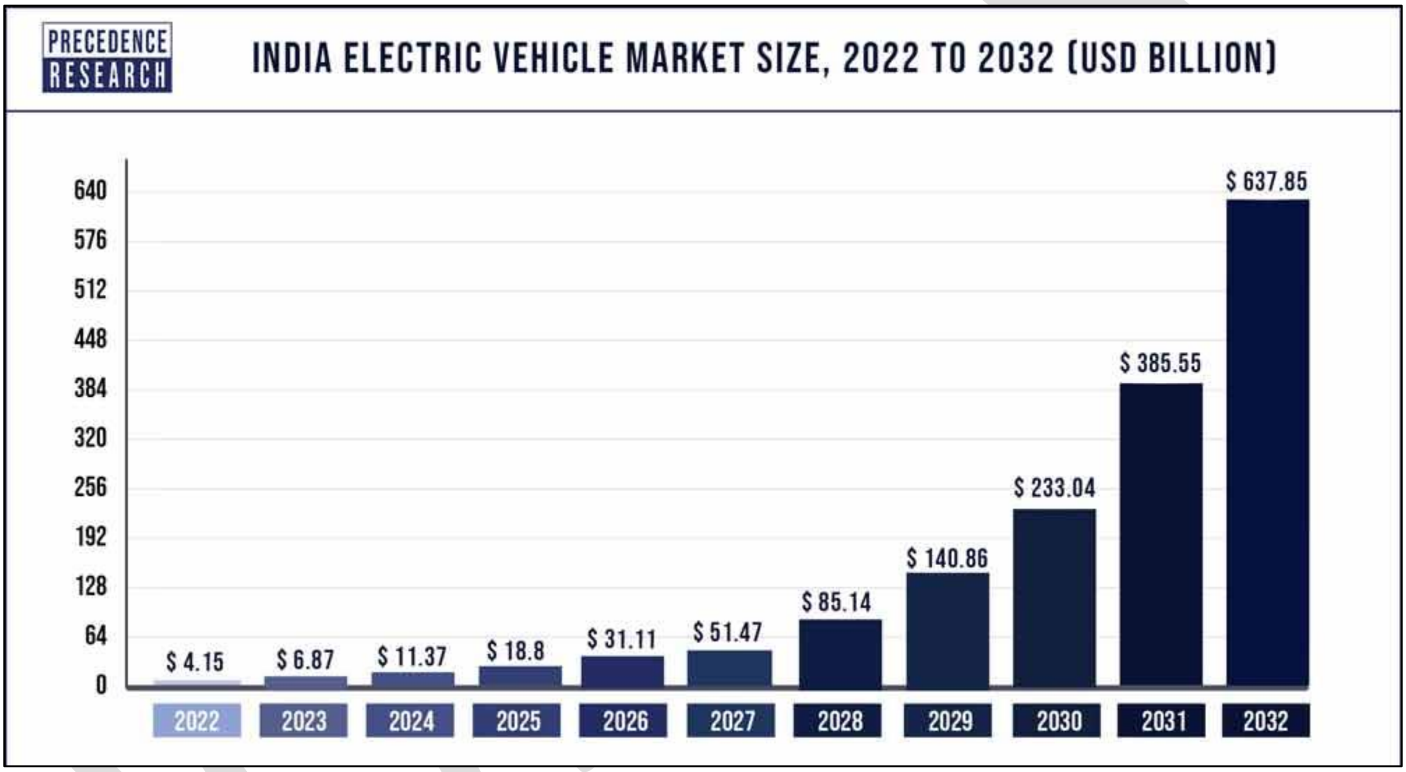
- The upfront cost of purchasing an electric vehicle is relatively higher compared to conventional vehicles.
- The high initial cost makes it less affordable for many potential buyers, limiting the demand for EVs.

Need for better infrastructure

- EVs require different charging and maintenance infrastructure than traditional ICE vehicles because of the differences in engine and other working parts.
- However, India's current charging infrastructure may not be enough to handle the increased demand for EVs.
- Given NITI Aayog's projection of eight crore EVs on the road by 2030, India needs to have at least 39 lakh cumulative charging stations between FY 2022 and FY 2030.

Low Market Penetration

- The global EV market grew 43% annually on average over the last five years, and the worldwide automobile market penetration rate of EVs stood at about 2.6% in 2019.
- India, which is the fourth largest car market globally, still has EV penetration at only around 1%, and that too is dominated by electric two-wheelers. The market data indicates that the sales of electric buses and cars amounted to just 4000 units in the fiscal year 2020.



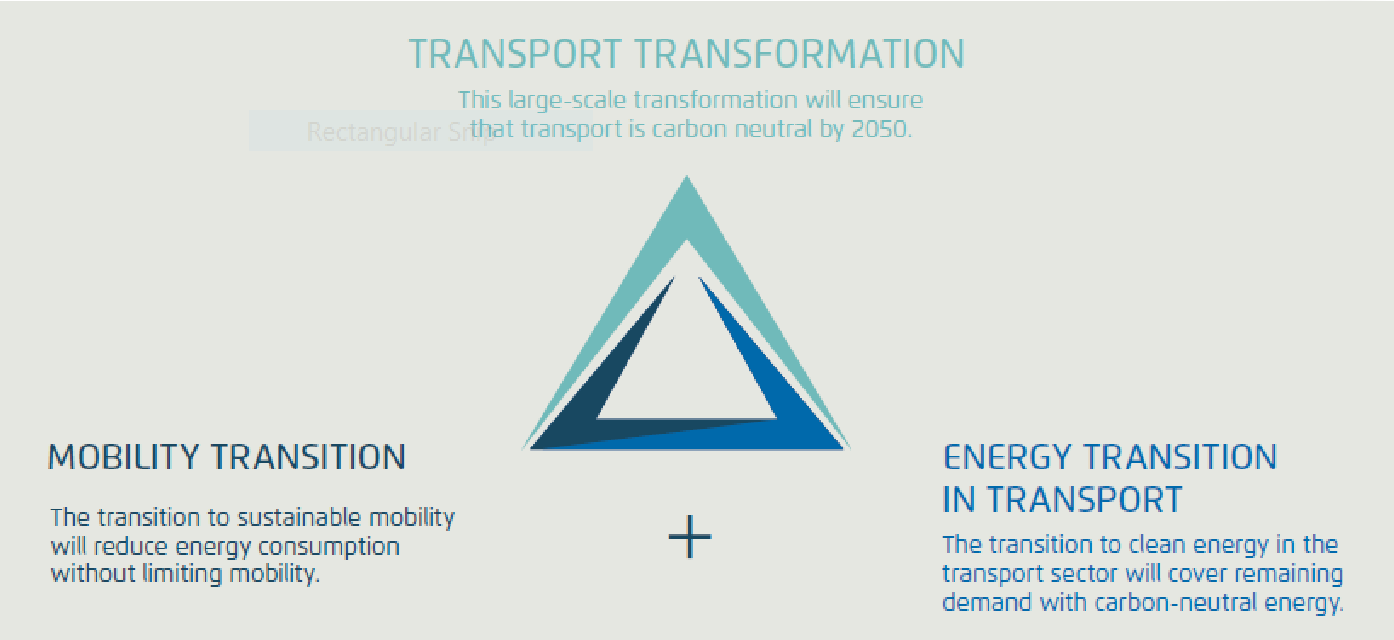
Steps Taken By The Government To Facilitate The Shift Towards Electric Vehicles

FAME Schemes	The Faster Adoption and Manufacturing of Hybrid and Electric Vehicles initiative offers incentives for purchasing EVs and establishing charging stations.
National Electric Mobility Mission Plan	Launched in 2020, it targets having 30% electric vehicles on roads by 2030.
Tax Incentives	An additional tax deduction of INR 1.5 Lakh is provided for the interest on loans for electric vehicle purchases.
Public Transport Enhancement	Financial support is given for electric buses in cities like Delhi.
Transformative Mobility Mission	This focuses on the manufacturing of EVs, components, and batteries.
NITI Aayog's Battery Manufacturing Subsidy	Proposes a $4.6 billion subsidy to boost domestic lithium battery production.

What should be done to facilitate this transition?

- **Address High Upfront Costs**: Tackle the issue of e-trucks being expensive (₹1.5 crore for electric vs. ₹40 lakh for diesel trucks) through subsidies or financial incentives.
- **Accelerate E-Truck Adoption**: Increase the pace of transitioning to electric trucks, aiming beyond the 7,750 e-truck targets for 2030.
- **Public-Private Investment**: Mobilize funding by combining public and private investments, aiming for a high ratio of private to public funds.
- **Expand Electric Rail Freight**: Utilize India's electrified rail freight more, as it currently covers only 20% of freight.
- **Set Electrification Targets**: Establish clear targets for electrifying trucks, similar to what's being done for buses.
- **Create Green Freight Corridors**: Designate specific highways as green corridors to demonstrate the effectiveness of e-trucks.
- **Innovative Financing and Incentives:** Innovative financial tools, incentives for charging infrastructure, support for entrepreneurial initiatives, and a favorable regulatory environment can help achieve the essential breakthrough in India's truck electrification.

The geometry of the Transport Transformation



Agora Verkehrswende (2023) | Source: Authors's illustration based on Agora Verkehrswende (2017a)

What Can India Learn from Other Countries' Success?

Setting up a Well-defined Electric Mobility Roadmap

- **United Kingdom**: It has released a Transport Decarbonization Plan with commitments and actions to decarbonize the UK's transport to zero-emission cars and vans by 2030.

- **Chile Energy Roadmap 2018-2022**: Aims to increase the existing number of electric cars tenfold by 2022. Electrify 100% of public transport by 2040. Achieve a 40% penetration rate of electric cars in the private stock by 2050.

Setting Clear Targets for Implementation of Electric Mobility

- **Norway:**100 % electric vehicle sales in light-duty vehicles (LDVs) and public bus segments by 2025.

Easily Accessible incentives:

- **South Korea:** One-time purchase subsidy for electric cars, Planned reduction in purchase tax surcharges of electric cars.

Administrating the Implementation at the Subnational Level

- **California:** Financial and non-financial incentives in addition to those at the federal government level. Clear and specific adoption targets are set for the region.

Countries Switching to EVs at Impressive Rates

- The top 5 countries with the highest share of EV sales are Norway (all-electric vehicles made up 80% of passenger vehicle sales in 2022), Iceland (41%), Sweden (32%), the Netherlands (24%) and China (22%).

Way Forward

- Government Fleet
- Creation of Funds For Charging Infrastructure
- Inclusion of EVs under Priority Sector Lending
- Innovation through Financial Models
- Innovation through Products
- Innovative Solutions through Technology
- Facilitate Private Sector Participation
- Transitioning to Sustainable Mobility

Government Fleet

- All the government-used vehicles should be 100% electric only.
  - There is a recent demand for 7,750 e-trucks in India by 2030, if it materializes, will result in the country saving over 800 billion liters of diesel by 2050.
- There is a need for all states to announce clear targets and plans to transition government-owned fleets to electric and to lead by example.
  - Some states have already set targets for the transition of vehicles owned by government agencies to 100% EVs, such as Andhra Pradesh, Assam, Madhya Pradesh, Maharashtra, Uttar Pradesh, and Haryana.

Creation of Funds For Charging Infrastructure

- Instruments like Viability Gap Funding are capable of reducing the overall cost of setting up charging station operations of the business.

Inclusion of EVs under Priority Sector Lending

- In order to push the retail financing of EVs, the sector should be brought under the umbrella of the Reserve Bank of India's priority-sector lending (PSL) guidelines.
  - The PSL mandate, which has a proven track record of improving the supply of formal credit towards areas of national priority, is capable of offering a strong regulatory incentive for banks and NBFCs to scale their financing to EVs.

Innovation through Financial Models

- NITI Aayog suggests the recognition of EVs as an infrastructure sub-sector and the incorporation of EVs as a separate reporting category under the RBI.

- New financing models like green bonds are pivotal for increasing the adoption of electric buses further.

Innovation through Products

- India has introduced its first electric double-decker bus, marking a significant innovation in public mass transportation.
- This distinctive bus stands out as an optimal solution for city travel, reducing road space and boasting a higher passenger capacity per footprint.

Innovative Solutions through Technology

- The integration of IT-enabled solutions, such as data monitoring and analytics, is crucial for enhancing operational performance, retaining commuters, and boosting passenger trips.

Facilitate Private Sector Participation

- The private sector is actively interested in the development of electric vehicle charging infrastructure, addressing a critical aspect of EV adoption and encouraging more individuals and businesses to embrace electric mobility.

Transitioning to Sustainable Mobility

- NITI Aayog in a report titled ‘Decarbonising Transport 2023’ suggests that achieving a successful "transport transformation" requires a "mobility transition" and an "energy transition in transport."

However, solely emphasizing the electrification of road transport will fall short of achieving effective decarbonization in the transportation sector. To address this challenge comprehensively, a holistic approach is required that not only promotes efficient, less carbon-intensive modes of transportation but encompasses addressing grid emission factors, investing in alternative fuel generation, and eliminating fossil-fuel subsidies, all of which are crucial steps toward advancing the energy transition and achieving decarbonization within the transport sector in India.

Supreme Court

Why in News?

At present, there are 79,813 cases pending before the 34 judges of the Supreme Court. It is therefore understandable that there has been demand time and again for a structural change in the top court. Recently, CJI D.Y. Chandrachud announced his intent to create Constitution Benches of varied strengths as a permanent feature of the Court.

Key Highlights

- The Supreme Court of India has three jurisdictions under the Constitution: original, appellate, and advisory.
- The Supreme Court serves as a Constitutional Court as well as a Court of Appeal. The Court sits in benches of varying sizes, as determined by the Registry on the directions of the Chief Justice of India (CJI), who is the Master of the Roster.
- Constitution Benches of the Supreme Court typically comprise five, seven, or nine judges who deliberate on a specific issue related to constitutional law.
- Article 145(3) of the Constitution provides for the setting up of a Constitution Bench. It says a minimum of five judges need to sit for deciding a case involving a “substantial question of law as to the interpretation of the Constitution”, or for hearing any reference under Article 143, which deals with the power of the President to consult the Court.
- Typically, cases before the Supreme Court are heard by Division Benches (of two judges) or full Benches (three judges) to examine a wide range of topics, such as film prohibitions/restrictions or charges that a police commissioner abused his position. Under its very broad jurisdiction, the Supreme Court has entertained frivolous public interest litigations, such as demands that passages be deleted from the Quran or secularism be removed from the Preamble to the Constitution.

Discourse on a separate Constitution Bench

- In March 1984, the Tenth Law Commission of India proposed that the Supreme Court be split into two divisions: the Constitutional Division and the Legal Division. The proposal stated that only issues pertaining to constitutional law would be brought to the proposed Constitutional Division.
- Reiterating this, the Eleventh Law Commission stated in 1988 that dividing the Supreme Court into parts would make justice more widely available and would significantly decrease the fees that litigants have to pay.
- It was reported that appeals in the top court mostly comprised matters from High Courts that are closer to the Supreme Court.
- That is, appeals from the Punjab and Haryana High Court, Allahabad High Court, and Delhi High Court formed the major chunk of matters, whereas courts far away from the apex court had fewer appeals filed, due to both difficulties in accessibility and costs.
- Earlier, in Bihar Legal Support Society v. Chief Justice of India (1986), the Supreme Court stated that it was "desirable" to establish a National Court of Appeal that would be able to entertain special leave petitions. This would allow the Supreme Court to only entertain constitutional and public law-related questions.
- As a step towards making the Court more accessible, the 229th Law Commission Report (2009) recommended four regional benches to be located in Delhi, Chennai or Hyderabad, Kolkata, and Mumbai to hear non-constitutional issues.
- It recommended six judges from each region at four regional benches take up appellate responsibility, with a Constitution Bench in New Delhi working on a regular basis.
- By dividing the heavy backlog of non-constitutional cases among regional benches, the Supreme Court, it said, could "deal with constitutional issues and other cases of national importance on a day-to-day basis."
- During colonial times, there were three Supreme Courts: in Bombay, Calcutta, and Madras.
- The Indian High Courts Act of 1861 replaced the Supreme Courts with High Courts for separate regions. The Government of India Act, 1935, created the Federal Court of India as an appellate body for the Privy Council and High Courts. India approved the Constitution in 1949.
- The Supreme Court, as we know it now, was founded on January 28, 1950, under Article 124 of the Constitution, two days after India became an independent, democratic republic. It came into being in Delhi as a result of Article 130.
- The first Supreme Court included eight judges, including the CJI. As the workload rose year after year and arrears of cases began to accumulate, Parliament increased the number of judges from eight in 1950 to 11 in 1956, 14 in 1960, 18 in 1978, 26 in 1986, 31 in 2009 and 34 in 2019.

An overburdened court

- Today's Supreme Court issues around 8-10 decisions each year through Constitution Benches of five or more judges. It serves primarily as an appeals court. Only four of the 1,263 decisions issued in 2022 were issued by a Constitution Bench.
- The Supreme Court hears matters between the Centre and the States, as well as between two or more States; rules on civil and criminal appeals; and provides legal and factual advice to the President.
- Any person can immediately petition the Supreme Court if they consider their basic rights have been infringed.
- The work of the Supreme Court could be split so that there is a Final Court of Appeal and a permanent Constitution Bench.
- This would ensure greater judicial stability and consistency by explicitly distinguishing cases filed under constitutional authority from those filed under appellate and review jurisdiction.
- A Constitution Bench (V. Vasanthkumar v. H.C. Bhatia) is analysing these issues and contemplating measures to protect a citizen's basic right to access the Supreme Court.

- Under the guidance of the CJI, there is an opportunity to address this structural gap in the Supreme Court by designating several of the court's appeal benches as regional benches.

Historical Proposals for Structural Change

- Tenth Law Commission (1984) proposed splitting the Supreme Court into Constitutional and Legal Divisions.
- Eleventh Law Commission (1988) reiterated the need for division, aiming at wider justice availability.
- Bihar Legal Support Society v. Chief Justice of India (1986) expressed the "desirability" of a National Court of Appeal.
- 229th Law Commission Report (2009) recommended regional benches for non-constitutional issues.

Colonial Legacy and Evolution of the Supreme Court

Three Supreme Courts during colonial times (Bombay, Calcutta, Madras).

Indian High Courts Act of 1861 replaced Supreme Courts with High Courts.

Government of India Act, 1935, created the Federal Court of India.

The Supreme Court, established on January 28, 1950, under Article 124 of the Constitution.

Increasing Judges and Overburdened Court:

Evolution of the Supreme Court from eight judges in 1950 to 34 in 2019.

Overburdened court issuing around 8-10 decisions yearly through Constitution Benches.

Only four out of 1,263 decisions in 2022 from Constitution Benches.

What are the powers of the Supreme Court?

Powers of the Supreme Court

Original Jurisdiction | **Appellate Jurisdiction** | **Advisory Jurisdiction**

Original Jurisdiction: It decides disputes between different units of the Indian Federation. This includes any dispute between:

1. The Centre and one or more states; or
2. The Centre and any state or states on one side and one or more states on the other; or
3. Between two or more states.

Appellate Jurisdiction: It is the highest court of appeal in the country. It hears appeals from lower courts and tribunals, both civil and criminal, ensuring uniformity in the interpretation and application of laws.

Advisory Jurisdiction: The President of India can seek advice from the Court on questions of law or fact that may appear before him/her.

Apart from this, it has the power of judicial review (reviewing the constitutionality of laws passed by the legislature and executive actions), the power to punish for its own contempt, as well as the power to issue writs (such as habeas corpus, mandamus, etc.) for the enforcement of the fundamental rights.

What are Constitution Benches?

- Article 145(3) provides for the setting up of a Constitution Bench. It says a minimum of 5 judges need to sit for deciding a case involving a "substantial question of law as to the interpretation of the Constitution".
- This provision is also applicable to the Court hearing any reference under Article 143, which deals with the power of the President to consult the Court.

Issues with the working of the Court

- **Backlog of Cases and Overburdening:** There are 79,813 cases pending before the Supreme Court. It has been reduced to an appeals court, with only 4 of the 1,263 decisions issued in 2022 being issued by a Constitution Bench.
- **Lack of Access to The Supreme Court:** It is reported that appeals in the Supreme court mostly comprised matters from High Courts that are geographically closer to the Supreme Court. Courts far away from the apex court had fewer appeals filed, due to both difficulties in accessibility and costs.

Due to this, there has been a demand for a structural change regarding accessibility, reducing workload, giving importance to Constitutional cases, etc. in the top court.

Reasons Behind this Staggering Number of Pending Cases

Low Strength of Judges → **Absence of Judges** → **Lack of Infrastructure** → **Appeals from High Courts** → **Filling of Frivolous Cases**

- **Low Strength of Judges**: The Supreme Court has a sanctioned strength of 34 judges, but as of August 2023, there were only 32 judges in office. This means that there are two vacancies that need to be filled urgently.
    - The judge-to-population ratio in India is also very low compared to other countries.
    - According to a response provided by the law minister in Rajya Sabha, India has approximately 21 judges per million population.
    - This is far below the global average of 50 judges per million people.
    - Moreover, the recommendations made by the collegium for the appointment of judges are often delayed by the government.
- **Absence of Judges**: The Supreme Court judges often have to attend various official and non-official functions, such as conferences, seminars, inaugurations, etc., which take up their valuable time and affect their availability for hearing cases.
    - Moreover, the judges also have to take leave for various reasons, such as health, personal, or vacation.
    - The Supreme Court breaks for its annual summer vacation, which is typically for seven weeks starting at the end of May.
    - According to a report by the Law Commission of India,The Supreme Court has 193 working days a year for its judicial functioning.

- **Lack of Infrastructure**: The Supreme Court faces a shortage of adequate infrastructure, such as courtrooms, staff, technology, etc., which hampers its efficiency and productivity.
    - For instance, the Supreme Court has only 17 courtrooms, which are not enough to accommodate all the benches and cases.
    - The court staff also face problems such as low salaries, poor training, and high workload.
    - Though the Supreme Court has introduced modern technologies, such as video conferencing, e-filing, digital libraries, etc., to facilitate faster and smoother disposal of cases but they aren't very popular amongst the common public.
- **Appeals from High Courts**: It was reported that appeals in the top court mostly comprised matters from High Courts that are closer to the Supreme Court.
    - That is, appeals from the Punjab and Haryana High Court, Allahabad High Court, and Delhi High Court formed the major chunk of matters, whereas courts far away from the apex court had fewer appeals filed, due to both difficulties in accessibility and costs.
- **Filling of Frivolous Cases**: The Supreme Court is the highest court of appeal in India, and it has the power to hear appeals from any judgment or order of any court or tribunal in the country. However, this power is often misused by litigants who file frivolous or vexatious appeals in the Supreme Court.
    - Under its very broad jurisdiction, the Supreme Court has entertained frivolous public interest litigations, such as demands that passages be deleted from the Quran or secularism be removed from the Preamble to the Constitution.
    - According to a report by the PRS Legislative Research, the Supreme Court admitted 86% of the Special Leave Petitions (SLPs) filed in 2016.
    - This is significantly higher than the 25% admission rate recommended by the Law Commission of India in its 2009 report on access to justice.

Reform to be Taken to Reduce the Pendency of Cases?

- **Split the Supreme Court into Two Divisions**: The Tenth Law Commission of India proposed that the Supreme Court be split into two divisions: the Constitutional Division and the Legal Division. The proposal stated that only issues pertaining to constitutional law would be brought to the proposed Constitutional Division.
    - Reiterating this, the Eleventh Law Commission stated in 1988 that dividing the Supreme Court into parts would make justice more widely available and would significantly decrease the fees that litigants have to pay.
- **Establish a National Court of Appeal for SLPs**: In Bihar Legal Support Society v. Chief Justice of India, 1986, the Supreme Court stated that it was "desirable" to establish a National Court of Appeal that would be able to entertain special leave petitions. This would allow the Supreme Court to only entertain constitutional and public law-related questions.
- **Establish the Regional Benches of Supreme Court**: As a step towards making the Court more accessible, the 229th Law Commission Report, 2009 recommended four regional benches to be located in Delhi, Chennai or Hyderabad, Kolkata, and Mumbai to hear non-constitutional issues.
    - It recommended six judges from each region at four regional benches take up appellate responsibility, with a Constitution Bench in New Delhi working on a regular basis.
    - By dividing the heavy backlog of non-constitutional cases among regional benches, the Supreme Court, it said, could "deal with constitutional issues and other cases of national importance on a day-to-day basis."
- **Increase the number of Work Days**: The Malimath Committee suggested that the Supreme Court should work for 206 days and it also recommended that the period of vacation should be reduced by 21 days, keeping in mind the long pendency of cases.

  - The 2009 Law Commission, in its 230th report suggested that court vacations be cut down by 10-15 days at all levels of the judiciary to help cut the backlog of cases.
- **Establish a Final Court of Appeal and a Permanent Constitution Bench**: The work of the Supreme Court could be split so that there is a Final Court of Appeal and a permanent Constitution Bench.
  - This would ensure greater judicial stability and consistency by explicitly distinguishing cases filed under constitutional authority from those filed under appellate and review jurisdiction.
- **Establish a Dedicated Authority for Infrastructure**: Former CJI NV Ramanna proposed to set up the National Judicial Infrastructure Authority of India (NJIAI) which will help improve judicial infrastructure which currently needs urgent attention.

Way Forward

- Suggestion to split the Supreme Court into a Final Court of Appeal and a permanent Constitution Bench.
- A Constitution Bench (V. Vasanthkumar v. H.C. Bhatia) analyzing and proposing measures to protect citizens' access to the Supreme Court.
- Opportunity to address structural gaps by designating appeal benches as regional benches under CJI's guidance.