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Polity and Governance

Highlights

- Kerala Leads Nation in NH Land Acquisition Contributions
- Decoding Good Governance
- Sanitation Systems
- Press and Registration of Periodicals Bill, 2023
- FAME India Phase-II Scheme
- Tribunals
- Parliament Passes Bills To Replace British-era Criminal Laws
- Housing for PVTGs
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- Unorganised Labour Initiatives and Migrant Workers Children Welfare

Kerala Leads Nation in NH Land Acquisition Contributions

Why in News?

Recently, the **Ministry for Road Transport and Highways (MoRT&H)** presented a document in Parliament which shows that **Kerala** has the highest amount of financial Burden followed by **Haryana** and **Uttar Pradesh**.

- The reason is being norms like state to bear **25%** of the **land acquisition** cost for national highway development.

What are the Key Highlights of the Document?

- The **National Highways Authority of India (NHAI)** has spent the highest share on land acquisition and related activities in **Maharashtra** in the past five years followed by **Uttar Pradesh**, and **Kerala**.
- The Kerala has submitted a proposal for waiver of the **25% share** for **land acquisition** for two projects of the **NHAI- Ernakulam bypass** and **Kollam-Shenkottai stretch** and exemption from sharing the **land acquisition cost** of the **Outer Ring Road project** by listing the project under the **Bharatmala Pariyojana**.
- According to documents **Haryana** and **Uttar Pradesh** have to pay **Rs. 3,114 crore** and **Rs. 2,301 crore** respectively.

➤ Key Facts About Road Network in India

- India's road density at **1,926.02 per 1,000 sq.km** of area in **2018-19** was higher than that of many developed countries though surfaced/paved road constituting **64.7 %** of the total road length is comparatively lower than that of developed countries.
- **National Highways** constituted **2.09%** of the total road length of the country in **2019**.
- The balance road networks comprise of **State Highways (2.9%)**, **District Roads (9.6%)**, **Rural Roads (7.1%)**, **Urban Roads (8.5%)** and **Project Roads (5.4%)**.

What are the Challenges Related to Land Acquisition in India?

- **High Financial Cost:** The financial cost of land acquisition in India has increased significantly due to the amended **Land Acquisition Act of 2013**, which provides **higher compensation** and **consent requirements** for land owners.
- **Environmental Clearance:** Delays and uncertainties in obtaining environmental clearance and **land acquisition** notifications, which affect the project timelines and costs.

Note:

- **Conflicts and Protests:** Affected communities oppose projects on the grounds of **environmental, social, or cultural impacts**.
- **Lack of Transparency and Accountability in Land Acquisition Process:** As many landowners are not aware of their rights and entitlements and coerced to sell their land at low prices.
 - Government agencies engaged in land acquisition have been observed to exhibit actions that may seem occasionally deviate from the principles of natural justice and fair compensation.
- **Inadequate Legal Framework and Enforcement Mechanism for Land Acquisition:** The existing laws governing land acquisition are outdated and complex, creating confusion and uncertainty for both the government and the landowners. The laws also lack clarity on various aspects of land acquisition, such as **financial cost, environmental clearance, dispute resolution mechanisms** etc.

What are the Initiatives taken by the Government to Reform the Land Acquisition Process?

- The **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013** (LARR Act of 2013) replaced the **Land Acquisition Act of 1894** and introduced new provisions for **compensation, consent, social impact assessment**, and rehabilitation and resettlement of affected persons.
- The **SVAMITVA scheme** was launched in **2020** to provide **property cards** to **rural landowners** and enable them to use their land as a financial asset.
- The **Special Economic Zones (SEZs) Act, 2005** was enacted to facilitate the establishment of **SEZs** in India and provide incentives and exemptions for the development of **export-oriented industries**.
- The **Bhoomi Rashi Portal** is an **e-Governance initiative** of the **Ministry of Road Transport & Highways**. The portal intends to expedite the process of **land acquisition for National Highways**. It has fully digitised and automated the entire process of land acquisition.
- **PM Gati Shakti Scheme**
- **Bharatmala scheme**

Decoding Good Governance

Why in News?

On **25th December**, India commemorated **Good Governance Day**, coinciding with the birth anniversary of former Prime Minister **Atal Bihari Vajpayee**.

- This yearly event strives to enhance citizen awareness concerning **accountability in governance and governmental procedures**.
- Three new features on the **iGOT (integrated government online training)** Karmayogi platform: **My iGOT, blended programmes, and curated programmes**, were launched on this occasion.

What is Good Governance?

- **About:**
 - **Governance** refers to the **processes, systems, and structures** through which organizations, societies, or groups are **directed, controlled, and managed**.
 - **Good governance** is defined as a set of values through which a **public institution conduct public affairs and manages public resources** in a way that respects human rights, the rule of law, and the needs of society.
 - The **World Bank** defines good governance in terms of the **traditions and institutions by which authority in a country is exercised**. This includes:
 - the process by which governments are selected, monitored and replaced
 - the capacity of the government to effectively formulate and implement sound policies
 - the respect of citizens and the state for the institutions that govern economic and social interactions among them.
- **Basic Principles of Good Governance:**



Note:

What is Worldwide Governance Indicators?

- The **World Bank's Worldwide Governance Indicators** project evaluates over 200 countries based on six fundamental measures of governance.
- The six indicators are:
 - **Voice and Accountability**
 - **Political Stability and Absence of Violence**
 - **Government Effectiveness**
 - **Regulatory Quality**
 - **Rule of Law**
 - **Control of Corruption**

What are the Major Issues Related to Governance in India?

- **Corruption and Bureaucratic Inefficiency:** In **Corruption Perception Index 2022**, India was ranked **85th out of 180 countries**, highlighting concerns about bribery and misuse of public funds.
- **Inequality and Social Exclusion:** Despite economic growth, the gap between rich and poor persists. A 2022 Oxfam report revealed that the **richest 1% in India held more than 40% of the country's wealth**, while the bottom 50% had just 3%. This widens disparities in access to healthcare, education, and opportunities.
- **Ineffective Implementation of Policies and Schemes:** Many well-intentioned government programs suffer from poor execution, leading to limited impact.
 - In 2023, the **CAG found irregularities in the Ayushman Bharat Scheme**. Also another CAG report highlights transfer of **widow pensions to males in Jharkhand**.
- **Inadequate Judicial Infrastructure:** India's courts are overburdened with a massive backlog of cases, leading to delays in dispute resolution and access to justice, particularly for the marginalized.
 - In 2023, the Supreme Court **had a pending docket of over 80,000 cases**, raising concerns about timely access to legal recourse.
- **Environmental Degradation and Climate Change:** India faces major challenges like air pollution, water scarcity, and deforestation. The **2023 World Air Quality Report** ranked several Indian cities among the **most polluted globally**, highlighting the weak enforcement of environmental regulations.

- **Political Polarization and Weakening Accountability:** Increasing partisanship and a focus on electoral gains sometimes overshadow long-term policy planning and public welfare in India.

What are the Major Initiatives Related to Good Governance in India?

- **Transparency and Accountability:**
 - **Right to Information Act (2005):** Empowers citizens to access government information, promoting transparency and reducing corruption.
 - **Central Public Grievance Redress and Monitoring System (CPGRAMS):** Online platform for registering and tracking grievances against government departments.
 - **E-Governance Initiatives:** Digitization of government services (e.g., **online tax filing, property registration**) for increased efficiency and reduced human interaction.
 - **Citizen Charters:** Commitment to service standards and timelines by government agencies, enhancing accountability.
- **Citizen Participation and Empowerment:**
 - **MyGov platform:** Enables citizens to participate in policy discussions, submit ideas, and provide feedback to the government.
 - **Gram Sabhas:** Village-level meetings for participatory decision-making in rural areas.
 - **Right to Education Act (2009):** Ensures free and compulsory education for children aged 6-14, empowering communities.
- **Decentralization and Local Governance:**
 - **73rd and 74th Constitutional Amendments:** Empower Panchayats (village councils) and Municipalities with financial and administrative powers, promoting local democracy.
 - **Aspirational Districts Program:** Focuses on improving socio-economic indicators in **112 geographically disadvantaged districts**.
 - **Smart Cities Mission:** Development of 100 cities with infrastructure and technology solutions for better living.
- **Other Initiatives:**
 - **Digital India Programme:** Aims to transform India into a digitally empowered society with widespread access to technology.

Note:

- **Direct Benefit Transfers:** Transfer of subsidies and benefits directly to beneficiaries through bank accounts, reducing leakages and corruption.
- **Aadhaar card:** Unique identification system for citizens, promoting financial inclusion and service delivery.
- **Insolvency and Bankruptcy Code (2016):** Streamlines the process of resolving bad debt and facilitating business revival.
- **Unified Payments Interface (UPI):** Instant real-time mobile payment system developed by the **National Payments Corporation of India (NPCI)**.
 - Enables seamless inter-bank transactions using a single mobile app.

Sanitation Systems

Why in News?

Used water that goes into ground, open space, into open drains or canals should be channelized into proper Sanitation Systems for public health and environmental preservation.

- While rudimentary sanitation was introduced by **ancient civilisations around 4000 BC**, the modern sanitation system **was built in London around the 1800s**.

What are the Types of Sanitation Systems?

- **On-site Sanitation Systems (OSS):**
 - Twin pits, septic tanks, bio-digester toilets, bio-tanks, and urine diversion dry toilets serve as prevalent **OSS** in rural or spacious urban settings. These systems passively treat used water, containing fecal sludge or septage, catering to varying spatial constraints.
 - **Twin Pits and Septic Tanks:**
 - **Twin Pits Functionality:** It consists of **two pits utilized alternately**, twin pits facilitate **liquid soaking into the ground** while solids settle and degrade.
 - One pit remains inactive for two years, **ensuring pathogen-free contents** for reuse, but unsuitable for rocky soils.
 - **Septic Tanks Operation:** Septic tanks are watertight; as used water flows through the tank, **solids settle at the bottom, while scum** – mostly oil and grease – floats to the top.

- While settled solids in septic tanks degrade over time, the accumulated faecal sludge and scum must be removed at regular intervals.
- This is done using trucks equipped with vacuum pumps that suck the faecal sludge out and transport it to treatment facilities called **Faecal Sludge Treatment Plants (FSTPs)**.

➤ Urban Sewer Systems:

- In densely populated urban areas that lack space within properties, an underground network of pipes – a.k.a. sewers – collects and conveys the used water to treatment facilities.
- This network of interconnected pipes transports used water from toilets, bathrooms, kitchens to treatment facilities by gravity or with the help of pumps. Sewers have machine-holes for maintenance and to remove blockages.
- This used water, called sewage, is transported by sewers to **Sewage Treatment Plants (STPs)**.

What are the Functions of Treatment Facilities?

➤ Faecal Sludge Treatment Plants (FSTPs):

- **Varieties of FSTPs:** FSTPs operate in **either mechanical** (utilizing equipment like screw presses) or **gravity-based systems** (employing sand drying beds). These facilities manage faecal sludge, aiming for effective containment, conveyance, and treatment, often referred to as **faecal sludge management (FSM)**.
 - In smaller towns or **villages, OSS-FSM prevails**.
- **Reuse and Disposal:** Treated solids from FSTPs, when composted with organic municipal waste, **become reusable in agriculture**.
 - The treated water is commonly **repurposed for landscaping within FSTP premises**, highlighting a sustainable approach.

➤ Sewage Treatment Plants (STPs):

- **Comprehensive Water Treatment:** STPs employ **physical, biological, and chemical processes** to eliminate pollutants from used water.
 - Similar to FSTPs, the primary **stage separates solids, followed by purification where microorganisms digest** solids, and eventual disinfection.
- **Advanced Techniques and Varied Types:** Advanced STPs employ methods like **membrane filtration to enhance water reuse**.

Note:



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- These facilities come in **mechanised and non-mechanised types**, selected based on technical and financial capacities of city administrations.

Note: FSTPs are smaller and can coexist with **Solid Waste Management** sites or be decentralised, located closer to sludge sources. In contrast, STPs are larger, centralised facilities serving whole communities or urban areas, usually situated near water bodies to discharge treated water.

What is the Need for Such a Complex Sanitation System?

- As water **moves through its various domestic and non-domestic uses**, it accumulates natural as well as human-introduced impurities – including organic matter, nutrients from detergents, pathogens such as bacteria, viruses, and parasites, and heavy metals from solvents and pesticides. It also includes solids like soil, debris, minerals, and salts.
- To ensure that used water doesn't pollute or cause public health issues as a result of these impurities when reintroduced into natural environments, **it's essential to contain, remove, and treat used water before it is disposed of or reused**.
- Odour and aesthetics have **long been the main drivers of sanitation**, but it wasn't until their connections with public and environmental health became clear that people realised that using an "out of sight" approach was inadequate.

Press and Registration of Periodicals Bill, 2023

Why in News?

Recently, the **Lok Sabha** passed the **Press and Registration of Periodicals Bill, 2023**, repealing the colonial era law of the **Press and Registration of Books Act, 1867**.

- The Bill has already been passed by Rajya Sabha in August 2023.

What are the Key Features of Press and Registration of Periodicals Bill, 2023?

- **Registration of Periodicals:** The Bill provides for the registration of periodicals, which include any publication containing public news or comments on public news.

- Periodicals do not include **books or scientific and academic journals**.

- Whereas, the act provides for the registration of newspapers, periodicals, and books. It also provided for the cataloguing of books.

- Books have been taken away from the purview of the bill, as books as a subject are administered by the **Ministry of Human Resource and Development**.

- **Registration Protocols for Publications:** The Bill enables periodical publishers to register online via the Press Registrar General and specified local authority.

- Also, Publishing a periodical is prohibited for individuals **convicted of terrorism or actions** against state security.

- Whereas, the **act mandated a declaration to the District Magistrate**, who sent it to the Press Registrar for newspaper publication.

- **Foreign Periodicals:** Reproduction of foreign periodicals within India necessitates prior **approval from the central government**. Specific protocols for registering such periodicals will be outlined.

- **Press Registrar General:** This Bill introduces the role of the **Press Registrar General of India**, responsible for issuing registration certificates for all periodicals.

- Additionally, their duties encompass maintaining a **periodical register, establishing guidelines for periodical titles, verifying circulation figures, and managing registration revisions, suspensions, or cancellations**.

- **Printing Press Registration:** Declarations regarding printing presses can now be submitted online to the **Press Registrar General**, deviating from the previous requirement of declarations made before the **District Magistrate**.

- **Suspension and Cancellation of Registration:** The Press Registrar General holds authority to **suspend a periodical's registration for a minimum of 30 days (extendable up to 180 days)** due to various reasons including furnishing false information, discontinuity in publication, or providing inaccurate annual statements.

- Failure to rectify these issues could result in registration cancellation.

- Further grounds for cancellation include **similarity in titles with other periodicals or convictions related to terrorism or acts against national security** by the owner/publisher.

Note:

- **Penalties and Appeals:** The Bill empowers the Press Registrar General to **levy penalties for unregistered periodical publication** or failure to furnish annual statements within specified timelines.
 - Non-compliance with these directives may lead to imprisonment for up to **six months**.
 - Additionally, provisions for appeals against refusal of registration certificates, suspension/cancellation of registration, or imposed penalties are available, with a **60-day window to file appeals before the Press and Registration Appellate Board**.

What are the other Pre-Independence Legislations Related to Press Regulation?

- **Censorship under Lord Wellesley (1799):** Enacted due to French invasion fears, imposing strict wartime press controls, including pre-censorship.
 - Relaxed later by **Lord Hastings** in 1818, removing pre-censorship.
- **Licensing Regulations by John Adams (1823):** Instituted penalties for starting or operating a press without a license, later extended to cover various publications.
 - Primarily targeted Indian language newspapers or those led by Indians, leading to the cessation of **Rammohan Roy's Mirat-ul-Akbar**.
- **Press Act of 1835 (Metcalf Act):** Repealed the restrictive 1823 ordinance, earning Metcalfe the title "Liberator of the Indian press."
 - Mandated precise declarations by printers/publishers about their premises and allowed cessation as required.
- **Licensing Act during the 1857 Revolt:** Imposed further licensing restrictions due to the 1857 emergency.
 - Augmented existing registration procedures, granting the government power to halt the circulation of any printed material.
- **Vernacular Press Act, 1878:** Designed to regulate the vernacular press, suppress seditious writing, and prevent discord among different communities.
 - Required printers and publishers of vernacular newspapers to sign a bond refraining from disseminating **anti-government or divisive content**.
 - Decisions made by the magistrate were final without any avenue for appeal in court.

- **Newspaper (Incitement to Offences) Act, 1908:** Empowered magistrates to seize press properties publishing objectionable content inciting violence or murder.
 - **Bal Gangadhar Tilak**, a militant nationalist leader, **faced sedition charges** and was transported to Mandalay, sparking widespread protests and strikes.
- **Indian Press Act, 1910:** Local governments could demand security at registration, penalize offending newspapers, and require free copies for scrutiny.
 - Impeded press freedom by imposing stringent regulations similar to those in the Vernacular Press Act.

FAME India Phase-II Scheme

Why in News?

The **Parliamentary Standing Committee on Industry** has recently put forth crucial recommendations regarding the extension and enhancement of the **Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India (FAME India) Scheme Phase-II**.

- The committee suggests extending the FAME India Phase-II Scheme's deadline by at least three more years to facilitate the **transition momentum to electric mobility**.
- The current deadline is March 31, 2024, with a budget allocation of Rs 10,000 crore.

What are the Committee Recommendations for Improvement?

- **Restoration of Subsidy on Electric Two-Wheelers:**
 - The committee suggests **restoring the subsidy on electric two-wheelers**, which was reduced in June 2023.
 - Government reduced the FAME-II subsidy for electric two-wheelers after June 1, 2023.
 - The initial 40% incentive on ex-factory price was cut to 15%. Reduction in subsidies negatively impacted electric two-wheeler sales. Budget constraints cited as a reason for subsidy reallocation.
 - It also recommends projecting enhanced budget allocations, if required, to maintain the momentum and pace of electric vehicle penetration.

Note:



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- **Inclusion of Private Electric Four-Wheelers:**
 - The ministry should increase the number of electric vehicles supported in the four-wheelers category and include **private electric four-wheelers** in the FAME-II Scheme, with a cap based on the cost and battery capacity of the vehicle.
- **Supportive Government Frameworks:**
 - The committee emphasizes the need for supportive, transparent, and consistent government frameworks at national, state, and local levels to make India a global EV hub.
 - It also recommends focusing on establishing dedicated manufacturing **hubs and industrial parks for batteries, cells, and EV auto components.**
- **Funding for BHEL and Charging Stations:**
 - More funds should be allocated to **Bharat Heavy Electricals Limited (BHEL)** to facilitate popularizing EV mobility.
 - BHEL provided Engineering, Procurement, and Construction (EPC) solutions for EV charging stations. These include solar-based charging stations and **battery energy storage systems.**
 - Additionally, public sector undertakings and government institutions should participate in installing charging stations on their premises.
- **Incentivizing Charging Station Installation:**
 - FAME-II should incentivise individual investors in charging stations. **Women's self-help groups and cooperative societies** should be assisted in opening and operating charging stations, with assured returns provided by the government from its funds.

What is the FAME India Scheme?

- **Background:**
 - FAME India is a part of the **National Electric Mobility Mission Plan.**
 - The scheme's main objective is to encourage the adoption of electric and hybrid vehicles by **offering upfront incentives on purchase.**
 - The scheme covers **Hybrid and electric** technologies like **Mild Hybrid, Strong Hybrid, Plug-in Hybrid and battery Electric Vehicles.**
- **Phase I:**
 - Started in 2015 and was completed on 31st March 2019, with an outlay of Rs 895 crore.
 - The 1st phase of FAME The scheme had four focus areas namely, technology development, demand creation, pilot project, and charging infrastructure.
 - **Achievements:**
 - In the **1st phase of the scheme, about 2.78 lakh xEVs** were supported with total demand incentives. In addition, 465 buses were sanctioned to various cities/states under this scheme.
- **FAME India Phase-II:**
 - The **Ministry of Heavy Industries** is implementing the scheme for five years, starting April 1, 2019, with a total budget of Rs. 10,000 crore.
 - This phase mainly focuses on supporting the **electrification of public & shared transportation** and aims to support through demand incentive **eBuses, e-3 Wheelers, e-4 Wheeler Passenger Cars and e-2 Wheelers.**
 - In addition, the creation of charging infrastructure is also supported under the Scheme.
 - **Achievements:**

Category	Number of Vehicles			Amount (in Rs. Crores)		
	Revised Targets	Achievement	%	Revised Targets	Achievement	%
e-2W	9,68,000	6,89,016	71%	3,500	3,160	90%
e-3W	1,26,000	80,341	64%	700	456	65%
e-4W	11,000	8,115	74%	250	189	76%
e-Buses	7,090	2,838 – supplied 6,862 – committed	97%	4,307	1,181 – paid 3,151 – committed	73%
Total	11,12,090	7,80,310	70%	8,757	4,986	57%

Note:

What are the Other Government Initiatives to Promote EV Adoption?

- [National Electric Mobility Mission Plan \(NEMMP\).](#)
- [National Mission on Transformative Mobility and Battery Storage.](#)
- [Production Linked Incentive \(PLI\) scheme.](#)
- [Vehicle Scrappage Policy.](#)
- [Go Electric campaign.](#)
- [EV30@30 campaign.](#)

Tribunals

Why in News?

Recently, the [Supreme Court \(SC\)](#) in case *Union of India (UoI) & Ors. v. AIR Commodore NK Sharma (2023)*, has clarified that [Tribunals](#) functioning under the strict parameters of their governing legislations cannot direct the government to make policy.

- The SC was dealing with a question on whether the **Armed Forces Tribunal (AFT)** could have directed the government to **make a policy to fill up the post of the Judge Advocate General (Air)**.

What is the SC's Ruling in UoI & Ors. v. AIR Commodore NK Sharma Case?

- Tribunals, including the **Armed Forces Tribunal (AFT)**, do not have the authority to direct the government to **formulate specific policies**.
- The **role of making policy is not within the domain of the judiciary**, including quasi-judicial bodies like the AFT.
- Even though the AFT is vested with powers **akin to a civil court**, it **lacks the authority of the Supreme Court** or the High Courts. Additionally, the High Courts, exercising powers under Article 226 of the Constitution, **cannot direct the government or its departments to create particular policies**.
 - **Article 226** provides the High Courts the authority to bring a lawsuit against a government entity if any citizen's rights and freedoms are violated. The High Court has broad **powers to issue orders and writs to any person or authority under Article 226** of the Indian Constitution.
- The formulation or sanctioning of policies regarding the service of defense personnel or their regularization falls **solely within the government's prerogative**.

- A tribunal functioning within the confines of its governing legislation **lacks the power to mandate the creation of a policy**.

What is a Tribunal?

➤ About:

- Tribunal is a **quasi-judicial institution** that is **set up to deal with problems such as resolving administrative** or tax-related disputes. It performs a number of functions like adjudicating disputes, determining rights between contesting parties, making an administrative decision, reviewing an existing administrative decision and so forth.

➤ Constitutional Provisions:

- Tribunals were **not part of the original constitution**, it was incorporated in the Indian Constitution by **42nd Amendment Act, 1976**.
 - **Article 323-A** deals with Administrative Tribunals.
 - **Article 323-B** deals with tribunals for other matters.
- Under **Article 323 B**, the Parliament and the state legislatures are authorized to provide for the establishment of tribunals for the adjudication of disputes relating to the following matters:
 - Taxation
 - Foreign exchange, import and export
 - Industrial and labour
 - Land reforms
 - Ceiling on urban property
 - Elections to Parliament and state legislatures
 - Food stuff
 - Rent and tenancy rights
- **Articles 323 A and 323 B** differ in the following three aspects:
 - While Article 323 A contemplates the establishment of tribunals for public service matters only, Article 323 B contemplates the establishment of tribunals for certain other matters (mentioned above).
 - While tribunals under Article 323 A can be established only by Parliament, tribunals under Article 323 B can be established both by Parliament and state legislatures with respect to matters falling within their legislative competence.

Note:



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- Under Article 323 A, only one tribunal for the Centre and one for each state or two or more states may be established. There is no question of the hierarchy of tribunals, whereas under Article 323 B a hierarchy of tribunals may be created.
- **Article 262:** The Indian Constitution provides a role for the Central government in adjudicating **conflicts surrounding inter-state rivers** that arise among the state/regional governments.

What are the Different Tribunals in India?

- **Administrative Tribunals:**
 - Administrative tribunals, instituted under the **Administrative Tribunals Act, 1985**, stem from **Article 323 A of the Constitution**. They serve as specialized quasi-judicial bodies tasked with adjudicating disputes and grievances concerning **recruitment and terms of service for individuals in public posts** under Union and State governance.
 - These tribunals include the Central Administrative Tribunal (CAT), state-specific tribunals upon request, and **joint tribunals for multiple states**.
- **Water Disputes Tribunal:**
 - The Parliament has enacted **Inter-State River Water Disputes (ISRWD) Act, 1956** have formed various Water Disputes Tribunal for adjudication of disputes relating to waters of inter-State rivers and river valleys thereof.
 - Standalone Tribunal: The Inter-State River Water Disputes (Amendment) Bill, 2019 is passed by Parliament for amending the existing ISRWD Act, 1956 to constitute a standalone Tribunal to remove with the need to set up a separate Tribunal for each water dispute which is invariably a time-consuming process.
- **Armed Forces Tribunal (AFT):**
 - It is a military tribunal in India. It was established under the **Armed Forces Tribunal Act, 2007**.
 - It has provided the power for the adjudication or trial by AFT of disputes and complaints with respect to commission, appointments, enrolments and conditions of service in respect of persons subject to the **Army Act, 1950, The Navy Act, 1957 and the Air Force Act, 1950**.
 - The Judicial Members are retired High Court Judges and Administrative Members are retired Members of the Armed Forces who have held the rank of Major General/ equivalent or above for a

period of three years or more, Judge Advocate General (JAG), who have held the appointment for at least one year are also entitled to be appointed as the Administrative Member.

- **National Green Tribunal (NGT):**
 - The **National Green Tribunal (NGT)**, established by the National Green Tribunal Act 2010, is a body dedicated to **swiftly resolving environmental disputes**.
 - Comprising judges and environmental specialists, it expedites **cases involving nature conservation and damage compensation**.
- **Income Tax Appellate Tribunal:**
 - **Section 252 of the Income Tax Act, 1961** provides that the Central Government shall constitute an Appellate Tribunal consisting of many Judicial Members and Accountant members as it thinks fit to exercise the powers and functions conferred on the Tribunal by the Act.

Parliament Passes Bills To Replace British-era Criminal Laws

Why in News?

The **Parliament** recently passed three pivotal Bills: **Bharatiya Nyaya (Second) Sanhita, 2023; Bharatiya Nagarik Suraksha (Second) Sanhita, 2023; and Bharatiya Sakshya (Second) Bill, 2023**.

- Following their introduction in August, 2023, the bills were referred to a 31-member **Parliamentary Standing Committee**.

What are the Major Provisions of Bharatiya Nyaya (Second) Sanhita, 2023?

The Bharatiya Nyaya Sanhita (Second) (BNS2) replaces the **Indian Penal Code, 1860** and introduces significant alterations including:

- **Retention and Incorporation of Offences:** The BNS2 maintains **existing IPC provisions on murder, assault, and causing hurt**, while incorporating new offenses like organized crime, terrorism, and group-related grievous hurt or murder. It also adds **community service** as a form of punishment.
- **Terrorism:** Defined as **acts threatening the nation's integrity or causing terror among the populace**. Penalties range from death or life imprisonment to imprisonment with fines.

Note:



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- **Organized Crime:** Includes offenses like kidnapping, extortion, financial scams, cybercrime, and more. Punishments vary from life imprisonment to death, with fines for those committing or attempting organized crime.
- **Mob Lynching:** BNS2 identifies **murder or severe injury by five or more individuals on specific grounds** (race, caste, etc.) as a punishable offence, carrying life imprisonment or death penalty.
- **Sexual Offences Against Women:** Retaining IPC sections on rape, voyeurism, and other violations, BNS2 raises the **age threshold for gangrape victims from 16 to 18 years**. Additionally, it criminalizes deceptive sexual acts or false promises.
- **Sedition Revisions:** BNS2 eliminates the **sedition offense**, replacing it with penalizing activities related to **secession, armed rebellion, or actions endangering national sovereignty or unity** through various means.
 - However, critics argue that despite the sedition law's alteration from 'rajdroh' to 'desdroh,' concerns remain over its essence and application.
- **Death by Negligence:** The BNSS elevates the punishment for causing death by negligence **from two to five years under Section 304A of the IPC**.
 - However, it stipulates that **doctors**, if convicted, will still face the lower punishment of **two years** imprisonment.
- **Supreme Court Compliance:** Aligns with certain Supreme Court decisions by **excluding adultery as an offense** and introducing life imprisonment alongside the death penalty for murder or attempted murder by a life convict.

Criticism of BNS2:

- **Criminal Responsibility Age Discrepancy:** The age of criminal responsibility remains at seven years, with potential extension to 12 years based on the accused's maturity. This may conflict with international convention recommendations.
- **Inconsistencies in Child Offense Definitions:** While the BNS2 defines a child as someone below 18, the age threshold for several offenses against children differs. For instance, the age requirement for offenses like rape and gangrape varies, creating inconsistency.
- **Sedition Provisions and Sovereignty Concerns:** While the BNS2 eliminates sedition as an offense, elements related to endangering India's sovereignty, unity, and integrity might retain aspects of sedition.

- **Retention of IPC Provisions on Rape and Sexual Harassment:** The BNS2 retains the provisions of the IPC on rape and sexual harassment. It does not consider recommendations of the **Justice Verma Committee (2013)** such as making the offence of rape gender neutral and including **marital rape as an offence**.

What are the Major Provisions of Bharatiya Nagarik Suraksha (Second) Sanhita, 2023?

The Bharatiya Nagarik Suraksha (Second) Sanhita, 2023 (BNSS2) replaces the **Criminal Procedure Code, 1973 (CrPC)** and introduces significant alterations including:

- **Detention Conditions:** The BNSS2 alters rules for undertrials, **restricting release on personal bond for those accused in severe offenses**, including life imprisonment cases and individuals facing multiple charges.
- **Medical Examination:** It **broadens the scope of medical examinations**, allowing any police officer (not just a sub-inspector) to request one, making the process more accessible.
- **Forensic Investigation:** Mandates **forensic investigation for crimes punishable by at least seven years' imprisonment**.
 - It requires forensic experts to collect evidence at crime scenes, recording the process **electronically**. States lacking forensic facilities should utilize those in other states.
- **Sample Collection:** Extends the **power to collect finger impressions and voice samples**, even from individuals not under arrest, expanding beyond the CrPC's specimen signatures or handwriting orders.
- **Timelines:** The BNSS2 introduces strict timelines: **medical reports for rape victims within 7 days, judgments within 30 days (extendable to 45)**, victim progress updates within 90 days, and charge framing within 60 days from the first hearing.
- **Court Hierarchy:** The CrPC organizes India's criminal courts hierarchically, from Magistrate's Courts to the Supreme Court. It previously allowed cities with over a million people to have Metropolitan Magistrates, but the **BNSS2 eliminates this distinction and the role of Metropolitan Magistrates**.

Note:

Criticism of BNSS2:

- **Property Attachment from Crime Proceeds and Lack of Safeguards:** The power to seize property from crime proceeds lacks the **safeguards provided in the Prevention of Money Laundering Act**, raising concerns about potential misuse or lack of oversight.
- **Restrictions on Bail for Multiple Charges:** While the CrPC allows bail for an accused detained for **half the maximum imprisonment for an offense**, the BNSS2 denies this facility for individuals facing multiple charges.
 - This restriction, prevalent in cases involving multiple sections, may limit bail opportunities.
- **Handcuff Use and Contradictory Supreme Court Directives:** The BNSS2 permits the use of handcuffs in various cases, including organized crime, which contradicts directives laid down by the Supreme Court.
- **Integration of Trial Procedure and Public Order Maintenance:** The BNSS2 retains CrPC provisions related to the maintenance of public order. This raises questions about whether **trial procedures and the maintenance of public order should be regulated under the same law or addressed separately**.

What are the Major Provisions of Bharatiya Sakshya (Second) Bill, 2023?

The Bharatiya Sakshya (Second) Bill, 2023 (BSB2) replaces the **Indian Evidence Act, 1872 (IEA)**. It retains most provisions of the IEA including those on **confessions, relevancy of facts, and burden of proof**. However, it introduces significant alterations including:

- **Documentary Evidence:**
 - **Definition Expansion:** The BSB2 broadens the definition of documents to include **electronic records** alongside traditional writings, maps, and caricatures.
 - **Primary and Secondary Evidence:** Primary evidence retains its status, encompassing original documents, electronic records, and video recordings.
 - **Oral and written admissions**, along with testimony from a qualified individual examining the documents, are now **considered secondary evidence**.
- **Oral Evidence:** The BSB2 permits **electronic provision of oral evidence**, enabling witnesses, accused

individuals, and victims to testify through electronic means.

- **Admissibility of Electronic Records:** Electronic or digital records are granted **equivalent legal status as paper records**.
 - This includes information stored in **semiconductor memory, smartphones, laptops, emails, server logs, locational evidence**, and voicemails.
- **Amended Explanation to Joint Trials:** Joint trials encompass **cases where one accused is absent or has not responded to an arrest warrant**, now categorized as joint trials.

Criticism of BSB2:

- **Admissibility of Information from Accused in Custody:** The BSB2 allows such information to be admissible if it was obtained when the **accused was in police custody**, but not if he was outside. The **Law Commission recommended** removing this distinction.
- **Unincorporated Law Commission Recommendations:** Several recommendations by the Law Commission, such as **presuming police responsibility for injuries sustained by an accused in police custody**, have not been included in the BSB2, despite their significance.
- **Tampering of Electronic Records:** The Supreme Court has recognised that electronic records may be tampered with.
 - While the BSB2 provides for the admissibility of such records, there are **no safeguards to prevent the tampering and contamination of such records** during the investigation process.

Housing for PVTGs**Why in News?**

The Centre has initiated a comprehensive survey and registration process to identify eligible beneficiaries of the **Pradhan Mantri Awas Yojana-Gramin (PMAY-G)** among **75 Particularly Vulnerable Tribal Groups (PVTGs)** across 18 states and Union Territories.

- The Ministry of Rural Development utilizes the **Aawas+ app**, its dedicated online application, to identify beneficiaries for the rural housing scheme.
- A total of **4.9 lakh houses are planned to be built for PVTGs** under the **Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN)**.

Note:

What is Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN)?

- PM JANMAN, led by the Ministry of Tribal Affairs, seeks to integrate **tribal communities into the mainstream** through a comprehensive scheme. In collaboration with states and PVTG communities, the initiative focuses on 11 key interventions across sectors, including **housing, healthcare, education, and livelihood opportunities**.
- The scheme will be overseen by 9 line Ministries, ensuring the implementation of existing schemes in villages inhabited by PVTGs.
- This initiative was announced by the Prime Minister on **Janjatiya Gaurav Diwas 2023 (15th November)**.



What is Pradhan Mantri Awas Yojana- Gramin (PMAY-G)?

- **About:**
 - It is a flagship program of the Central Government. It was launched on April 1, 2016, by the **Ministry of Rural Development (MoRD)**.
 - The scheme's goal is to provide affordable housing for the rural poor. This includes providing basic amenities and hygienic kitchens to those living in dilapidated and kutcha houses.
 - The deadline for completion of **2.95 crore houses under PMAY-G is 31st March, 2024**.
- **Beneficiaries:**
 - People belonging to SCs/STs, PVTGs, freed bonded labourers and non-SC/ST categories, widows or next-of-kin of defence personnel killed in action, ex-servicemen and retired members of the paramilitary forces, disabled persons and minorities.

➤ Cost Sharing:

- The cost of unit assistance is shared between Central and State Governments in the ratio of **60:40 in plain areas and 90:10 for North Eastern and hilly states**.

➤ Features:

- The unit cost for **PMAY-G houses in PVTGs has been increased to Rs 2 lakh**, compared to Rs 1.2 lakh in plain areas and Rs 1.30 lakh in hilly areas.
- PMAY-G beneficiaries can avail additional financial assistance of Rs 12,500 for toilet construction and 90 days of work under the **National Rural Employment Guarantee Scheme (NREGS)**, taking the total benefit to Rs 2.39 lakh.

What are the PVTGs of India?

- Of the 75 PVTGs, the **maximum 13 are in Odisha**, followed by 12 in Andhra Pradesh.

State/UT	Tribal Groups
Andhra Pradesh	Bodo Gadaba, Bondo Poroja, Chenchu, Dongria Khond, Gutob Gadaba, Khond Poroja, Kolam, Kondareddis, Konda Savaras, Kutia Khond, Parengi Poroja, Thoti
Bihar (including Jharkhand)	Asurs, Birhor, Birjia, Hill Kharia, Korwas, Mal Paharia, Parhaiyas, Sauria Paharia, Savar
Gujarat	Kathodi, Kotwalia, Padhar, Siddi, Kolgha
Karnataka	Jenu Kuruba, Koraga
Kerala	Cholanaikayan (a section of Kattunaickans), Kadar, Kattunayakan, Kurumbas, Koraga
Madhya Pradesh (including Chhattisgarh)	Abujh Marias, Baigas, Bharias, Hill Korbas, Kamars, Saharias, Birhor
Maharashtra	Katkaria (Kathodia), Kolam, Maria Gond
Manipur	Marram Nagas
Orissa	Birhor, Bondo, Didayi, Dongria-Khond, Juangs, Kharias, Kutia Kondh, Lanjia Sauras, Lodhas, Mankidias, Paudi Bhuyans, Soura, Chuktia Bhunjia
Rajasthan	Seharias
Tamil Nadu	Kattu Nayakans, Kotas, Kurumbas, Irulas, Paniyans, Todas
Tripura	Reangs
Uttar Pradesh (including Uttarakhand)	Buxas, Rajis
West Bengal	Birhor, Lodhas, Totos
Andaman & Nicobar Islands	Great Andamanese, Jarawas, Onges, Sentinelese, Shom Pens

➤ Other Initiatives for PVTGs:

- **Janjatiya Gaurav Divas.**
- **Viksit Bharat Sankalp Yatra.**
- **PM PVTG Mission.**

Note:

Suspension of Members of Parliament

Why in News?

Recently, 146 **Members of Parliament (MPs)** have been suspended during the **winter session of Parliament 2023**.

- MPs in both Houses faced suspension due to their disruption of Parliamentary proceedings in protest of the recent breach of security in Parliament.

Why do MPs disrupt Parliament?

- As per the analysis done by political leaders, and presiding officers there is **four main causes that lead to disruption**:
 - MPs do not have enough time to raise crucial issues.
 - The government's lack of responsiveness
 - Parties intentionally cause disturbance for political or publicity reasons.
 - The failure to take immediate action against MPs who interrupt parliamentary proceedings.

Who Can Suspend a Minister of Parliament?

- The general principle is that it is the role and duty of the Presiding Officer i.e., **Speaker of Lok Sabha** and **Chairman of Rajya Sabha** to maintain order so that the House can function smoothly.
- In order to ensure that proceedings are conducted in the proper manner, the **Speaker/ Chairman** is empowered to force a Member to withdraw from the House.

What are the Rules Under Which the Presiding Officer Suspends MPs?

- **Rules of Procedure and Conduct of Business of Lok Sabha :**
 - **Rule 373:** Rules The Speaker can direct a member to withdraw immediately from the House if he finds the member's conduct disorderly.
 - Members so ordered to withdraw shall do so forthwith and shall remain absent during the remainder of the day's sitting.
 - **Rule 374:** The Speaker can name a member who disregards the authority of the Chair or abuses the rules of the House by persistently and wilfully obstructing the business thereof.

- And the member so named will be suspended from the House for a period not exceeding the remainder of the session.
- A member suspended under this rule shall forthwith withdraw from the precincts of the House."

- **Rule 374A:** Rule 374A was incorporated in the Rule Book in December 2001.

- In case of gross violation or severe charges, on being named by the Speaker, the member stands automatically suspended from the service of the House for five consecutive sittings or the remainder of the session, whichever is less.

- **Rules of Procedure and Conduct of Business of Rajya Sabha:**

- **Rule 255:**

- The **Chairman of Rajya Sabha** is empowered under **Rule 255** of its Rule Book to "direct any Member whose conduct is in his opinion grossly disorderly to withdraw immediately" from the House.

- **Rule 256:**

- Under this rule, the **Chairman** may "name a Member who **disregards** the **authority of the Chair** or **abuses** the rules of the Council by persistently and wilfully obstructing" business.
- In such a situation, the House may adopt a motion suspending the Member from the service of the House for a period not exceeding the remainder of the session.

What are the Drawbacks of the Suspension of MPs?

- The suspension of MPs in Parliament is a drastic measure that is taken to maintain the order and decorum of the House. However, it also has several **disadvantages for the functioning of democracy**, such as:
 - It **curbs the voice** and **representation of the people** who elected the suspended MPs. It deprives them of their right to raise issues of public interest and hold the government accountable.
 - It reduces the **scope and quality of debate** and **discussion** on important matters of legislation and policy.

Note:

- It **undermines the role of the opposition** as a constructive and responsible partner in the parliamentary process.
- It creates a **trust deficit** and animosity between the ruling and opposition parties.
- It erodes the **spirit of cooperation and consensus-building** that is essential for a **healthy democracy**.
- It sets a bad precedent and encourages the **misuse of power** by the majority party.
- It violates the **norms and conventions of parliamentary democracy** and weakens the institution of Parliament.
- The suspensions are a **threat to the federal structure** and the **diversity** of the country, as they affect **MPs** from different regions and parties.

Supreme Court's Remarkable Case Disposal Surge in 2023

Why in News?

In a notable development, the **Supreme Court (SC) of India** has disclosed a **substantial increase in the disposal of cases** during the year 2023, surpassing the **number of cases registered** during the same period.

What are the Factors that Contributed to the High Disposal of Cases?

- The SC disposed of 52,191 cases between January 1 and December 15, 2023, compared to 49,191 cases registered during the same period.
- The **Integrated Case Management Information System (ICMIS)**, implemented in 2017, played a crucial role in achieving the highest disposal numbers.
- The **Chief Justice of India** streamlined the **filing-to-listing timeframe**, ensuring cases were **listed within five days**, compared to the previous 10-day requirement.
 - Matters related to **bail, habeas corpus, demolition**, and **anticipatory bail** were processed within a day and promptly listed in courts, prioritizing the right to liberty.
- Special Benches were constituted, including those dealing with the death penalty.

What is Integrated Case Management Information System (ICMIS)?

- ICMIS is a next-generation hybrid **database** adopted by the SC. It integrates various information sources related to cases, such as case status, orders, judgments, appeals, etc.
- ICMIS enables litigants to **access and retrieve information online through a user-friendly interface**. It also provides real-time updates on the progress of cases.
- ICMIS helps reduce manipulation and delay in case filing and disposal. It also facilitates the online filing of cases and documents through e-filing portals.

What are the Other Initiatives Related to Reduce Pendency of Cases?

- **e-Courts:**
 - The Government of India has initiated the **e-Courts Integrated Mission Mode** Project to **computerize District and subordinate courts**, enhancing access to justice through technology.
 - Launched in 2007 as part of the **National e-Governance Plan**, it collaborates with the **e-Committee Supreme Court of India** and the **Department of Justice**.
 - The project progressed in two phases, with **Phase I from 2011-2015** and **Phase II starting in 2015**, focusing on the computerization of District and Subordinate courts.
- **Fast Track Special Courts (FTSCs):**
 - **FTSCs** were established to expedite **trials for sexual offenses**, especially those under the Protection of Children from Sexual Offences Act (POCSO Act), addressing delays in regular courts.
 - Enacted through the **Criminal Law (Amendment) Act in 2018**, operates under the **Department of Justice, Ministry of Law & Justice**.
- **Supreme Court Portal for Assistance in Court's Efficiency (SUPACE):**
 - **SUPACE**, a tool designed for judges, functions as a **fact and law collection system**, providing relevant **information for decision-making**. While it doesn't make decisions itself, it processes facts for judges seeking input in decision-making.

Note:

The Post Office Bill, 2023

Why in News?

Recently introduced, the **Post Office Bill, 2023** aims to repeal the Indian **Post Office Act, 1898**, which has been in existence for **125 years**.

- The Act regulates **India Post**, a departmental undertaking of the **central government**. The Bill contains provisions that allow the Centre to intercept, open, or detain any item, and deliver it to customs authorities.

What are the Key Highlights of the Bill?

- **Post officers can "intercept" any item:**
 - The Bill allows the **Centre** to empower any officer to **"intercept, open or detain"** any item in the interest of **state security, friendly relations with foreign states, public order, emergency, public safety, or contravention of other laws**.
 - This provision also allows post officers to hand over postal items to customs authorities if they are suspected to contain any prohibited item, or if such items are liable to duty.
- **The Post Office exempt from liability**
 - The bill exempts the **Post Office** and its **officer** from **"any liability by reason of any loss, mis-delivery, delay, or damage"** in course of any service provided by the Post Office except such liability as may be prescribed.
- **Removal of Offenses and Penalties:**
 - The Bill **removes all penalties and offenses** under the **1898 Act**.
 - For example, offenses committed by post office officials such as **misconduct, fraud, and theft**, among others, have been **deleted entirely**.
 - At the same time, if anyone **refuses or neglects** to pay the charges for availing a service provided by the Post Office, such amount shall be recoverable as if it were an **arrear of land revenue**.
- **Removes Centre's exclusivity:**
 - The present Bill has removed **Section 4 of the 1898 Act**, which allowed the Centre the exclusive privilege of conveying all letters by post.
 - However, courier services have been bypassing the **1898 law** by simply calling their couriers **"documents"** and **"parcels"**, rather than **"letters"**.

➤ Regulates Private Courier Services:

- The **2023 Bill**, for the first time, **regulates private courier services** by bringing it under its ambit.

What is the Criticism of the Bill?

- The Bill does not specify **procedural safeguards** for **interception** of articles transmitted through India Post.
 - Lack of safeguards may violate **freedom of speech and expression**, and the **right to privacy** of individuals.
- The **grounds for interception** include **'emergency'**, which may be **beyond reasonable restrictions** under the Constitution.
- The **Bill exempts India Post** from **liability for lapses** in postal services.
 - Liability may be prescribed through Rules by the central government, which also administers India Post. This may lead to **conflict of interest**.
- The Bill does **not specify any offenses and penalties**.
 - There are no consequences for unauthorized opening of postal articles by a postal officer. This may have adverse implications for the **Right to Privacy** of consumers.

2023 Records Lowest Number of CAG Audits

Why in News?

In the calendar year 2023, only **18 audit reports** on the **Union government's accounts**, prepared by the **Comptroller and Auditor General (CAG)**, were tabled in **Parliament**. A year-wise analysis shows that the number of audits on the Union Government tabled in Parliament has been decreasing.

- On average, **22 reports were tabled each year between 2019 and 2023**, compared to the 40 reports tabled between 2014 and 2018

What is the Office of CAG?

- **About:**
 - **Comptroller and Auditor General of India**, is a constitutional authority which heads the **Indian Audit and Accounts Department (IA&AD)**. The two entities are known as the **Supreme Audit Institution of India (SAI)**.

Note:

➤ **Mandate:**

- As a **"Guardian of the Public Purse"**, CAG is vested with the responsibility of **inspecting and auditing all the expenditure of both the Central and the State Governments** as well as of those organizations or the bodies which the government significantly funds.
 - This is the reason why **Dr. B.R. Ambedkar** said that the CAG shall be the most important Officer under the Constitution of India.

➤ **Constitutional Provisions:**

- **Article 148** provides for an independent office of the CAG.
 - Other Provisions Related to CAG include: **Articles 149-151 (Duties & Powers, Form of Accounts of the Union and the States and Audit Reports)**, Article 279 (calculation of net proceeds, etc.) and **Third Schedule** (Oath or Affirmation) and Sixth Schedule (Administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram).

➤ **Appointment:** The CAG is appointed by the **president of India** by a warrant under his hand and seal.

- He is provided with the security of tenure. He can be removed by the president only in accordance with the procedure mentioned in the Constitution.

➤ **Tenure:** Period of 6 years or until attaining the age of 65 years whichever is earlier.➤ **Removal:** Removal of the CAG from office requires a specific process: **an order from the President** after receiving an address from each House of Parliament.

- For removal to take effect, the **address must be supported by a majority of the total membership of that house** and by at least a **two-thirds majority of the members present and voting** in the same session.
- Grounds for removal include **proved misbehavior or incapacity**.

➤ **Provisions of Independence:** Major provisions include-

- The CAG's salary and **expenses are charged upon** the Consolidated Fund of India.
- CAG is provided with the **security of tenure** and does not hold office till the pleasure of the president, though he is appointed by him.
- Upon relinquishing the office, the **CAG is barred from holding any subsequent position within either the Government of India or any State**

Government, maintaining the independence and integrity of the office.

What is the Role of Audits in a Democracy like India?

➤ **Transparency and Accountability:**

- **Public Trust:** Audits instill **confidence in the public regarding how taxpayer money is utilized**, ensuring transparency in government operations.
- **Accountability:** They hold government bodies and officials accountable for their financial decisions and actions, preventing misuse or misallocation of public funds.

➤ **Preventing Financial Mismanagement:**

- **Detecting Errors and Fraud:** Audits help uncover **errors, discrepancies, or potential fraudulent activities**, ensuring corrective actions are taken promptly.
- **Budget Compliance:** They verify if financial activities align with budgetary allocations, preventing overspending or unauthorized expenditures.

➤ **Improving Efficiency and Effectiveness:**

- **Identifying Inefficiencies:** Audits highlight inefficiencies in processes, allowing for improvements and **cost-saving measures**.
- **Performance Assessment:** They assess the effectiveness of government programs and initiatives, **guiding future policy decisions for better outcomes**.
- **Enhancing Decision-Making:** Audit reports provide valuable insights for policymakers, aiding in informed decision-making for better governance.

➤ **Global Standards and Collaborations:** Audits meeting global standards improve the country's standing in international financial communities, facilitating collaborations and partnerships.

Note: The Constitution of India envisions the CAG as both the **Comptroller and Auditor General**. However, in practice, the **CAG primarily functions as an Auditor General only and not Comptroller**. In other words, CAG lacks control over fund disbursements. It is involved only during the audit phase, after the expenditure has occurred.

Note:

Outcome of SHG Bank Linkage Project

Why in News?

Recently, the Union Minister of State for Rural Development, in a written reply in Rajya Sabha has given information about Self Help Group (SHG) Bank linkage (BL).

- In 2019, the International Initiative for Impact Evaluation assessed DAY-NRLM, finding a 19% income boost and a 28% increase in household savings compared to the baseline.
 - The study spanned nine states: Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Uttar Pradesh, and West Bengal.

What is Self Help Group (SHG) Bank linkage (BL) Project?

- **About:**
 - The SHG BL Project was launched by **NABARD** in 1992 and has blossomed into the world's largest microfinance project.
 - Under this programme, banks were allowed to open savings accounts for SHGs.
- **Components:**
 - Training and sensitization of **Bank Branch Managers**
 - Training and positioning of **Bank Sakhis** at Rural Bank Branches
 - Initiate **Community Based Repayment Mechanism (CBRM)** at Rural Bank Branches
 - **Credit Linkage** of **SHGs**
- **Key Factors for SHG-BL's Success:**
 - Annual issuance of a Master Circular by **RBI** and **NABARD**.
 - Specification of minimum loan amounts for each **Self-Help Group (SHG)** with provisions being modified as needed to meet the scheme's requirements.
 - Regular training of staff and community cadres under **State Rural Livelihoods Missions (SRLMs)** to enhance their capacity.
 - Financial education for **Self Help Group (SHG) members** through trained **Financial Literacy Community Resource Persons (FLCRPs)** at the village level.

- **Bank Sakhis**, trained members from **SHGs** who act as intermediaries, aiding SHG members in transactions and application processes.
- A web portal was created to overcome **information asymmetry** in **SHG-Bank Linkage**, incorporating data directly from Banks' **Core Banking Solution (CBS) database**.

➤ Status of Bank Loans:

- The Bank loans to the tune of **Rs. 7.68 lakh Crore** have been accessed by **SHGs** since **FY 2013-14**.

What is Deendayal Antyodaya Yojana-National Rural Livelihood Mission (DAY-NRLM)?

➤ About:

- It is a **Centrally Sponsored Programme**, launched by the **Ministry of Rural Development** in **2011**.
- It aims to **eliminate rural poverty** through the promotion of multiple livelihoods and improved access to financial services for the **rural poor households** across the country.

➤ Functioning:

- It involves working with community institutions through community professionals in the spirit of **self-help which is a unique proposition of DAY-NRLM**.
- It impacts livelihoods by
 - Mobilizing rural households into SHGs.
 - Organizing one-woman member from each **rural poor household** into SHGs
 - Providing training and **capacity building** to **SHG members**
 - Providing access to financial resources from their own institutions and banks.

➤ Sub Programs:

- **Mahila Kisan Sashaktikaran Pariyojana (MKSP):** It aims to promote agro-ecological practices that increase women farmers' income and reduce their input costs and risks.
- **Start-Up Village Entrepreneurship Programme (SVEP):** It aims to support entrepreneurs in rural areas to set up local enterprises.
- **Aajeevika Grameen Express Yojana (AGEY):** It was launched in August 2017, to provide safe, affordable and community monitored rural transport services to connect remote rural villages.

Note:

- **Deendayal Upadhyaya Grameen Kaushalya Yojana (DDUGKY):** It aims at building placement-linked skills of the rural youth and placing them in relatively higher wage employment sectors of the economy.
- **Rural Self Employment Institutes (RSETIs):** DAY-NRLM, in partnership with 31 Banks and State Governments, is supporting Rural Self Employment Institutes (RSETIs) for skilling rural youth to take up gainful self-employment.

Artificial Intelligence Mission

Why in News?

India is gearing up for a significant **Artificial Intelligence (AI)** push with the recent announcement of the **AI Mission** by the Prime Minister at the **Global Partnership for AI Summit**.

- The AI Mission is expected to boost India's innovation ecosystem and position it as a global leader in artificial intelligence by building **computational capacity and providing compute-as-a-service to startups**.

Note:

- Computing capacity, or compute, is a general term that refers to the resources required for a program to be successful. This includes **processing power, memory, networking, and storage**.

What are the Key Highlights of the AI Mission?

- **Mission Objectives:**
 - The primary objectives of the AI Mission include establishing robust **computing powers for AI within India**.
 - The mission seeks to **enhance services for startups and entrepreneurs** while fostering AI applications in critical sectors such as **agriculture, healthcare, and education**.
- **Compute Capacity Goals:**
 - The ambitious plan involves building a substantial compute capacity, ranging between **10,000 to 30,000 Graphic Processing Units (GPUs)**.
 - A GPU is a chip or electronic circuit that can **render graphics** for display on an electronic device. GPUs are designed to accelerate **computer graphics and image processing**.

- Additionally, an extra 1,000-2,000 GPUs are slated through the PSU **Centre for Development of Advanced Computing (C-DAC)**.
- The government emphasizes a collaborative approach with the **private sector for capacity building** within the **National Supercomputing Mission**.

Note:

- **C-DAC's Rudra and Param systems** are slated for expansion with the addition of 1,000-2,000 GPUs.
 - Rudra is an **indigenous server platform** built by the C-DAC which has two expansion slots for graphic cards.
 - Param Utkarsh is a high-performance computing system setup at C-DAC that offers **AI over machine learning and deep learning frameworks**, computing and storage as a cloud service.

➤ Incentive Structures:

- The government is exploring varied incentive models, including capital expenditure subsidies, operational expense-based incentives, and a "usage" fee.

➤ Digital Public Infrastructure (DPI) for Startups:

- The government plans to create a **Digital Public Infrastructure (DPI)** using the GPU assembly, allowing startups to access computational capacity at a reduced cost.

➤ Focus on Datasets:

- The introduction of the **India Datasets platform** is highlighted, offering non-personal and **anonymized datasets** to startups and researchers.
- The government contemplates issuing a directive to major tech companies, including Facebook, Google, and Amazon, to share anonymized personal data with the India Datasets platform.

What is Artificial Intelligence (AI)?

- AI is the ability of a computer, or a robot controlled by a computer to do tasks that are usually done by humans because they require **human intelligence and judgement**.
 - Although no AI can perform the wide variety of tasks an ordinary human can do, **some AI can match humans in specific tasks**.

Note:



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- The ideal characteristic of AI is its ability to rationalize and take actions that have the best chance of achieving a specific goal. A subset of AI is **Machine Learning (ML)**.
 - **Deep Learning (DL)** techniques enable this automatic learning through the absorption of huge amounts of unstructured data such as text, images, or video.

What are India's Other Initiatives Related to Artificial Intelligence?

- **INDIAai.**
- **Global Partnership on Artificial Intelligence (GPAI).**
- **US India Artificial Intelligence Initiative.**
- **Responsible Artificial Intelligence (AI) for Youth.**
- **Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.**

Three New Sub-schemes under RAMP

Why in News?

Ministry of Micro, Small and Medium Enterprises (MoMSME) has launched three sub-schemes under the **RAMP programme**, aimed at bolstering the MSME sector in India.

What are the Sub-schemes under RAMP Programme?

- **MSME Green Investment and Financing for Transformation Scheme (MSME GIFT Scheme):**
 - This scheme intends to **help MSMEs adopt green technology** with **interest subvention and credit guarantee support**.
 - Implementing agency is SIDBI.
- **MSE Scheme for Promotion and Investment in Circular Economy (MSE SPICE Scheme):**
 - It is the first ever scheme in the Government to support **circular economy** projects which will be done through **credit subsidy** and will lead to realizing the dream of the MSME sector towards **zero emissions by 2070**.
 - Implementing agency is SIDBI.
- **MSE Scheme on Online Dispute Resolution for Delayed Payments:**

- It is a first-of-its-kind scheme to synergise **legal support with modern IT tools** and **Artificial Intelligence** to address the incidences of **delayed payments** for Micro and Small Enterprises.
- National Informatics Centre Services Inc. (NICSI) is the Implementing Agency.

➤ Other Initiatives under Existing Schemes:

- The **Support for Commercialisation of IP Programme (MSME – SCIP Programme)** will enable the innovators in the MSME sector to commercialize their IPR.
- In addition, the **Zero Defect and Zero Effect (ZED) Scheme** of the Ministry has now been made completely free for women led MSMEs. The government guarantees payment of 100 percent financial support for the certification cost.

What is the RAMP Scheme?

➤ About:

- It is a **World Bank** assisted **Central Sector Scheme**, supporting various **CoronaVirus Disease** 2019 (Covid) Resilience and Recovery Interventions of the **Ministry of Micro, Small and Medium Enterprises (MoMSME)**.

➤ Aimed at:

- Improving access to market and credit
- Strengthening institutions and governance at the Centre and State
- Improving Centre-State linkages and partnerships
- Addressing issues of delayed payments and greening of MSMEs

➤ Components:

- Important component of RAMP is preparation of **Strategic Investment Plans (SIPs)**, in which all states/UTs will be invited.
 - The SIPs would include an outreach plan for identification and mobilisation of MSMEs under RAMP, identify key constraints and gaps, set milestones and project the required budgets for interventions in priority sectors including **renewable energy**, rural & non-farm business, wholesale and retail trade, village and cottage industries, women enterprises etc.
- The overall **monitoring and policy overview** of RAMP would be done by an apex **National MSME Council**.

Note:

- The council will be headed by the Minister for MSME, including representation from various Ministries and supported by a secretariat.

Disqualification of Member of the Legislative Assembly

Why in News?

Recently, the Madras High Court convicted the Tamil Nadu Minister in a **disproportionate asset case**.

- The High Court's decision comes 12 years after the **First Information Report (FIR)** was first registered in the case in 2011. The minister now faces possible disqualification as a **Member of the Legislative Assembly (MLA)** due to his conviction, unless the conviction is overturned.

Note:

- Disproportionate assets is a term used in India to describe an **individual's net economic assets** that significantly **exceed the assets they should possess**.
 - This is after accounting for the assets they previously held and all legal sources of income.

What are the Provisions for Disqualification of a Member of the Legislative Assembly?

➤ Article 191:

- Article 191 of the Constitution of India deals with **disqualifications for membership of the State Legislative Assembly** or Legislative Council.
- A person shall be disqualified for being chosen as, and for being, a member of either house of the State Legislature if:
 - A person holds any **office of profit** under the Government of India or the Government of any State specified in the **First Schedule** unless the office is exempted by the State Legislature by law.
 - A person is declared to be of **unsound mind** by a competent court.
 - A person is an undischarged **insolvent**.
 - A person is **not a citizen** of India, or he has voluntarily acquired the citizenship of a foreign State, or he owes allegiance or adherence to a foreign State.
 - A person is **disqualified by or under any law made by Parliament**.

- A person can be disqualified on **grounds of defection** under the **Tenth Schedule** of the Constitution. This includes changing party affiliation before or after an election.

➤ Representation of the People Act (RPA), 1951:

- According to **Section 8(1) of the Representation of the People Act, 1951**, a legislator convicted of an offence under the **Prevention of Corruption Act (PCA), 1988**, should be disqualified for six years, from the date of conviction, if the punishment is limited to a fine.
- However, if a legislator is sentenced to any term of imprisonment under the PCA, 1988, then he or she should be disqualified from the **date of conviction till the entire period of imprisonment** and also for a further period of six years from the date of release, the Act says.
- But, the **detention of a person under a preventive detention law is not a disqualification**.
- The disqualification can be avoided only if the conviction, and not just the sentence, gets stayed or set aside.
- The person must not have been found guilty of **certain election offences or corrupt practices in the elections**.
- The person must not have been dismissed from government service for corruption or disloyalty to the state.
- The person must not have been convicted for promoting enmity between **different groups or for the offence of bribery**.
- The person must not have **failed to lodge an account of his election expenses** within the time.
- The person must not have any interest in government contracts, works or services.
- The person must not be a director or managing agent nor hold an office of profit in a corporation in which the government has **at least 25% share**.
- The person must not have been punished for **preaching and practising social crimes** such as **untouchability, dowry and sati**.
- The **Governor's decision on a member's disqualification is final**, but they must seek the Election Commission's opinion before taking action.
- The disqualification can be reversed if a **higher court grants a stay** on the conviction or decides the appeal in favour of the convicted lawmaker.

Note:



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How Disqualification is Different from Suspension?

- Suspension means that a **person temporarily loses his or her membership** due to some misconduct or violation of rules.
- **Rules 373, 374, and 374A of the Rules of Procedure and Conduct of Business in Lok Sabha** provide for the withdrawal of a member whose conduct is “**grossly disorderly**”, and suspension of one who abuses the rules of the House or willfully obstructs its business.
 - The maximum suspension as per these Rules is “**for five consecutive sittings or the remainder of the session**, whichever is less”.
- The maximum suspension for Rajya Sabha under Rules 255 and 256 also does not exceed the remainder of the session.
- Similarly, **each state has its own set of rules governing assembly conduct**, including provisions for the suspension of MLAs which prescribe a maximum suspension not exceeding the remainder of the session.

Indian Forest and Wood Certification Scheme

Why in News?

Recently, the Ministry of Environment, Forests and Climate Change (MoEFCC) has launched the **Indian Forest & Wood Certification Scheme (IFWCS)**, offering **voluntary third-party certification** designed to promote sustainable forest management and agroforestry in the country.

What is the Indian Forest & Wood Certification Scheme (IFWCS)?

- **Objective:**
 - IFWCS aims to offer an **alternative to private foreign certification agencies** that have been operating in India. It seeks to ensure greater integrity, transparency, and credibility in certifying sustainable forest management and wood-based products.
- **Certification Scope:**
 - The scheme covers **three main areas for certification**:
 - Sustainable forest management.
 - Sustainable management of trees outside forests (like plantations).

- Chain of custody, which guarantees the traceability of forest products throughout their supply chain, ensuring ethical sourcing and handling.

➤ **Nodal Agencies:**

- The scheme will be overseen by the **Indian Forest and Wood Certification Council**, which will act as a multistakeholder advisory body.
- **Indian Institute of Forest Management, Bhopal** will act as the scheme operating agency and will be responsible for overall management of the Scheme.
- The **National Accreditation Board for Certification Bodies under the Quality Council of India** will accredit the certification bodies which will carry out independent audits and assess adherence of various entities on the standards prescribed under the scheme.

➤ **Trees Outside Forests Standard:**

- A separate Trees Outside Forests Standard is **now introduced** as a part of the Scheme.
- ‘Trees outside Forests’ means trees growing outside recorded and notified forests, in farm lands of an individual farmers or group of small farmers or plantation area on private land of institutions and industries, etc. and include all trees on the hedges and bunds, **trees in different models of agroforestry, silvo-pastoralism, urban and rural forestry** systems and block plantations.

➤ **Benefits:**

- The certification is expected to enhance trust and transparency in processes related to **forest management and wood-based products**.
- The IFWCS can provide **market incentives to various entities** that adhere to **responsible forest management** and agroforestry practices in their operations.
- This includes state forest departments, individual farmers, or **Farmer Producer Organizations** engaged in **agroforestry and farm forestry**, as well as other wood-based industries in the value chain.

➤ **Global Context:**

- The launch of IFWCS aligns with global efforts to address deforestation concerns. The scheme’s objective resonates with the pledge made by over 100 countries at the **Glasgow climate change conference in 2021** to halt and reverse **Deforestation** by 2030.

Note:

What are the Other Recent Announcements Related to Forest Management?

- **National Working Plan Code 2023:**
 - The MoEFCC has released the “National Working Plan Code-2023” for scientific management of forests and evolving new approaches in July 2023.
 - National Working Plan Code which **was first adopted in 2004** with a subsequent amendment in 2014 brought uniformity and acted as the guiding principle for the preparation of the working plan **for scientific management of different forest divisions of our country.**
 - The “**Indian Forest Management Standard (IFMS)**” which is a part of this code, takes into account the diverse forest ecosystem in our country, while trying to bring in uniformity in management.
- **Green Credit Program (GCP) and Ecomark Scheme:**
 - The MoEFCC under **LIFE (Lifestyle for Environment’ movement)**, has introduced the GCP and the Ecomark Scheme in October 2023.
 - **GCP** is an innovative market-based mechanism designed **to incentivize voluntary environmental actions** across diverse sectors, by various stakeholders like individuals, communities, private sector industries. The **Indian Council of Forestry Research and Education (ICFRE)** serves as the **GCP Administrator**, responsible for program implementation, management, monitoring, and operation.
 - **Ecomark Scheme** provides accreditation and labelling for household and consumer products that **meet specific environmental criteria** while maintaining quality standards as per Indian norms.
 - The **Central Pollution Control Board** administers the Ecomark Scheme in partnership with **Bureau of Indian Standards (BIS)**, which is the national body for standards and certification.

Telecommunications Bill 2023

Why in News?

Recently, the government introduced the **Telecommunications Bill 2023** in the **Lok Sabha**. It seeks

to repeal the **Indian Telegraph Act, 1885**, the **Indian Wireless Telegraphy Act, 1933**, and the **Telegraph Wires (Unlawful Possession) Act, 1950**. It also amends the **Telecom Regulatory Authority of India (TRAI) Act, 1997**.

What are the Key Provisions of Telecommunications Bill 2023?

- **Authorisation for Telecom-related Activities:** Prior authorisation from the central government will be required to **provide telecommunication services**, establish, operate, maintain, or expand telecommunications networks, or possess radio equipment.
 - Existing licenses will continue to be valid for the period of their grant, or for five years, where the period is not specified.
- **Assignment of Spectrum:** Spectrum will be **assigned by auction**, except for specified uses, where it will be allocated on an administrative basis. These include purposes such as **national security and defense**, **disaster management**, **weather forecasting**, **transport**, **satellite services** such as **DTH and satellite telephony**, and BSNL, MTNL, and public broadcasting services.
 - The central government may **re-purpose or re-assign any frequency range**. The central government may also permit sharing, trading, leasing, and surrender of spectrum.
- **Satellite Internet Allotments:** The Bill introduces provisions for **allocating spectrum to satellite Internet providers** like **OneWeb (supported by Bharti)** and **U.S.-based companies** such as **SpaceX’s Starlink**.
 - Presently, active authorizations have been granted to **OneWeb and Jio**, paving the way for satellite-based Internet services.
- **Powers of Interception and Search:** Messages or a class of messages between two or more persons may be **intercepted, monitored, or blocked on certain grounds**.
 - Such actions must be necessary or expedient in the interest of public safety or public emergency, and must be in the interest of specified grounds which include: security of the state, prevention of incitement of offenses, or public order.
 - **Telecom services may be suspended** on similar grounds. The government may take temporary possession of any telecom infrastructure, network,

Note:



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or services on occurrence of any public emergency or public safety.

- An officer authorized by the government may search premises or vehicles for possession of unauthorized telecom networks or equipment.

- **Powers to Specify Standards:** The central government may prescribe standards and assessments for **telecom equipment, infrastructure, networks, and services**.
- **Right of Way:** Facility providers may seek a **right of way over public or private property** to establish telecom infrastructure.
 - Right of way must be provided on a non-discriminatory and non-exclusive basis to the extent possible.
- **Protection of Users:** The central government may provide for measures to protect users which include: **prior consent to receive specified messages** such as advertising messages, **creation of Do Not Disturb registers**, and a mechanism to allow users to report malware or specified messages.
 - **Biometric Authentication** is mandatory for telecom customers to combat spam calls and messages.
 - Entities providing telecom services must establish an online mechanism for registration and redressal of grievances.
- **Appointments to TRAI:** The **Bill amends the TRAI Act** to also allow individuals with: at least 30 years of professional experience to serve as the chairperson, and at least 25 years of professional experience to serve as members.
- **Digital Bharat Nidhi:** The **Universal Service Obligation Fund** has been established under the **1885 Act** to provide for telecom services in underserved areas.
 - The Bill retains this provision, **renames the fund as Digital Bharat Nidhi**, and also allows its use for research and development.
- **Regulation of OTT Apps:** It has **removed over-the-top (OTT) services and apps from the definition of telecommunication services**, in a big relief to communication service providers such as WhatsApp and Telegram.
 - The **Ministry of Electronics and IT** will handle the regulation of OTT apps under the potential Digital India Act, not included in the Telecom Bill.

- **Offenses and Penalties:** The Bill specifies various criminal and civil offenses. Providing telecom services without authorisation, or gaining unauthorized access to a telecom network or data, **are punishable with imprisonment up to three years**, a fine up to two crore rupees, or both.
 - Breaching terms and conditions of authorisation is punishable with a civil penalty up to **five crore rupees**.
 - Possessing unauthorized equipment, or using unauthorized network or service, is punishable with a penalty of up to **ten lakh rupees**.
- **Adjudication Process:** The central government will **appoint an adjudicating officer to conduct inquiries** and pass orders against civil offenses under the Bill.
 - The officer must be of the rank of joint secretary and above.
 - Orders of the adjudicating officer may be **appealed before the Designated Appeals Committee** within 30 days.
 - Appeals against the orders of the Committee, in connection to breach of terms and conditions, may be filed with Telecom Disputes Settlement and Appellate Tribunal (TDSAT) within 30 days.
- **Trusted Sources Regime:** A measure initially established post the India-China border conflict in 2020 to prevent the importation of telecom equipment from potentially adversarial nations is **now integrated into the law**.

What is the Status of the Telecom Sector in India?

- **Status:**
 - The Telecom industry in India is the **second largest in the world** with a subscriber base of 1.179 Billion as of August 2023 (wireless + wireline subscribers).
 - It is also the **4th largest sector in terms of FDI inflows**, contributing 6% of total FDI inflow.
 - India has an overall **tele-density of 84.69%**. Tele-density denotes the number of telephones per 100 population, and is an important indicator of telecom penetration.
 - The average monthly data consumption per wireless data subscriber has also increased to 17.36 GB in March 2023 from 61.66 MB in March 2014.

Note:

- **Related Government Initiatives:**
 - [Prime Minister Wi-Fi Access Network Interface \(PM-WANI\)](#)
 - [Bharatnet project](#)
 - [Production Linked Incentive \(PLI\) Scheme](#) for manufacturing of telecom and networking products.
 - [Bharat 6G Alliance](#)

Arbitration Agreements In Unstamped Contracts Valid

Why in News?

Recently, a seven-judge [Constitution Bench](#) of the Supreme Court (SC) held that [arbitration agreements](#) embedded in **unstamped** or **insufficiently-stamped** substantive commercial contracts or instruments are not invalid, unenforceable or even non-existent.

- “Arbitration aims to provide **speedy, efficient, and binding resolution** of disputes that have arisen between the parties.

What are the Key Highlights of the SC Decision?

- Delivering the lead opinion in a [curative petition](#) overruling an earlier **five-judge Bench** verdict of the [Supreme Court](#) in the **N.N. Global case**, [Chief Justice of India](#) held that “**non-stamping** or **inadequate stamping** is a **curable defect**”.
- Non-payment or insufficient stamping of contracts under the **Indian Stamp Act, 1899**, would not affect arbitration proceedings under the **Arbitration And Conciliation Act, 1996**.
- The Arbitration Act is a self-contained code. Matters governed by the **Arbitration Act** such as the **arbitration agreement, appointment of arbitrators** and competence of the **arbitral tribunal** to rule on its jurisdiction have to be assessed in the manner specified under the law.
 - Therefore, provisions of other statutes cannot interfere with the working of the **Arbitration Act**.
- The judgment gives a significant shot in the arm for India’s ambition to become an **international arbitration hub** to quickly resolve commercial disputes.
 - Earlier, arbitrations on such disputes had struck a **roadblock** owing to **non-payment** of the required **stamp duty** for or **insufficient stamping** of contracts by the parties.

What is Alternative Dispute Resolution (ADR) Mechanism in India?

➤ Arbitration:

- The dispute is submitted to an **arbitral tribunal** which makes a decision (an “award”) on the dispute that is mostly binding on the parties.
- It is less formal than a **trial**, and the **rules of evidence** are often relaxed.
- Generally, there is **no right to appeal** an **arbitrator’s decision**.
- Except for some interim measures, there is very little scope for **judicial intervention** in the **arbitration process**.
- The Indian arbitration is governed and regulated by the **Arbitration and Conciliation Act 1996** (which is amended in 2015, 2019 and **2021**),
 - The **Arbitration and Conciliation (Amendment) Act, 2019** seeks to establish an independent body called the **Arbitration Council of India (ACI)**.

➤ Conciliation:

- A **non-binding procedure** in which an **impartial third party**, the **conciliator**, assists the parties to a dispute in reaching a mutually satisfactory agreed settlement of the dispute.
- Conciliation is a **less formal** form of **arbitration**.
- The parties are free to **accept or reject** the recommendations of the conciliator.
- However, if both parties accept the settlement document drawn by the conciliator, it shall be final and binding on both.

➤ Mediation:

- In mediation, an impartial person called a “**mediator**” helps the parties try to reach a mutually acceptable resolution of the dispute.
- The **mediator does not decide the dispute** but helps the parties communicate so they can try to settle the dispute themselves.
 - Any person who undergoes the required 40 hours training stipulated by the **Mediation and Conciliation Project Committee** of the **Supreme Court (SC)** can be a mediator.
 - He also needs to have at least 10 mediations resulting in a settlement and at least 20 mediations in all to be eligible to be accredited as a qualified mediator.
- Mediation leaves control of the outcome with the parties.

Note:

- **Mediation Act, 2023** seeks to promote mediation, particularly **institutional mediation**, and provide a mechanism for **enforcing mediated settlement agreements**.
- **Negotiation:**
 - A **non-binding procedure** in which discussions between the parties are initiated without the **intervention of any third party** with the object of arriving at a negotiated settlement to the dispute.
 - It is the most common method of **alternative dispute resolution**.
 - Negotiation occurs in **business, non-profit organizations, government branches, legal proceedings**, among nations and in personal situations such as **marriage, divorce, parenting**, and **everyday life**.

What is the Arbitration Council of India (ACI)?

- **Constitutional Background:** The **Constitution of India, Article 51**, India is obliged to endeavor to:
 - Foster respect for international law and treaty obligations in the dealings of organized peoples with one country.
 - Encourage settlement of international disputes by arbitration. ACI is a step in realization of this constitutional obligation.
- **Objective:**
 - **ACI** aims to promote **arbitration, mediation, conciliation** and other **alternative dispute redressal mechanisms**.
- **Composition of the ACI:**
 - The **ACI** will consist of a **Chairperson who is either:**
 - A **Judge of the Supreme Court/ A Judge of a High Court/ Chief Justice of a High Court**.
 - An eminent person with expert knowledge in **conduct of arbitration**.
 - Other members will include an **eminent arbitration practitioner**, an academician with experience in **arbitration**, and **government appointees**.

Advocates Amendment Bill, 2023

Why in News?

Recently, the **Advocates Amendment Bill, 2023**, was passed in the Lok Sabha and Rajya Sabha. Its purpose was to weed out '**touts**' from the **legal system**.

- The Bill repeals the **Legal Practitioners Act, 1879** and amended the **Advocates Act, 1961**, to reduce "the number of superfluous enactments in the statute book" and repeal all "obsolete laws".

What are the Key Highlights of the Advocates Amendment Bill, 2023?

- **Touts:**
 - The Bill provides that every **High Court, district judge, sessions judge, district magistrate**, and **revenue officer** may frame and publish lists of touts.
 - Tout refers to a person who:
 - Either proposes to **procure** or **procures** the employment of a legal practitioner in a legal business in return of any payment.
 - Frequents places such as the **precincts of civil or criminal courts, revenue-offices, or railway stations** to procure such employment.
 - The **Court or judge** may exclude from the premises of the Court any person whose name is included in the **list of touts**.
- **Preparation of lists:**
 - The authorities empowered to **frame and publish the list of touts** may order **subordinate courts** to hold an inquiry into the conduct of persons alleged or suspected to be touts.
 - Once such a person is proven to be a tout, his name may be included by the authority in the list of touts.
 - No person will be included in such lists without getting an opportunity of showing cause against his inclusion.
- **Penalty:**
 - Any person who acts as a tout while his name is included in the list of touts will be punished with imprisonment up to **three months**, a fine up to **Rs 500**, or **both**.

What is the Advocate Act, 1961?

- The **Advocates Act, 1961**, was enacted to amend and consolidate the law relating to **legal practitioners** and to provide for the constitution of **Bar Councils** and an **All-India Bar**.
- This Act repealed a majority of the Legal Practitioners Act, 1879 but left behind provisions relating to its **extent, definitions**, and **powers to frame and publish lists of touts**.

Note:



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Waste Management Initiatives

Why in News?

In a recent written reply in the [Rajya Sabha](#), the Ministry of Environment, Forest and Climate Change highlighted the significant steps taken to tackle [waste management](#) in the country.

What are the Highlighted Initiatives Related to Waste Management?

- **Extended Producer Responsibility (EPR) Mechanism:**
 - [EPR](#) is a policy approach in waste management that makes producers **responsible for the entire lifecycle of their products**, including their collection, recycling, and disposal.
 - It aims to reduce the **environmental impact of products** by shifting the financial and physical burden of waste management from governments and taxpayers to producers.
 - In 2022, EPR initiatives utilizing market mechanisms were implemented for [plastic packaging](#), [E-waste](#), battery waste, and [used oil](#). This strategic move is anticipated to stimulate growth in the waste management sector.
- **Waste Processing Capacity:**
 - Out of the approximately **1.5 lakh metric tons per day (MT/D) waste generated in urban areas**, around **76% is processed**.
 - Since 2014, there has been a notable increase in the capacity for processing various types of waste, including solid waste, hazardous waste, bio-medical waste, E-waste, plastic waste, and construction and demolition waste.
 - Solid waste processing capacity has seen an increase of around 1.05 lakh MT/D in the last eight years, particularly under the [Swachh Bharat Mission \(Urban\)](#).
- **Swachh Bharat Mission for Solid Waste Management:**
 - Central assistance is provided under [Swachh Bharat Mission for solid waste management](#) including plastic waste management in urban and rural areas, as per scheme guidelines.
 - The Central Government launched [Swachh Bharat Mission Urban 2.0 \(SBM-U 2.0\)](#) in 2021 with the overall vision of creating [“Garbage Free Cities”](#), which would involve achieving the target that all Urban Local Bodies will become at least **3-star certified (as per Star Rating**

[Protocol for Garbage Free Cities](#)) covering door to door collection, source segregation, and scientific processing of municipal solid waste.

- The mission focuses on source segregation, reducing single-use plastic, managing waste from construction-and-demolition activities, and bio-remediation of legacy waste dump sites.
- Under [Swachh Bharat Mission – Grameen Phase II](#), the Department of Drinking Water and Sanitation has issued operational guidelines to the States and Union Territories which include **solid waste management activities at the village level**.
- **Waste Management Rules and Guidelines:**
 - The **Ministry, under the [Environment \(Protection\) Act, 1986](#)**, has implemented various waste management rules and guidelines to ensure environmentally sound practices. These include:
 - [Solid Waste Management Rules, 2016](#).
 - [Plastic Waste Management Rules, 2016](#).
 - [Bio-medical Waste Management Rules, 2016](#).
 - [Construction and Demolition Waste Management Rules, 2016](#).
 - [Hazardous and other wastes \(Management and Transboundary Movement\) Rules, 2016](#).
 - [E-waste Management Rules, 2022](#).
 - [Battery Waste Management Rules, 2022](#).
 - Guidelines have also been issued on environmentally sound waste management.
 - Guidelines have been developed for the levy of **environmental damages /environmental compensation charges** based upon the **polluter pays principle**, for hazardous waste, E-waste, and plastic waste.

Note:

- The ‘polluter pays’ principle is the commonly accepted practice that those who produce pollution should bear the costs of managing it to prevent damage to human health or the environment.

Unorganised Labour Initiatives and Migrant Workers Children Welfare

Why in News?

The Ministry of Labour & Employment recently highlighted measures designed to safeguard the interests

Note:

of **unorganised labour** in a written response presented in the **Rajya Sabha**.

- Additionally, the ministry addressed **welfare facilities for the children of migrant workers**.

What are the Highlighted Initiatives Related to Unorganised Labour?

➤ **Life and Disability Cover:**

- Provided through **Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)** and **Pradhan Mantri Suraksha Bima Yojana (PMSBY)**.

- **PMJJBY:**

- Rs. 2.00 Lakh in case of death of insured, due to any reason, at an annual premium of Rs. 436/-.

- **PMSBY:**

- Rs. 2.00 Lakh in case of accidental death or total permanent disability and Rs. 1.00 lakh for partial permanent disability due to accident at a premium of Rs. 20/- per annum.

➤ **Health and Maternity Benefits:**

- The health and maternity benefits are insured through **Ayushman Bharat- Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)** under deprivation and occupation criteria.
- It provides health insurance coverage up to Rs. 5.00 lakhs per family for secondary and tertiary care-related hospitalization.

➤ **Old Age Protection:**

- To provide old age protection to unorganised sector workers, the Government of India launched a pension scheme in 2019 namely **Pradhan Mantri Shram Yogi Maan-dhan Yojana (PM-SYM)** to provide a monthly pension of Rs. 3000/- after attaining the age of 60 years to unorganized workers.

➤ **Other Schemes:**

- **Public Distribution System** through **One Nation One Ration Card scheme** under the **National Food Security Act (NFSA) 2013**.
- **Mahatma Gandhi National Rural Employment Guarantee Act, 2005**.
- **Deen Dayal Upadhyay Gramin Kaushal Yojana**.
- **Pradhan Mantri Awas Yojana**.

- **Pradhan Mantri Gareeb Kalyan Rojgar Yojana**.
- **Mahatma Gandhi Bunkar Bima Yojana**.
- **Deen Dayal Antyodaya Yojana**.
- **Prime Minister Street Vendor's AtmaNirbhar Nidhi (PM-SVANidhi)**.
- **Pradhan Mantri Kaushal Vikas Yojana**.

Note:

- **Unorganised Workers' Social Security Act, 2008**, mandates the Government to provide **Social Security to the workers of the unorganized sector** by formulating suitable welfare schemes on matters relating to life and disability cover, health and maternity benefits, old age protection etc.
 - The term unorganized worker has been defined under the Unorganized Workers' Social Security Act, 2008, as a home-based worker, self-employed worker or a wage worker in the unorganized sector.
 - As per the survey carried out by the **National Sample Survey Organization** in the year 2011-12, the total employment in both organized and unorganized sectors in the **country was of the order of 47 crore. Out of this, about 39 crore are in the unorganized sector.**

What are the Welfare Facilities for Children of Migrant Workers?

- **Inter-State Migrant Workmen (Regulation of Employment and Conditions of Services) Act, 1979:**
 - The act protects the interests of migrant workers. The act provides for registration of certain **establishments employing Interstate Migrant Workers**, licensing of contractors etc.
 - Workers employed with such establishments are to be provided payment of minimum wages, journey allowance, displacement allowance, residential accommodation, medical facilities, protective clothing etc.
- **Right of Children to Free and Compulsory Education (RTE) Act, 2009:**
 - It mandates the appropriate Government to **provide free and compulsory elementary education to every child aged 6 to 14 years** in a neighbourhood school, which is also **applicable to children of inter-state migrant workers**.



Note:

Economic Scenario

Highlights

- Internationalisation of Indian Currency
- T+0 and Instant Settlement Cycle
- China Bans Export of Rare Earth Technologies
- Empowering States Fiscal Flexibility
- RBI Strengthens Norms for Lenders in AIFs
- Unnati Becomes the First Entity to List on the Social Stock Exchange
- Surat Diamond Bourse
- Logistics Ease Across Different State 2023
- Green Hydrogen Projects and SEZs

Internationalisation of Indian Currency

Why in News?

Recently, India has made first-ever payment in rupees for crude oil purchased from the UAE, paving the way for the Internationalization of Indian Currency.

- In July 2023, an agreement with the UAE facilitated **Indian Oil Corporation's (IOC) rupee payment** for a million barrels of crude from ADNOC (Abu Dhabi National Oil Company). Similarly, some Russian oil imports were settled in rupees.
- India, heavily reliant on oil imports (over 85%), employs a strategy centered on sourcing the most cost-effective oil while diversifying suppliers without breaching international obligations, notably amidst the Russian oil controversy post-Ukraine conflict.

What is Internationalisation of Rupee?

- **About:**
 - Internationalization of rupees is a **process that involves increasing use of the local currency in cross-border transactions.**
 - It involves promoting the rupee for import and export trade and then other current account transactions followed by its use in **capital account transactions.**
- **Historical Context:**
 - In the 1950s, the Indian rupee was widely used as **legal tender** in the United Arab Emirates, Kuwait, Bahrain, Oman, and Qatar.
 - However, the devaluation of India's currency by 1966 led to the introduction of sovereign

currencies in these countries to reduce reliance on the Indian rupee.

➤ Benefits of Internationalisation of Rupee:

- **Appreciate Currency Value:** It will improve the demand for the rupee in international trade.
 - This can lead to increased convenience and reduced transaction costs for businesses and individuals dealing with India.
- **Reduced Exchange Rate Volatility:** When a currency is internationalized, its exchange rate tends to stabilize.
 - The increased demand for the currency in global markets can help reduce volatility, making it more predictable and reliable for international transactions.
- **Geopolitical Advantages:** Internationalizing the Rupee can enhance India's geopolitical influence.
 - It can strengthen economic ties with other countries, facilitate bilateral trade agreements, and promote diplomatic relations.
- **Fortify Indian Economy:** Diversifying settlement currencies can reduce dollar demand and **fortify India's economy against global currency shocks.**
- **Challenges:**
 - **Triffin Dilemma:** The Triffin dilemma could manifest as a **conflict between maintaining stability in India's domestic economy and meeting the global demand for the Rupee.** Balancing these conflicting demands presents a challenge in the process of making the Rupee an international currency without adversely impacting the country's economic stability.

Note:



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- It describes the **conflict between a country's domestic monetary policy goals and its role as an international reserve currency issuer.**
- **Exchange Rate Volatility:**
 - Opening up the currency to international markets can increase volatility in its exchange rate, especially in the initial stages. Fluctuations can impact trade and investments, affecting economic stability.
- **Impact on Import Costs:** If the Rupee's internationalisation leads to increased demand for the currency in global markets, it might strengthen the Rupee against other currencies. A stronger Rupee **could potentially reduce the cost of imports from countries like China and Russia**, potentially impacting trade balances.
- **Limited International Demand:** The daily average share for the rupee in the global forex market is only around 1.6%, while India's share of global goods trade is ~2%.
- **Convertibility Concern:** The **INR is not fully convertible**, meaning there are restrictions on its convertibility for certain purposes such as capital transactions. This restricts its widespread use in international trade and finance.
- **Demonetization Impact:** The **demonetization** exercise in 2016, along with the recent withdrawal of the Rs 2,000 note, has affected confidence in the rupee, particularly in neighboring countries like Bhutan and Nepal.
- **Challenges in Trade Settlement:** While efforts have been made to trade with around 18 countries in rupees, transactions have remained limited.
 - Also, negotiations with Russia to settle trade in rupees have been slow, hampered by currency depreciation concerns and inadequate awareness among traders.
- **Steps Towards Internationalisation:**
 - **Developments in the GIFT City**
 - **Asian Clearing Union (ACU):**
 - The ACU is a regional payment arrangement. It facilitates the settlement of trade transactions among its member countries on a multilateral basis. It was established in 1974 by ten central banks of Asia. The ACU currently has 13 member countries. India is a member of ACU.
 - In March 2023, the RBI put in place the mechanism for rupee trade settlement with as many as 18 countries.

- Banks from these countries have been allowed to open **Special Vostro Rupee Accounts (SVRAs)** for settling payments in Indian Rupees.
- In July 2022, the RBI issued a circular on **"International Trade Settlement in Indian Rupees"**.
- RBI enabled **external commercial borrowings** in Rupees (especially **Masala Bonds**).

What are the Reforms that India Can Pursue to Internationalise the Rupee?

- **Make the Rupee More Freely Convertible:**
 - With a goal of full convertibility by 2060, letting financial investments move freely between India and abroad.
 - This would allow foreign investors to easily buy and sell the rupee, enhancing its liquidity and making it more attractive.
- **Reforms Suggested by Tarapore Committee:**
 - **Strong Fiscal Management:** Such as reducing **fiscal deficits** lower than 3.5%, reducing gross **Inflation** rate to 3%-5%, and reducing gross banking **non-performing assets** to less than 5%.
 - **Liberalised Scheme for Personal Remittance:** The introduction of a more liberal scheme for personal remittances to facilitate easier transactions for individuals dealing with foreign exchange.
 - **Removal of Restrictive Clauses for Employee Stock Options:** The removal of restrictive clauses related to issuing Employees' Stock Options at concessional rates, allowing for smoother transactions and operations concerning stock options.
 - **Name Change and Reorientation of Department:** The committee suggested changing the name and reorienting the department responsible for handling the implementation of the Foreign Exchange Management Act, 1999, from the Exchange Control Department to the Foreign Exchange Department, emphasizing a leaner and more strategic task force approach.
- **Pursue a Deeper Bond Market:**
 - Enabling foreign investors and Indian trade partners to have more investment options in rupees, enabling its international use.
- **Encourage Exporters/Importers for Transactions in Rupee:**
 - Optimising the trade settlement formalities for rupee import/export transactions would go a long way.

Note:

- **Sign Additional Currency Swap Agreements:**
 - As with Sri Lanka, to allow India to settle trade and investment transactions in rupees, without resorting to a reserve currency such as the dollar.
 - India currently has a bilateral swap arrangement (BSA) with Japan for up to USD 75 billion as a backstop line of support in case of any balance-of-payments issues.
- **Ensure Currency Management Stability and Improve the Exchange Rate Regime:**
 - Avoid sudden or drastic changes such as devaluation or demonetisation that can impact confidence.
 - Ensure consistent and predictable issuance/retrieval of notes and coins.

T+0 and Instant Settlement Cycle

Why in News?

The **Securities and Exchange Board of India (SEBI)** has proposed a new system for settlement of funds and securities on **T+0 (same day)** and instant settlement cycle on an optional basis, supplementing the **existing T+1 (trade plus one day) settlement cycle** in the secondary markets for the equity cash segment.

- By embracing **popular instant payment methods such as Unified Payment Interface**, SEBI aims to adapt equity trading to modern investor preferences for enhanced flexibility.

What is the Settlement Cycle in the Securities Market?

- **T in Settlement Cycles:** The “T” in settlement cycles within financial markets refers to the day on which a transaction or trade takes place.
 - In this context, “T” **represents the transaction date**. The settlement cycle, denoted as “T+n,” **specifies the number of days after the transaction date (T)** by which the settlement or completion of the trade occurs.
- **Evolution of Settlements Cycles :** SEBI has shortened the settlement cycle to **T+3 from T+5 in 2002** and subsequently to **T+2 in 2003**.
 - Presently, the **settlement of funds and securities occurs on the T+1 cycle in India**, which was phased in through **2021** and wholly implemented by **January 2023**.

SEBI's Proposed Phases for New Settlement Cycles:

- **Phase 1: T+0 Settlement Cycle**
 - An **optional T+0 settlement cycle** is envisioned for trades until 1:30 PM, aiming to settle funds and securities on the same trading day by 4:30 PM.
- **Phase 2: Instant Settlement Cycle**
 - An optional **immediate trade-by-trade settlement**, including funds and securities, with trading until 3:30 PM.
- SEBI has proposed the **initial rollout of the T+0 settlement for the top 500 listed equity shares** in three tranches (**200, 200, 100**) based on market capitalization.
 - This initiative corresponds to the changing Indian securities market, marked by surging **volumes, values, and participants**.
- **Benefits:**
 - **Clients:** Enables **faster pay-outs of funds against securities** for sellers and vice versa, offering enhanced flexibility.
 - **Securities Market Ecosystem:** Accelerated pay-outs are expected to bolster the market ecosystem's efficiency and liquidity.

China Bans Export of Rare Earth Technologies

Why in News?

Recently, China has banned the export of technology to extract and separate the Rare Earth Metals, as it overhauled a list of technologies **deemed key to national security**.

- It also banned the export of **production technology for rare earth metals and alloy materials** as well as technology to prepare some rare earth magnets.
- The move comes as Europe and the US scramble to wean themselves off rare earths from **China, which accounts for 90% of global refined output**.

What are Rare Earth Metals?

- They are a set of seventeen metallic elements. These include the fifteen lanthanides on the **periodic table** in addition to scandium and yttrium that show similar physical and chemical properties to the lanthanides.
 - The 17 Rare Earths are cerium (Ce), dysprosium (Dy), erbium (Er), europium (Eu), gadolinium

Note:



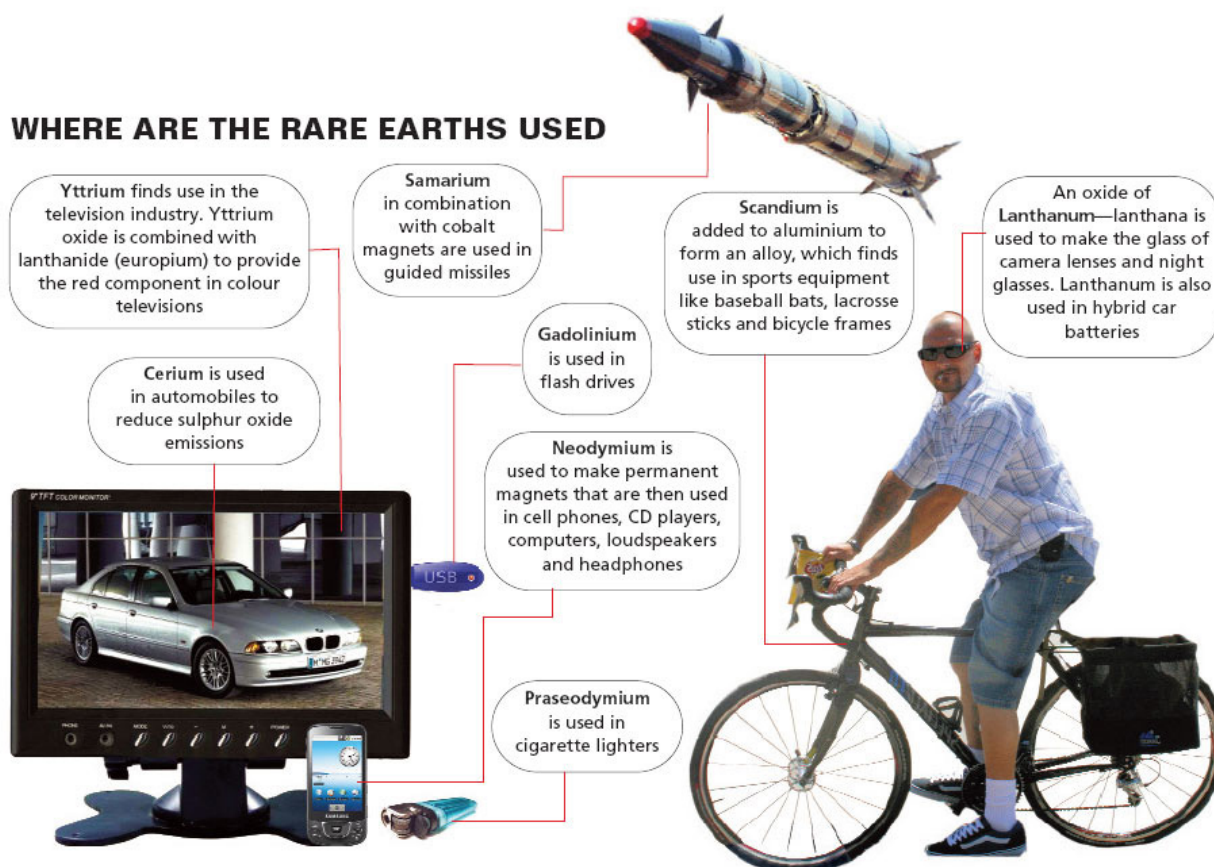
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(Gd), holmium (Ho), lanthanum (La), lutetium (Lu), neodymium (Nd), praseodymium (Pr), promethium (Pm), samarium (Sm), scandium (Sc), terbium (Tb), thulium (Tm), ytterbium (Yb), and yttrium (Y).

- These minerals **have unique magnetic, luminescent, and electrochemical properties** and thus are used in many modern technologies, including consumer electronics, computers and networks, communications, health care, national defense, clean energy technologies etc.

- Even **futuristic technologies need these REEs**.
 - **For example**, high-temperature superconductivity, safe storage and transport of hydrogen for a post-hydrocarbon economy etc.
- They are called '**rare earth**' because **earlier it was difficult to extract** them from their oxides forms technologically.
- They occur in **many minerals but typically in low concentrations** to be refined in an economical manner.

WHERE ARE THE RARE EARTHS USED



What are the Global Implications of Banning Rare Earth Export Technology?

➤ Global Supply Chain Disruption:

- China is the world's top processor of rare earths. Given China's dominant role in rare earth production and processing, the ban could **disrupt global supply chains for various industries** reliant on these materials.
- Countries and industries **heavily dependent on Chinese rare earth exports** might face shortages

or higher costs.

➤ Strategic Dependence:

- It underscores the vulnerability of countries heavily reliant on China for critical materials.
- Dependence on a single source for such essential elements **raises concerns about supply security, pushing nations to explore alternative sources or domestic production.**

➤ Opportunities for Innovation:

- The ban might spur **innovation and investments**

Note:

in **alternative technologies** and supply sources outside China.

- Countries may **seek to diversify their rare earth supply chains**, reducing dependence on a single market.

How can it Impact India?

➤ **Supply Chain Diversification:**

- India, like many other countries, **relies on Chinese rare earth exports**. The ban **presents an opportunity for India** to reassess its dependence and explore diversification strategies.
- India may **focus on developing domestic rare earth extraction** and processing capabilities or **seek partnerships with other nations** to secure its supply.

➤ **Industrial Impact:**

- Industries in India relying on rare earth materials **may face disruptions initially due to potential supply constraints**.
- However, this could prompt investments in domestic production or collaborations with alternative suppliers to mitigate risks.
 - The Rare Earth (RE) resources in India are reported to be the **fifth largest in the world**.

Empowering States Fiscal Flexibility

Why In News?

Recently, The **Union Government** had allowed **22 States** to **raise additional borrowings** of almost **Rs. 61,000 crore** for **2023-24** on top of their **net borrowing ceilings** of **3% of Gross State Domestic Product (GSDP)**.

- States may be able to tap about **Rs. 2.04 lakh crore** as **additional borrowings** over and above their **net borrowing limits** for the year.

What are the Borrowing Provisions for the States?

- States that fulfilled their **pension obligations** by contributing to the **National Pension System (NPS)**, responsible for managing government employees' retirement savings since **2004**, were given an additional borrowing limit.
- States can have a **fiscal deficit of 3.5%** of their **Gross State Domestic Product (GSDP)**.

- States are eligible for **additional borrowing space** of **0.5%** of their **GSDP** as a reward for implementing **power sector reforms** that enhance operational and economic efficiency, following the **Fifteenth Finance Commission's** recommendation.
- Additionally, states will receive a **fifty-year interest-free loan**, and the entire loan must be used for **capital expenditure** in the **fiscal year 2023-24**.

What is the National Pension System?

➤ **About:**

- The **Central Government** has introduced the **National Pension System (NPS)** with effect from **January 2004**.
- In **2018** to streamline the **NPS** and make it more attractive, the **Union Cabinet** approved changes in the scheme to benefit central government employees covered under **NPS**.
- NPS is being implemented and regulated by **Pension Fund Regulatory and Development Authority (PFRDA)** in the country.
- **National Pension System Trust (NPST)** established by **PFRDA** is the registered owner of all assets under NPS.

➤ **Structure:**

- **NPS is structured into two tiers:**
 - **Tier-I account:**
 - This is the non-withdrawable permanent retirement account into which the accumulations are deposited and invested as per the option of the subscriber.
 - **Tier-II account:**
 - This is a voluntary withdrawable account which is allowed only when there is an active Tier I account in the name of the subscriber.
- The withdrawals are permitted from this account as per the needs of the subscriber as and when claimed.

➤ **Beneficiaries:**

- NPS was made available to all Citizens of India from **May 2009**.
- Any individual citizen of India (both resident and Non-resident) in the age group of **18-65 years** can join **NPS**.
- However, **OCI (Overseas Citizens of India)** and **PIO (Person of Indian Origin)** card holders and **Hindu Undivided Family (HUFs)** are not eligible for opening of NPS accounts.

Note:



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RBI Strengthens Norms for Lenders in AIFs

Why in News?

In a move aimed at curbing evergreening of stressed loans, the **Reserve Bank of India (RBI)** recently directed **Regulated entities (REs)** like **banks, non-banking financial companies (NBFCs)** and other lenders not to invest in any scheme of **alternative investment funds (AIFs)** which has downstream investments in a debtor company.

- **Regulated entities (REs)** make investments in units of AIFs as part of their regular investment operations. RBI, however, stated that certain transactions of REs involving AIFs, **raise regulatory concerns**.

What are the Recent RBI's Directives to REs Related to AIFs?

- RBI emphasized “**replacing direct loans given to borrowers with investments in AIF units by REs**, which indirectly links to the borrowers. This raised concerns about the practice of **loan evergreening** to avoid marking them as defaults.
 - **Evergreening of loans** is a process whereby a lender tries to revive a loan that is on the verge of default or in default by extending more loans to the same borrower.
- RBI's **directive explicitly prohibits REs from investing in AIFs schemes with downstream investments** in debtor companies related to the RE.
 - According to the directive, in instances where an AIF in which an RE is already an investor makes downstream investments in debtor companies, the **RE must liquidate its investment within 30 days**.
 - In case the REs are not able to liquidate their investments within the prescribed time limit, they will have to make a **100% provision on such investments**.
 - A provision is an amount set aside or reserved by a company or financial institution to cover anticipated future expenses or losses.

Note: Downstream investments refer to the **actual investments made by AIFs in companies** using raised funds from investors.

What is an Alternative Investment Fund?

- **About:** An AIF refers to a fund established or formed in India, serving as a **privately pooled investment mechanism**.
 - It gathers funds from sophisticated investors, **whether domestic or international**, with the aim of investing according to a specific investment policy, ultimately benefiting its investors.
 - These investment vehicles adhere to the **SEBI (Alternative Investment Funds) Regulations, 2012**.
 - As of **December, 2023**, 1,220 AIFs were registered with the Securities and Exchange Board of India (SEBI).
- **Types of AIFs in India:** SEBI has classified AIFs into three main categories:
 - **Category I:** AIFs that invest in **startups, early-stage ventures, social initiatives, SMEs, infrastructure**, or sectors deemed socially and economically beneficial by authorities.
 - This includes **venture capital, social venture funds, infrastructure funds**, and any other specified Alternative Investment Funds.
 - **Category II:** AIFs which **do not fall in Category I and III** and which do not undertake leverage or borrowing other than to **meet day-to-day operational requirements**.
 - These include **real estate funds, private equity funds (PE funds), distressed asset funds**, and similar types.
 - **Category III:** AIFs which **employ diverse or complex trading strategies** and may employ leverage including through investment in listed or unlisted derivatives.
 - Various types of funds such as **hedge funds, PIPE (private investment in public equity) Funds, etc.** are registered as Category III AIFs.
- **Legal forms:** An AIF can be established in the form of a **trust or a company or a limited liability partnership or a body corporate**.
 - Most of the AIFs registered with SEBI are in **trust form**.

Unnati Becomes the First Entity to List on the Social Stock Exchange

Why in News?

Recently, **SGBS Unnati Foundation (SUF)** became the first entity to list on the **social stock exchanges (SSE)**.

Note:

The Unnati program of the foundation provides vocational training for the underprivileged and unemployed youth in the age group of 18 to 25 years.

- **SUF**, a **not-for-profit organization (NPO)**, was incorporated in **2011**.
- A **Not-for-Profit organization** after registering with **Social Stock Exchange** may raise funds on SSE through issuance of **Zero Coupon Zero Principal Instruments**.

What is the Social Stock Exchange (SSEs)?

- The idea of the **Social stock exchanges (SSEs)** as a platform for listing social enterprise, voluntary and welfare organizations so that they can raise capital was mooted in the **Union Budget 2019-20**.
 - Social enterprise can be defined as a **non-loss; non-dividend paying company** created and designed to **address a social problem**.
- It works under the market regulator **Security and Exchange Board of India (SEBI)**.
 - The **aim** of the initiative is to help **social and voluntary organizations** which work for **social causes** to raise capital as **equity or debt** or a **unit of mutual fund**.
- It provides new and cheaper sources of financing for social welfare projects, while showcasing India's independence from foreign aid.
- **SEBI** had permitted social enterprises registered on **SSEs** to raise funds through **Zero Coupon Zero Principal Bonds (ZCZP)**.

What is the Zero Coupon Zero Principal (ZCZP)?

- **About:**
 - The **ZCZP bonds** do not give any interest, and investors will not get any money back on the maturity of the bond.
 - The ZCZP bonds **issued by non-profit organisations** are listed on the SSE. They **are not available for trading in the secondary market**, but they can be transferred to legal heirs since they are issued in dematerialised form.
 - Similar ZCZP instruments issued by **for-profit organisations** can be listed on main board or SME platform of exchanges and **are available for trading in secondary market**.
- **Benefits:**
 - ZCZP is akin to a donation made to a charity. There is **greater transparency about the objective of**

the social enterprise. The end use of the funds can also be monitored since the enterprises have to disclose details of money utilised and balance amount remaining to exchanges.

- The listing provides visibility to the social enterprises and helps them **to approach the public at regular intervals if they can show good outcomes**.

Surat Diamond Bourse

Why in News?

Recently, the **Indian Prime Minister** inaugurated the **Surat Diamond Bourse (SDB)** in Gujarat, marking a significant development in the **diamond** and jewelry industry.

- The SDB stands as the **world's largest office complex**. It aims to relocate the diamond trading hub from Mumbai to Surat, **leveraging Surat's diamond cutting and polishing expertise**.

What is the Status of the Diamond Industry in India?

- **About Diamond:** A diamond is a rare, naturally occurring mineral made up of pure carbon. The word diamond comes from the Greek word Adamas, which means **indestructible**.
 - Diamond occurs in two types of deposits, **primarily in igneous rocks of basic or ultrabasic composition** and in alluvial deposits derived from the primary sources.
- **Major Diamond Producing Countries:** Russia, Botswana, Canada, South Africa, Democratic Republic of the Congo.
 - Russia is the world's largest producer of rough diamonds, mining nearly 42 million carats in 2022.

Note: Recently, the **G7** group of countries have announced direct import restrictions on Russian-origin diamonds from January 2024 and **diamonds processed by third countries like India from March 2024**, which has raised major concerns for the Indian gems and jewelry trade and diamond processing industry.




- However, **Lab grown diamonds** are gaining traction for their eco-friendly nature.

Note:

- **Diamond Industry in India:** India is the world's largest cutting and polishing center for diamonds, accounting for over 90% of polished diamond manufacturing globally.
 - According to **Indian Minerals Yearbook 2019**, diamond fields of India are grouped into four regions:
 - **Central Indian tract of Madhya Pradesh**, comprising Panna belt.
 - **South Indian tract of Andhra Pradesh**, comprising parts of Anantapur, Kadapa, Guntur, Krishna, Mahabubnagar and Kurnool districts.
 - **Behradin-Kodavali area in Raipur district** and Tokapal, Dugapal, etc. areas in Bastar district of Chhattisgarh.
 - **Eastern Indian tract mostly of Odisha**, lying between Mahanadi and Godavari valleys.
 - In 2022, India ranks first among the top exporters in **cut & polished diamonds**.

What are Lab-Grown Diamonds?

- **About:**
 - Lab-grown diamonds (LGDs) are diamonds that are grown in a laboratory using advanced technology.
 - They are also known as **cultured, synthetic, man-made, or artisan-created diamonds**.
 - Natural diamonds form deep within the Earth over an extensive period, often up to three billion years, under extreme pressure and high temperatures.
 - LGDs have essentially the same chemical, optical and physical properties and crystal structure as natural diamonds.
 - Unlike mined diamonds, **lab-grown diamonds do not involve the social and environmental ramifications associated with mining activities**.
 - Consequently, all LGDs are considered eco-friendly and contribute positively to environmental preservation.
- **Production Methods:** LGDs are synthesized in laboratories via two primary methods: **chemical vapor deposition (CVD) or high pressure, high temperature (HPHT)**.
 - Both HPHT and CVD methods of growing diamonds artificially begin with a **seed**, a slice of another diamond.

Growth Process	Typical Growth Morphology
Natural	 Shape: Octahedron Growth: 8 directions
High Pressure, High Temperature (HPHT)	 Shape: Cuboctahedron Growth: 14 directions
Chemical Vapor Deposition (CVD)	 Shape: Cube Growth: 1 direction

- **Market Share in India:** India, known as a significant hub for diamond cutting and polishing, has experienced a notable surge in export earnings due to the increasing global demand for LGDs.
 - However, their current share in the overall diamond industry stands at **2-3%**.
 - To improve the share, In **Budget 2023-24**, the Union Finance Minister announced **elimination of Customs duty on imported seeds** used in the manufacturing process of rough LGDs.

Logistics Ease Across Different State 2023

Why in News?

Recently, the Ministry of Commerce & Industry has released the 5th edition of "**Logistics Ease Across Different State (LEADS) 2023**" report, which serves as a **guide for stakeholders in the Logistics Sector** by providing strategic insights.

What is Logistics Ease Across Different States (LEADS)?

- **About:**
 - The LEADS is an **indigenous data-driven index** to assess logistics infrastructure, services, and human resources across all 36 States and UTs.

Note:



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- LEADS continues to act as a guiding & bridging mechanism for the identification of interventions enhancing logistics efficiency at State/UTs. It reflects positively on international indices, like the Logistics **Performance Index**.
- LEADS aims to guide **stakeholders in the logistics sector** by offering strategic insights and fostering healthy competition among states and union territories to improve their logistics performance.
 - LEADS was conceived on the lines of the **Logistics Performance Index of World Bank in 2018** and has evolved over time.
- **Evaluation Criteria:**
 - The report evaluates **logistics performance based on three key pillars**,
 - Logistics Infrastructure
 - Logistics Services
 - Operating and Regulatory Environment
- **Methodology:**
 - The report is based on a **pan-India primary survey conducted between May and July 2023**, incorporating over 7,300 responses across 36 states/UTs. Additionally, it includes insights from over 750 stakeholder consultations facilitated by various associations.

What are the Key Highlights of the LEADS 2023?

- **Achievers:**
 - Thirteen states and Union Territories, including

Andhra Pradesh, Karnataka, Tamil Nadu, Chandigarh, and Gujarat, are categorized as achievers in the logistics index chart 2023.

- These regions have **shown efficient logistical services** that contribute to export promotion and economic growth.
- **Fast Movers:**
 - **Kerala, Maharashtra, Madhya Pradesh, Rajasthan, Uttarakhand, Arunachal Pradesh, and Nagaland** are recognized as fast movers in the logistics index.
 - These areas have shown significant progress and **improvements in their logistical services**.
- **Aspirers:**
 - States and UTs in the aspirers category, **such as Goa, Odisha, West Bengal, Bihar, Chhattisgarh, Himachal Pradesh, and Jharkhand**, are identified as regions with potential for growth in their logistics ecosystem. These areas are striving to **enhance their logistical capabilities**.
- **Policy Reforms:**
 - The report emphasizes the significance of policy reforms such as industry status for logistics, digital initiatives (PM GatiShakti, Logistics Data Bank, Unified Logistics Interface Platform (ULIP), GST), and the **alignment of State Logistics Policies with the National Logistics Policy**.

Groups / Categories	Achievers	Fast Movers	Aspirers
Coastal	Andhra Pradesh, Gujarat, Karnataka, Tamil Nadu	Kerala, Maharashtra	Goa, Odisha, West Bengal
Landlocked	Haryana, Punjab, Telangana, Uttar Pradesh	Madhya Pradesh, Rajasthan, Uttarakhand	Bihar, Chhattisgarh, Himachal Pradesh, Jharkhand
North-East	Assam, Sikkim, Tripura	Arunachal Pradesh, Nagaland	Manipur, Meghalaya, Mizoram
Union Territories	Chandigarh, Delhi	Andaman & Nicobar, Lakshadweep, Puducherry	Daman & Diu/ Dadra & Nagar Haveli, Jammu & Kashmir, Ladakh

LEADS 2023: Performance Snapshot

* States/ Union Territories within the performance categories are listed in alphabetical order

Note:

What is the Logistics Performance Index?

- The **Logistics Performance Index (LPI)**, developed by the World Bank Group, is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics and what they can do to improve their performance.
- LPI is the **weighted average of the country's scores** on the **six key dimensions**:
 - Customs performance
 - Infrastructure quality
 - Ease of arranging shipments
 - Logistics services quality
 - Consignment tracking and tracing
 - Timeliness of shipments
- India ranked **38th out of 139 countries** in **LPI 2023**.

What are the Initiatives Related to Logistics?

- **Multimodal Transportation of Goods Act, 1993.**
- **PM Gati Shakti Scheme**
- **Multi Modal Logistics Parks**
- **LEADS Report**
- **Dedicated Freight Corridor**
- **Sagarmala Projects**
- **Bharatmala Project**

Green Hydrogen Projects and SEZs

Why in News?

The Indian government is considering amendments to current regulations that could pave the way for **significant fiscal benefits for renewable energy projects focused on producing green hydrogen within Special Economic Zones (SEZs)**.

What are the Key Proposed Amendments?

- **Expanding SEZs for Green Hydrogen Projects:** The Ministry of Commerce is contemplating permitting SEZs to span **multiple non-contiguous areas, specifically catering to green hydrogen initiatives**.
 - Presently, SEZs require a **contiguous land area of 50 hectares or more**. The commerce ministry is open to relaxing this criterion for green hydrogen projects.

- Allowing multi-locational SEZs will enable developers to use wind energy for which turbines are placed at a considerable distance (250 to 400 metres) from each other.

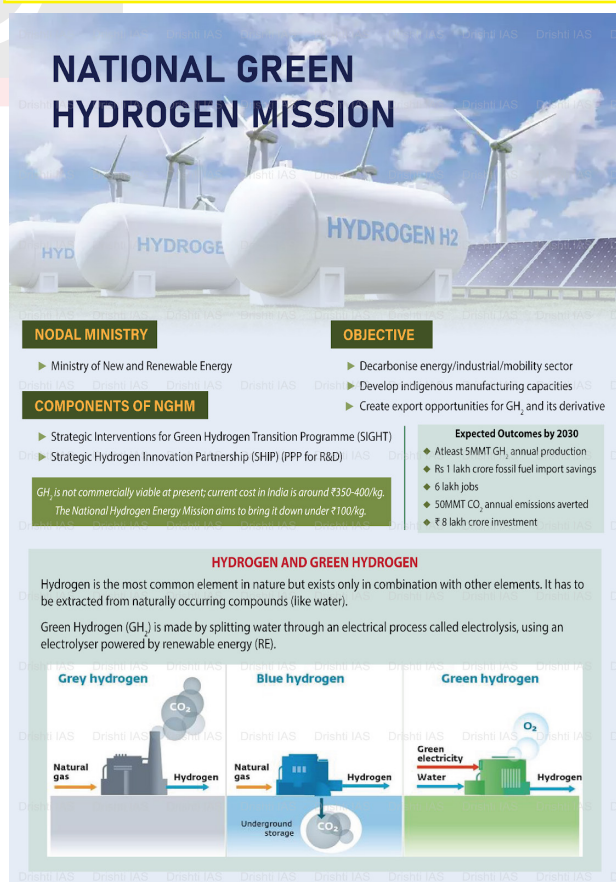
- **Eligibility for Fiscal Benefits:** The proposed amendment aims to **grant fiscal benefits to renewable energy plants** used for captive consumption within SEZs.

- Currently, **SEZ rules do allow fiscal benefits only for renewable energy plants set up as SEZ units** and meant for selling power outside of SEZs.

- However, renewable energy plants become ineligible for benefits when used for **captive consumption**.

- These changes, if approved, will enable **export-oriented green hydrogen ventures to access tax breaks for establishing and operating renewable energy facilities** dedicated to green hydrogen production.

Note: Captive consumption refers to the utilization of goods or services within the premises of the producing entity or within a designated area, without their transfer or sale to external markets.



Note:

What is a Special Economic Zone?

- **About:** A **Special Economic Zone (SEZ)** is a geographical region that has economic laws that are **more liberal than a country's domestic economic laws**.
 - The category 'SEZ' covers a broad range of more specific zone types, including, but not limited to:
 - Free Trade Zones (FTZs)
 - **Export Processing Zones (EPZs)**
 - Free Zones (FZs)
 - Industrial Estates (IEs)
 - India was one of the first in Asia to recognize the effectiveness of the Export Processing Zone model in promoting exports, with **Asia's first EPZ set up in Kandla, Gujarat in 1965**.

- **SEZs in India: Special Economic Zones Policy** in India was announced in April 2000 to enhance foreign investment, creation of employment opportunities and provide an internationally competitive and hassle-free environment for exports along with the **development of infrastructure facilities**.
 - All laws of India are applicable in SEZs **unless specifically exempted as per the SEZ Act/ Rules**.
 - Each Zone is headed by a Development Commissioner and is administered as per the **SEZ Act, 2005 and SEZ Rules, 2006**.
 - Units may be set up in the SEZ for manufacturing, trading or for service activity.



Note:

International Relations

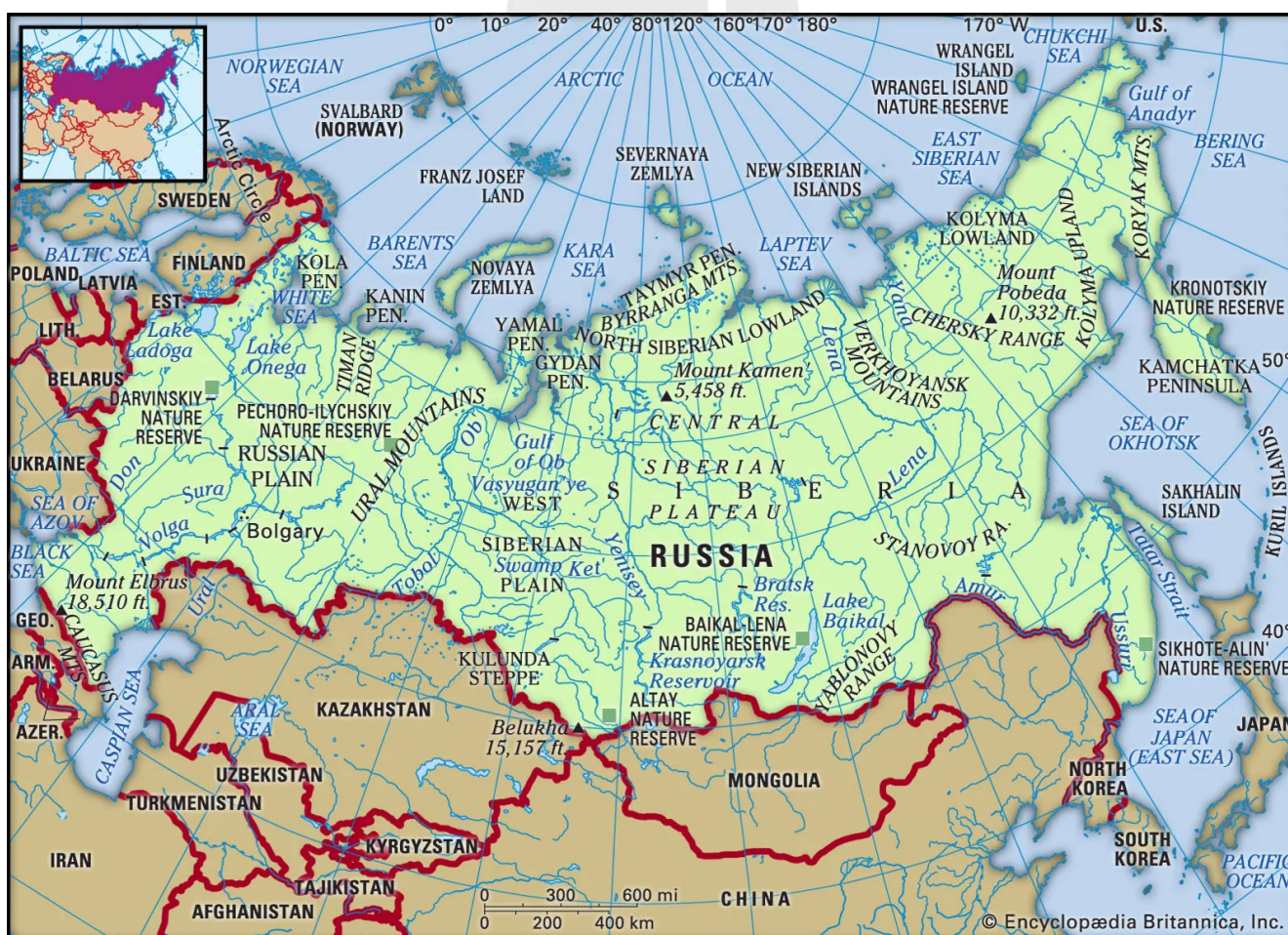
Highlights

- India-Russia Bilateral Meeting
- Gelephu Smart City Project
- India-US Relations
- Indian Navy Helps Hijacked Ship in Arabian Sea
- India-Oman Bilateral Meet
- Coup Attempt in Sierra Leone

India-Russia Bilateral Meeting

Why in News?

Recently, the External Affairs minister of India has visited Russia for a Bilateral Meeting where both the countries signed agreements on **Nuclear Power** and in areas of medicines, pharmaceutical substances and medical devices.



Note:

What are the Key Highlights of the India-Russia Bilateral Meeting?

➤ Economic Collaboration:

- Emphasis on strategic collaboration in **defense, space exploration, nuclear energy**, and technology sharing, reflecting the robustness of the longstanding partnership and **exploring avenues for deeper cooperation**.
- Both Countries **agreed on the expansion of the exports of Russian hydrocarbons** to the Indian market as well as the cooperation in the peaceful use of nuclear energy.
- The two sides **finalised the programme of cooperation in the Far East** and it was decided to hold an early meeting of EaEU-India FTA negotiations.

➤ Agreement on Nuclear Power Plants:

- India and Russia signed **agreements to move forward with future units of the Kudankulam nuclear power project** in Tamil Nadu.
- India is already operating two **Russian-built nuclear plants** while another four are under construction in Kudankulam, Tamil Nadu.
 - The Kudankulam nuclear power plant, **India's largest, is being built in Tamil Nadu** with the technical assistance of Russia. The construction began in March 2002. Since February 2016, the first power unit of the Kudankulam NPP has been steadily operating at its design capacity of 1,000 MW.
 - The plant is expected to start operating at full capacity in 2027, according to Russian state media.

➤ Diplomatic Initiatives:

- Discussion on multilateral forums and international organizations where India and Russia collaborate or hold common interests, including forums like **BRICS, SCO (Shanghai Cooperation Organization)**, and **UN** affairs.

How has Been the Indo-Russia Relations?

➤ Historical Background:

- During the **Cold War**, India and the Soviet Union had a strong strategic, military, economic and diplomatic relationship. After the Dissolution of the Soviet Union, **Russia inherited its close relationship with India** which resulted in both nations sharing a Special Strategic Relation.

- However, the relations have taken a steep downfall over the past few years, especially in the post-Covid scenario. One of the biggest causes for this is **Russia's close relations with China and Pakistan**, which have caused many geopolitical issues in the past few years for India.

➤ Political Relations:

- Two Inter-Governmental Commissions – **one on Trade, Economic, Scientific, Technological and Cultural Cooperation (IRIGC-TEC)**, and another on Military-Technical Cooperation (IRIGC- MTC), meet annually.

➤ Bilateral Trade:

- India's total **bilateral trade with Russia stood at ~USD 13 Billion in 2021-22** and USD 8.14 Billion in 2020-21.
- Russia is India's seventh biggest trading partner, up from 25th position in 2021.
 - The US, China, UAE, Saudi Arabia, Iraq, and Indonesia were the six countries that recorded higher volumes of trade with India during the first five months of 2022-23.

➤ Defence and Security Relations:

- Both countries regularly conduct the Tri-Services exercise **'INDRA'**.
- The joint military programmes between India and Russia include:
 - **BrahMos cruise missile programme**
 - 5th generation fighter jet programme
 - Sukhoi Su-30MKI programme
- The military hardware purchased/leased by India from Russia includes:
 - **S-400 Triumph**
 - **Kamov Ka-226 200 to be made in India under the Make in India initiative**
 - **T-90S Bhishma**
 - **INS Vikramaditya aircraft carrier programme.**

Science and Technology:

- Science & Technology has played a **key role in the bilateral India-Russia (and India-Soviet) partnership**, especially in the early days after India's independence where the erstwhile Soviet Union's assistance was crucial to the establishment of Bhilai Steel Plant, Indian Institute of Technology, Bombay and India's space program.
- During the early stages of the Indian space program, the Soviet Union's assistance played a

Note:

key role in the launch of the first **Indian satellites- Aryabhata and Bhaskara** in 1984.

- Today, India & Russia work together on basic sciences, materials science, mathematics and cutting-edge areas like **India's manned spaceflight program** (Gaganyaan), nanotechnologies and quantum computing.

What is the Significance of Russia for India?

- **Balancing China:**
 - The Chinese aggression in the border areas of eastern Ladakh, brought India-China relations to an inflection point, but also demonstrated that Russia can contribute to defusing tensions with China.
 - Russia organized a trilateral meeting among the foreign ministers of Russia, India, and **China following deadly clashes in the Galwan Valley** in the disputed territory of Ladakh.
- **Emerging New Sectors of Economic Engagement:**
 - Apart from traditional areas of cooperation such as weapons, hydrocarbons, nuclear energy, and diamonds, new sectors of economic engagement are likely to emerge — **mining, agro-industrial, and high technology, including robotics, nanotech, and biotech.**
 - India's footprint in the Russian Far East and in the Arctic is set to expand. Connectivity projects may get a boost too.
- **Combating Terrorism:**
 - India and Russia are working to close the gap on Afghanistan and are calling for early finalization of the **Comprehensive Convention on International Terrorism.**
- **Support At Multilateral Forums:**
 - Additionally, Russia supports India's candidacy for permanent membership of a reformed **United Nations Security Council** and of the Nuclear Suppliers Group.
- **Russia's Military Exports:**
 - Russia was **India's largest arms supplier in the periods between 2013-17 and 2018-22**, but its share of arms imports to India fell from 64% to 45%, according to **Stockholm International Peace Research Institute's (SIPRI)** Trends in International Arms Transfers 2022 report.

Way Forward

- Russia will remain a key defense partner for India for decades to come.
- The two countries have been discussing how they can cooperate in using India as a production base for exporting to third countries Russian-origin equipment and services.
 - To address this, Russia has made legislative changes allowing its companies to set up joint ventures in India to address it following an Inter-Governmental Agreement signed in 2019.
 - This agreement needs to be implemented in a time bound manner.

Gelephu Smart City Project

Why In News?

Recently, Bhutan's King has announced plans to build a massive **"international city"** in an area of over **1,000 sq. km.** on its **border with Assam.** This project is known as the **Gelephu Project.**



What are the Key Highlights of the Gelephu Smart City Project?

- The project is expected to be an **"economic corridor connecting South Asia with Southeast Asia via India's northeastern States"**.
- The city is expected to follow **environmental standards** and **sustainability** as a goal, and will

Note:

aim to attract “**quality investment**” from “**pecially screened**” international companies.

- The project is expected to include “**zero emission**” industries, a “**mindfulness city**” that plays to **Bhutan’s strength** in tourism and wellness, as well as infrastructure companies.
- The project is expected to be a “**Special Administrative Region**” that would be run under different laws to facilitate more international investment.
- The project is expected to be a “**point of inflection**” and “**transformation**” for **Bhutan and South Asia**.
- The Government of India agrees to construct the first **India-Bhutan railway line** to **Gelephu**.
 - The railway will also connect with **roadways** and **border trading points** into **Assam** and **West Bengal**, eventually providing **Bhutan** access to **Myanmar, Thailand, Cambodia, and Singapore**.

What are the Key Facts Related to Bhutan?

- **About:**
 - Bhutan is nestled between **India and Tibet**, an **autonomous region of China**.
 - and is a **landlocked country**.
 - **Thimphu** is the Capital City of Butan.
 - Bhutan became a democratic country in 2008 after the first democratic elections were held in the country. The **King of Bhutan** is the **Head of State**.
- **River:**
 - The main rivers from west to east are the Torsa (Amo), Wong (Raidak), Sankosh (Mo), and Manas. All the rivers flow southward from the Great Himalayas and join the Brahmaputra River in India.
 - The longest river in Bhutan is the **Manas River**.
 - The **Manas River** is a **transboundary river** in the Himalayan foothills between **southern Bhutan and India**.
- **Government:**
 - Constitutional monarchy.

India-US Relations

Why in News?

Recently, the Prime Minister (PM) of India has stated that, despite occasional issues, **India and the US have been on a positive trajectory in relations**.

- The PM emphasized a deepening engagement, understanding, and friendship between the two nations, driven by national interest.



How have been India's Relations with the US?

- **About:**
 - The U.S.-India strategic partnership is **founded on shared values including a commitment to democracy** and upholding the rules-based international system.
 - Both have shared interests in promoting global security, stability, and economic prosperity through trade, investment, and connectivity.
- **Economic Relations:**
 - The U.S. has emerged as India's biggest trading partner in 2022-23 on account of increasing economic ties between the two countries.
 - The bilateral trade between India and the U.S. has increased by 7.65% to USD 128.55 in 2022-23 as against **USD 119.5 billion in 2021-22**.
 - Exports to the U.S. rose by 2.81% to USD 78.31 billion in 2022-23 as against USD 76.18 billion in 2021-22, while imports grew by about 16% to USD 50.24 billion.
- **International Cooperations:**
 - India and the United States cooperate closely at multilateral organizations, including the **United Nations, G-20, Association of Southeast Asian**

Note:



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Nations (ASEAN) Regional Forum, International Monetary Fund, World Bank, and World Trade Organization.

- The United States welcomed India joining the UN Security Council in 2021 for a two-year term and supports a reformed UN Security Council that includes India as a permanent member.
- India is also one of twelve countries partnering with the United States on the **Indo-Pacific Economic Framework for Prosperity (IPEF)**.
- India is a member of the **Indian Ocean Rim Association (IORA)**, at which the United States is a dialogue partner.
- In 2021, the United States joined the International Solar Alliance headquartered in India, and in 2022 the **United States Agency for International Development (USAID)**.

➤ **Defence Cooperation:**

- India has now signed all **four foundational agreements with the US**.
 - The **Logistics Exchange Memorandum of Agreement (LEMOA)** in 2016,
 - the **Communications Compatibility and Security Agreement (COMCASA)** in 2018,
 - The Basic Exchange and Cooperation Agreement for Geo-Spatial cooperation (BECA) in 2020.
 - While the **General Security of Military Information Agreement (GSOMIA)** was signed a long time ago, an extension to it, the Industrial Security Annex (ISA), was signed in 2019.
- India, which could not access **US weapons during the Cold War**, has bought USD 20 billion worth of arms over the last two decades.
 - However, the incentive for the US is helping India reduce its historical dependence on Russia for its military supplies.
- The armed forces of India and the US engage in extensive bilateral military exercises (**Yuddha Aabyas, Vajra Prahar**) and minilateral ones with the four partners in the **Quad Forum (Malabar)**.
- Another grouping in the Middle East - I2U2 involving India, Israel, UAE and the US is being termed as the **new Quad**.

➤ **Space and Science and Technology:**

- **Indian Space Research Organization (ISRO)** and US National Aeronautics and Space Administration (NASA) are developing a microwave remote sensing satellite for Earth observation, **NASA-ISRO**

Synthetic Aperture Radar (NISAR).

- In June 2023 ISRO signed with NASA the Artemis Accords to participate in peaceful and sustainable civil exploration of outer space.
- **iCET** is a joint initiative by the National Security Advisors of the US and India to foster cooperation and innovation in key technology domains such as **AI, quantum, telecom, space, biotech, semiconductors**, and defence. It was launched in January 2023.

What are the Major Challenges between India and the US?

➤ **US Criticism of India's Foreign Policy:**

- If the Indian elite has long seen the world through the lens of non-alignment, alliance relationships have been at the heart of US' foreign policy since the **Second World War**.
 - India's policy of nonalignment especially during the Cold War has always been a point of concern for the West, especially the US.
- After the 9/11 attacks, the US asked India to dispatch troops to Afghanistan; the Indian military vetoed the request.
 - When the US invaded Iraq in 2003, even then India's erstwhile PM withheld military support.
- Even today, India refuses to toe the American line on the Russian-Ukraine war and its **import of cheap Russian oil** continues to break records.
 - Pro-US voices have often been raised demanding India to get "on the right side of history".

➤ **India's Engagement with US Adversaries:**

- India has criticised the US decision to block Iranian and Venezuelan oil from the open market.
- India has actively worked to **bring Iran into the SCO (Shanghai Cooperation Organization)**.

➤ **US' Criticism of India's Democracy:**

- Various **US organisations and foundations**, from time to time, with the tacit support of some Congressmen and Senators, come out with reports questioning the present state of democratic discourse, press and religious freedom and condition of the minorities in India.
 - Some of them include the **International Religious Freedom Report 2023** and the **Human Rights Report on India 2021** by the US State Department.

Note:

➤ Economic Tensions:

- The Atmanirbhar Bharat Campaign has exacerbated the view in the US that India is increasingly becoming a protectionist closed market economy.
- Effective in June 2019, the USA decided to withdraw duty-free benefits to Indian exporters **under the GSP (Generalized System of Preferences) programme** affecting India's export-oriented sectors such as pharma, textiles, agri products and automotive parts.

Indian Navy Helps Hijacked Ship in Arabian Sea

Why in News?

In a recent maritime incident, the Malta-flagged Vessel MV Ruen fell victim to pirates in the **Arabian Sea**. Responding swiftly, the **Indian Navy**, strategically based in the **piracy-prone Gulf of Aden**, intercepted the hijacked vessel, closely monitoring its trajectory toward the **Somali coast**.

- The **European Union Naval Force (EUNAVFOR) Operation Atalanta**, a maritime security operation in the western Indian Ocean, joined the anti-piracy effort.

What is Maritime Piracy?

➤ About:

- Article 101 of the **1982 United Nations Convention on the Law of the Sea (UNCLOS)** outlines acts constituting piracy.
 - These acts include **violence, detention, or depredation** committed for private ends on the high seas or outside the jurisdiction of any state.
- These acts are carried out with the intent of personal gain and may include the seizure of another ship, its cargo, or the kidnapping of its passengers or crew.
- It is considered a serious maritime crime and is subject to international laws and conventions.

➤ Strongest Zones of Pirate Activity:

- Northwest Africa, the **Gulf of Guinea**, Red Sea, Somalia, **Horn of Africa**, Gulf of Aden, **Indian Ocean**, Indian subcontinent and **Southeast Asia**.



➤ Global Initiatives Related to Maritime Piracy:

- **United Nations Convention on the Law of the Sea (UNCLOS):**
 - It establishes the legal framework for combating piracy, as outlined in. The **UN Security Council** and **General Assembly** have consistently emphasized the importance of international cooperation in addressing piracy and armed

robbery at sea, stressing the applicability of UNCLOS in combating maritime threats.

- **Operation Prosperity Guardian:**
 - The United States has initiated **Operation Prosperity Guardian**, a multinational security initiative to ensure security in the Red Sea.
- **Convention for the Suppression of Unlawful Acts against the safety of Maritime Navigation (1988):**

Note:

- It is a multilateral treaty. The main purpose of the treaty is to ensure that appropriate action is taken against people who commit unlawful acts against ships.
- It was adopted in 1988 at the **Suppression of Unlawful Acts(SUA) Convention in Rome.**
- **Combined Maritime Forces (CMF):**
 - The **CMF** is a multinational naval partnership with primary focus areas aimed at defeating terrorism, preventing piracy, fostering regional cooperation, and promoting a secure maritime environment.
 - **CMF has 39 member nations including India.**
- **India's Initiatives Related to Maritime Piracy:**
 - **SAGAR policy.**
 - **India reiterated its support for the UN Convention on Law of Sea (UNCLOS).**
 - **International Fusion Centre (IFC).**
 - **Indian Ocean Rim Association (IORA).**
 - **Enhanced Technical Surveillance of Coastal and Offshore Areas:**
 - **Coastal Surveillance Network.**
 - **National Command Control Communication and Intelligence Network.**
 - **National Automatic Identification System.**
 - **National Maritime Domain Awareness Project.**
 - **National Committee for Strengthening Maritime and Coastal Security.**

What are the Key Facts About the Gulf of Aden?



- The Gulf of Aden, an arm of the Indian Ocean is situated between **Yemen on the south coast of the Arabian Peninsula and Somalia in Africa.**
 - It is bounded to the south by Somalia and the Socotra Islands, north by Yemen, east by the Arabian Sea, and west by Djibouti.
- The gulf – roughly 900 kilometers long and 500 kilometers wide is an important **waterway for transporting Persian Gulf oil.**
 - The gulf connects the **Red Sea to the Arabian Sea via the Strait of Bab el Mandeb.** It forms an essential oil transport route between Europe and the Far East.
- Its marine life is rich in quantity and variety. Its coastline lacks large-scale fishing facilities but supports many fishing towns, as well as the major ports **Aden and Djibouti.**
- In recent years, the gulf has received a lot of attention due to **piracy, terrorism and refugee smuggling.**

India-Oman Bilateral Meet

Why in News?

Recently, India and Oman have adopted the **India Oman Joint Vision Partnership For the Future**, setting the stage for bilateral cooperation and charting pathways for **future collaboration between the two countries.**

- This Vision Document focuses on building partnerships in broadly 8 to 10 areas. These include maritime cooperation and connectivity, energy security, space, digital payments, health, tourism, hospitality, agriculture and food security.

What are the Key Highlights of the Bilateral Meet?

- **Bilateral Agreements:**
 - Both countries have signed agreements on cooperation in the field of information technology, combating financial crimes, culture, and the establishment of a Hindi chair of the **Indian Council of Cultural Relations (ICCR)** in Oman.
- **Comprehensive Economic Partnership Agreement (CEPA):**
 - Both nations are engaged in discussions to finalize a CEPA. Substantial progress has been made, and leaders from both sides emphasized concluding

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this agreement at the earliest to boost economic ties.

➤ **Oman-India investment Fund:**

- The two sides announced the **third tranche of Oman-India investment fund** worth USD 300 million that would be used for channelising investment into the fastest growing sectors of the Indian economy.
- The fund was started as a **50:50 joint venture between the SBI and the Oman investment authority**, with the first tranche of USD 100 million followed by USD 200 million.

➤ **Digital Payments and Trade:**

- Discussions revolved around the possibility of using India's digital payment system, **UPI (Unified Payments Interface)**, in collaboration with an Omani platform.
- Additionally, exploring the potential of conducting trade in Rupees was considered, although it's still in the exploratory stage.

➤ **Regional and International Issues:**

- Leaders exchanged perspectives on regional and global matters, including the ongoing conflict between **Hamas and Israel**.
- They discussed the challenge of terrorism and advocated for a two-state solution to address the Palestine issue.

How have Been India-Oman Relationships so Far?

➤ **Background:**

- The two countries **across the Arabian Sea are linked by geography, history and culture** and enjoy warm and cordial relations, which are attributed to historical maritime trade linkages.
- The Sultanate of Oman is a strategic partner of India in the Gulf and an important interlocutor at the **Gulf Cooperation Council (GCC), Arab League and Indian Ocean Rim Association (IORA)** fora.
- **Gandhi Peace Prize 2019** was conferred on Late HM Sultan Qaboos in recognition of his leadership in strengthening the ties between India & Oman and his efforts to promote peace in the **Gulf region**.

➤ **Defense Relations:**

- **Joint Military Cooperation Committee (JMCC):**
 - The JMCC is the highest forum of engagement between India and Oman in the field of defence.

- The JMCC is expected to meet annually, but could not be organised since 2018 when the meeting of the 9th JMCC was held in Oman.

○ **Military Exercises:**

- **Army exercise:** Al Najah
- **Air Force exercise:** **Eastern Bridge**
- **Naval Exercise:** Naseem Al Bahr

➤ **Economic & Commercial Relations:**

- Institutional mechanisms like Joint Commission Meeting (JCM) and Joint Business Council (JBC) oversee economic cooperation between India and Oman.
- India is **among Oman's top trading partners**.
 - India is the 2nd largest market for Oman's crude oil exports for the year 2022 after China.
 - India is also the 4th largest market for Oman's non-oil exports for the year 2022 after UAE, US and Saudi Arabia and 2nd largest source of its import after UAE.
- Indian companies have invested in Oman in sectors like iron and steel, cement, fertilisers, textile etc.
- **India-Oman Joint Investment Fund (OIJIF)**, a JV between State Bank of India and **State General Reserve Fund (SGRF)** of Oman, a special purpose vehicle to invest in India, has been operational.

➤ **Indian Community in Oman:**

- There are about 6.2 lakh Indians in Oman, of which about 4.8 lakh are workers and professionals. There are Indian families living in Oman for more than 150-200 years.

What is Oman's Strategic Significance for India?

- Oman is at the **gateway of Strait of Hormuz** through which India imports one-fifth of its oil imports.
- Defence cooperation has emerged as a key pillar for the robust India-Oman strategic partnership. Defence exchanges are guided by a **Framework MOU which was recently renewed in 2021**.
- Oman is the only country in the Gulf region with which all three services of the Indian armed forces conduct regular bilateral exercises and staff talks, enabling close cooperation and trust at the professional level.
- Oman also actively participates in the **Indian Ocean Naval Symposium (IONS)**.
- In a strategic move to expand its footprint in the Indian Ocean region, India has secured access to

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the key Port of **Duqm** in Oman for military use and logistical support. This is part of India's maritime strategy to counter Chinese influence and activities in the region.

- The Port of Duqm is situated on the southeastern seaboard of Oman, overlooking the Arabian Sea and the Indian Ocean.
- It is strategically located, in close proximity to the Chabahar port **in Iran**. With the Assumption Island being developed in Seychelles and Agalega in Mauritius, Duqm fits into India's proactive maritime security roadmap.

Key Facts About Oman

➤ **Border Countries:**



- United Arab Emirates (UAE) to the northwest.
- Saudi Arabia to the west and southwest.
- Yemen to the southwest.
- **Deserts:**
 - The largest desert in Oman is the **Rub' al Khali or the "Empty Quarter,"** one of the largest continuous sand deserts in the world.
- **River:**
 - Oman doesn't have perennial rivers; however, during seasonal rains, wadis (seasonal riverbeds) flow with water.
 - The most notable is **Wadi Bani Khalid, known for its natural pools** and stunning scenery.
- **Highest Mountain:**
 - Jebel Shams, situated within the Al Hajar mountain range, is the highest mountain in Oman.

➤ **Geography:**

- Oman is located on the southeastern coast of the Arabian Peninsula, bordering the Arabian Sea, the Gulf of Oman, and the Persian Gulf.

Coup Attempt in Sierra Leone

Why in News?

In the wake of an **unsuccessful coup attempt in Sierra Leone**, the West African nation finds itself at the **crossroads of political turmoil and economic crisis**.

- Sierra Leone is a member country of the **Economic Community of West African States (ECOWAS)** and hence if any security concern arises in the future, ECOWAS and the member countries will step in to maintain constitutional order.

What are the Factors Contributing to Unrest in Sierra Leone?

- **Political Instability:** The President's re-election in June 2023 triggered political unrest. The opposing party contested the results, alleging manipulation. Opposition contestation led to a **parliamentary boycott** until October 2023.
- **Economic Instability:** High cost of living and **severe poverty** contribute to the crisis.
 - The President's economic policies worsened the situation, leading to protests and demands for the resignation of the President.
- **Police Aggression:** The government's use of force, including live ammunition, in handling protests and prison riots has fueled resentment.

What are the Key Facts About Sierra Leone?



Note:

- Sierra Leone is located between **Liberia and Guinea**, bordering the **North Atlantic Ocean**. The country is situated on the **southwest coast of West Africa**.
- **Capital:** Freetown.
- **Languages:** English, Krio.
- **Mount Bintumani** (also known as Loma Mansa) is the highest peak in Sierra Leone.
- A **tropical climate** is found in Sierra Leone.
- Sierra Leone's terrain is characterized by mountains in the eastern region, an upland plateau, a wooded hill country, and a coastal belt of mangrove swamps.
- Sierra Leone is one of the members of the **International Solar Alliance**.
- India was among the first countries to contribute to the **UN Mission in Sierra Leone (UNAMSIL)** with the deployment of 4000 strong Indian Military contingent.

Other Recent Upheavals in Africa

- **Coup in Niger (2023).**
- Crisis in Sudan (**2023** and **2021**).

- **Burkina Faso Coup (2022).**
- **Military Coup in Mali (2021, 2020).**

What is Economic Community of West African States (ECOWAS)?

- Established in 1975 through the Lagos Treaty, the **ECOWAS (CEDEAO in French)** is a **regional intergovernmental organization** promoting economic integration and cooperation among West African nations.
 - **Headquarters: Abuja, Nigeria.**
- ECOWAS consists of 15 member states: Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Sierra Leone, Senegal, and Togo.
- It aims to achieve **economic integration, free movement of people and goods**, and regional cooperation across sectors. Additionally, it seeks to establish a borderless region governed by democratic principles and address security challenges through collaborative conflict resolution.

Note:

Social Issues

Highlights

- ECI Promotes Respectful Dialogue on Disabilities in Politics
- MGNREGS Scheme
- Progress in Ending Child Marriage
- India Skills Report 2024
- Regulator to Oversee Health Insurance
- WHO Prequalification to R21/Matrix-M Vaccine
- UNODC's Global Study on Homicide Report 2023
- Noma as a Neglected Tropical Disease
- Impact of Covid Vaccination on Mental Health
- e-Cigarettes
- Southeast Asia Opium Survey 2023: UNODC
- Pompe Disease
- Tree Ambulance 70

ECI Promotes Respectful Dialogue on Disabilities in Politics

Why in News?

The **Election Commission (EC)** has issued guidelines to **political parties** to use disability and gender sensitive language, and refrain from using derogatory references to **persons with disabilities (PwD)** in public speeches, campaigns and writings.

What are the Key Guidelines of the EC?

- **Prohibition of Derogatory Language:** Political parties and their representatives are urged to refrain from using **derogatory, insulting, or offensive references** related to disability or PwDs in any **public statements, speeches, writings, articles, or campaigns**. And make sure that all campaigns remain accessible to all citizens.
- **Avoidance of Ableist Language:** Specific terms considered ableist or offensive towards PwDs such as "dumb," "retarded," "blind," "deaf," "lame," etc., are highlighted as language to be avoided.
- **Internal Review and Rectification:** All campaign materials, including speeches, social media posts, advertisements, and press releases, should **undergo internal review within the political party** to identify and rectify instances of offensive language.
- **Declaration of Use of Sensitive Language:** Political parties should **declare on their websites their commitment to using disability and gender-sensitive**

language, respecting human equality, equity, dignity, and autonomy.

- **Adoption of Rights-Based Terminology:** Parties are encouraged to use rights-based terminologies as outlined in the **Convention on Rights of Persons with Disabilities (CRPD)**.
- **Legal Consequences:** Any violation of the guidelines may fall under the provisions of **Section 92 of the Rights of Persons with Disabilities Act 2016**.

What is the Status of Persons with Disabilities in India?

- **Status:** As per the **76th round of National Sample Survey (NSS)**, **2.21%** of the Indian population identifies as having a disability.
 - The incidence of disability is **highest in the age group 10-19 years**, highlighting the need for early intervention and support.
- **Constitutional and Legislative Framework for PwD in India:**
 - **Constitution:**
 - The Constitution of India ensures **equality, freedom, justice and dignity of all individuals** through **Fundamental Rights** and implicitly mandates an inclusive society for all including the persons with disabilities.
 - **Article 41 of the Constitution (Directive Principles of State Policy)** states that the State shall make effective provision for securing the right to work, to education and to **public assistance in cases of unemployment, old age, sickness and disablement**, within the limits of its economic capacity and development.

Note:

○ Legislation:

- The **Rights of Persons with Disabilities Act, 2016 (RPwD Act)** which replaced the **Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995**, is the most comprehensive legislation for PwDs in India.
- Government job reservation for PwD is **4%**, while in government or aided higher educational institutions, seats reserved for students with disabilities is **5%**.

○ Other Related Initiatives:

- **Accessible India Campaign**
- **DeenDayal Disabled Rehabilitation Scheme**
- **National Fellowship for Students with Disabilities**

➤ Major Challenges:

- **Accessibility:** Many public spaces, transportation systems, and buildings lack proper accessibility features like ramps, elevators, and designated spaces for PwDs, making it challenging for them to move around independently.
 - Only **around 3%** of public buildings in India are accessible to PwDs (Census of India, 2011).
- **Inadequate Healthcare:** Only **37% of PwDs in rural India** have access to healthcare facilities, according to the Census of India, 2011.
 - A recent report by the **World Health Organization** identified a shortage of healthcare professionals trained in disability management across India, limiting access to specialised care.
- **Limited Educational Opportunities:** Access to quality education for PwDs remains a challenge. Schools often lack adequate facilities and trained teachers to cater to diverse learning needs, resulting in exclusion from mainstream education.
- **Employment Barriers:** PwDs encounter significant hurdles in finding suitable employment. **Discrimination, lack of accessible workplaces,** and a dearth of accommodations to meet their needs often lead to high unemployment rates among PwDs.
- **Stigma and Discrimination:** There is **still a prevailing stigma surrounding disabilities in India**, and PwDs often face prejudices that limit their opportunities and acceptance in society.
- **Legal and Policy Gaps:** While there are laws and policies in place to protect the rights of PwDs in

India, **implementation and enforcement remain inconsistent.** This gap affects the actual realization of their rights and access to resources.

MGNREGS Scheme

Why in News?

The **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)** has witnessed a **significant surge in women's participation**, marking a historic high in the **current financial year of 2023-24**.

What are the Women Participation Trends in MGNREGA?

➤ Women Participation Trends:

- There has been a **gradual increase in women's participation over the last decade**, with percentages rising from 53.19% during the **Covid-19** outbreak in 2020-21 to the current 59.25%.
- Southern states like Kerala, Tamil Nadu, Puducherry, and Goa showcase **notably high rates of women's involvement**, surpassing 70%, while northern states like Uttar Pradesh and Madhya Pradesh lag **behind at around 40% or below**.
- Despite historical disparities, some states like Uttar Pradesh, Madhya Pradesh, and Lakshadweep show **recent improvements in women's participation rates** in the ongoing financial year, attributed to incremental percentages.

➤ Rural Labor Force Trends:

- Beyond MGNREGS, the **Periodic Labour Force Survey (PLFS)** by the Ministry of Statistics and Programme Implementation demonstrates a **substantial surge in female Labour Force Participation Rate (LFPR) in rural areas**.
- Notable figures show an **increase from 18.2% in 2017-18 to 30.5% in 2022-23 in rural female LFPR**, along with a decline in female unemployment rates from 3.8% to 1.8% during the same period.

What is MGNREGA Scheme?

➤ About:

- MGNREGA is one of the largest work guarantee programmes in the world launched in 2005 by the **Ministry of Rural development**.
- It provides a legal guarantee for one hundred days of employment in every financial year to

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drishti

adult members of any rural household willing to do public work-related unskilled manual work at the statutory minimum wage.

- Active workers: 14.32 Crore (2023-24)

➤ **Major Features:**

- The cornerstone of **MGNREGA's design is its legal guarantee**, ensuring that any rural adult can request work and must receive it within 15 days.
 - If this commitment is not met, an "unemployment allowance" must be provided.
- It requires that priority shall be given to women in such a way that at least one-third of the beneficiaries shall be women who have registered and requested for work.
- Section 17 of the MGNREGA has mandated Social audit of all Works executed under the MGNREGA.

➤ **Implementation Agency:**

- The Ministry of Rural Development (MRD), Govt of India is monitoring the entire implementation of this scheme in association with state governments.

➤ **Objective:**

- This act was introduced with an aim of improving the **Purchasing Power** of the rural people, primarily semi or unskilled work to people living below poverty line in rural India.
- It attempts to bridge the gap between the rich and poor in the country.

➤ **Achievements of 2022-23:**

- 11.37 crore households availed employment.
- 289.24 crore person-days employment has been generated out of which:
 - 56.19% were for women
 - 19.75% were for **Scheduled Castes (SCs)**
 - 17.47% were for **Scheduled Tribes (STs)**.

What are the Challenges with the Implementation of the Scheme?

➤ **Delay and Insufficiency in Funds Dispersal:**

- Most states have failed to disburse wages within 15 days as mandated by MGNREGA. In addition, workers are not compensated for a delay in payment of wages.
 - This has turned the scheme into a supply-based programme and subsequently, workers had begun to lose interest in working under it.
- There is ample evidence by now, including an admission by the Ministry of Finance, that

delays in wage payments are a consequence of insufficient funds.

➤ **Caste Based Segregation:**

- There were significant variations in delays by caste. While 46% of payments to **SC (Scheduled Caste) workers and 37% for ST (Scheduled Tribes) workers** were completed in the mandated seven-day period, it was a dismal 26% for non-SC/ST workers.
- The negative impact of caste-based segregation was felt acutely in poorer States such as Madhya Pradesh, Jharkhand, Odisha and West Bengal.

➤ **Ineffective Role of PRI:**

- With very little autonomy, **Panchayati Raj Institution (PRI)** are not able to implement this act in an effective and efficient manner.

➤ **Large Number of Incomplete works:**

- There has been a delay in the completion of works under MGNREGA and inspection of projects has been irregular. Also, there is an issue of quality of work and asset creation under MGNREGA.

➤ **Fabrication of Job cards:**

- There are several issues related to the existence of fake job cards, the inclusion of fictitious names, missing entries and delays in making entries in job cards.

What are the Initiatives under MGNREGS?

- **Amrit Sarovar:** Construction/renovation of at least 75 Amrit Sarovars (ponds) in each district of the country; they will help in increasing the availability of water, both on surface and under-ground.
- **Jaldoot App:** It was launched in Sept 2022 for measuring the water level in a Gram Panchayat through 2-3 selected open wells twice a year.
- **Ombudsperson for MGNREGS:** Ombudsperson App was launched in Feb 2022 for smooth reporting and categorization of grievances received from various sources related to the implementation of the MGNREGS.

Progress in Ending Child Marriage

Why in News?

A recent study published in 'The Lancet Global Health' journal sheds light on the **prevailing scenario of child**

Note:

marriage in India, revealing both progress and setbacks in the fight against this deeply rooted practice.

What are the Major Trends Highlighted by the Study?

➤ **Status in India:**

- Girl child marriages declined from **49% in 1993 to 22% in 2021**. Boy child marriages reduced from **7% in 2006 to 2% in 2021**, indicating an overall national decline.
- However, between **2016 and 2021**, the progress plateaued, with certain states experiencing a troubling rise in child marriages.
 - Notably, six states witnessed an **increase in girl child marriages**, including **Manipur, Punjab, Tripura, and West Bengal**.
 - Eight states observed a rise in boy child marriages, encompassing **Chhattisgarh, Goa, Manipur, and Punjab**.

- **Global Trends:** Globally, progress against child marriage has been notable, but the **Covid-19 pandemic** threatens this advancement, putting approximately **10 million more girls at risk of child marriage** over a decade.

What are the Major Factors Associated with Child Marriage?

- **Economic Factors:** Families living in poverty might see **marriage as a means to reduce the economic burden** by transferring responsibility for the girl to her husband's family.
 - In some regions, the tradition of providing dowry can influence families to **marry off daughters at a young age to avoid higher dowry costs later**.
 - Also, in areas prone to **natural disasters** or **agrarian crises**, families facing economic hardships might resort to early marriage as a coping mechanism or to secure stability.
- **Social Norms and Traditional Practices:** Long-held customs and traditions often prioritize **early marriage as a social norm**, perpetuating the practice across generations.
 - **Pressure from the community or family** to conform to prevalent customs and traditions lead to early marriages, particularly for girls.
- **Gender Inequality and Discrimination:** Unequal power dynamics and **limited agency for girls**

compared to boys contribute significantly to early marriage.

- **Lack of access to education and opportunities for girls often pushes families to opt for early marriages**, viewing it as a way to secure their daughters' futures.

Note: **UNICEF** categorizes **child marriage as a human rights violation** due to its adverse impacts on the development of both girls and boys.

- **Sustainable Development Goal 5.3** states that Child marriage elimination is pivotal in achieving Sustainable Development Goal 5, aiming for gender equality and empowerment of women and girls by 2030.
- According to the UN, **1 in 5 young women worldwide (19%)** were married in childhood in 2022.

What are the Legislative Framework and Initiatives Related to Child Marriage in India?

- **Legislative Framework:** India enacted the **Prohibition of Child Marriage Act in 2006**, establishing the **legal age for marriage at 21 for men and 18 for women**.
 - Section 16 of the Prohibition of Child Marriage Act allows State Governments to appoint '**Child Marriage Prohibition Officers (CMPO)**' for specific areas.
 - CMPOs are responsible for preventing child marriages, collecting evidence for prosecutions, counseling against promoting or aiding such marriages, raising awareness about their harmful effects, and sensitizing communities
 - Government has introduced a bill namely '**the Prohibition of Child Marriage (Amendment) Bill, 2021 for raising the age of marriage of women to 21 years** to make it at par with the men.
- **Related Initiatives:**
 - **Dhanalakshmi Scheme:** It is a conditional cash transfer scheme for a girl child with insurance coverage.
 - It also aims to **eliminate child marriage by offering parents insurance coverage** of medical expenses and encouraging the education of the girl child.
 - Schemes like Beti Bachao Beti Padhao (BBBP), also aims to empower girls through education, health and protection, and discourage child marriage.

Note:

Note: Odisha Government has devised a comprehensive strategy to tackle child marriage. They track girls' school attendance and village presence and utilize the "Advika" platform for girls aged 10 to 19.

- Guidelines are in place to **declare villages free of child marriage**, with incentives for vulnerable tribal groups.
- Districts implement various approaches, such as maintaining girl databases and mandating **Aadhaar numbers** in marriages.

India Skills Report 2024

Why in News?

Recently, Wheebox in association with various agencies including **All India Council for Technical Education (AICTE)**, Confederation of Indian Industry and Association of Indian Universities has published India Skills Report 2024, highlighting India's skill landscape and the impact of **AI (Artificial Intelligence)** on the workforce

- **Theme:** Impact of AI on the Future of Work, Skilling & Mobility.
- The findings in this report are a **result of the evaluation of 3.88 Lakhs candidates** who took the **Wheebox National Employability Test (WNET)** across academic institutions in India.

Note: Wheebox is **one of the leading firms** in remote proctored assessments and consulting services, Headquartered in India and spread across GCC (Gulf Cooperation Council) Countries, Wheebox delivers millions of assessments for corporations, institutions and governments across the globe.

What are the Key Highlights of the India Skills Report 2024?

- **AI Leadership and Talent Concentration:**
 - India holds a **prominent global position in AI skill penetration** and talent concentration, showcasing a strong base of AI professionals.
 - As of August 2023, there were 4.16 lakh AI professionals, poised to meet the increasing demand expected to **reach 1 million by 2026**.
 - India has a **60%-73% demand-supply gap** in key roles such as ML engineer, data scientist, DevOps engineer, and data architect.

➤ Employability Trends:

- The overall young employability in India has shown improvement, reaching **51.25%**. **States like Haryana, Maharashtra, Andhra Pradesh, Uttar Pradesh,**
- Kerala, and Telangana demonstrate a **high concentration of highly employable youth**.
- Haryana has the highest employable youth concentration with 76.47% of test takers in this region scoring 60% and above on the WNET.

➤ Age-Specific Employability:

- Different age groups display varying levels of employability. For instance, in the **22 to 25 years age range**, states like Uttar Pradesh and Maharashtra stand out with high talent concentrations.
- Telangana has the **highest concentration of employable** talent in the age group of 18-21 with 85.45% found employable followed by Kerala 74.93% employable resources in this age group.
- Gujarat has the highest availability of employable resources in the age group of 26-29 with 78.24% in this age group found employable.

➤ Cities with Employable Talent:

- Among top cities with employable **talent in the age group of 18-21**, Pune came first with **80.82% of candidates found highly employable**, followed by Bengaluru, and then Trivandrum.
- For employability in the age group of 22-25 among top cities, Lucknow comes first at 88.89%, followed by Mumbai and then Bengaluru.

➤ Most Preferred State to Work:

- **Kerala** is the most preferred state to work for both male and female employable talent, with Cochin being the most preferred area to work for female test takers.

➤ AI Integration in Learning:

- The integration of AI into learning science is seen as a key differentiator, enabling personalized, analytics-driven, and actionable insights. This integration is deemed essential for effective professional development.

➤ Industry Readiness:

- Companies are **anticipated to invest more in upskilling initiatives**, with a focus on early careers programs. The report foresees a significant portion of hiring being directed toward early career segments.

Note:

➤ Collaborative Efforts:

- The report emphasizes the need for collaborative efforts among government bodies, businesses, and educational institutions to address challenges and focus on inclusive upskilling initiatives to navigate the transformative journey catalyzed by AI.

What are India's Initiatives Related to Artificial Intelligence?

- [INDIAai.](#)
- [Global Partnership on Artificial Intelligence \(GPAI\).](#)
- [US India Artificial Intelligence Initiative.](#)
- [Responsible Artificial Intelligence \(AI\) for Youth.](#)
- [Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.](#)

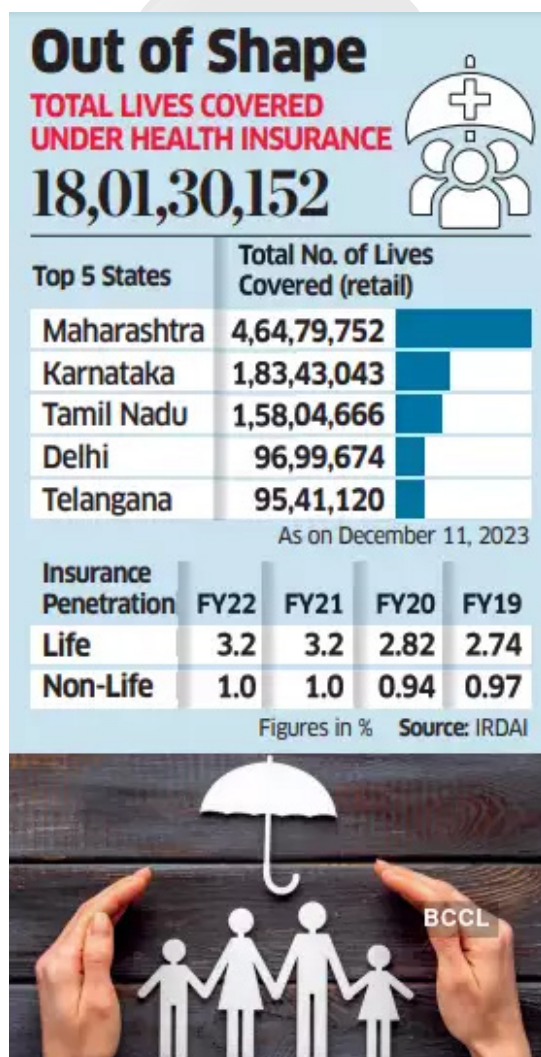
What are the Government Initiatives Related to Skill Development?

- [Pradhan Mantri Kaushal Vikas Yojana](#)
- [SANKALP Scheme](#)
- [TEJAS Skilling Project](#)
- [Skill India Digital](#)

Regulator to Oversee Health Insurance

Why in News?

The government is exploring setting up a **health sector regulator** that will bring private and government health insurance schemes under its purview to facilitate **affordable insurance coverage for all**.



Note:

What is the Need for Setting up a Health Sector Regulator?

- **Lower Penetration:**
 - Under the **IRDAI Vision 2047**, the government aims to provide 'Insurance for All by 2047', which means that every citizen has appropriate life, health, and property insurance coverage and every enterprise is supported by appropriate insurance solutions.
 - According to a report by the National Insurance Agency, **over 400 million individuals, or about a third of the population, lack Health Insurance** due to lower penetration, coverage inadequacy and rising healthcare costs.
- **Unified Oversight:**
 - Bringing both private and government health insurance schemes under one regulator ensures **standardized oversight**.
 - It streamlines regulations, policies, and procedures, **creating a cohesive framework for the entire health insurance sector**.
- **Ensuring Fair Practices:**
 - A regulator helps ensure fair practices across the board. It can monitor premiums, **claim settlements, and coverage criteria**, preventing malpractices and ensuring that both private and government insurers operate transparently.
- **Enhanced Accessibility:**
 - With a regulator in place, **there's an opportunity to improve the accessibility** of healthcare.
 - Penetration of private insurance is increasing at a fast rate and along with government-run insurance, India aims to be covering 70% of the population soon.
- **Affordability and Sustainability:**
 - By overseeing insurance schemes, the **regulator can work toward maintaining the affordability of health insurance**.
 - It can help **control costs, establish fair pricing structures**, and prevent undue premium hikes, making insurance more sustainable in the long run.
- **Quality Control:**
 - The regulator can set and enforce standards for healthcare services covered by insurance. This includes ensuring that empaneled hospitals meet certain quality benchmarks, fostering a higher quality of care for insured individuals.

What is Health Insurance?

- **About Healthcare:**
 - Health insurance is a **type of coverage that pays for medical expenses** incurred by the insured individual.
 - It works by **providing financial protection to cover various healthcare costs**, including hospitalization, **doctor visits, surgeries, medications**, and preventive care.
- **Significance of Health Insurance:**
 - It is a mechanism of **pooling the high level of Out of Pocket expenditure (OOPE)** in India to provide greater financial protection against health shocks.
 - Pre-payment through health insurance emerges as an important tool for risk-pooling and safeguarding against catastrophic (and often impoverishing) expenditure from health shocks.
 - Moreover, pre-paid pooled funds can also **improve the efficiency of healthcare provision**.
- **Issues related to Health Insurance:**
 - **Life Status is unevenly Distributed:** There has been a significant increase in life expectancy of people from 35 years to 65 years since Independence. But the status of life is unevenly distributed in different parts of the country. The health problems in India are still a cause of great concern.
 - **Low Government Expenditure:** Low Government expenditure on health has constrained the capacity and quality of healthcare services in the public sector.
 - It diverts the majority of individuals – about two-thirds – to seek treatment in the costlier private sector.
 - **Significant Population is missed:** At least 30% of the population, or 40 crore individuals are devoid of any financial protection for health.
- **Related Government Schemes:**
 - **Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (AB-PMJAY):** It offers a sum insured of Rs. 5 lakh per family for secondary care (which doesn't involve a super specialist) as well as tertiary care (which involves a super specialist).
 - In 2019, the government had reconstituted the National Health Agency (NHA) as the **National Health Authority (NHA)**, responsible for implementing Ayushman Bharat.

Note:

- The NHA has developed a national Health Claims Exchange (HCX) to enable the interoperability of health claims.

Note: The Insurance Regulatory and Development Authority of India (IRDAI) regulates insurers that provide health cover among other products.

WHO Prequalification to R21/Matrix-M Vaccine

In a significant development in the global fight against **malaria**, the **World Health Organization (WHO)** has recently added the **R21/Matrix-M malaria vaccine** to its list of **prequalified vaccines**.

- Developed by Oxford University and manufactured by the **Serum Institute of India**, this vaccine holds promise in **preventing malaria in children**.
- The R21/Matrix-M vaccine became the **second malaria vaccine to achieve WHO prequalification**, the first one was the **RTS, S/AS01 vaccine**.

What is the Significance of WHO Prequalification?

- WHO prequalification of the R21 vaccine serves as a robust assurance of the **safety and efficacy** of the vaccine.
 - Products that achieve WHO prequalification gain credibility and are more readily accepted in international markets, as WHO applies rigorous international standards to evaluate their safety, effectiveness, and manufacturing compliance.
- WHO prequalification is often a prerequisite for procurement by international organizations, such as the **United Nations Children's Fund (UNICEF)**.
 - It enhances the likelihood of a vaccine being included in **global immunization programs**, ensuring a wider reach.
- WHO prequalification is instrumental in securing **Gavi support**, enabling the implementation of vaccination programs in regions with limited resources.
 - Gavi, the Vaccine Alliance, created in 2000 provides funding support for the deployment of vaccines in developing countries.

What is Malaria?

- **About:**
 - It is a life-threatening **mosquito-borne blood disease** caused by **Plasmodium parasites**. It is preventable and curable.

- Predominantly found in tropical and subtropical regions of Africa, South America, and Asia.
 - Malaria spreads through infected **female Anopheles mosquito bites**, with parasites multiplying in the liver and subsequently attacking **Red Blood Cells**.
 - Among the five parasite species causing malaria, **Plasmodium falciparum** and **Plasmodium vivax** present the highest threat to human health.
 - Symptoms of malaria include **fever and flu-like illness**, including shaking chills, headache, muscle aches, and tiredness.
- **Malaria Burden:**
- Malaria places a particularly high burden on **children in the African region**, where nearly half a million children die from the disease each year.
 - In 2022, there were an estimated **249 million malaria cases in the world** and **6,08,00 malaria deaths** across 85 countries.

Initiatives to Curb Malaria:

- **Global:**
 - **E-2025 initiative.**
 - **Global Technical Strategy for Malaria 2016–2030.**
- **India:**
 - **National Framework for Malaria Elimination (NFME).**
 - **National Strategic Plan for Malaria Elimination (2017-22).**
 - **The Indian Council of Medical Research (ICMR)'s Malaria Elimination Research Alliance-India (MERA-India)**

UNODC's Global Study on Homicide Report 2023

Why in News?

Recently, the **United Nations Office on Drugs and Crime (UNODC)** has released a Global Study on Homicide 2023 report, which found that homicide is a bigger killer than armed conflict and terrorism combined.

- Homicide is the **killing of a person, whether lawful or unlawful, intentional or unintentional** while Murder

Note:

is the **unlawful killing of a person** with intent or malice aforethought.

- The report examines homicides related to criminal activities and **interpersonal conflict, as well as “socio-politically motivated homicides”** such as the deliberate killing of human rights activists, humanitarian workers and journalists.

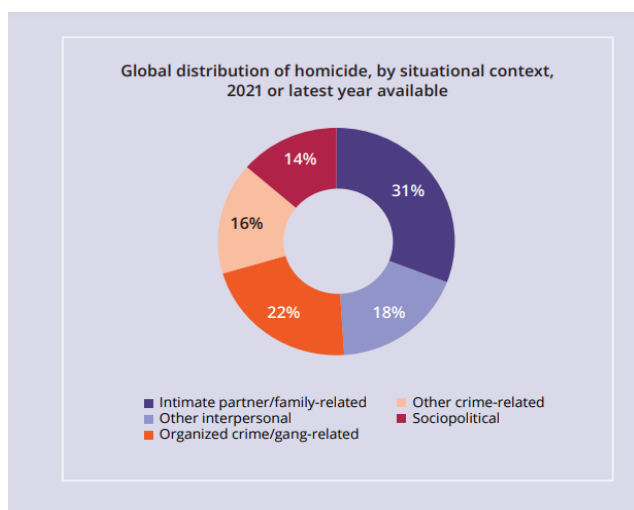
What are the Key Findings of the Global Study on Homicide 2023?

➤ **Homicide Trends:**

- An average of around **440,000 deaths** annually occurred due to homicide between 2019 and 2021.
- 2021 was exceptionally lethal, witnessing **458,000 homicides**. Economic repercussions from the **Covid-19** pandemic and a surge in organized crime, gang-related, and **socio-political violence contributed to this increase**.
- Despite a more than 95% surge in conflict deaths between 2021 and 2022, available data shows that the global homicide burden in 2022 was twice that of conflict deaths.

➤ **Factors Contributing to Homicide:**

- **Organized Crime** accounted for **22% of global homicides**, reaching 50% in the Americas. Competition among organized crime groups and gangs can escalate intentional homicides significantly.
- Factors like climate change, demographic shifts, inequality, urbanization, and technological changes **influence homicide rates differently across regions**.



➤ **Regional Variances:**

- America has the highest regional homicide rate per capita (15 per 100,000 population in 2021).
- Africa recorded the **highest absolute number of homicides** (176,000) with a rate of 12.7 per 100,000 population. Rates in Africa did not show a declining trend compared to other regions.
- Asia, Europe, and Oceania had homicide rates far below the global per capita average of 5.8 per 100,000 population in 2021.

➤ **Victims:**

- Men constituted **81% of homicide victims and 90% of suspects**, while women were more likely to be killed by family members or intimate partners.
- 15% of homicide victims in 2021 were children, amounting to 71,600 boys and girls.

➤ **Targeted Killings and Impact on Aid Workers:**

- Deliberate killings of human rights **defenders, journalists, aid workers**, etc., accounted for 9% of global homicides.
- Humanitarian aid workers **faced a higher average number of fatalities** during 2017-2022 compared to 2010-2016, indicating increased threat levels.

➤ **Projections and Vulnerability:**

- The global homicide rate is **projected to decrease to 4.7 in 2030**, though this falls short of the Sustainable Development Goals target.
- Africa is projected as the **most vulnerable region due to its younger population**, persistent inequality, and climate-related challenges.

What are the Key Highlights Related to India?

➤ **Motives Behind Murders:**

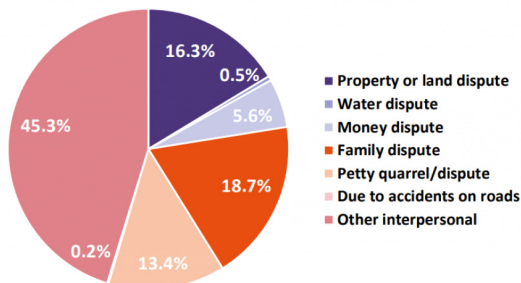
- Nearly 16.8% of murder cases recorded in India between 2019 and 2021 were linked to disputes over property, land, or access to water.
- About **0.5% (300 cases)** of recorded murders in India between 2019 and 2021 were specifically attributed to water-related conflicts, highlighting the emergence of this issue as a significant driver of homicides.

➤ **Factors Amplifying Water-Related Conflicts:**

- Population Growth, Economic Expansion, and Climate Change: These factors were identified as exacerbating tensions over water access, contributing to increased **violence related to disputes over water resources**.

Note:

FIG. 13 Interpersonal murders by type in India, 2019–2021



Source: National Crime Record Bureau, Ministry of Home Affairs, India.

Noma as a Neglected Tropical Disease

Why in News?

Recently, **World Health Organization (WHO)** added **noma** to its list of **neglected tropical diseases (NTDs)** underscoring the urgent need to address this health challenge and allocate resources for prevention and treatment.

- Noma, also known as **cancrum oris** or **gangrenous stomatitis**, is a severe gangrenous disease affecting children aged 3–10 in poor communities.
 - Gangrene is a **dangerous and potentially fatal condition** that happens when the **blood flow to a large area of tissue is cut off**.

What is Noma?

- **About:**
 - Noma, derived from the **Greek “nomē”** meaning “to devour,” manifests as **severe gangrene of the mouth and face**.
 - Evidence indicates that noma is **caused by bacteria found in the mouth**.
 - This **non contagious disease**, exploits weakened defense with a **mortality rate of around 90%** and poses a significant threat to marginalized children in extreme poverty and malnutrition.
 - **Risk factors** include poor oral hygiene, malnutrition, weakened immune systems, poverty.
- **Geographic Distribution and Historical Context:**
 - Noma is prevalent in developing countries, especially **sub-Saharan Africa**, affecting **poor children aged 3–10**.

- Historical records show **noma** was reported in concentration camps during World War II and **disappeared in the Western world with economic progress, emphasizing its link to poverty**.

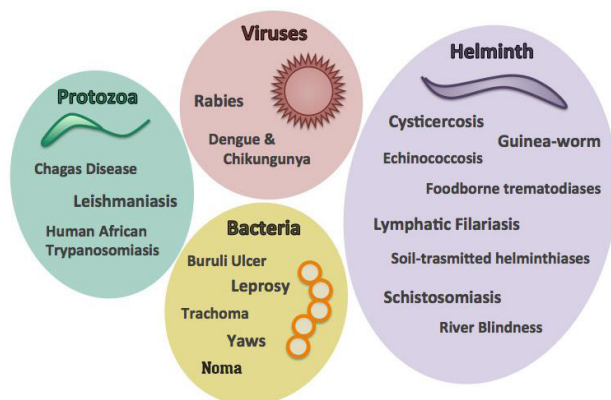
➤ Consequences and Treatment Challenges:

- Survivors face severe consequences like **facial disfigurement, jaw muscle spasms, oral incontinence, and speech problems**.
- **Early detection** is crucial, with therapy most effective in the disease’s initial stages.

What are Neglected Tropical Diseases (NTDs)?

- NTDs are **communicable diseases** in tropical regions, thriving in **conditions of poverty and poor healthcare access**.
- They are caused by a variety of **pathogens** such as **viruses, bacteria, protozoa and parasitic worms**.
- The term “neglected” reflects the **lack of attention and resources** despite significant impact on vulnerable communities.
- These diseases generally receive less funding for research and treatment than **malaises** like **tuberculosis, HIV-AIDS and malaria**.
 - Examples of NTDs are: snakebite envenomation, scabies, yaws, trachoma, Leishmaniasis and Chagas disease etc.

Neglected Tropical Diseases



What is the Impact of NTDs?

- **Global Scenario:**
 - NTDs **affect more than a billion people** globally. They are **preventable and treatable**.
 - There are 20 NTDs that impact over 1.7 billion people worldwide.

Note:

➤ **Indian Scenario:**

- India carries the largest burden of at least 11 of these diseases, with parasitic illnesses like **kala-azar** and **lymphatic filariasis** affecting millions of people throughout the country – often the poorest and most vulnerable.
- India is **at the cusp of eliminating Kala-Azar**, with 99% Kala-Azar endemic blocks having achieved the elimination target.

What are the Initiatives for NTDs?➤ **Global Initiatives:**

- **WHO's New Roadmap for 2021–2030:**
 - It is WHO's blueprint to drive global efforts in the fight against NTDs in the context of the United Nations **Sustainable Development Goals**.
 - The Blueprint recommends measuring impact and to promote disease-specific planning and programming
- **London Declaration on NTDs:** It was adopted on 30th January, 2012 to recognise the global burden of NTDs.

➤ **Indian Initiatives:**

- **The Accelerated Plan for Elimination of Lymphatic Filariasis (APELF)** was launched in 2018, as part of intensifying efforts towards the elimination of NTDs.
- A WHO-supported **regional alliance** established by the governments **of India, Bangladesh, and Nepal** in 2005 to expedite early diagnosis and treatment of the most vulnerable populations and improve disease surveillance and control of sandfly populations (Kala-azar).
 - India has already **eliminated several other NTDs**, including guinea worm, trachoma, and yaws.
- **Preventive methods like Mass Drug Administration (MDA)** rounds are periodically deployed in endemic areas during which anti-filarial medicines are provided free-of-cost to at-risk communities.
- **Vector-control measures** like Indoor Residual Spraying rounds are undertaken in endemic areas to prevent sandfly breeding.
- State and central governments have also introduced **wage compensation schemes for**

those suffering from Kala-Azar and its sequela (a condition which is the consequence of a previous disease or injury) known as Post-Kala Azar Dermal Leishmaniasis.

Impact of Covid Vaccination on Mental Health

Why in News?

Some studies have suggested a **lower incidence of Mental Health** issues among vaccinated individuals compared to the unvaccinated post-**Covid-19** infection.

- The additional risk of depression at 6 months following Covid-19 was 449 per 100,000 among vaccinated individuals, while it was 1009 per 100,000 among the unvaccinated.

How Severe was the Issue of Mental Health after Covid-19?➤ **Anxiety and Depression:**

- Individuals who survived Covid-19 hospitalization faced **persistent mental health challenges**, including anxiety and depression, lasting at least a year post-recovery.
- Long Covid, affecting about 5% of individuals regardless of its severity, overlaps with these **mental health conditions, adding to the burden**.

➤ **Increased Burden on Healthcare Systems:**

- The burden of mental health issues post-Covid-19 added **strain to healthcare systems**, requiring additional resources for diagnosis, treatment, and support for individuals facing these challenges.

➤ **Children and Vulnerable Groups Affected:**

- School closures, disrupted routines, and limited social interaction affected children's mental health, leading to **increased anxiety and other psychological challenges**.
- Marginalized populations faced compounded challenges due to socioeconomic disparities, leading to increased mental health vulnerabilities.

➤ **Isolation and Grief Amplifying Mental Health Issues:**

- Social isolation, limited access to communication devices, domestic stress, and grief from the loss of friends and relatives to Covid-19 amplified mental health challenges, especially among vulnerable groups like the elderly.

Note:



drishti

What is the link Between Mental Health and Vaccination?

- **Reduction in Mental Health Challenges:**
 - The reduction in mental health issues among vaccinated individuals was observed irrespective of whether they had a prior history of mental illness.
 - This suggests that vaccination's impact on mental health outcomes was independent of pre-existing conditions.
- **Reduced Anxiety:**
 - Vaccination **created a sense of safety and decreased anxiety** among individuals.
 - Feeling protected against severe illness or **death from Covid-19 contributed** to lower levels of anxiety and stress associated with the pandemic.

What is the Status of Mental Health Illness in India?

- **About:**
 - Mental health **refers to a person's emotional, psychological, and social well-being**, encompassing their overall mental and emotional state.
 - It involves a person's ability to cope with stress, manage their emotions, maintain healthy relationships, work productively, and make rational decisions.
 - Mental health is an integral part of overall health and well-being, just as important as physical health.
- **Status in India:**
 - In India, according to National Institute of Mental Health and Neuro-Sciences data, more than 80% of people do not access care services for a multitude of reasons, ranging from lack of knowledge, stigma and high cost of care.
 - The economic loss due to mental health conditions, between 2012-2030, is estimated at USD 1.03 trillion (WHO).
- **Government Initiatives Related to Mental Health:**
 - **National Mental Health Programme (NMHP)**
 - **Ayushman Bharat – Health and Wellness Centres (AB-HWC)**
 - **National Tele Mental Health Programme**
 - **Kiran Helpline**
 - **Rashtriya Kishor Swasthya Karyakram**
 - **Yuva Spandana Yojana (Karnataka)**

e-Cigarettes

Why in News?

Recently, the **World Health Organization (WHO)** has urged governments to treat **e-cigarettes similarly to tobacco and ban all flavors**, threatening cigarette companies' bets on smoking alternatives.

- Some researchers, campaigners and governments see e-cigarettes, or vapes, as a key tool in reducing the **death and disease caused by smoking**. But the WHO said "urgent measures" are needed to control them.

What are e-Cigarettes?

- **e-Cigarettes** are **battery powered devices** that work by heating a liquid into an aerosol that the user inhales and exhales.
- The e-cigarette liquid **typically contains nicotine, propylene glycol, glycerin, flavorings, and other chemicals**.
- There are many different types of e-cigarettes in use, also known as electronic nicotine delivery systems (ENDS) and sometimes electronic non-nicotine delivery systems (ENNDS).

What are the Concerns Raised by WHO Regarding e-Cigarettes?

Ineffectiveness for Smoking Cessation:

- E-cigarettes as consumer products **are not shown to be effective for quitting tobacco** use at the population level. Instead, alarming evidence has emerged on adverse population health effects.
- E-cigarettes have been **allowed on the open market** and aggressively marketed to young people.
 - Thirty-four countries ban the sale of e-cigarettes, 88 countries have no minimum age at which e-cigarettes can be bought and 74 countries have no regulations in place for these harmful products.

Impact on Youth:

- The recruitment and **potential trapping of children and young people** at an early age into using e-cigarettes, potentially leading to **nicotine addiction**.
- The aggressive marketing of e-cigarettes, **along with insufficient regulations in many countries**, contributes to this issue.

Note:

- **Rising Usage among Youth:**
 - Children **13–15-years old are using e-cigarettes** at rates higher than adults in all WHO regions.
 - In Canada, the rate of e-cigarette use among 16–19-year-olds has doubled between 2017–2022, and in England (the United Kingdom) the number of young users has tripled in the past three years.
- **Health Risks:**
 - Although the long-term health effects of e-cigarettes are not fully understood, these devices generate toxic substances, some of which are **known to cause cancer** and increase the risk of heart and lung disorders.
 - E-cigarette use can also **affect brain development, cause learning disorders** in young people, and adversely affect fetal development in pregnant women.
- **Nicotine Addiction and Addictive Nature:**
 - E-cigarettes containing nicotine are noted to be highly addictive, posing health risks to both users and bystanders. The addictive nature of nicotine in e-cigarettes raises concerns about countering nicotine addiction, especially among young users.

Note: In India, the possession of e-cigarettes and similar devices is a violation of the Prohibition of Electronic Cigarette Act (PECA) 2019.

What are the Arguments in Favour of e-Cigarettes?

- **Harm Reduction:**
 - Proponents argue that e-cigarettes offer a harm reduction strategy compared to traditional tobacco products.
 - They contain nicotine but **lack many of the harmful carcinogens present in conventional cigarettes**. As a result, they are often seen as a safer alternative for adult smokers who are unable or unwilling to quit using nicotine altogether.
- **Economic Revenue:**
 - There's an economic argument suggesting that legalizing and regulating e-cigarettes could generate **substantial tax revenue for governments**. By taxing e-cigarettes, authorities could benefit from revenues while also controlling and monitoring their use.

- **Consumer Choice:**
 - Supporters argue for the importance of consumer choice and access to alternatives. They believe that adult smokers should have the option **to choose less harmful nicotine delivery systems** if they find traditional smoking cessation methods ineffective.

What is Nicotine?

- **Nicotine** is a plant alkaloid that contains nitrogen, which is found in several types of plants, including the tobacco plant and can also be produced synthetically.
- Nicotine is both a sedative and a stimulant.
- Nicotine is used as a direct substance in e-cigarettes and the content ranges up to 36 mg/mL. Although regular cigarettes too have nicotine, but it ranges between 1.2 to 1.4 mg/mL.
- Karnataka has notified nicotine as Class A poison.

What are the Government Initiatives Related to Tobacco Consumption?

- **National Tobacco Control Programme**
- Cigarettes and other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Amendment Rules, 2023.
- **National Tobacco Quitline Services (NTQLS)**
- The Union Finance Minister of India announced a 16% increase in National Calamity Contingent Duty (NCCD) on cigarettes in the **Budget 2023-24**.
- The Union Health Ministry of India has announced new regulations requiring **Over-The-Top (OTT) platforms** to display tobacco-related health warnings during streamed content.

Southeast Asia Opium Survey 2023: UNODC

Why in News?

Recently, the **United Nations Office on Drugs and Crime (UNODC)** has released a report titled ***Southeast Asia Opium Survey 2023 - Cultivation, Production, and Implications***, highlighting that there is a significant increase in Opium Cultivation in the Golden Triangle, Southeast Asia.

Note:

Note: The **Golden Triangle** typically refers to a **region in Southeast Asia** known for the production of illicit drugs, particularly Opium. It's an area where the **borders of three countries meet**: Myanmar (formerly Burma), Laos, and Thailand.

- Originally, the term "Golden Triangle" referred to the opium-producing region covering parts of these three countries. However, it has evolved to denote a broader area associated with drug production, **trafficking, and organized crime**.
- One more infamous region for illicit drugs is Golden Crescent or "Death crescent", this crescent region **includes Afghanistan and Iran** – making it a natural transit point for drugs being smuggled out of Pakistan.

What are the Key Highlights of the Report?

- **Opium Cultivation Increase in Myanmar:**
 - Opium cultivation in the Golden Triangle continued to expand over the past year 2022, with a significant increase in Myanmar.
 - There's been a **18% increase in Opium cultivation** in Myanmar, reaching 47,100 hectares.
 - This surge has made **Myanmar the world's largest source of opium**, particularly due to disruptions following the **Military Takeover in 2021**.
- **Increased Yield and Investment:**
 - The average estimated opium yield per hectare expanded by 16% to 22.9 kilograms/hectare.
 - This reflects advancements in farming practices and increased investments in irrigation systems and fertilizers, signaling a more sophisticated approach by farmers and buyers.
- **Rising Opium Prices:**
 - Despite an expanding supply, the **price paid to farmers increased by 27%** to approximately USD 355 per kilogram.
 - This price surge underscores the attractiveness of opium as a crop and commodity, indicating strong demand that fuels **the opium trade in the Golden Triangle**.
- **Impact of the Afghanistan Opium Ban:**
 - The report anticipates that a protracted ban on opium in Afghanistan will likely lead to sustained high prices and further increases in cultivation in Southeast Asia.
 - The Taliban's ban has led to a **95% drop in the cultivation of opium poppies** in Afghanistan

➤ Contribution to Illicit Economy:

- The expansion of opium cultivation contributes to a **broader illicit economy in the Mekong region** (Cambodia, the People's Republic of China (specifically Yunnan Province and Guangxi Zhuang Autonomous Region), Lao People's Democratic Republic, Myanmar, Thailand, and Viet Nam).
- It fuels synthetic drug production and a convergence of drug trafficking, money laundering, and online criminal activities, generating significant profits for organized crime groups.

➤ Recommendations:

- The crisis in Myanmar exacerbates crime and governance challenges in the region. Addressing these issues necessitates **comprehensive solutions considering the complex realities** faced by people in opium-cultivation areas. Providing viable alternatives to opium cultivation and improving socio-economic conditions are crucial to mitigate this trend.
- Given the insecurities and economic hardships faced by farming communities, the UNODC's direct engagement with these communities in Myanmar and Laos becomes more critical than ever.
- Building resilience and offering sustainable income generation alternatives are **vital to combat the allure of opium cultivation**.

What are the Key Facts about Opium Poppy Plants?

- **Scientific Name:** *Papaver somniferum*
- **Uses:** Opium derived from the **sap of the opium poppy** has been used for centuries as a pain reliever, sedative, and in the production of various opioids, including morphine, codeine, and heroin. Medicinally, it has been employed to alleviate severe pain, suppress coughs, and induce sleep.
- **Global Production:** India is the **sole country authorized by the United Nations Single Convention on Narcotic Drugs (1961)** to produce gum opium. Additionally, other countries like Australia, Austria, France, China, Hungary, the Netherlands, Poland, Slovenia, Spain, Turkey, and the Czech Republic cultivate opium poppies. However, these countries do not extract gum but instead use the Concentrate of Poppy Straw process (CPS).
 - This process involves cutting the bulb with 8 inches of the stalk for processing in its entirety.

Note:

What is the United Nations Office on Drugs and Crime?

- It was established in 1997 and was named as a United Nations Office on Drugs and Crime (UNODC) in 2002.
- It acts as the Office for Drug Control and Crime Prevention by combining the United Nations International Drug Control Program (UNDCP) and the Crime Prevention and Criminal Justice Division of the United Nations Office at Vienna.

What are the Related Initiatives to Tackle Drug Abuse ?

- **Indian:**
 - [Nasha Mukh Bharat Abhiyaan/Drugs-Free India Campaign](#)
 - [National Action Plan for Drug Demand Reduction](#)
 - [Narco-Coordination Centre](#)
 - [National Fund to Control Drug Abuse](#)
- **Global Initiatives:**
 - Single [Convention on Narcotic Drugs](#), 1961.
 - The [Convention on Psychotropic Substances, 1971](#).
 - The UN Convention against Illicit Traffic in [Narcotic Drugs and Psychotropic Substances, 1988](#).
 - India is a signatory to all three and has enacted the [Narcotics Drugs and Psychotropic Substances \(NDPS\) Act, 1985](#).
 - Every year, the UN publishes a [World Drug Report](#), [Global Drug Policy Index](#).

Pompe Disease

Why in News?

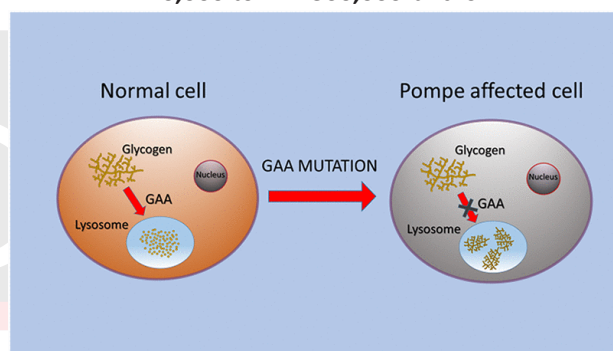
India's **first Pompe disease** patient, passed away at the age of 24 years after battling the disease in a **semi-comatose state**.

- A **semi-comatose state** is characterized by **partial coma**, manifesting as **disorientation** and **stupor** without reaching a complete coma. Individuals in a **semi-comatose state** may exhibit responsiveness to stimuli, such as groaning and mumbling.

What is Pompe Disease?

➤ About:

- Pompe Disease (also known as Glycogen Storage Disease Type II) is characterized by the **buildup of glycogen in the lysosomes of the body's cells**.
- This disease is a rare **genetic disorder** caused by a deficiency of the **enzyme acid alpha-glucosidase (GAA)**. This enzyme is crucial for **breaking down glycogen into glucose** within the lysosomes of cells.
 - Lysosomes are membrane-enclosed organelles that contain an array of enzymes capable of breaking down all types of biological polymers—proteins, nucleic acids, carbohydrates, and lipids.
 - Its prevalence estimates range from **1 in 40,000** to **1 in 300,000** births.



➤ Symptoms:

- Muscle weakness, Motor skill delay, Degenerative impact on bones, Respiratory complications, Cardiac involvement, Implications for daily living.

➤ Diagnosis:

- **Enzyme assays** are conducted to measure the activity of GAA, the deficient enzyme.
- Genetic testing identifies mutations in the responsible **GAA gene**. Genetic analysis confirms the presence of specific mutations associated with Pompe Disease.

➤ Treatment:

- Although there is presently no cure for **Pompe disease**, there are treatment alternatives accessible to address symptoms and enhance the patient's quality of life.
- **Enzyme Replacement Therapy (ERT)** is a common treatment method that entails infusing the deficient enzyme to mitigate glycogen accumulation.

Note:

Science & Technology

Highlights

- Tree Ambulance
- Electronic Soil
- Artificial Intelligence
- Pesticide Poisoning
- Breakthrough Prizes
- Sensor for Formalin Detection in Fish
- PwC's 2023 Global Risk Survey
- Dark Energy
- Pantoea Tagorei
- Magnetars and Related AstroSat's Discovery
- mRNA-Based Medicines
- Kakrapar Atomic Power Project
- Artificial Intelligence and Machine Learning in Space Sector
- Ketamine Drug
- Global Partnership on Artificial Intelligence (GPAI) Summit

Tree Ambulance

Why In News?

Recently, the Horticulture Department of the **Municipal Corporation of Delhi (MCD)** plans to expand its **tree ambulance fleet** in Delhi, aiming to **triple** the current number to **12** by 2024.

- Each of the **12 administrative zones** will be assigned **one tree ambulance**, enhancing the city's capacity for timely and efficient tree care.

What is a tree ambulance?

A vehicle put to use to treat trees with diseases, termite infestations, or those trees are tilting towards one side

5 Tree ambulances currently in Delhi

4 With MCD **1** With NDMC

12 MCD plans to triple its strength to 12

What does a tree surgery entail?

A treated tree may take 2-3 years to heal. The procedure starts with removing the infected part, cleaning it with a brush, washing it, and applying insecticide on the infested portion. Hollowed-out parts are filled with inert foam and covered with chicken mesh

What is a tree ambulance equipped with?

- 1** Guard-rails and mesh to cover a treated tree
- 2** Fungicides, pesticides, manure, insecticides, and any other chemicals required to treat a tree
- 3** A hosepipe to provide water on the spot
- 4** A ladder to help the staff climb tall trees

HOW CAN ONE UTILISE THIS SERVICE?

There is no dedicated helpline number for a tree ambulance. When a damaged or infected tree is spotted, one can contact the MCD horticulture department at mcd-ithelpdesk@mcd.nic.in and ask for a tree ambulance

Note:

What is the Tree Ambulance?

➤ About:

- **Tree Ambulance** is an initiative that has been initiated to support “save trees” with the “vision to save the Earth”.
- The **first phase** of **Tree Ambulance** was flagged off and inaugurated in **Chennai** on the occasion of **International Day for Biological Diversity, 2019** (celebrated on 22nd May) by the **Vice President of India**.
- Tree Ambulances are **run by botanists, forestry experts, gardeners, volunteers and tree surgeons** and **provide free services** to people who call its helpline requesting help rescuing ailing trees and plants.

➤ Aim:

- The initiative was proposed by the Chennai-based environmentalist **K Abdul Ghani**, well known as the “**Green Man of India**”.
- The initiative was launched for the purpose of providing a platform to **battle climate change** by replanting the trees that were uprooted due to **Cyclone Vardah** and **Cyclone Gaja**.
- **Tree Ambulance** is also tasked to provide services such as “**first aid treatment, seed banking, seed ball distribution, uprooted tree planting, plant distribution, aiding tree plantation, shifting trees, and surveying of trees and removal of dead trees**”.

➤ Significance:

- Tree Ambulance services are **starting up across India**, bringing sick plants back to life.
- The work is helping cool down India’s cities by reducing “urban heat islands”.
- These tree ambulances are also playing a role in protecting biodiversity.

Electronic Soil

Why in News?

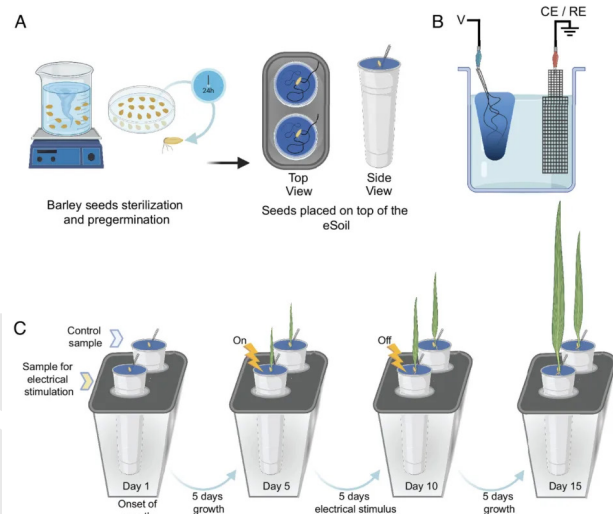
Recently, researchers from **Linköping University in Sweden** have developed ‘**Electronic Soil**’ that can **speed up the growth of plants in Hydroponic** spaces.

What is Electronic Soil?

➤ About:

- The electronic soil (eSoil) developed is a **novel conductive cultivation substrate** tailored specifically for hydroponic systems.

- Unlike traditional substrates like mineral wool, which are non-biodegradable and manufactured using energy-intensive processes, **eSoil is composed of cellulose**, a biopolymer, blended with a conductive polymer known as PEDOT (Poly(3,4-ethylenedioxythiophene)).
- This innovative blend of **materials allows for the stimulation of root systems in plants** through low-power electrical currents.



➤ Significance:

- eSoil offers the **advantage of significantly lower energy consumption and eliminates** the risk associated with high-voltage systems.
- The significance of eSoil lies in its **ability to enhance the growth of plants**, as evidenced by a study showing a 50% increase in the growth rate of barley seedlings cultivated in hydroponic systems using this technology.
- Hydroponics coupled with eSoil can be potentially helpful in **addressing global food demands**, especially in urban settings where arable land is limited.

What is Hydroponics?

➤ Hydroponics:

- Hydroponics is a method of growing plants in a **water based, nutrient rich solution in a soilless media**.
- It does not use soil, instead the root system is supported **using an inert medium such as perlite, rockwool, clay pellets, peat moss, or vermiculite**.
- The fundamental is to allow the plants roots to come in **direct contact with the nutrient solution**,

Note:

while also having access to oxygen, which is essential for proper growth.

➤ **Advantages:**

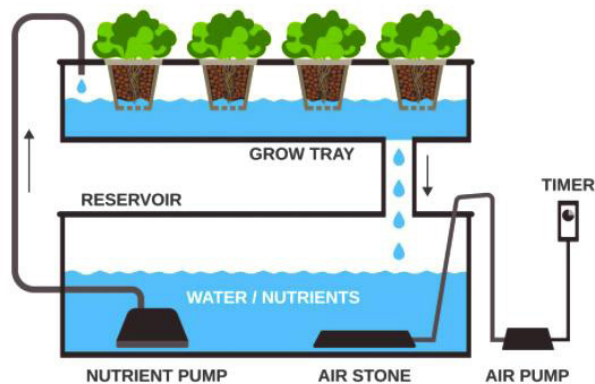
- **Land and Water Efficient:** The hydroponic farming technology with closed water loop systems is a viable option for farmers with limited access to land and water.
- **Suitable for Urban Areas:** The significance of soilless systems increases many folds when it comes to urban and peri-urban areas where the arable land is polluted.
- **Lower Resource Consumption:** Lower and more efficient resource consumption allows this alternative farming technique to be adopted by a variety of stakeholders.
- **Higher Yield:** According to the [Food and Agricultural Organisation \(FAO\)](#), the vegetable yield of soilless systems is 20-25% higher than in traditional systems as the number of plants per square metre is higher.

➤ **Drawbacks:**

- **Much Time and Attention Required:** The water needs to be replaced at regular intervals as standing or recirculating water makes it easier for plant disease to spread if pathogens enter the water supply.
- **Water and Electricity Intensive:** Water and electricity are the two major factors in Hydroponic farming, in absence of adequate water supply or stable electricity, the Hydroponic system won't thrive well.

HYDROPONICS

infographics elements



Artificial Intelligence

Why in News?

The year 2023 has been a landmark year for **Artificial Intelligence (AI) innovation**, showcasing incredible advancements in **various AI tools**. These advancements offer a glimpse into the expanding potential of AI, particularly in creativity, conversation, and visual content generation.

- However, this surge in development emphasizes the **critical need for enhanced oversight to ensure ethical AI use** and equitable access to its benefits.

What is Artificial Intelligence?

➤ **About:**

- AI is defined as the **ability of machines** and systems to **acquire and apply knowledge and to carry out intelligent behaviour**.
 - The term "Artificial Intelligence" was coined by **John McCarthy**, an American computer scientist and cognitive scientist. He was one of the founders of the discipline of AI.
- It includes technologies like **machine learning, Deep Learning, Big Data, Neural Networks**, Computer vision, **Large Language Models** etc.
- The ideal characteristic of artificial intelligence is its ability to rationalize and take actions that have the best chance of achieving a specific goal.

➤ **Types of AI:**

Based on Capabilities	Description
Weak AI or Narrow AI	AI designed for specific tasks like playing chess, recognizing faces, or making recommendations. Examples include Siri, Watson, AlphaGo.
General AI	AI with the ability to perform any intellectual task that a human can, including reasoning, learning, and planning. No current examples, but researchers are working on it.
Super AI	Speculative AI that surpasses human intelligence, excelling in tasks with cognitive abilities like creativity, self-awareness, and emotion. No current examples, only future possibilities.

Based on Functionality	Description
Reactive Machines	AI that reacts to the current situation but lacks memory or past experience storage. Examples include Deep Blue, AlphaGo.
Limited Memory	AI that stores some data or past experience for a short time, using it for decision-making. Examples include self-driving cars, chatbots.
Theory of Mind	AI that understands and simulates the mental states, emotions, and beliefs of others. No current examples, research is ongoing.
Self-Aware	AI with a sense of self, consciousness, and self-reflection. No current examples, subject to philosophical and scientific debates.

➤ **Principles for the Ethical Use of AI:**

- AI initiatives should align with established **ethical**

Note:

principles, human rights, and societal values to ensure responsible technological advancement.

- Prioritize the **positive impact of AI on individuals**, communities, and society, emphasizing responsible use for the greater good.
- Design AI systems to be **transparent and explainable**, allowing users and stakeholders to understand operations and decision-making processes, **fostering trust and accountability**.
- Mitigate **biases in AI algorithms to ensure fair outcomes**, preventing **discrimination** based on race, gender, ethnicity, or socioeconomic status.
- Uphold **individuals' privacy rights** by responsibly handling **personal data**, obtaining **explicit consent**, and complying with relevant privacy laws and regulations.
- Establish clear lines of **accountability for developers and organizations** deploying AI systems, with mechanisms to address errors or harmful impacts.
- Develop and utilize AI technology to **enhance human well-being**, address societal challenges, and contribute positively to global progress, economies, and environmental sustainability.

➤ **Major AI Tools:**

Tools	Description
ChatGPT	OpenAI's powerful chatbot evolved with features, mobile versions, and integration with DALL-E 3. Challenges faced with internal upheaval.
Bing AI Chat/ Microsoft Copilot	Microsoft's interactive search experience powered by GPT-4. Excels in coding assistance, travel planning, and language learning.
Runway Gen-2	Revolutionary AI video software by Runway, acclaimed for stunning visual effects in the film 'Everything Everywhere All at Once.'
DALL-E 3	OpenAI's third iteration generative AI model integrated with ChatGPT for brainstorming and prompt refinement. Content restrictions implemented.

Midjourney	AI tool popular for generating breathtaking images based on detailed text prompts, known for precise and photorealistic creations.
Pi Chatbot	Empathetic chatbot designed by Inflection AI as a supportive companion with real-time access to the latest information from the web.
Claude 2 by Anthropic	Anthropic's chatbot with a large context window for natural conversations, self-supervision learning, and assistance in various tasks.
Character AI	Engaging chatbot enabling conversations with AI versions of celebrities, historical figures, and fictional characters.
GitHub Copilot	GitHub's AI pair programmer providing contextual suggestions, real-time assistance, and adapting to the user's coding style.
Adobe Firefly	Creative powerhouse for AI image generation by Adobe, transforming textual prompts into stunning high-quality images. Currently free in beta.
Perplexity AI	Conversational AI search engine offering a chatbot-like interface, bridging creativity and knowledge with precise answers and sourced information.
Google Bard	AI chatbot with a massive dataset of code and text, capable of learning and understanding human language. Under development, offering a glimpse into the future of AI interactions.

➤ **India's Initiatives Related to Artificial Intelligence:**

- **INDIAai.**
- **Global Partnership on Artificial Intelligence (GPAI).**
- **US India Artificial Intelligence Initiative.**
- **Responsible Artificial Intelligence (AI) for Youth.**
- **Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform.**
- **Artificial Intelligence Mission.**

Note:

Pesticide Poisoning

Why in News?

Recently, in **Maharashtra** which is prone to **droughts** and **crop failures**, **pesticide poisoning** has claimed the lives of many farmers and farm workers in recent years.

- 20 farmers have died due to pesticide poisoning in Yavatmal district alone **since 2017**.
- Many others have suffered from **respiratory problems**, **skin rashes**, **eye irritation**, **neurological disorders**, **reproductive issues**, **cancer**, and even **death**.

What are Pesticides?

- **About:**
 - Pesticide is any **chemical or biological substance** intended to **prevent, destroy or control damage** from pests which has both **agricultural and non-agricultural** uses.
 - They also pose serious risks to **human health** and the **environment**, especially when they are **misused, overused, or sold illegally**.
- **Types:**
 - **Insecticides:** The chemicals that are used to protect plants from insects and pests are known as Insecticides.
 - **Fungicides:** This class of crop protection chemicals is used to control the spread of fungal diseases in plants.
 - **Herbicides:** Herbicides are chemicals that kill or control the growth of weeds in the cultivation area.
 - **Bio-Pesticides:** They are Pesticides of biological origin, i.e., derived from animals, plants, bacteria etc.
 - **Others:** This includes plant growth regulators, nematicides, rodenticides and fumigants.
- **Pesticide Poisoning:**
 - **Pesticide poisoning** is a term that refers to the **adverse effects of exposure to pesticides** on **humans or animals**.
 - According to the **World Health Organization (WHO)**, **pesticide poisoning** is one of the leading causes of **death** among **agricultural workers** worldwide.

- Pesticides can be classified into two types, **Acute (short-term)** and **chronic (long-term)**.
 - **Acute poisoning** occurs when a person **ingests, inhales, or comes into contact** with a large amount of pesticide in a **short period of time**.
 - **Chronic poisoning** occurs when a person is exposed to **low doses** of pesticide over a **long period of time**, which can cause damage to various organs and systems in the body.

➤ Recently Banned Pesticides:

- The government has banned three more insecticides in **2023**: **Dicofol**, **Dinocap**, and **Methomyl**, in addition to **monocrotophos**.

How Pesticides are Regulated in India?

- Pesticides are regulated under the **Insecticides Act, 1968** and the **Insecticides Rules, 1971**.
- The **Insecticides Act of 1968** covers the **registration, manufacture and sale of pesticides** in India.
- The Act is administered by the **Department of Agriculture and Farmers Welfare, Ministry of Agriculture and Farmers Welfare**.

Note: The **Pesticide Management Bill, 2020** was introduced in **Rajya Sabha** in 2020. It seeks to regulate the **manufacture, import, sale, storage, distribution, use, and disposal of pesticides**, in order to ensure the availability of safe pesticides and minimize the risk to humans, animals, and environment. The Bill seeks to replace the **Insecticides Act, 1968**.

What are the Concerns Regarding Uses of Pesticides?

- **Harmful Effects on Farmers:**
 - Experts believe that **chronic low-level pesticide exposure** is associated with a broad range of **nervous system symptoms** such as **headache, fatigue, dizziness, tension, anger, depression, and impaired memory, Parkinson's disease, and Alzheimer's disease**, among others.
- **Harmful Effect on Consumers:**
 - Pesticides go up the food chain by working their way through the environment and into the soil or the water systems after which they are taken by **aquatic animals or plants** and ultimately **humans**. This process is called **Biomagnification**.
- **Harmful Effect on Agriculture:**
 - Continued use of pesticides for decades has contributed significantly to the **current ecological**,

Note:



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economic and existential crisis of the Indian agriculture sector.

➤ **Regulatory Issues:**

- Although agriculture is a **state subject**, **education**, and **research** related to insecticides are governed by the **Insecticides Act, 1968**, which is a **central act**. Therefore, **state governments do not have a direct role** in amending this act.
 - It is due to this that an estimated **104 pesticides** that are still produced/ used in India, have been banned in two or more countries in the world.
- In 2021, non-profit **Pesticide Action Network (PAN)** International released a list of **highly hazardous pesticides**, of which over **100 pesticides** are currently approved for use in India.

Breakthrough Prizes

Why in News?

The **2024 Breakthrough Prizes in the Life Sciences** category recognised groundbreaking research set to change the lives of those suffering from three **Rare Diseases: Parkinson's disease, Cystic fibrosis** and **Cancer**.

- Awards were also given in the categories of **Fundamental Physics** and **Mathematics**.

What are the 2024 Award-Winning Breakthroughs?

➤ **Life Sciences:**

- **Cancer Treatment Advances:** Carl June and Michel Sadelain **genetically engineered T cells** with synthetic receptors to recognize individual cancer cells, achieving remarkable success against liquid cancers such as leukemia, lymphoma, and myeloma.
 - Some patients have experienced complete tumor eradication and long-term remission after treatment.
- **Cystic Fibrosis Breakthroughs:** Sabine Hadida, Paul Negulescu, and Fredrick Van Goor invented the first effective medicines to treat the underlying cause of cystic fibrosis.
 - These medicines, including a triple combination medicine, enable a protein to function properly, significantly improving the quality and length of life for people with this disease.

- **Parkinson's Disease Discoveries:** Thomas Gasser, Ellen Sidransky, and Andrew Singleton discovered the most common genetic causes of Parkinson's Disease.
 - These discoveries offer clues to the mechanisms that cause the disease, pointing to the role of the lysosome in neuronal damage.

➤ **Fundamental Physics:**

- Winners John Cardy and Alexander Zamolodchikov have contributed a **lifetime of deep insights into quantum field theories**,

➤ **Mathematics:**

- Awardee Simon Brendle has contributed a **series of remarkable leaps in differential geometry**, a field that uses the tools of calculus to study curves, surfaces and spaces.

What are the Breakthrough Prizes?

➤ **Establishment:**

- Founded in **2012** by prominent **Silicon Valley figures including Yuri Milner**, Mark Zuckerberg, Priscilla Chan (from Facebook), and Sergey Brin (from Google).

➤ **Recognition of Scientific Excellence:**

- The prizes aim to honor **outstanding individuals who have made transformative contributions** in fundamental sciences, specifically in fields like life sciences, mathematics, and fundamental physics.

➤ **Categories:**

- The Breakthrough Prizes are awarded in distinct categories, including **life sciences (biology, genetics, medicine)**, **fundamental physics**, and **mathematics**.

➤ **Financial Reward:**

- Recipients of the Breakthrough Prizes are awarded a substantial monetary prize. Each recipient receives USD 3 million, surpassing the monetary value associated with Nobel Prizes, which offer USD 1 million per category.

➤ **Oscars of Science:**

- Often dubbed as the **"Oscars of Science,"** these awards hold significant prestige within the scientific community, shining a spotlight on groundbreaking discoveries and advancements.

➤ **Recognition Events:**

- The awards are presented annually, acknowledging top scientists globally. The inaugural ceremony in 2012 was hosted by actor Morgan Freeman.

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➤ **Support for Early-Career Researchers:**

- Additionally, there are other prizes associated with the Breakthrough Prizes, such as the New Horizons in Physics and Mathematics and the Maryam Mirzakhani New Frontiers Prize, dedicated to recognizing the work of promising early-career researchers.

What are Rare Diseases?

➤ **About:**

- A rare disease is a **health condition of low prevalence that affects a small number of people** compared with other prevalent diseases in the general population.
- There is **no universally accepted definition of rare diseases** and the definitions usually vary across different countries.

➤ **Prevalence:**

- There are about **7,000 known rare diseases**, affecting around 8% of the world's population" and "75% of rare disease patients are children."
- **India has close to 50-100 million people affected by rare diseases or disorders.**

➤ **Examples:**

- **Lysosomal Storage Disorders (LSD)**
- **Cystic fibrosis**
- **Haemophilia**
- **Parkinson's Disease**

Sensor for Formalin Detection in Fish

Why in News?

A team of researchers from Guwahati University, Assam, has developed a new sensor made of a **metal oxide-reduced graphene oxide(metal oxide- rGO) composite** that can detect **formalin adulteration in fishes** at room temperature in a non-invasive way.

Note:

- **Food adulteration** is the practice of **adding illegal or harmful substances to food** to make it appear **more appealing or to increase its shelf life.**
- Formaldehyde is a **colourless, pungent gas** that is used in a variety of industrial processes, including as a **preservative in some foods**, commonly in fish in developing countries.
 - However, the use of formaldehyde in food is illegal in many countries, as it is a known carcinogen.

What are the Key Facts of the Metal oxide- rGO Sensor?

➤ **About:**

- The sensor used Graphene(material that is extracted from graphite) oxide (GO) and tin oxide-reduced graphene oxide composite (rGO-SnO2) to detect formalin in adulterated fishes.
- The sensor is **low-cost, non-invasive, and selective**, and can be used to prevent food adulteration and protect consumers.

➤ **Need:**

- Traditional formalin sensors for fish are **either expensive electrochemical-based** or less costly but **invasive colorimetric-based** methods.
 - Both face issues of low-level and selective detection.

➤ **Working Procedure:**

- GO, the oxidized form of graphene, initially poses a challenge due to low **electrical conductivity.**
 - To overcome GO's limitations, scientists developed a composite called **tin oxide-reduced graphene oxide (rGO-SnO2)** with enhanced properties.
- The reduced graphene oxide provides **high solution processability** and ease of chemical modification with other materials, while the tin oxide offers **high stability and sensitivity** to low concentrations of formaldehyde.
- The sensor, crafted from tin oxide (SnO2) decorated Reduced graphene oxide (rGO), demonstrates effective **sensing of formaldehyde vapour at room temperature.**
 - rGO is known for **detecting toxic gasses**, while SnO2 **excels in formaldehyde detection.** The combination maximizes their strengths.
- The **designing of the prototype is in process in the lab** which may be **regarded as a breakthrough** in the field of food adulteration.

PwC's 2023 Global Risk Survey

Why in News?

According to the **Global Risk Survey 2023** by PwC, a global consultancy firm, **Cyber risks** are the biggest threat faced by Indian organizations.

Note:



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What are the Key Highlights of the Global Risk Survey 2023?

➤ Cyber Risks:

- Cyber risks are cited as the **biggest threat** faced by Indian organizations, with **38% of respondents** feeling highly or extremely exposed to it.
 - **Climate change** (37%) and **inflation** (36%) rank second and third among the top threats to Indian organizations.
 - **Digital and technology risks** rank fourth, with 35% of Indian business leaders concerned about these risks.

➤ Risk Management:

- Indian organizations are proactively investing in **cybersecurity**, with over half planning investments in cybersecurity tools (55%) and AI-related technologies (55%) in the next 1–3 years, aligning with global trends (51% and 49%, respectively).
- To reinforce these investments, **71% of Indian organizations are actively leveraging cybersecurity and IT data for risk management** and opportunity identification, surpassing the global average of 61%.
- The survey also revealed how organizations are using emerging technologies such as **Generative Artificial Intelligence** for risk management, with **48% of Indian enterprises** having deployed AI and machine learning for automated risk assessment and response to a large extent. This is slightly lower than the global response of 50%.
 - This strategic approach signifies a commitment to fortify cybersecurity defences and embrace evolving technologies for resilience.

➤ Legacy Technologies:

- 42% of Indian organizations grapple with heightened **security vulnerabilities attributed to legacy technologies** (Outdated technology systems and infrastructure), surpassing the global average of 36%.
- Moreover, 46% of Indian companies face increased maintenance costs due to legacy tech, limiting budgets for innovative risk solutions, exceeding the global figure of 39%.

➤ Resilience Investments:

- **88% of Indian organizations have actively invested** in resilience building over the past year, surpassing the global average of 77%.

- Resilience Investments include a resilience team, comprising members from functions such as business continuity, cyber, crisis management and risk management to swiftly respond to risk events as they occur.

Why are Cyber Risks a Primary Threat to Indian Organizations?

- Cyber risks, encompassing **malware, trojans, and spyware**, have prominently emerged as the foremost threat for Indian organizations, notably highlighted by a substantial increase in **ransomware attacks**.
 - Despite containment, such risks significantly **impact market perception**, influencing **stock prices and eroding trust**.
- Companies paying the ransom witnessed a **doubling of the cost of data recovery** compared to those relying on backups, emphasizing the financial toll of succumbing to ransomware demands.
- IT organizations store a **diverse range of critical data, encompassing personally identifiable information, intellectual property, access credentials, and financial data**.
 - This multi-dimensional data provides threat actors with leverage to execute and perpetuate a range of **malicious activities**.
 - Leaked data, especially intellectual property, can lead to **devaluation and replication of software**, posing a severe threat to revenue streams.
- The data's intrinsic value and potential impact on the organization's stakeholders increase the likelihood of successful ransom collection.

Laws Addressing Cyber Risks for Indian Organizations:

➤ **The Information Technology (IT) Act, of 2000:**

- It is the primary legislation dealing with cybersecurity, data protection and cybercrime. Identifying activities such as hacking, denial-of-service attacks, phishing, malware attacks, identity fraud and electronic theft as punishable offences.

➤ **Digital Personal Data Protection (DPDP) Act, 2023:**

- The **DPDP Act, 2023** is legislation acknowledging **individuals' right to protect their digital personal data** while emphasizing the lawful processing of such data for legitimate purposes.

Note:

- It imposes accountability and responsibilities on data processors. The DPDP Act, 2023 addresses concerns about the use of personal data by employees and customers, fostering a higher standard of data privacy.

➤ **National Cyber Security Policy 2013:**

- It is designed to safeguard information and infrastructure in cyberspace by building capabilities for threat prevention and response, reducing vulnerabilities, and strengthening national security digitally.
- It focuses on ensuring a secure **computing environment, fostering trust in electronic transactions**, and guiding stakeholders' actions for **cyberspace protection**.

➤ **National Cyber Security Strategy 2020:**

- Aims to improve cyber awareness and cybersecurity through more stringent audits. Empanelled cyber auditors will look more carefully at the security features of organizations than are legally necessary now.

Dark Energy

Why In News?

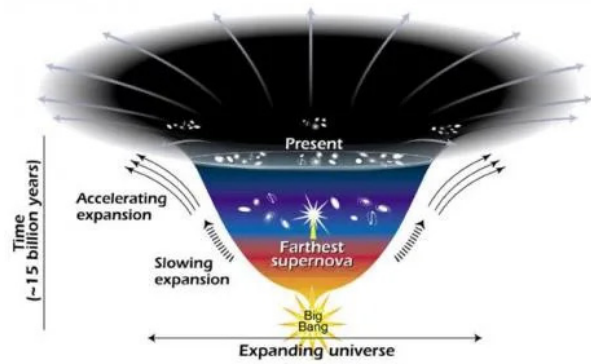
The universe's energy makeup involves a **delicate balance** between different forms of matter and radiation.

- **Dark energy**, constituting a significant **68%**, plays a dominant role in dictating the **universe's expansion**.

What is Dark Energy in the Universe?

➤ **About:**

- **Dark energy** is a mysterious and elusive form of energy that makes up a significant portion of the **total energy content of the universe**.
- It is thought to be responsible for the **observed accelerated expansion** of the cosmos.
- Roughly **68%** of the universe is **dark energy** and **dark matter** makes up about **27%**.
 - The rest of everything on Earth, everything ever observed with all of our instruments, all normal matter adds up to less than **5%** of the universe.



➤ **Key points to understand about dark energy:**

○ **Invisible Force Steering Expansion:**

- Dark energy is an unseen influence responsible for the **accelerated expansion of the universe**. Unlike gravity, which tends to pull objects together, dark energy acts as a repulsive force, pushing galaxies away from each other.

○ **Characteristics of Space:**

- Contrary to the notion of space being a **void**, **dark energy** introduces a new perspective. Space is not just an empty expanse; it's a **dynamic, stretchable medium** that responds to the **presence of energy**.

○ **Expansion Dictated by Energy Forms:**

- The universe's expansion is not **uniform**, and different forms of energy contribute to this process uniquely. Each type of energy, be it **matter, radiation, or dark energy**, influences how a specific region of space expands or contracts.

○ **Balancing Act:**

- Dark energy dominates the universe's energy budget, and its presence dictates the overall rate at which space expands. Striking a delicate balance with other forms of energy is crucial for the stability of the cosmos.

○ **Implications:**

- The amount of **dark energy** has significant implications for the observable universe.
 - Adding too much **positive energy** could result in galaxies moving away from us faster than light, making only nearby regions visible.
 - Conversely, excessive negative energy might lead to the universe collapsing to a tiny point.

Note:

○ Diluteness of Dark Energy:

- Despite its dominance, dark energy is **incredibly dilute** across the vastness of the universe. In a cubic kilometer, it's as sparse as a single sugar crystal. This diluteness raises questions about the nature and distribution of this enigmatic force.

What are the Possible Explanations of Dark Energy?

➤ Property of Space:

- Albert Einstein was the first person to realize that empty space is not nothing.
- One version of Einstein's gravity theory, the version that contains a cosmological constant, implies that "empty space" can possess its own energy.
- Because this energy is a property of space itself, it would not be diluted as space expands. As more space comes into existence, more of this energy-of-space would appear. As a result, this form of energy would cause the universe to expand faster and faster.

➤ Quantum Theory of Matter:

- Another explanation for how space acquires energy comes from the quantum theory of matter.
- In this theory, "empty space" is actually full of temporary ("virtual") particles that continually form and then disappear.

➤ Fifth Fundamental Force:

- There are four fundamental forces in the universe, and **speculative theories have proposed a fifth force, something that can't be explained by the four forces.**
- To hide or screen this fifth force, many models for dark energy use special mechanisms.
- Some theorists have named this "quintessence," after the fifth element of the Greek philosophers.

- **However, none of the theories have been proved.** Due to this, Dark energy has been noted as "the most profound mystery in all of science".

Pantoea Tagorei

Why in News?

Researchers at **Visva-Bharati University** have discovered a **new species of bacteria** that could transform

agricultural practices. They named it ***Pantoea Tagorei*** after the famous Nobel laureate **Rabindranath Tagore**.

What are the Key Facts About Pantoea Tagorei?

- Pantoea Tagorei bacteria belong to the **genus Pantoea**, which is part of the **Enterobacteriaceae family**.
 - Pantoea bacteria can be isolated from various environments including Water, Soil, Humans, Animals, and Plants.
- It is described as a **plant growth-promoting bacteria**, Pantoea Tagorei has demonstrated remarkable capabilities in **boosting the cultivation of crops** like paddy, pea, and chilli.
- The bacteria efficiently extracts potassium from the soil, enhancing plant growth. Additionally, it facilitates the **solubilization of both potassium and phosphorus, nitrogen fixation**, and enhances overall nutrient availability for plants.
- The bacteria efficiently extracts potassium from the soil, **enhancing plant growth**.
- Positive effects on plant growth suggest a potential boost in crop yield. It can aid in addressing critical issues related to **food security**.
- Pantoea Tagorei enhances soil nutrient availability, **reducing the need for commercial fertilizers**.
 - Minimizing reliance on fertilizers, the bacteria offers a **cost-effective approach to sustainable agriculture** and it can be a potential Biofertilizer.

Biofertilizer

- Biofertilizer can be defined as **biological products containing living microorganisms** that, when applied to seed, plant surfaces, or soil, **promote growth by several mechanisms** such as increasing the supply of nutrients, increasing root biomass or root area and increasing nutrient uptake capacity of the plant
 - They are made up of living organisms like **bacteria, blue-green algae, and mycorrhizal fungi**.
- **Example:**
 - **Bacterial Biofertilizers:** e.g. Rhizobium, Azospirillum, Azotobacter, Phosphobacteria.
 - **Fungal Biofertilizers:** e.g. Mycorrhiza.
 - **Algal Biofertilizers:** e.g. Blue Green Algae (BGA) and Azolla.

Note:



"You can't cross the sea merely by standing and staring at the sea."

Rabindranath Tagore (1861-1941)

- First Indian and first non-European to achieve the **Nobel Prize in Literature** in 1913 for his exceptional work, *Gitanjali*. Responsible for modernising **Bengali prose and poetry**.
- Gave the **national anthems of India and Bangladesh**: the *Jana Gana Mana* and the *Amar Shonar Bangla*.
- "*Jana Gana Mana*" was **translated by him from Bengali to English** in **February 1919** at Madanapalle in the District of Chittoor (Andhra Pradesh).
- In 1915, he was **awarded the knighthood** by British King George V which he later **renounced in 1919**, to protest against the Jallianwalla Bagh massacre.
- He is said to have given Mahatma Gandhi the title of Mahatma.
- Established the **Vishwa-Bharati University** in 1921.
- Spoke at the **World Parliament for Religions** in the years 1929 and 1937.



Magnetars and Related AstroSat's Discovery

Why in News?

AstroSat, India's first **multi-wavelength space-based observatory**, has detected bright sub-second **X-ray bursts** from a new and unique **neutron star** with an ultrahigh magnetic field (magnetar).

- Scientists performed the timing and spectral analysis of this magnetar using two instruments onboard AstroSat: the **Large Area X-Ray Proportional Counter (LAXPC)** and **Soft X-Ray telescope (SXT)**.

What are Magnetars?

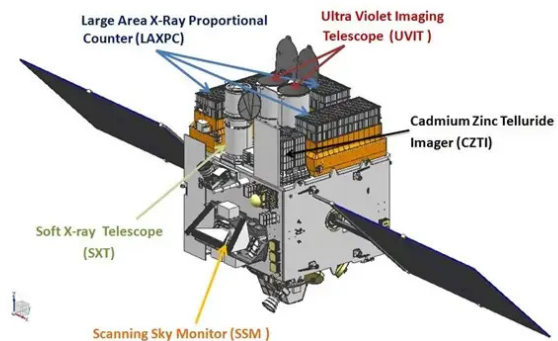
- **Magnetars** are neutron stars having an ultrahigh magnetic field that are much **stronger than the terrestrial magnetic field** (over one quadrillion times stronger than the magnetic field of Earth).
 - High-energy electromagnetic radiation emitted by magnetars results from the decay of their powerful magnetic fields.
- They display strong **temporal variability**, typically including a slow rotation, a **rapid spin-down**, **bright but short bursts** going on up to months-long outbursts.
- One such magnetar, called **SGR J1830-0645**, was discovered in **October 2020** by **NASA's Swift spacecraft**.
 - It is relatively young (about 24,000 years) and an isolated neutron star.

Note: A neutron star is a **dense and compact stellar object** that forms from the remnants of a massive star's core after a **supernova explosion**. These stars are among the densest objects known in the universe, packing an **immense mass into a relatively small size**.

- The **discovery of pulsars** in **1967** provided the first evidence of the existence of neutron stars. Pulsars are neutron stars that emit pulses of radiation once per rotation

What is AstroSat?

- **About: AstroSat** is the first dedicated **Indian astronomy mission** aimed at studying celestial sources in **X-ray, optical and UV spectral bands** simultaneously.
 - It was launched in **September, 2015** onboard **PSLV-C30** from **Satish Dhawan Space Centre, Sriharikota**.
 - Mission operations center at **ISTRAC Bengaluru** manages the task of operating AstroSat.
- **Payload:**



Note:

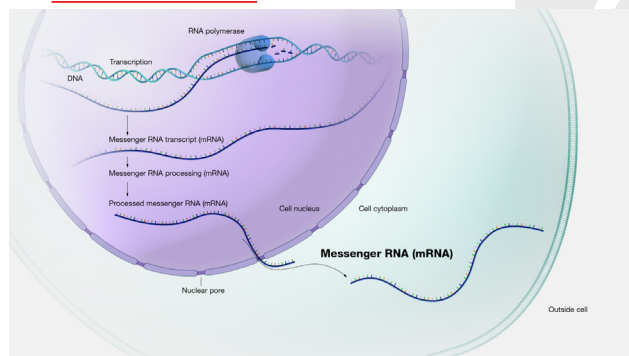
- **Major Scientific Observations of AstroSat:**
 - Spotted **stars forming in gas streams**, offering insights into how galaxy clusters behave.
 - It found over **75,000 young stars in the Andromeda Galaxy's bulge**, a first discovery.
 - **Black holes in a binary system** were seen spinning almost as fast as possible by LAXPC and SXT payloads.

mRNA-Based Medicines

Why in News?

The cells in our body **create mRNAs that serve as instructions** to make specific proteins we need to function. Researchers can create new mRNAs to correct those instructions when they aren't working.

- While most scientists **studying mRNAs are not creating new drugs**, this fundamental understanding of how mRNA works **laid the foundation for other scientists to create effective mRNA medicines** like **Covid-19 vaccines**.



What does mRNA do?

- **mRNA (Messenger RNA)** carries important messages from our **DNA (Deoxyribonucleic acid)**, to the cell's machinery, telling it how to make specific proteins.
 - Imagine DNA as a library of **cookbooks filled with recipes (genes) to create different proteins**.
- Our bodies need around **100,000 proteins to work properly**, helping with tasks like breaking down food and performing vital chemical reactions.
- When a cell needs a specific protein, it doesn't directly read the recipe from DNA. Instead, **it makes a copy called mRNA**.
- This mRNA serves as a messenger, carrying the protein-making instructions. It's made up of **four building blocks (A, U, C, G)**, forming words of only three letters.

- By reading this mRNA recipe, **cells easily know how to create the required protein**.
- Cells are quite good at recognizing, using, and then getting rid of mRNA once it's done its job.
- However, changes or mistakes in the DNA's recipe book (mutations) can mess **up the mRNA instructions, leading to errors in making essential proteins**, which can cause diseases.

What is the Significance of mRNAs in Making Medicine?

- **Precision and Customization:**
 - Scientists comprehend how mRNAs instruct cells to create proteins. This knowledge allows them to **easily craft codes for various proteins**, modifying these codes to suit individual patient needs.
 - Whether it's designing entirely new mRNA codes or adjusting existing ones, the **flexibility allows for tailored treatments**.
- **Scalability and Uniformity:**
 - Manufacturing mRNA treatments is scalable and consistent. The process to create one mRNA **is uniform across different mRNA types**.
 - Unlike traditional drugs, each having unique **chemistry and manufacturing methods**, mRNA production follows a standardized process. This uniformity streamlines production, akin to knowing a basic recipe and being able to create countless variations.
- **Easy Adaptability:**
 - Cells naturally eliminate mRNA **once its task is complete**. This characteristic ensures that mRNA treatments **are not permanent**.
 - Adjusting doses to accommodate changing patient requirements becomes effortless due to this innate ability of cells to degrade unnecessary mRNA.
- **Production Capacity:**
 - Scientists can generate substantial quantities of mRNA in laboratory settings. This ability to produce large amounts facilitates the development and distribution of mRNA-based medicines on a broader scale.
- **Expanded Vaccine Development:**
 - Clinical trials for mRNA-based vaccines extend to diseases like seasonal flu, herpes, respiratory syncytial virus, norovirus, Lyme disease, **Zika**, and shingles, promising a wider array of preventive treatments.

Note:

- mRNA therapies show **promise in cancer treatment by leveraging the body's immune response**. Cancer vaccines, tailored to target specific mutations in tumors, enhance antibody production to mark and attack cancer cells. This personalized approach seeks to minimize harm to healthy cells.

What is the Future of mRNA Based Medicines?

- The future of mRNA-based medicine appears promising, offering highly personalized, effective therapies with fewer side effects.
- This revolutionary approach holds the potential to address diverse diseases by precisely altering cellular processes and correcting protein deficiencies.
- The **ease of customization and production** positions mRNA as a versatile tool in modern medicine, poised to redefine treatment strategies and improve patient outcomes across various medical conditions.

Kakrapar Atomic Power Project

Why in News?

Recently, the fourth unit of **Kakrapar Atomic Power Station (KAPS)**, Gujarat has achieved its **first Criticality** — the beginning of the regulated fission reaction — paving the way for its eventual transition to generating power for commercial use.

What is Criticality?

- Criticality is the **first step towards power production**. A nuclear reactor is said to be critical when the nuclear fuel inside a reactor sustains a fission chain reaction.
- Each fission reaction releases a sufficient number of neutrons to **sustain a series of reactions**. Heat is produced in the event, which is used to generate steam that spins a turbine to create electricity.
 - **Fission is a process** in which the nucleus of an atom splits into two or more smaller nuclei, and some byproducts.
 - When the nucleus splits, the **kinetic energy of the fission fragments (primary nuclei) is transferred** to other atoms in the fuel as heat energy, which is eventually used to produce steam to drive the turbines.

What is the Significance of Achieving First Criticality?

- **Milestone for Power Generation:**
 - This stage demonstrates that the **reactor can produce a controlled and continuous chain reaction**, essential for sustained power generation. It's a precursor to full operation and power generation for commercial use.
- **Technology Advancements:**
 - The Kakrapar reactors, particularly Units 3 and 4, boast advanced safety features inspired by lessons from past nuclear incidents like the **Fukushima Daiichi disaster**.
 - These include steel-lined containment systems and passive decay heat removal systems, enhancing safety and reliability.
- **Energy Sustainability and Climate Goals:**
 - Nuclear energy, as a **low-carbon source**, aligns with **India's climate goals** to increase its renewable energy share.
 - India aims to generate **50% of its electricity from non-fossil fuel sources** by 2030, as pledged at international forums like the **United Nations Convention of Parties (COP26)**.

What are the Key Points about the Kakrapar Reactor?

- Existing KAPS reactors Unit-1 and Unit-2 have a capacity of 220 MW each. But the new 700MW projects, Unit-3 and Unit-4, are **among the safest reactors** in the world.
- The **Unit-3 and 4 reactors have steel-lined inner containment systems** that prevent any radioactive material from escaping in case of an accident.
- They also have passive decay heat removal systems, which **safely cool down the reactor even when it is shut down**.

How has India's Nuclear Journey Been?

- **Early Development:**
 - India's nuclear program started in the 1940s and gained momentum with the establishment of the **Atomic Energy Commission (AEC) in 1948**.
 - Homi Bhabha, known as the **father of India's nuclear program**, played a pivotal role in its early stages.

Note:

- **Peaceful Nuclear Explosions:**
 - India conducted its **first peaceful nuclear explosion as operation Smiling Buddha** 1974, in Pokhran, marking its entry into nuclear technology.
 - In May 1998 Pokhran-II was conducted as a series of five nuclear tests including one thermonuclear test aimed **at demonstrating nuclear weapon capability**
- **Civil Nuclear Cooperation:**
 - Despite being outside the **Nuclear Non-Proliferation Treaty (NPT)**, India negotiated civil nuclear agreements with various countries, including the **Indo-US Civil Nuclear Agreement in 2008**, allowing for technology cooperation and nuclear fuel supply.
- **Indigenous Nuclear Capabilities:**
 - India developed indigenous nuclear technology, including **Pressurised Heavy Water Reactors (PHWRs)** and **Fast Breeder Reactors (FBRs)**, showcasing self-reliance and scientific prowess.
 - India's nuclear power generation capacity grew steadily, with the Nuclear Power Corporation of India Limited (NPCIL) leading the construction and operation of nuclear reactors across the country.
- **Safety and Regulations:**
 - India focused on stringent safety standards and regulatory measures overseen **by the Atomic Energy Regulatory Board (AERB)** to ensure the safe operation of nuclear facilities.
 - Nuclear energy played a role in diversifying India's energy mix, contributing to energy security and reducing dependence on fossil fuels.
- **Current Status and Future Plans:**
 - Currently, India has **23 nuclear power reactors** in operation under NPCIL (Nuclear Power Corporation of India), with a total capacity of **7,480 MW**.
 - NPCIL is constructing nine more reactors, including KAPS Unit-4, with a total capacity of 7,500 MW.
 - As of 2023, India has a **total generation capacity of 417 GW**, out of which **43 percent is from renewable sources**. However, nuclear energy still has a small role in India's total energy generation, despite its rapid growth.

- In 2022-23, nuclear energy formed around 2.8 percent of India's total energy production, according to government data.
- India has set ambitious targets to significantly increase its nuclear energy production, **aiming to triple its capacity by 2031**.
- However, challenges such as **public concerns over safety, land acquisition, and regulatory hurdles** remain.

Artificial Intelligence and Machine Learning in Space Sector

Why in News?

Recently, the Government of India highlighted the substantial strides made by the **Indian Space Research Organisation (ISRO)** in **integrating Artificial Intelligence (AI) and Machine Learning (ML)** within the realm of space exploration.

- This transformation has been a **strategic response to the rapid technological advancements** in these domains over the past few years.
- ISRO's ongoing projects, including the **Gaganyaan Program** have integrated AI solutions.

How AI and ML Assist in Diverse Space Applications?

- **Space Exploration and Robotics:** AI-driven robots and rovers can **navigate**, make decisions, and explore distant planets or asteroids without constant human intervention.
 - ML helps in **identifying celestial objects, terrain, and hazards** in images captured by space probes or satellites.
- **Satellite Operations:** ML algorithms **analyze satellite images to monitor changes in Earth's surface**, weather patterns, and environmental changes.
 - AI helps anticipate satellite component failures by **analyzing telemetry data**, enhancing maintenance scheduling and reducing downtime.
- **Spacecraft Systems:** AI systems **monitor the health of spacecraft components**, predicting potential failures and allowing proactive maintenance.
 - **ML algorithms optimize power, fuel, and other resources** for spacecraft operations during missions.

Note:

- **Data Analysis and Pattern Recognition:** AI analyzes vast amounts of astronomical data to discover new celestial bodies, understand cosmic phenomena and identify space debris in space.
 - ML helps in processing signals from deep space, **distinguishing between noise and potential communication or scientific data.**
- **Mission Planning and Decision Making:** AI models assess mission risks, **aiding in decision-making processes** by considering various factors and scenarios.
 - ML enables spacecraft to adapt to changing environments or unexpected situations in real-time.
- **Optical Communications Optimization:** AI and ML models refine optical communication systems, adapting to changing space conditions and maximizing data transmission rates, crucial for interplanetary missions.
- **Quantum Computing for Space Challenges:** AI has the potential to harness **quantum computing's potential to tackle complex calculations and cryptography**, enhancing security and computational capabilities for space missions requiring high-level encryption or intricate simulations.

What AI and ML Projects are Underway in India's Space Sector?

- **AI and ML Projects:**
 - There are various projects and programmes in the domains of AI and ML being undertaken by the **Department of Space** are at different stages of feasibility studies and implementation. Major ones include:
 - **Launch vehicle and spacecrafts mission** trajectory design and autonomous operations;
 - **Launch vehicle and satellites health monitoring** and prediction from the telemetry data;
 - **Satellite Data Processing** for Resource mapping, weather prediction, disaster prediction, **geo-intelligence (object and change detection)**, Precision agriculture, Agroforestry etc.
 - **Humanoid robots and chatbots**
 - **Space Robotics** and smart manufacturing in space.

ISRO's Future Endeavors:

- **Chandrayaan-4 Mission:** Planned by ISRO to bring back samples from the Moon within four years.
- **Bharatiya Antariksh Station (India's Space Station):** The first module, capable of conducting experiments with robots, will launch by 2028.
- **SPADEX Experiment:** Demonstrates autonomous docking capability between two spacecraft.
 - Involves launching connected satellites that separate, travel a distance, and then reconnect.
- **NISAR: NASA-ISRO SAR (NISAR) is a Low Earth Orbit (LEO) observatory** being jointly developed by NASA and ISRO.
- **Gaganyaan:** Gaganyaan mission aims to **send humans to space and return them safely to Earth**. The mission will consist of two unmanned flights and one manned flight, using the GSLV Mk III launch vehicle and a human-rated orbital module.

Note: During the past 9 months of the **financial year 2023-24**, the government stated that startups in the space sector within the country have garnered **private investments exceeding 1,000 crore rupees**.

What are Major Challenges Related to AI and ML in the Space Sector?

- **Computational Limitations:** Spacecraft have **limited computational power and memory, making it challenging to run complex AI algorithms**. ML models need to be optimized to run efficiently in these resource-constrained environments.
- **Robustness and Reliability:** Space environments are **harsh, with high levels of radiation and extreme temperatures**, which can affect the hardware and software components of AI systems. Ensuring the reliability and robustness of AI algorithms in such conditions is crucial.
- **Training Data Limitations:** Gathering training data for AI models specific to space missions can be challenging due to the **limited number of past missions or situations to learn from**.
- **Ethical and Legal Considerations:** As AI becomes more prevalent in space missions, ethical and legal concerns arise, such as the **responsibility for AI decisions, data privacy, and potential conflicts between AI-driven decisions and human judgment**.

Note:

Ketamine Drug

Why in News?

In recent times, drug **Ketamine** has surged into the spotlight, triggering debates and discussions surrounding its application, effects, and safety concerns.

What are the Key Facts about Ketamine?

➤ About:

- Ketamine is a dissociative anaesthetic. Doctors use it to **induce general anesthesia** that does not require muscle relaxation.
 - General anesthesia denotes a **sleep-like state**, while dissociative refers to the state of **detachment from the body and the outside world**.
- Developed as an **animal anesthetic in the 1960s**, later approved by the United States Food and Drug Administration (FDA) for **human use**.
- Recently used to **treat depression and mental illnesses**, also used recreationally.
 - Recreational use **involves snorting, injecting, or smoking**.
- Administered through intravenous (IV), nasal spray, or tablet for mental illness treatment.

Effects of Ketamine:

- Ketamine works by blocking the **N-methyl-D-aspartate (NMDA) receptor** in the brain.
 - This receptor is involved in the **transmission of pain signals and in the regulation of mood**. By blocking the NMDA receptor, ketamine can produce analgesia (pain relief) and euphoria.
- It can create pleasant visualizations and a sense of detachment
- Ketamine can produce **hallucinations** similarly to other drugs such as Lysergic acid diethylamide (LSD) and angel dust.
 - Hallucinations are distorted perceptions of sounds and sights.

➤ Safety of Ketamine Consumption:

- Ketamine, **deemed safe for medicinal use** by some doctors, faces reported risks **like addiction and cognitive impairment** in high doses. Limited research hampers understanding of prolonged safety of the drug.

Global Partnership on Artificial Intelligence (GPAI) Summit

The Prime Minister of India inaugurated the **Global Partnership on Artificial Intelligence (GPAI) Summit**.

- **India is the lead chair of GPAI in 2024.** The GPAI is an alliance of 28 countries; the European Union adopted the 'New Delhi Declaration' of the GPAI.

What are the Key Highlights of the GPAI Summit?

- The Prime Minister of India discussed the national AI portal, highlighting the **AIRAWAT** initiative and raising concerns over the potential misuse of **deep fake technology**.
- **YUVAi** was prominently featured at the **GPAI Summit**, and the winners of the **YUVAi** initiative and start-ups showcased their **AI models and solutions**.

The Prime Minister suggested using AI to make digital services available in **local languages** to increase **digital inclusion**.

- **Responsible AI, data governance, future of work, and innovation and commercialization** are the four different themes of four sessions organized in the **GPAI**.
- The summit also included various side events showcasing AI progress and engaging in discussions, such as **industry panel discussions, workshops, research symposiums, hackathons, and the Global AI Expo**.

What is the Delhi Declaration of the GPAI?

- It acknowledges the need to harness new opportunities and mitigate the risks arising from the **development, deployment, and use of Artificial Intelligence (AI)**.
- Affirms the commitment to uphold **human dignity, human rights, and democratic values**.
- Emphasizes the importance of fostering **trust, transparency, accountability, and inclusiveness in AI**.
- Recognizes the potential of AI to contribute to the **United Nations Sustainable Development Goals** and address global challenges.
- Encourages **international cooperation and coordination** on AI research, innovation, and policy.
- Supports the development of a **comprehensive framework** that encompasses shared principles for safe and trusted AI.

Note:

- Endorses India's proposal to establish and maintain a **Global Digital Public Infrastructure Repository (GDPIR)** to share digital public goods.
 - **GDPIR** was established under the **Ministry of Electronics and Information Technology (MeitY)**, to serve as an extensive repository, consolidating crucial insights and knowledge from both **G20 members** and **guest nations**.
- Calls for further dialogue on **AI governance** and **ethics** among stakeholders.

What is Artificial Intelligence (AI)?

- AI is the ability of a computer, or a robot controlled by a computer to do tasks that are usually done by humans because they require **human intelligence** and **judgement**.
 - Although no AI can perform the wide variety of tasks an ordinary human can do, **some AI can match humans in specific tasks**.
- The ideal characteristic of AI is its ability to rationalize and take actions that have the best chance of achieving a specific goal. A subset of AI is **Machine Learning (ML)**.
 - **Deep Learning (DL)** techniques enable this automatic learning through the absorption of huge amounts of unstructured data such as text, images, or video.

What is AIRAWAT?

- **NITI Aayog** circulated the cabinet note to establish a **cloud computing platform** called **AIRAWAT (Artificial Intelligence Research, Analytics and Knowledge Assimilation Platform in 2019)**.
- The move to create a **cloud computing platform** is part of the government's goal of making India a pioneer amongst emerging economies with regard to **AI** and transforming sectors like **education, health, agriculture, urbanization** and **mobility**.

What is DeepFake?

- **Deepfakes** are synthetic media that use **AI** to manipulate or generate **visual** and **audio** content,

usually with the intention of deceiving or misleading someone.

- Deepfakes are created using a technique called **generative adversarial networks (GANs)**, which involve two competing neural networks: a **generator** and a **discriminator**.
 - The generator tries to create **fake images** or **videos** that look realistic, while the discriminator tries to distinguish between the real and the fake ones.
 - The generator learns from the feedback of the discriminator and improves its output until it can fool the discriminator.
 - Deepfakes require a large amount of data, such as photos or videos, of the source and the target person, which are often collected from the internet or social media without their consent or knowledge.
- Deepfakes are a part of Deep Synthesis, which uses technologies, including deep learning and augmented reality, to generate text, images, audio and video to create virtual scenes.

What is the YUVA Ai initiative?

- **About:**
 - **The National e-Governance Division (NeGD)** partnered with **Intel India** to launch '**YUVAi- Youth for Unnati and Vikas**' with **AI** program.
- **Aims:**
 - To foster a deeper understanding of **AI**, equip school students from **classes 8 to 12** across the nation with relevant mindset and skill sets, and empower them to become human-centric designers and users of AI.
 - The program offers an applied learning experience for students to understand and identify how **AI technology** can be used to tackle critical problems and lead to inclusive development of the nation.
 - The program will be ongoing throughout the year to give a maximum number of students a chance to empower themselves to be future-ready.



Note:

Environment & Ecology

Highlights

- Tiger Deaths in India
- Field Pansy's Evolution
- Increase Tiger Numbers in Valmiki Tiger Reserve
- Illegal Sand Mining
- Namdapha Flying Squirrel
- India's Maiden Winter Arctic Research
- Greenwashing
- Climate Change Performance Index 2024
- International Energy Agency's Coal 2023 Report
- The Wisent: European Bison
- Initial Yak Domestication 2,500 Years Ago
- Annual Arctic Report Card: NOAA
- IUCN Red List Update 2023

CLIMATE FINANCE

Climate finance refers to local, national or transnational financing—drawn from public/ private/alternative sources of financing—to support mitigation and adaptation actions against climate change.

PRINCIPLES OF CLIMATE FINANCE

- ☞ Polluter Pays
- ☞ Common but Differentiated Responsibility and Respective Capability (CBDR-RC)

Multilateral Climate Funds Coordinated by UNFCCC

- ☞ **Global Environment Facility (GEF):** Operating entity of financial mechanism (1994)
- ☞ **Kyoto Protocol (2001):**
 - ☞ **Adaptation Fund (AF):** Gives developing countries full ownership of adaptation projects
 - ☞ **Clean Development Mechanism (CDM):** To carry out emission-reduction projects in developing nations
- ☞ **Green Climate Fund (GCF):** estd. - 2010 (COP 16)
 - ☞ Funds under it - **Least Developed Countries Fund (LDCF)** and **Special Climate Change Fund (SCCF)**
- ☞ **Long-Term Climate Finance:**
 - ☞ **Cancun Agreements (2010):** Mobilize and provide scaled-up funds in short and long term
 - ☞ **Paris Agreement (2015):** Developed nations agreed to establish new collective goal of at least \$100 billion/year by 2025
- ☞ **Loss and Damage Fund (2023) (COP27 & COP28):** Financial assistance to nations most vulnerable and impacted by effects of climate change

Climate Investment Funds (CIFs) under World Bank

- ☞ Clean Technology Fund
- ☞ Strategic Climate Fund

INDIA'S INITIATIVES REGARDING CLIMATE FINANCE

Fund	Objective
<ul style="list-style-type: none"> ■ National Adaptation Fund for Climate Change (NAFCC) (2015) ■ National Clean Energy Fund (2010-11) ■ National Adaptation Fund (2014) ■ Intended Nationally Determined Contributions (INDCs) (2015) ■ Climate Change Finance Unit (2011) 	<ul style="list-style-type: none"> ■ For vulnerable Indian states ■ Advancing clean energy (started with initial carbon tax on industrial coal use) ■ Bridging gap between required and available funds ■ Nationally binding targets adopted under UNFCCC ■ Leads on global climate finance issues

Challenges to Climate Finance

- ☞ Gap between national needs and climate finance under NDCs
- ☞ Least Developed Countries receive much less approved funding in per-capita terms from the multilateral climate funds
- ☞ Slow rate of approvals
- ☞ Failure in securing viability-gap funding



Note:

Tiger Deaths in India

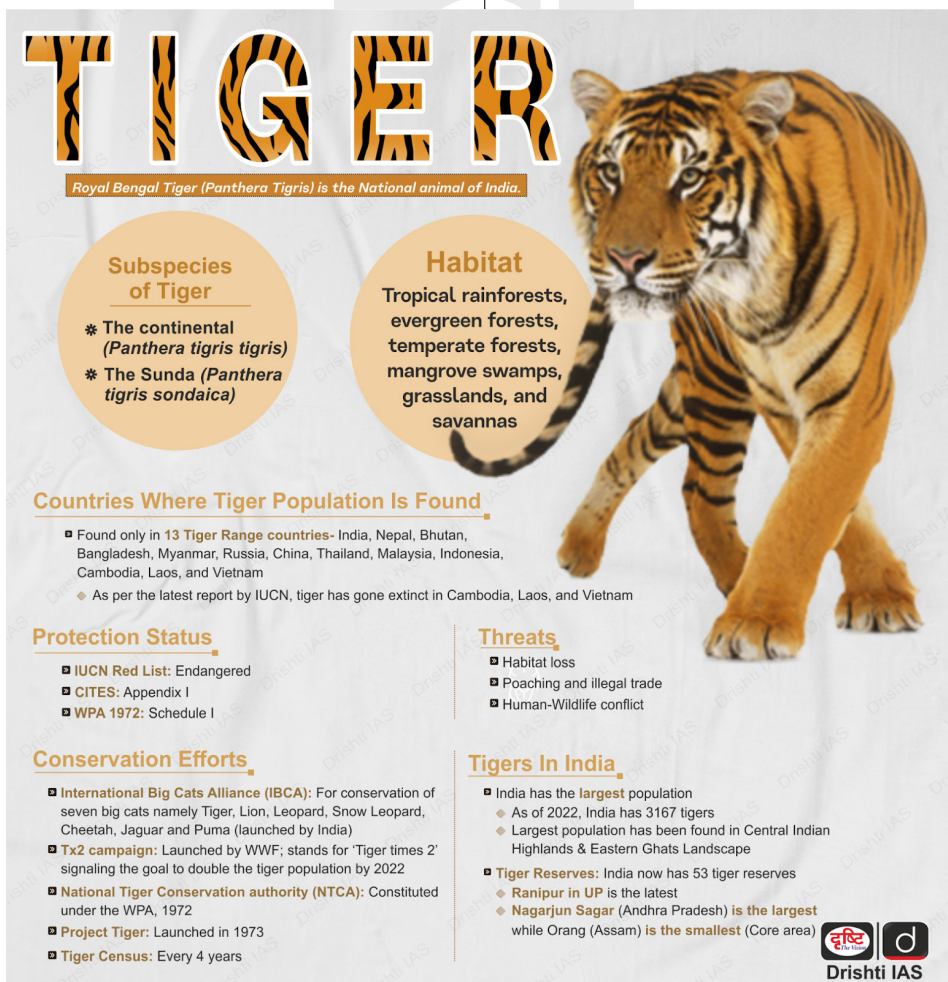
Why in News?

In 2023, India witnessed a disturbing surge in **tiger deaths**, reaching a record **204**, as reported by the **Wildlife Protection Society of India (WPSI)**, a non-profit organisation prompting concerns about conservation efforts for these majestic creatures.

What is the Status of Tiger Deaths in India?

- **Maharashtra has recorded the highest number of tiger fatalities** with 52 deaths, prompting apprehensions regarding the adequacy of conservation measures in the state.
- **India's top tiger state, Madhya Pradesh**, witnessed 45 deaths, emphasizing the need for enhanced protection. Uttarakhand recorded 26 deaths, adding to the grim statistics.

- Tamil Nadu and Kerala recorded 15 tiger deaths each, reflecting a widespread issue across regions. **Karnataka, with the second-highest tiger population**, reported 13 deaths.
- The tiger population in India reached **3,167 in 2022, up from 2,967 in 2018**. This positive trend, however, raises questions about the sustainability of these gains in the face of increasing threats.
- **Natural & other causes**, led to 79 tiger deaths, urging a focus on understanding and addressing these factors for effective conservation.
 - Poaching remains a persistent threat, claiming 55 tigers' lives, necessitating robust anti-poaching measures.
 - Infighting among tigers resulted in 46 deaths, underscoring the significance of habitat preservation.
 - Human-induced threats, such as road incidents, caused 7 tiger fatalities, demanding urgent attention to mitigate **human-wildlife conflicts**.



Note:

Way Forward

- Collaboration among **government agencies, conservationists, and communities** is crucial for effective anti-poaching efforts, utilizing technology and intelligence.
 - Establishing a robust anti-poaching network with law enforcement is imperative.
- Strategies to **mitigate human-wildlife conflict**, especially in areas with roadkill, should be developed.
- Allocate **resources for research on natural causes of tiger deaths**, enhance monitoring, and ensure transparent reporting to adapt conservation strategies to evolving challenges.

Field Pansy's Evolution

Why in News?

Recently, scientists have uncovered evidence of **rapid evolution in a flowering plant** found in Paris, France. The plant, identified as **Field Pansy (*Viola arvensis*)** is showing signs of **self-pollination**, a behaviour contradicting the conventional reliance on external pollinators.

What are the Key Facts about Field Pansy?

- The **Field Pansy (*Viola arvensis*)**, is a common wildflower that can be found in many parts of **Europe, Asia, and North America**.
- It belongs to the group of plants called **angiosperms**, which produce seeds inside a protective structure called a fruit.
 - Angiosperms rely on insects and other animals to pollinate them and help them reproduce.



Pollination

- **Pollination** is the process by which **pollen grains**, which contain the male **reproductive cells of plants**, are transferred from one flower to another, usually by insects that visit the flowers for nectar.
 - Nectar is a **sugary liquid that plants produce to attract pollinators**.
- Pollination is essential for the genetic diversity and survival of many plant species, and it has evolved over 100 million years of coevolution between plants and animals.
- Pollination is carried through pollinators (vectors that move pollen within the flower and from flower to flower).
- However, some plants can also **pollinate themselves**, without the help of any external agent. This is called **self-pollination**, and it is a way for plants to ensure their reproduction in case there are no suitable pollinators around.
 - Self-pollination can also save energy and resources for plants, as they do not need to produce as much nectar and flowers to attract pollinators.

What are the Key Highlights of the Study?

- **Rapid Evolution:**
 - The study marks the **first evidence of rapid evolution in plants**, with the field pansy, showing significant changes in nectar production and flower size over a relatively short period.
 - The study found that flowers of the wild **pansy variety produced 20% less nectar and were 10% smaller**.
- **Self-Pollination:**
 - The field pansy has evolved to self-pollinate, reducing its **reliance on pollinators** due to a decreasing availability of insects.
 - This behaviour is contrary to the conventional reliance on insects for pollination in angiosperms, marking a significant departure from **established plant reproductive strategies**.
- **Convergent Evolution:**
 - The study reveals convergent evolution across

Note:

populations, with a reduction in rewarding traits and attractiveness to pollinators.

- This convergence suggests a consistent evolutionary response to environmental pressures across different plant populations.

➤ **Resurrection Ecology Method:**

- The researchers used the “resurrection ecology” method, planting seeds from the 1990s and 2000s against their contemporary descendants from 2021 to observe changes over time.
- This method allowed them to track and compare changes in plant traits and behaviour across different periods.

➤ **Environmental Impact:**

- The move towards selfing **may benefit plants in the short term** but poses a threat to their long-term survival, especially in the **face of climate change and other environmental changes**.
- Self-pollination reduces the genetic diversity and adaptability of the plant, making it more susceptible to diseases and environmental stresses.

➤ **Pollinator Decline:**

- The study warns of a potential feedback loop that could lead to further **declines in pollinators as a result of plant trait evolution**, impacting the plant-pollinator network.

➤ **Urgent Analysis:**

- The study emphasizes the need to analyze whether these results are symptomatic of broader behavioral changes in the relationship between angiosperms and their pollinators.
- Researchers call for a thorough understanding of the possibility of reversing the process and breaking the eco-evolutionary-positive feedback loop to preserve plant-pollinator networks.

Increase Tiger Numbers in Valmiki Tiger Reserve

Why In News?

Recently, the [National Tiger Conservation Authority](#)

(NTCA) had officially announced the increase in [tiger population](#) in Valmiki Tiger Reserve (VTR).

- It witnessed the growth in the number of big cats from **31 (2018)** to **54 (2023)**.
- The Bihar government is waiting to obtain NTCA approval for declaring Kaimur Wildlife Sanctuary as the state's second [tiger reserve](#) after VTR.

Why Has the Number of Tigers in VTR Increased?

- A total ban on **sand and stone mining** inside VTR, and strict restrictions on **mining** in its **eco-sensitive zone**, helped increase **grassland cover**.
- An **increase in grassland cover** thus helps in supporting the **prey population**, in turn increasing the chances of the carnivores' survival.
- The reserve is dedicated to managing and sustaining the tiger population **by raising awareness among local residents** and monitoring mining activities in and around the area **to minimize human-wildlife conflict**.
- The NTCA placed the reserve in the 'Very Good' category.

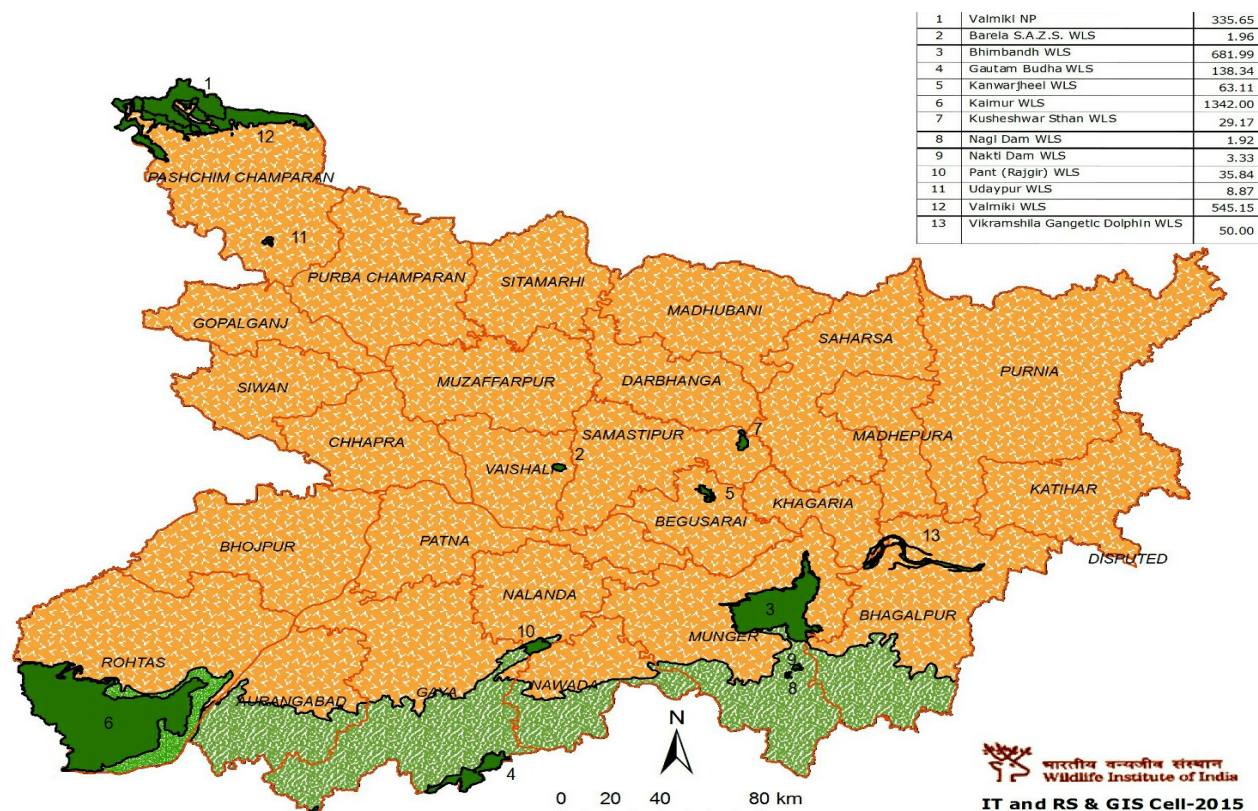
What are the Important Facts of Valmiki Tiger Reserve (VTR)?

- The VTR is the **only tiger reserve** in Bihar, which forms the easternmost extent of the **Himalayan Terai forests** in India.
 - The VTR is located in **Bihar's West Champaran district**, bordering **Nepal** to its **north** and **Uttar Pradesh** to its **west**.
- Situated in the **Gangetic plains bio-geographic region**, the vegetation of this Tiger Reserve is a combination of **Bhabar and Terai regions**.
- According to the **Forest Survey of India Report 2021**, **85.71%** of its total area is covered by forest cover.
- Wild mammals found in the forests of **Valmiki Tiger Reserve** include **tiger, sloth bear, leopard, wild dog, bison, wild boar** etc.
- **Rivers Gandak, Pandai, Manor, Harha, Masan** and **Bhapsa** flow through various parts of the reserve.

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What is the National Tiger Conservation Authority (NTCA)?

➤ About:

- NTCA is a **statutory body** under the **Ministry of Environment, Forests and Climate Change**.
- It was established in **2005** following the recommendations of the **Tiger Task Force**.

Note:

- It was constituted under enabling provisions of the **Wildlife (Protection) Act, 1972**, as amended in **2006**, for **strengthening tiger conservation**, as per powers and functions assigned to it.

➤ **Objectives:**

- Providing **statutory authority** to **Project Tiger** so that compliance of its directives becomes legal.
- Fostering **accountability** of **Center-State** in management of **Tiger Reserves**, by providing a basis for **MoU** with States within our federal structure.
- Providing for an **oversight by Parliament**.
- Addressing livelihood interests of local people in areas surrounding Tiger Reserves.

Illegal Sand Mining

Why in News?

Recently, Bihar police arrested sand smugglers in a major crackdown against **illegal sand mining**.

- This operation, near the **Sone River**, signifies a significant step in the ongoing battle against powerful criminal syndicates involved in illicit sand mining activities.

What is Sand Mining?

➤ **About:**

- Sand mining is defined as the **removal of primary natural sand and sand resources** (mineral sands and aggregates) from the natural environment (terrestrial, riverine, coastal, or marine) for extracting valuable minerals, metals, crushed stone, sand and gravel for subsequent processing.
- This activity, driven by various factors, poses serious **threats to ecosystems and communities**.

➤ **Source of Sand in India:**

- **Sustainable Sand Mining Management Guidelines (SSMMG) 2016** suggest that the source of sand in India are through
 - River (riverbed and flood plain),
 - Lakes and reservoirs,
 - Agricultural fields,
 - Coastal / marine sand,
 - Palaeo-channels,
 - Manufactured Sand (M-Sand).

➤ **Factors Contributing to Illegal Sand Mining:**

○ **Lack of Regulation and Enforcement:**

- Inadequate regulatory frameworks and weak enforcement mechanisms contribute to the proliferation of illegal sand mining.

○ **High Demand for Construction Materials:**

- The **construction industry's hefty demand for sand** fuels is illegal extraction, intensifying pressure on riverbeds and coastal areas due to the rising need for sand in construction projects.
- Rapid **population growth and urbanization** drive the need for construction, escalating the demand for sand.

○ **Corruption and Mafia Influence:**

- Corrupt practices and the influence of organized **sand mafias** contribute to the continuation of illegal mining.
 - Collusion between authorities and illegal operators undermines efforts to control and regulate the sand mining industry.

○ **Lack of Sustainable Alternatives:**

- Limited adoption of sustainable alternatives like **manufactured sand (M-sand)** contributes to overreliance on riverbed sand.
- Inadequate promotion of eco-friendly alternatives maintains the demand for natural sand, exacerbating environmental consequences.

○ **Weak Environmental Impact Assessment (EIA) Implementation:**

- Ineffective implementation of EIAs for sand mining activities allows for unauthorized extraction.
- Insufficient public awareness and monitoring mechanisms contribute to illegal mining activities going unnoticed.

➤ **Consequences of Sand Mining:**

○ **Erosion and Habitat Disruption:**

- The **Geological Survey of India (GSI)** notes that unregulated sand mining alters riverbeds, leading to increased **erosion**, changes in channel morphology, and disruption of aquatic habitats.
- Sand Mining leads to loss of stability in stream channels, threatening the survival of native species adapted to pre-mining habitat conditions.

Note:



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- **Flooding and Increased Sedimentation:**
 - Depletion of sand from river beds contributes to increased **flooding and sedimentation in rivers** and coastal areas.
 - Altered flow patterns and sediment loads negatively impact aquatic ecosystems, affecting **both flora and fauna**.
- **Groundwater Depletion:**
 - Deep pits formed due to sand mining can cause a drop in the **groundwater table**.
 - This in turn affects **local drinking water wells**, leading to **water scarcity** in surrounding areas.
- **Biodiversity Loss:**
 - Habitat disruption and degradation arising from activities such as sand mining lead to the significant **loss of biodiversity**, adversely affecting both aquatic and riparian species. The destructive impact extends even to **mangrove forests**.

What are the Initiatives to Prevent Sand Mining in India?

- **Mines and Mineral Development and Regulation Act, 1957 (MMDR Act):**
 - Sand is classified as a **"minor mineral"**, under **The Mines and Minerals (Development and Regulations) Act, 1957 (MMDR Act)** and administrative control over minor minerals vests with the State Governments.
 - Section 3(e) of the MMDR Act aims to prevent illegal mining, with the government implementing laws to curb illicit practices.
 - The **Mines and Minerals (Development and Regulation) Amendment Act, 2023** was recently passed by the Parliament to **amend the MMDR Act, 1957**.
- **2006 Environment Impact Assessment (EIA):**
 - The Supreme Court of India mandated that **approval is required for all sand mining collection activities**, even in areas less than 5 hectares.
 - This decision aimed to address the severe impact of sand mining on the ecosystem, affecting plants, animals, and rivers.
- **Sustainable Sand Management Guidelines (SSMG) 2016:**
 - Issued by the Ministry of Environment, Forests, and Climate Change (MoEFCC), the main objectives

of these guidelines include environmentally **sustainable and socially responsible mining**, conservation of the **river equilibrium** and its natural environment by **protection and restoration of the ecological system**, avoiding pollution of river water, and prevention of depletion of **groundwater reserves**.

➤ **Enforcement and Monitoring Guidelines for Sand Mining 2020:**

- The guidelines provide a uniform **protocol for monitoring sand mining across India**.
 - The guidelines cover the identification of sand mineral sources, their dispatch, and their end-use.
 - The guidelines also consider the use of new surveillance technologies, such as drones and night vision, to monitor the sand mining process.

Sone River

- The Sone River, a **perennial river in central India**, is the **Ganges' 2nd-largest southern tributary**.
- Originating near **Amarkantak Hill in Chhattisgarh**, it flows through Chhattisgarh, Madhya Pradesh, Uttar Pradesh, and Bihar, forming waterfalls at the Amarkantak plateau.
 - It merges with the Ganges near Patna, Bihar.
- Tributaries include Ghaghar, Johilla, Chhoti Mahanadi, Banas, Gopad, Rihand, Kanhar, and North Koel River.
- Prominent dams include the **Bansagar Dam in Madhya Pradesh** and the **Rihand Dam** near Pipri in Uttar Pradesh.

Namdapha Flying Squirrel

Why in News?

Recently, a Namdapha flying squirrel (*Biswamoyopterus biswasi*) has resurfaced in Arunachal Pradesh after going missing for 42 years.

- The Namdapha flying squirrel was **last described in 1981** based on a single individual found in the **Namdapha Tiger Reserve in Arunachal Pradesh's Changlang district**.

What is a Namdapha Flying Squirrel?

- **About:**
 - It is a **rare nocturnal flying squirrel species** found in the **Namdapha Tiger Reserve** in Arunachal Pradesh, India.

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- It is **distinct from the red giant flying squirrel (Petaurista petaurista)**, another species in the same ecosystem, primarily due to the prominent tuft of hair on its ears.
- The difficulty in locating this species led to concerns that it might have been mistaken for the **red giant flying squirrel or, worse, faced extinction.**

➤ Threats:

- The Namdapha flying squirrel is presently threatened by habitat loss and degradation, caused by clear-felling for human settlements, shifting agriculture, and the extraction of non-timber forest products, particularly the leaves of a rattan palm, *Zalacca secunda*, for use as a roofing material.

➤ Protection Status:

- **IUCN Red List:** Critically Endangered
- **Wildlife (Protection) Amendment Act, 2022:** Schedule I

What are the Key Points About Namdapha Tiger Reserve?

➤ About:

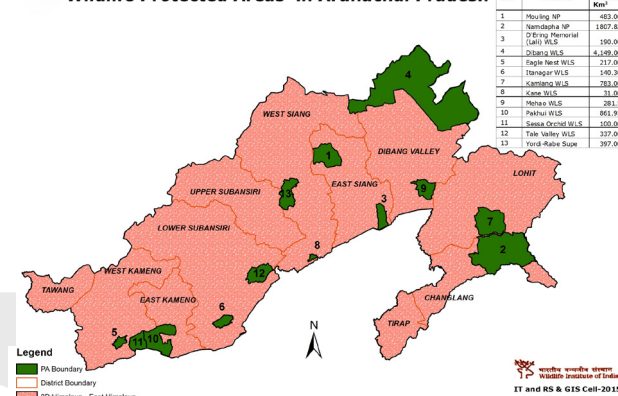
- Namdapha Tiger Reserve was declared in 1983 as the 15th Tiger Project of the country.
 - It was declared a **Wildlife Sanctuary in 1972**, then a **National Park in 1983** and became a Tiger Reserve under the Project Tiger scheme in the same year.
 - Namdapha is in fact the name of a river which originates from Daphabum (Dapha is the name of hill, Bum means peak of hill) and meets **Noa-Dehing river**. This river flows right across in a North-South direction of the National Park and hence the name **Namdapha has been given.**

- It is located in Arunachal Pradesh. The park is **located between the Dapha bum range of the Mishmi Hills and the Patkai range.**

➤ Climate:

- Enjoys the sub-tropical climate. The mountainous part has a mountain type of climate while the low-lying plains and valleys experience tropical climate.

Wildlife Protected Areas in Arunachal Pradesh



India's Maiden Winter Arctic Research

Why in News?

Recently, the Union Minister of Earth Sciences flagged off India's first **winter scientific expedition to Himadri**, the nation's **Arctic Research Station** situated in **Ny-Ålesund** within the **Norwegian archipelago of Svalbard** in the **Arctic**.

- The first batch of the maiden Arctic winter expedition comprises researchers from the host **National Centre for Polar and Ocean Research (NCPOR)**, Indian Institute of Technology (IIT) Mandi, Indian Institute of Tropical Meteorology (IITM) and **Raman Research Institute**.

What is the Importance of The Winter Arctic Scientific Expedition?

- Indian scientific expeditions to the **Arctic** during the **winter** will allow researchers to conduct unique scientific observations during **polar nights**, where there is **no sunlight for nearly 24 hours** and **sub-zero temperatures**.
- It opens more avenues for India to expand our scientific capabilities in Earth's poles.

Note:

- This will aid in expanding understanding of the **Arctic**, especially **climate change**, **space weather**, **sea-ice** and **ocean circulation dynamics**, **ecosystem adaptations**, etc. which affect **weather** and **climate** in the tropics, including monsoons.
- India has operated a research base in the **Arctic** named **Himadri** since **2008**, which has been mostly hosting scientists during the summer (April to October).
- Priority research areas include **atmospheric**, **biological**, **marine**, and **space sciences**, environmental chemistry, and studies on **cryosphere**, terrestrial ecosystems, and astrophysics.
- India will join a small group of countries that operate their Arctic research bases through the winter.
- In recent years, **climate change** and **global warming research** has been attracting scientists to the **Arctic** region.



What is the Impact of Warming on the Arctic?

- Temperatures in the **Arctic region** have risen by about **4 degree Celsius** on average over the last 100 years 2023 was the warmest year on record.
- The extent of **Arctic sea-ice** has been declining at the rate of **13%/ decade**, according to the **Intergovernmental Panel on Climate Change**.
- The **melting sea ice** can have global impacts reaching beyond the **Arctic region**.
- **Rising sea levels** can influence **atmospheric circulation**.
- An increase in **tropical sea surface temperatures** could lead to increased precipitation in the tropics, a shift in the **Inter Tropical Convergence Zone** and high chances of an increase in **extreme rainfall events**.
- Milder weather due to **global warming** could make the **Arctic** a more habitable and a less hostile place.
- There could be a rush to explore and exploit the **Arctic's resources**, including its minerals, and countries will seek to control **trade**, **navigation** and other strategic sectors in the region.

Note:

- **Dakshin Gangotri** in **Antarctica** was set up much earlier in **1983**. **Dakshin Gangotri** is now submerged under **ice**, but India's two other stations, **Maitri** and **Bharti**, are in use.
- **Indian scientific expeditions** to the Earth's poles (the Arctic and the Antarctic) are facilitated under the **PACER (Polar and Cryosphere)** scheme of the **MoES**, solely through the aegis of the **National Centre for Polar and Ocean Research (NCPOR)**, Goa, an autonomous institution of the **MoES**.

Greenwashing

Why in News?

The United Kingdom's Advertising Standards Authority (ASA) has banned advertisements from Air France, Lufthansa, and Etihad.

- These airlines face accusations of **'greenwashing'** as they allegedly misled consumers by falsely claiming the **sustainability for their flights**. and downplaying the **environmental impact of air travel**.

What is Greenwashing?

- **About:**
 - The term greenwashing was first used in **1986** by **Jay Westerveld**, an American environmentalist and researcher.
 - Greenwashing is a deceptive practice where companies or even governments exaggerate their actions and their **impact on mitigating climate change**, often providing **misleading information** or making **unverifiable claims**.
 - It is an **attempt to capitalize** on the growing demand for **environmentally sound products**.
 - It is fairly widespread, and entities often label **various activities** as **climate-friendly** without

Note:

verifiable evidence, undermining genuine efforts against climate change.

➤ **Examples of Greenwashing:**

- The Volkswagen scandal, in which the German car company was found to have been cheating in emissions testing of its supposedly green diesel vehicles, was a case of greenwashing.
 - Several other multinational corporations, including oil giants like Shell and BP, and Coca Cola have faced accusations of greenwashing.

➤ **Concerns:**

- It creates a **risk of diluting the authenticity of climate goals** by presenting misleading or exaggerated information about environmental initiatives.
- Entities engaged in greenwashing may receive **unwarranted recognition or benefits**, rewarding **irresponsible behavior**.
 - Greenwashing can distort markets by creating an uneven playing field, where **entities engaging in deceptive practices gain an unfair advantage** over those adhering to genuine environmental standards.
- The absence of **comprehensive regulations and standards** for environmental claims allows greenwashing to persist without adequate scrutiny.
- The practice of greenwashing introduces challenges to the **integrity of carbon credit systems**, particularly in informal markets, where the expansion of credit sources and certification by unofficial entities raises concerns about transparency and reliability.
 - One carbon credit is equivalent to **one metric ton of carbon dioxide or equivalent greenhouse gases** removed from the atmosphere.
 - The **Kyoto Protocol** introduced the concept of carbon credits. Countries or firms that exceed emission reduction mandates are rewarded with carbon credits.

➤ **Global Initiatives Related to Greenwashing:**

- At the **27th Conference of Parties (COP27)**, the **United Nations Secretary-General** has declared **zero tolerance for greenwashing**, urging private corporations to rectify their practices.
- The **European Union** approved the **world's first green bond standards to combat greenwashing** in October 2023.

- The “European Green Bond” label mandates transparency, **directing 85% of funds to EU sustainable activities**. The legislation aims to support the EU’s climate neutrality transition.

➤ **Laws in India Related to Greenwashing:**

- Greenwashing is designated as an unfair trade practice under the **Consumer Protection Act, 2019 in India**. The Act prohibits such **deceptive claims** and outlines penalties and remedies for consumers adversely affected by these misleading practices.
- In February 2023, the **Securities and Exchange Board of India (SEBI)** issued guidelines for issuers of **green debt securities** to ensure transparency and avoid greenwashing.
 - The guidelines are intended to protect investors, promote the development of the securities market, and regulate it.
- The **Advertising Standards Council of India (ASCI)** plays a regulatory role in monitoring advertising practices and holds some jurisdiction over allegations of greenwashing.
 - The ASCI, a voluntary self-regulatory organization in India, ensures ads are **legal, honest, and fair**, safeguarding consumer interests and **promoting fair competition**.

Climate Change Performance Index 2024

Why in News?

India’s secured **7th position** in recently released **Climate Change Performance Index (CCPI) 2024** underscoring its notable role and contribution in the ongoing global efforts aimed at mitigating **climate change**.

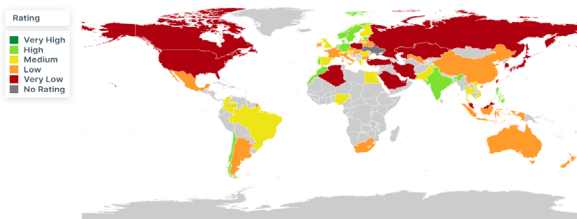
What are the Major Takeaways From CCPI 2024?

- **About:** CCPI, published annually since 2005, is an independent monitoring tool for tracking countries’ climate protection performance. It increases **transparency in national and international climate policy** and enables comparison of individual countries’ climate protection efforts and progress.
 - It is published by **Germanwatch, the NewClimate Institute, and Climate Action Network International**.

Note:

- It indicates the **climate mitigation efforts of 63 countries and the EU**, which collectively account for over **90% of global greenhouse gas (GHG) emissions**.
- **Performance Metrics:** The CCPI evaluates countries across four key categories: **Greenhouse Gas (GHG) Emissions (40%)**, **Renewable Energy (20%)**, **Energy Use (20%)**, and **Climate Policy (20%)**.
- **CCPI 2024:** No country performed well enough in all index categories to achieve an overall very high rating. The **first three overall positions therefore remain empty**.
 - **Denmark** claimed the 4th spot, **Estonia** followed in 5th place, and the **Philippines** secured the 6th position among the top ranks.

Top 3 remain empty as countries must speed up implementation



- **India's Ranking in CCPI 2024:** India secured the **7th position** in the CCPI 2024, exhibiting a stride forward from **8th spot** in CCPI 2023. Interestingly, due to the **absence of countries in the first three spots**, India effectively stands **4th** in global climate performance.
- **India's Score and Rankings in Key Categories:**
 - **GHG Emissions & Energy Use:** India ranked **9th in GHG Emissions** and **10th in Energy Use** among assessed countries, largely attributed to its lower per capita energy use, a factor bolstering its climate standing.
 - Also, in the per capita GHG category, the country is on track to meet a benchmark of well below 2°C.
 - **Climate Policy:** India secured the **10th spot in Climate Policy**, showcasing moderate progress compared to its performance in previous assessments.
 - **Renewable Energy:** India's performance showed a more moderate rank, standing at **37th**, barely remaining within the 'high' performance category.
 - This position marks a decline from the **24th spot** in CCPI 2023.

➤ Global Context and Comparative Analysis:

- **Global Trends:** The CCPI report highlighted a concerning trend, despite the urgency to decarbonize, **global GHG emissions have increased in 2022**, with atmospheric CO2 levels **soaring 50% higher** than pre-industrial levels.
- **G20-performance:** With **India (7th)**, **Germany (14th)**, and the **EU (16th)**, only three G20 countries/regions are among the high performers in CCPI 2024.
 - The G20 members account for **more than 75% of the world's greenhouse gas emissions**.
- **Developed Countries:** Notably, many developed countries including the **United Kingdom**, the **United States**, **Italy**, and others showcased poorer performances compared to the **CCPI 2023**, reflecting a lack of substantial progress in countering climate change.

Note: The report also emphasizes **India's reliance on coal, oil, and gas to meet its energy needs**, despite efforts to promote renewable energy. This reliance contributes significantly to GHG emissions and severe air pollution in cities.

What are the Major Challenges Related to Climate Change in India?

- **Water Scarcity:** Changing rainfall patterns and melting glaciers threaten India's **water security**. According to **NITI Aayog**, best estimates indicate that India's water demand will exceed supply by a **factor of two by 2030**.
- **Agricultural Vulnerability:** Climate change affects crop patterns, **leading to reduced yields** and affecting food security. Increased temperatures and **extreme weather events** like floods and droughts disrupt farming.
 - According to a **2019 study**, extreme weather events cause annual crop losses of about **0.25% of India's GDP**.
- **Rising Sea Levels:** Coastal regions, including major cities like **Mumbai and Kolkata**, face threats from rising **sea levels**. This endangers infrastructure, habitats, and the livelihoods of millions.
 - It is estimated that India could **lose about 1,500 square kilometers of land by 2050** due to erosion caused by rising seas.
- **Air Pollution:** India struggles with **severe air quality issues**, primarily due to **vehicular emissions**,

Note:

industrial pollution, and crop burning. Climate change exacerbates this problem, impacting public health and ecosystems.

- According to a **2022 report**, India's average **PM2.5 concentration was 53.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)**. This is more than **10 times the** World Health Organization's (WHO) **recommended** annual guideline level of $5 \mu\text{g}/\text{m}^3$.
- **Urban Heat Island Effect:** It exacerbates temperatures in cities, leading to an increased frequency and intensity of heatwaves. This **elevates the risk of heat-related illnesses and fatalities**, especially among vulnerable populations living in densely populated urban areas.
- In 2021, the following four Indian cities were among the top 10 cities for heat exposure: **New Delhi, Kolkata, Mumbai, Chennai**.

What are the Indian Government Initiatives for Climate Change Mitigation?

- **National Action Plan on Climate Change (NAPCC)**
 - **National Solar Mission**
 - National Mission for Enhanced Energy Efficiency
 - National Mission on Sustainable Habitat
 - **National Water Mission**
 - **National Mission for Sustaining the Himalayan Ecosystem**
 - **National Mission for A Green India**
 - **National Mission for Sustainable Agriculture**
 - National Mission on Strategic Knowledge for Climate Change
 - **Nationally Determined Contributions (NDC)**
 - **National Adaptation Fund on Climate Change (NAFCC)**
 - **State Action Plan on Climate Change (SAPCC)**
- **National Adaptation Fund on Climate Change (NAFCC)**
- **Panchamrit Goal**

International Energy Agency's Coal 2023 Report

Why in News?

The **International Energy Agency's (IEA)** annual coal market report predicts a significant shift in the trajectory

of global coal demand, **hinting at a structural decline by 2026**.

- This anticipated transformation is influenced by various factors, including the expansion of **renewable energy** and a rise in **nuclear generation** in key regions.

What are the Key Highlights of the Report?

➤ Global Coal Demand Trends:

- Global coal demand reached a record high in 2022 amid the global energy crisis, rising by **4% year-on-year to 8.42 billion tonnes (Bt)**.
- Asia remains the primary driver of coal demand growth in both power and non-power sectors.
 - China experienced a demand rise of 4.6%, equivalent to 200 million tonnes (Mt) of coal.
 - India saw a substantial increase of 9%, amounting to 97 Mt.
 - Indonesia witnessed a remarkable surge of 32%, reaching 49 Mt, driven by nickel smelters.
- The United States faced an 8% decline in coal demand, totalling 37 Mt, the most significant drop among major markets.
- Europe, despite a 4.3% increase in consumption, exhibited more restrained growth than anticipated.
 - Subdued hydropower and nuclear electricity generation in certain European countries.
 - A weak economy and mild winter in Europe contributed to the restrained impact of natural gas price spikes.

➤ Future Projections and Uncertainties:

- Anticipated decline in coal demand in most advanced economies during 2023.
- Overall, global coal **consumption in 2026 is projected to be 2.3% lower than in 2023**.
 - Despite the expected decline, global coal consumption is projected to remain **above 8 billion tonnes through 2026**, highlighting its continued role as a significant source of **carbon dioxide emissions**.
- **China, India, and Indonesia, the three largest coal producers globally**, are expected to break output records in 2023, pushing global production to a new high in 2023. These three countries **now account for more than 70% of the world's coal production**.

Note:



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- In China and India, in particular, rising coal consumption is driven by robust growth in demand for electricity and low **hydropower** output.

➤ **Factors Influencing Decline in Coal Demand:**

- The decline in coal demand is attributed to a **global shift towards renewable energy sources**.
- The IEA links the expected decline to changes in global climate, with **El Nino conditions transitioning to La Nina**, potentially leading to **increased hydropower output**.
- The report highlights a significant upward trend in **low-cost solar photovoltaic deployment**, contributing to the growth of renewable power generation.
- **Nuclear generation** is expected to see moderate increases, particularly in China, India, and the European Union, further influencing coal-fired generation.

➤ **China's Dominance in Coal Markets:**

- China's coal consumption is expected to fall in 2024 and remain steady through 2026.
 - Hydropower output is set to recover, while electricity generation from solar PV and wind is expected to increase significantly in China.
- The pace of **economic growth in China and its coal use is uncertain**, as the country undergoes major structural changes.
- India, Indonesia, and other emerging economies are expected to rely on coal for economic growth, despite commitments to deploy renewables.
- Efforts to reduce the use of **'unabated' coal**, in line with the **28th Conference of Parties (COP28)** are deemed essential for meeting international climate targets, aiming for a **nearly 95% reduction in coal emissions between 2020-2050**.

➤ **Coal Industry Shifts:**

- Coal prices have experienced an unexpected surge over the past two years, impacting both consumers and industry dynamics.
- Despite escalating costs, coal mining companies have maintained strong profit margins. This has allowed diversified mining firms to strategically reinvest coal profits in other commodities, capitalizing on the expected surge in demand linked to the **energy transition**.

What is the International Energy Agency?

➤ **About:**

- The International Energy Agency (IEA), which has its **headquarters in Paris, France** was set up as an **autonomous agency in 1974** by member countries of the **Organisation for Economic Cooperation and Development(OECD)** in response to the **mid-1970s oil crisis**.
- The IEA's main focus is on energy policies, which include economic development, energy security, and environmental protection.
- The IEA also plays a major role in providing information related to the international oil market and taking action against any physical disruptions in the supply of oil.

➤ **Members:**

- The IEA family is made up of 31 member countries, 13 association countries including India, and 4 accession countries.
 - A candidate country to the **IEA must be a member country of the OECD**.

➤ **Major Reports:**

- **World Energy Outlook.**
- **World Energy Investment Report.**
- **India Energy Outlook Report.**

The Wisent: European Bison

Why in News?

Recently, the ongoing war in Ukraine has cast a shadow over conservation efforts aimed at preserving the **wisent**, also known as the **European wood bison**.



- This majestic creature, once abundant across the European continent, faced near-extinction by **1927**.

Note:

- Despite successful conservation endeavors in **Ukraine** and **Russia**, the **Russian invasion of Ukraine** in February 2022 poses a significant threat to the revival and restoration of the wisent.

What is the Wisent (European Wood Bison)?

- **About:** The **European wood bison (*Bison bonasus*)** stands as the **largest** and **heaviest** terrestrial mammal in Europe.
 - Once comprising three subspecies, only one, ***Bison bonasus bonasus***, remains extant, with the other two having succumbed to extinction.
- **Habitat:** Thriving in **grasslands**, **deciduous**, and **mixed forests**,
 - Noteworthy for its role as an **ecosystem engineer**, the wisent plays a crucial part in **restoring grassland habitats**.
- **Distribution:** Belarus; Lithuania; Poland; Russian Federation; Slovakia; Ukraine
- **IUCN Red list Status:** Near Threatened
- **Threats:** Rapid environmental change and hunting by humans were the main drivers of the wisent's extirpation across Europe.

Initial Yak

Domestication 2,500 Years Ago

Why in News?

A recent study has unveiled the **earliest evidence of human domestication of yaks**, discovered in **Bangga**, a settlement situated within the **Shannan prefecture of the Tibetan Autonomous Region in China**.

- Shannan, which shares borders with **Bhutan** and **Arunachal Pradesh**, is traversed by the **Brahmaputra River**.

What are the Major Highlights of the Study?

- **Coexistence of Domesticated Yaks and Taurine Cattle:** The study highlights the **coexistence of domesticated yaks and taurine cattle** within **Bangga**, indicating a sophisticated level of animal husbandry and agricultural practices from **2,500 years ago**.
 - The researchers also expressed surprise at the **presence of taurine cattle in an area so near to the Indian subcontinent**, where Zebus are predominant.

- It asserted that taurine cattle probably reached central and eastern Tibet from **Anatolia (modern-day Turkiye) via the Silk Route** and northern Tibet.
 - Most modern cattle breeds of Europe as well as the temperate regions of Asia are taurine. They are distinct from the Zebu or humped breeds native to the Indian subcontinent and tropical Asia.

- **Evidence of Hybridization and Advanced Breeding:** Intriguingly, researchers unearthed **evidence of hybrids**, a result of intentional crossings **between yaks and cattle**, further underscoring the nuanced understanding ancient inhabitants possessed about animal breeding.

Note: There are an estimated **14 million to 15 million domestic yaks in the highlands of Asia alone**. They are also found in the Indian Himalayan Border States and Union territories, such as **Ladakh, Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh**. However, wild yaks, never domesticated by humans, are on the brink.

What are the Major Points Related to Wild Yaks?

- **About:**
 - The wild yak, known as *Bos grunniens* or *Bos mutus*, thrives in remote areas within the **Tibetan plateau**, specifically inhabiting high-elevation alpine tundra, grasslands, and cold deserts.
 - The **Convention on Migratory Species (CMS)** reports that native wild yak population, while previously also found in Bhutan and Nepal, is now presumed extinct in those regions, limiting their current habitat to **China and India**.
- **Major Threats to Wild Yaks:**
 - **Habitat loss, genetic hybridization with domestic yaks**, and poaching pose significant threats.
 - Communities across the Himalayas and Tibetan Plateau use **Dzo (Male hybrid)** and **Dzomo (Female hybrid)**, bred by crossing cattle and yaks.
 - Disturbance from human activities and their livestock forces wild yaks to relocate to less favorable habitats, impacting their populations.
- **Conservation Status:**
 - **IUCN Red list status:** Vulnerable
 - **CITES:** Appendix I of CITES
 - **The Wild Life (Protection) Amendment Act 2022:** Schedule I

Note:



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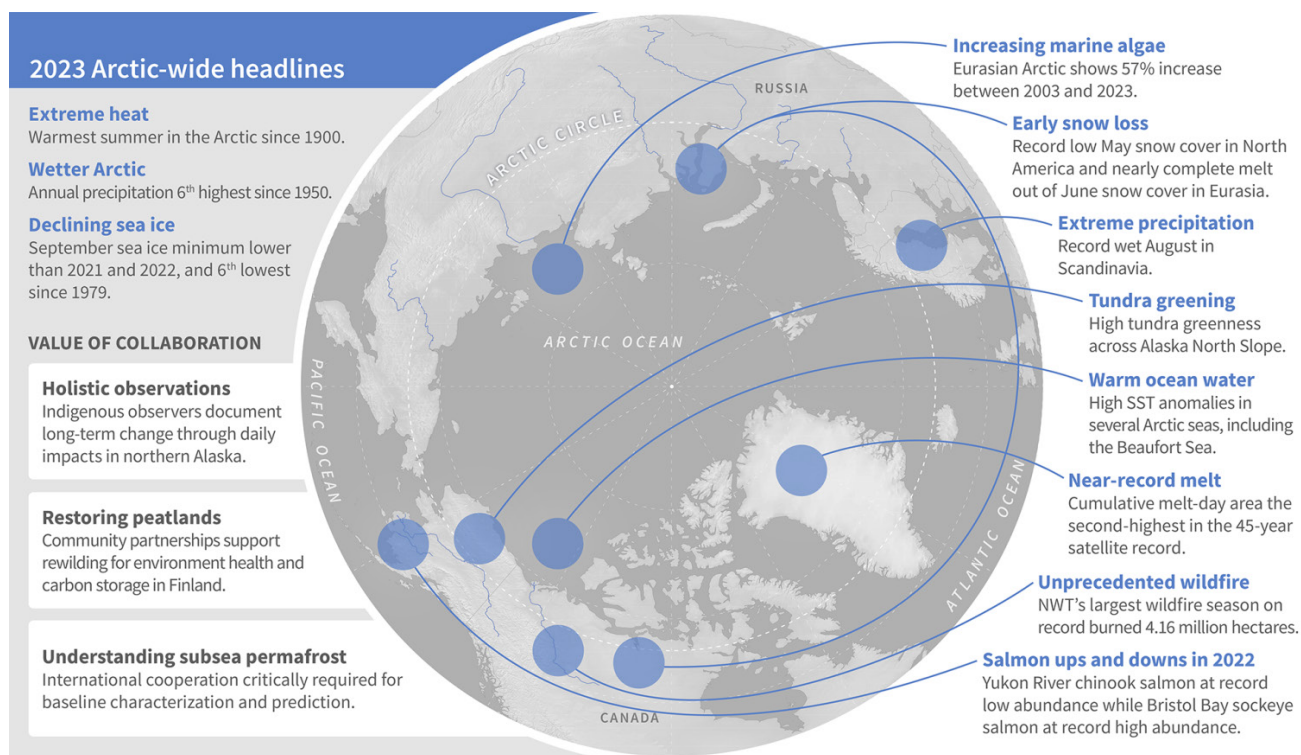
Annual Arctic Report Card: NOAA

Why in News?

Recently, the **National Oceanic and Atmospheric Administration (NOAA)** has released its 18th Annual Arctic

Report Card, highlighting the profound impact of extreme weather and Climate Events on the **Arctic**.

- NOAA is a **United States government agency** that is responsible for providing accurate and timely information about weather forecasts, climate, oceans, coasts, and even the exploration of outer space.



What is the Arctic Report Card?

- It has been Issued annually since 2006, the **Arctic Report Card is a timely and peer-reviewed source** for clear, reliable and concise environmental information on the current state of different components of the Arctic environmental system relative to historical records.

What are the Key Highlights of the Arctic Report Card?

- **Record High Temperatures:**
 - The 2023 summer was the **warmest on record in the Arctic**, which, due to climate change, has warmed nearly four times faster than the globe since 1979.

- This year was noted as **the sixth warmest in the Arctic since reliable records began in 1900.**

➤ Impact of Rising Temperatures:

- The soaring temperatures led to **unprecedented wildfires**, forcing community evacuations, a decline in sea ice extent, **severe floods, food insecurity**, and rising sea levels.
 - These impacts directly affect ecosystems, human health, and cultural practices.

➤ Thawing of Subsea Permafrost:

- Warmer ocean temperatures are **accelerating the thawing of subsea Permafrost**, releasing methane and carbon dioxide.
- This process contributes to **Global Warming** and exacerbates ocean acidification. There's concern

Note:

about the unknown extent and impact of these released greenhouse gasses.

- **Food Insecurity Due to Salmon Decline:**
 - Western Alaska experienced significantly reduced populations of Chinook and chum salmon (81% and 92% below the 30-year mean, respectively), impacting Indigenous communities reliant on these fish for sustenance.
 - This decline has cultural, food security, and economic implications.
- **Wildfires in Arctic Regions:**
 - Canada witnessed its worst wildfire season on record, affecting 40% of its land mass considered Arctic and Northern.
 - High temperatures and dry conditions facilitated the burning of over 10 million acres in the Northwest Territories, leading to evacuations and diminished air quality.
- **Glacier Thinning and Flooding:**
 - Rising temperatures have led to dramatic thinning of the Mendenhall Glacier, located in Alaska, over the past 20 years
 - As a result, over the years, the meltaway water has annually caused floods in the region.
 - One such disaster took place in August 2023, when “a glacial lake on a tributary of the Mendenhall Glacier burst through its ice dam and caused unprecedented flooding and severe property damage” in Alaska’s Juneau.
- **Greenland Ice Sheet Melting:**
 - Greenland’s ice sheet experienced melting for only the fifth time in the 34-year record. Not only this, the ice sheet continued to lose mass despite above-average winter snow accumulation — between August 2022 and September 2023, it lost roughly 350 trillion pounds of mass. Notably, Greenland’s ice sheet melting is the second-largest contributor to sea-level rise.

What is the Arctic?

- The Arctic is a polar region located at the northernmost part of Earth.
- Land within the Arctic region has seasonally varying snow and ice cover.
- It consists of the Arctic Ocean, adjacent seas, and parts of Alaska (United States), Canada, Finland, Greenland (Denmark), Iceland, Norway, Russia, and Sweden.

IUCN Red List Update 2023

Why in News?

Recently, the **International Union for the Conservation of Nature (IUCN) Red List** underwent an update, featuring thousands of new species assessments and reassessments.

- This information was presented at the **28th Conference of Parties**, shedding light on the escalating impacts of climate change on a diverse range of species.
- The IUCN Red List now includes 157,190 species, of which 44,016 are threatened with extinction.

What are the Key Highlights of the Report?

- **Climate Change Threatens Diverse Species:**
 - Species ranging from Atlantic salmon to green turtles face growing threats due to **climate change**.
 - IUCN Director General, emphasises the urgency of ambitious **climate action to combat species decline**.
 - The IUCN Red List update underscores the interlinked nature of climate and **biodiversity crises**, urging joint efforts for sustainable solutions.
- **Freshwater Fish Assessment:**
 - The first comprehensive assessment of **global freshwater fish species** is revealed.
 - **25% of assessed freshwater fish species are at risk of extinction.**
 - Climate change, pollution, **overfishing**, and invasive species contribute to the decline.
- **Impact on Atlantic Salmon:**
 - Atlantic salmon (*Salmo salar*) are ray-finned fish that can grow up to a meter long, found in the North Atlantic Ocean basin. They are **anadromous**, meaning they live in both fresh and saltwater.
 - Atlantic salmon population declined by 23% (2006-2020), moving them from Least Concern to Near Threatened.
- **Green Turtles Facing Extinction:**
 - Central South Pacific and East Pacific **green turtle** populations are respectively **Endangered and Vulnerable**.
 - Climate change poses threats throughout their life cycle, impacting hatching success and food sources.

Note:



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➤ **Mahogany Trees Facing Endangerment:**

- The big-leaf mahogany (*Swietenia macrophylla*), a sought-after timber tree, shifts from **Vulnerable to Endangered**.
 - Unsustainable harvest, **urban encroachment**, and **illegal logging** contribute to a **60% reduction over 180 years**.

➤ **Conservation Success Stories:**

- **Scimitar-horned oryx**, a desert antelope moves from **Extinct in the Wild to Endangered**, showcasing successful reintroduction efforts in the Republic of Chad.
- Saiga antelope improves from **Critically Endangered to Near Threatened** due to conservation measures.

International Union for the Conservation of Nature (IUCN) Red List

- The IUCN Red List is the foremost global resource for **assessing the risk of extinction among animals, fungi, and plant species**.

- Accessible to all, it serves as a **crucial indicator of global biodiversity health**, it offers comprehensive insights into species' characteristics, threats, and conservation measures, playing a pivotal role in shaping informed conservation decisions and policies.
- The IUCN Red List Categories define the extinction risk of species assessed. Nine categories extend from **NE (Not Evaluated)** to **EX (Extinct)**. **Critically Endangered (CR)**, **Endangered (EN)** and **Vulnerable (VU)** species are considered to be threatened with extinction.
 - It is also a key indicator for the **Sustainable Development Goals** and **Aichi Targets**.
- The IUCN Red List includes the **IUCN Green Status of Species**, which **assesses the recovery of species' populations** and measures their conservation success.
 - There are eight Green Status Categories: Extinct in the Wild, Critically Depleted, Largely Depleted, Moderately Depleted, Slightly Depleted, Fully Recovered, Non-Depleted and Indeterminate.
- A Green Status assessment examines how conservation actions have affected the current Red List status.

Note:

Security

Highlights

- *INS Imphal*

INS Imphal

Why in News?

Recently, INS (Indian Naval Ship) Imphal (Pennant D68) has been **commissioned into the Indian Navy.**



What is INS Imphal?

➤ About:

- INS Imphal is the third of the four '**Project 15 Bravo Vishakhapatnam class**' guided missile destroyers.
 - The fourth will be named **INS Surat.**
- INS Imphal is among "the **most technologically advanced guided missile destroyers** in the world.
- It was launched and "christened" as 'Imphal' on 20th April, 2019.

➤ Features:

- The ship measures 163m in length, and 17m in breadth with a displacement of 7,400 tonnes and is amongst the most potent warships built in India.
- It is propelled by **four powerful Gas Turbines**, in a Combined Gas and Gas configuration, and is capable of speeds in excess of 30 knots.
- It is capable of launching the **BrahMos cruise missile**, the world's fastest supersonic cruise missile.

- The ship is also **equipped to fight under Nuclear, Biological and Chemical warfare** conditions.
- It is armed with **sophisticated state-of-the-art weapons and sensors**, including Surface-to-Surface Missiles, Surface-to-Air Missiles, Anti-Submarine Warfare (ASW) rocket launchers and Torpedo launchers, ASW helicopters, radars, sonar and **Electronic Warfare systems.**

➤ Significance:

- The ship reinforces the principle of "Jalmev Yasya, Balmev Tasya," signifying that **controlling the seas grants immense power**. In the **Indo-Pacific region**, where multiple powers vie for influence, INS Imphal contributes to India's efforts to establish itself as a significant maritime player.
- India heavily relies on **sea routes for international trade** due to geographical barriers like the Himalayas and challenges from neighboring countries.
 - INS Imphal aids in **securing these crucial sea lanes**, ensuring safe passage for trade vessels and thereby safeguarding India's economic interests.

What is Project 15B?

- India's **indigenous Destroyer construction programme** commenced in the late 1990s with the **three Delhi class (P-15 class) warships** and this was followed by **three Kolkata class (P-15A) destroyers** commissioned a decade later.
 - Presently, under the P-15B (Visakhapatnam Class), a **total of four warships** are planned (**Visakhapatnam, Mormugao, Imphal, Surat**), following the success and technological advancements achieved in **Project 15A.**
- Project 15B aimed to build the advanced variants of Kolkata class destroyers as **Visakhapatnam class destroyers.**

Note:

- The class is identified by the name of its lead ship, hence known as the **Visakhapatnam class**.
- Under Project 15B, a contract was signed in January 2011 with the **objective to build on the capabilities of the earlier ships while incorporating technological advancements** and improvements in weaponry, electronics, and other systems.
- The lead ship of Project 15B is **INS Visakhapatnam** (Pennant No D66), which was commissioned in November 2021.
- **INS Mormugao (D67)** is the second ship commissioned in December 2022, and **INS Surat** (to be designated D69 upon commissioning) was launched in May 2023.
- These ships are designed by the **Indian Navy's Warship Design Bureau** and constructed by Mazagon Dock Shipbuilders Limited (MDSL) in Mumbai.



Note:

Art and Culture

Highlights

- *Shahi Idgah and Krishna Janmabhoomi Temple Dispute*
- *Sahitya Akademi Awards 2023*
- *Bihar's Punaura Dham project*

Shahi Idgah and Krishna Janmabhoomi Temple Dispute

Why in News?

The Allahabad High Court recently ruled that a survey will be conducted for the **Shahi Idgah**, a **three-domed mosque** in **Mathura**.

- It is seeking appointment of a **court commission** to inspect the **Shahi Idgah mosque** that stands adjacent to the **Krishna Janmabhoomi** temple in **Mathura**.

What is the History of the Disputed Land?

- Raja Veer Singh Bundela of Orchha had also built a temple on the same premises in **1618** and the mosque was built by **Aurangzeb** in **1670** on the site of an earlier temple.
- The **Krishna Janmasthan temple** in **Mathura** is believed to have been built around **2,000 years ago**, in the **1st century CE**.
- A survey has been ordered due to demands by Hindu representatives for complete ownership of the premises where the **Keshava Deva temple** was destroyed on the orders of **Mughal emperor Aurangzeb** in **1670**.
 - The area was regarded as **nazul land** — non-agricultural state land owned by the Marathas, and then the British.
- The temple was originally built in **1618** during the **reign of Jahangir** and was patronized by **Aurangzeb's brother** and rival, **Dara Shukoh**.
- In **1815**, the **Raja of Benaras** purchased the **13.77-acre** land from the **East India Company**.
- Later, the **Shri Krishna Janmabhoomi Trust** was established.
 - The trust acquired ownership rights over the temple, and in **1951**.

- The **13.77-acre** land was placed under the trust with the condition that it would never be sold or pledged.
- In **1956**, the **Shri Krishna Janmasthan Sewa Sangh** was set up to manage the affairs of the temple.
- In **1968**, an agreement was signed between the **Sri Krishna Janmasthan Seva Sangh and the Shahi Idgah Masjid Trust**, where the temple authority conceded a portion of the land to the **Idgah** as part of the settlement.
- The current dispute involves temple petitioners seeking possession of the entire parcel of land.

What is the Present Status of the Issue?

- The plea for a survey was filed on behalf of the Hindu deity, **Shri Krishna** and seven others, who in their original suit pending before court claimed that the mosque was built over the **birthplace of Shri Krishna** on the orders of **Mughal emperor Aurangzeb** in **1670**.
 - Since the **Babri Masjid judgment** in **2019**, nine cases related to the **Shri Krishna Janmabhoomi** and **Shahi Idgah Masjid**, have been filed in the **Mathura court**.
- The **Allahabad High Court** transferred to itself all the suits pending before the **Mathura Court** on various reliefs pertaining to the **Sri Krishna Janmabhoomi-Shahi Idgah Mosque dispute**.
- In the **High Court**, the **U.P. Sunni Central Waqf Board** and the **Shahi Idgah Masjid Committee** argued that the **birthplace of Lord Krishna** is not under the **Mosque**.
 - They stated that the plaintiffs' claim lacks evidence and is based on speculation.
- When the **Committee of Management Trust of the Shahi Idgah Masjid** sought a stay on the survey from the **Supreme Court**, the court did not grant any relief.

Note:

What is the Places of Worship Act, 1991?

➤ About:

- It was enacted to **freeze the status of religious places of worship** as they existed on **August 15, 1947**, and prohibits the conversion of any place of worship and ensures the maintenance of their religious character.

➤ Major Provisions of the Act:

- **Prohibition of Conversion (Section 3):**
 - Prevents the conversion of a place of worship, whether in full or part, from one religious denomination to another or within the same denomination.
- **Maintenance of Religious Character (Section 4(1)):**
 - Ensures that the religious identity of a place of worship remains the same as it was on **August 15, 1947**.
 - The **Allahabad High Court's** recent stance in the **Gyanvapi case** suggests that the **Places of Worship Act, 1991** does not clarify "**religious character of any place of worship**" and can only be determined in a trial, based on documentary and oral evidence, on a case-to-case basis.
- **Abatement of Pending Cases (Section 4(2)):**
 - Declares that any ongoing legal proceedings concerning the conversion of a place of worship's religious character before **August 15, 1947**, will be terminated, and no new cases can be initiated.
- **Exceptions to the Act (Section 5):**
 - The Act does not apply to **ancient and historical monuments**, archaeological sites, and remains covered by the **Ancient Monuments and Archaeological Sites and Remains Act, 1958**.
 - It also excludes cases that have already been settled or resolved and disputes that have been resolved by mutual agreement or conversions that occurred before the Act came into effect.
 - The Act does not extend to the specific place of worship known as Ram Janmabhoomi-Babri Masjid in Ayodhya, including any legal proceedings associated with it.
- **Penalties (Section 6):**
 - Specifies penalties, including a maximum imprisonment term of three years and fines, for violating the Act.

Sahitya Akademi Awards 2023

Why in News?

Recently, the Sahitya Akademi announced the **Sahitya Akademi Award** 2023 in 24 languages.

- Nine books of **poetry, six novels, five short story collections**, three essays and one literary study have **won the Sahitya Akademi Awards this year**.
- The award, in the form of a casket containing an engraved copper-plaque, a shawl, and RS 1,00,000, will be presented to the awardees.

What is the Sahitya Akademi Award?

➤ About:

- Sahitya Akademi award established in **1954**, is a **literary honour** that is conferred annually by Sahitya Akademi, India's National Academy of letters.
- Akademi gives 24 awards annually to **literary works in the languages it has recognized** and an equal number of awards to literary translations from and into the languages of India.



- Besides the **22 languages enumerated in the Constitution of India**, the Sahitya Akademi has recognised **English** and **Rajasthani** as languages in which its programme may be implemented.
- The Sahitya Akademi award is the second-highest literary honour by the Government of India, **after the Jnanpith award**.

Note:

➤ **Criteria for Choosing Awardee:**

- The author must be of **Indian Nationality**.
- Book/work eligible for the award must be an outstanding contribution to the language and literature to which it belongs.
- When equal merit for books of **two or more are found, certain criteria like total literary contribution** and standing of authors shall be taken into consideration for declaring the award.

➤ **Other Sahitya Akademi Awards:**

- Sahitya Akademi **Bal Sahitya Puraskar** is given to an author based on his/her total contribution to children literature and relates to books first published during the five years immediately preceding the year of Award.
- Sahitya Akademi Yuva Puraskar relates to books published by an author of the age of 35 and below.

Bihar's Punaura Dham project

Why in News?

The Bihar state government recently approved a project to develop **Punaura Dham, a temple complex in Sitamarhi district**, as a major tourist attraction.

- Punaura Dham is believed to be the birthplace of Goddess **Sita**, wife of Lord Rama and a revered figure in **Hinduism**.
- The initiative aims to promote the culture and heritage of **Mithila**, the region where Sita was born and raised.

Note:

- According to the **Valmiki Ramayana**, Sita emerged from a furrow when **King Janaka**, the ruler of Mithila, was ploughing the land.
 - He adopted her as his daughter and named her Sita, which means "furrow" in Sanskrit. He also gave her the name Janaki, meaning "daughter of Janaka".

What are the Key Cultural Aspects of Mithila?

➤ **Historical Significance:**

- Mithila has a rich and ancient history, dating back to the **Vedic period (1500-500 BCE)** when it was one of the **16 Mahajanapadas** of India.
- Mithila, also known as **Tirhut or Tirabhukti**, is a historically and culturally significant region encompassing Darbhanga, Madhubani, Sitamarhi, Supaul, Saharsa, Madhepura, and adjacent areas of Bihar and Nepal.
 - It is bounded by the **Himalayas** in the north, the **Ganges** in the south, the **Gandaki River** in the west, and the **Mahananda River** in the east.
 - It is also known as **Mahla** and mentioned in revenue records of the United Provinces of Bihar, Bengal, and Orissa.
 - It was ruled by the **Videha Janak dynasty**.

➤ **Language and Literature:**

- The main language of **Mithila** is **Maithili** which belongs to the Indo-Aryan family.
 - Maithili has a rich literary tradition, the **poet Vidyapati(1352–1448 AD)**, wrote famous songs of love and devotion in this language.
 - Maithili literature also includes epics, dramas, folktales, and biographies of saints and heroes.

Cultural Heritage:

- Mithila is famous for its unique style of painting, known as **Madhubani or Mithila painting**, which is done using bright earthy natural colours and geometric patterns.
 - The paintings depict scenes from Hindu mythology, especially the Ramayana, as well as flora, fauna, and social events.

➤ **GI Tag:**

- **Mithila Makhana or Makhan (botanical name: Euryale ferox Salisb.)** is a special variety of aquatic fox nut cultivated in Mithila region of Bihar and Nepal. It is also recognised with the **GI (geographical indication) tag**.



Note:



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History

Highlights

- *Hindustan Republican Association and the Kakori Train Action*

Hindustan Republican Association and the Kakori Train Action

Why in News?

Ninety-six years ago, in **December, 1927**, four revolutionaries of the **Indian independence movement** were hanged 2 years after the **Kakori Train Action**, in which members of the **Hindustan Republican Association (HRA)** had looted a train transporting money to the British treasury.

- It serves as a poignant reminder of their **sacrifice and bravery**, reigniting reflections on their pivotal roles in **shaping the course of India's fight for freedom**.

What are the Key Points Related to Hindustan Republican Association?

- **Background:** Mahatma Gandhi initiated the **Non-Cooperation Movement in 1920**, advocating non-violence and urging Indians to withdraw support from British activities in India.
 - However, the **movement's trajectory shifted after the Chauri Chaura Incident in 1922**, where police firing led to protesters' deaths and a subsequent mob attack resulted in the death of policemen.
 - Gandhi, despite internal dissent within the INC, abruptly halted the movement.
- **Foundation:** The decision to halt Non-Cooperation Movement disillusioned a group of young men who founded the **Hindustan Republican Association (HRA)**.
 - **Ram Prasad Bismil and Ashfaqulla Khan**, both of whom had a flair for poetry, were among the group's founders. Others included **Sachindra Nath Bakshi** and trade unionist **Jogesh Chandra Chatterjee**.

- Figures such as **Chandra Shekhar Azad** and **Bhagat Singh** also joined the HRA.

- **Manifesto:** Their manifesto released on **1st January, 1925**, was titled **Krantikari (Revolutionary)**. It proclaimed the revolutionary party's aim: to establish a **federal Republic of the United States of India** through an organized, armed revolution.
 - It **characterized the revolutionaries as neither terrorists nor anarchists**, rejecting terrorism for its own sake while considering it as a potent retaliatory measure when necessary.
- **HRA's Vision:** They envisioned a **republic grounded in universal suffrage** and socialist principles, prioritizing the abolition of systems enabling human exploitation.
- **Evolution of HRA:** HRA transformed into the **Hindustan Socialist Republican Association (HSRA) in 1928** due to a shift toward socialist ideologies, broadening its focus from political independence to encompass socio-economic equality.
 - Led by figures like **Bhagat Singh**, the HSRA merged nationalist aspirations with socialist principles, altering the trajectory of India's freedom struggle.

What was the Kakori Train Action Incident?

- The **train robbery at Kakori was the HRA's first major action**, in August 1925. The **Number 8 Down Train** ran between **Shahjahanpur and Lucknow**.
- As the train approached Kakori, a revolutionary (**Rajendranath Lahiri**) pulled the emergency chain to stop the train and overpowered the guard. The train was **carrying treasury bags containing government funds** that were to be deposited in the British treasury in Lucknow.
 - The revolutionaries planned to rob this money, which **they believed legitimately belonged to Indians anyway**.

Note:

- Their objective was **both to fund the HRA and garner public attention** for their work and mission.
- The British authorities launched a **harsh crackdown**, leading to the arrest of numerous HRA members.
- Among the forty arrested individuals, **four received**

death sentences (Rajendranath Lahiri on 17th December and Ashfaqullah Khan, Ram Prasad Bismil, Thakur Roshan Singh on 19th December) and others faced lengthy imprisonments.

- **Chandrashekhar Azad** was the only prominent HRA leader who managed to evade capture.



Note:

Geography

Highlights

- Indian Meteorological Department
- Land of Fire and Ice: Iceland

- Persistence of Synchronized Extreme Rainfall in Changing Climates

MONSOON



Monsoons are seasonal winds that reverse their direction with the change of season.

Origin of Monsoon

- Thermal Concept
- Dynamic Concept

Thermal Concept by Halley

Monsoon result of:

- Heterogeneous character of globe (Unequal distribution of land and water)
- Differential seasonal heating and cooling of continents and oceans

South-West (Summer) Monsoon

- Sun shines over Tropic of Cancer
- Brings low-pressure centres (Near Baykal Lake and Peshawar) due to High temperature

Dynamic Concept by Flohn

- Monsoon originated due to shifting of pressure and wind belts
- Intertropical Convergence (ITC) formed due to convergence of NE and SE trade winds near equator
- Northern and Southern branches of the ITC, known as NITC and SITC respectively, create a belt of doldrums marked by equatorial westerlies

South-West (Summer) Monsoon

- Sun shines over Tropic of Cancer
- NITC extended up to 30° N latitude covering south and SE-Asia and establishes Equatorial westerlies
- It brings atmospheric depressions (cyclones) with heavy rainfall

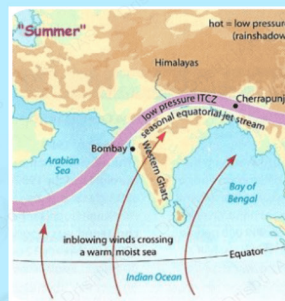
North-East (Winter) Monsoon

- Sun shines over Tropic of Capricorn
- Due to Southward shifting of Sun, pressure and wind belts also shifts
- Western cyclonic disturbances (from Mediterranean Sea) enter India from west in winter due to Westerly Jet stream
- Northeast trade winds reestablished over south and SE Asia
- These NE trades become winter monsoons called Retreating Monsoon and rains in Andhra and Tamil Region

- Low temperature in Southern hemisphere brings High pressure centre over Australia and Indian Ocean
- Winds Blow from high (ocean) to low pressure in Asia (land)
- Ferrel's law and Coriolis force turn these wind in south-westerly (SW) direction
- They bring moisture from Indian oceans to Indian subcontinent yielding heavy rainfall

North-East (Winter) Monsoon

- Sun shines over Tropic of Capricorn
- Brings High Pressure centers (near Baykal Lake and Peshawar) due to low temperatures
- High temperature in Southern hemisphere brings Low pressure centre over Australia and Indian Ocean
- Winds Blow from high (Land) to low pressure (ocean) in north-easterly (NE) direction called Retreating Monsoon



Note:

Indian Meteorological Department

Why in News?

The **Indian Meteorological Department (IMD)** recently got a new logo ahead of the commencement of its **150th year of providing weather and climate services to the country.**

- The new logo, in a mix of orange and green colours, depicts numerical 150 embedded with the present logo showing the **Indian monsoon winds** crossing over India.



What is the India Meteorological Department?

- **About:**
 - IMD was **established in 1875**. It is the **National Meteorological Service** of the country and the principal government agency in all **matters relating to meteorology and allied subjects.**
 - It works as an **agency of the Ministry of Earth Sciences** of the Government of India.
 - It is headquartered in **New Delhi.**
 - IMD is also one of the **six Regional Specialized Meteorological Centres** of the **World Meteorological Organization.**
- **Roles and Responsibilities:**
 - To take meteorological observations and to **provide current and forecast meteorological information** for optimum operation of weather-sensitive activities like agriculture, irrigation, shipping, aviation, offshore oil explorations, etc.
 - To **warn against severe weather phenomena** like **tropical cyclones**, norwesters, **dust storms**, heavy

rains and snow, cold and **heat waves**, etc., which cause destruction of life and property.

- To provide **meteorological statistics required for agriculture, water resource management, industries, oil exploration** and other nation-building activities.
- To conduct and promote research in meteorology and allied disciplines.

Note: Meteorology is the scientific study of the Earth's atmosphere, focusing on understanding and forecasting weather patterns, atmospheric phenomena, and climate.

- It involves **analyzing atmospheric conditions, such as temperature, humidity, air pressure, wind, and precipitation**, to predict weather and study the processes that drive the Earth's atmospheric system.

What are the Major Initiatives Related to Meteorology in India?

- **National Monsoon Mission (NMM):** Government of India launched NMM in 2012 with a vision to develop a state-of-the-art dynamical prediction system for monsoon rainfall on different time scales.
- **Mausam App:** Tool for dissemination of weather information and warnings in an attractive and user friendly manner.
- **Doppler Weather Radars:** Based on Doppler principle, the **radar is designed to improve precision in long-range weather forecasting and surveillance** using a parabolic dish antenna and a foam sandwich spherical radome.
 - DWR has the equipment to measure **rainfall intensity, wind shear and velocity and locate a storm center** and the direction of a tornado or gust front.

Land of Fire and Ice: Iceland

Why in News?

Recently, the **Government of Iceland** has confirmed that the **volcanic eruption** near the capital **Reykjanes** poses no threat to human life.

- Iceland is located on the **Mid-Atlantic Ridge**, technically the longest mountain range in the world, but on the floor of the **Atlantic Ocean.**
- The eruption began between **Sýlingarfell** and **Hagafell**, just north of the fishing town of **Grindavik** which is located on the **Reykjanes Peninsula.**

Note:



drashti

Iceland volcano Fagradalsfjall



What are the Key Facts about Iceland (Land of Fire and Ice)?

- Iceland is located on the **Mid-Atlantic Ridge**, technically the longest mountain range in the world, but on the **floor of the Atlantic Ocean**.
 - The ridge separates the **Eurasian** and **North American tectonic plates** making it a hotbed of **seismic activity**. It is mostly a submarine, running along the length of the **Atlantic** from **north to south**.
 - However, in the North Atlantic, it rises over the ocean surface in the form of the island of Iceland. This feature of its geology has given rise to **Iceland's unique landscape** made up of **geysers (hot springs), glaciers, mountains, volcanoes and lava fields**.
- Iceland is home to **33 active volcanoes**, the **highest in Europe**. This unique landscape has given Iceland the epithet, '**Land of Fire and Ice**'.
 - **Eyjafjallajökull**, one of **Iceland's most famous volcanoes**, erupted in **2010**, causing a widespread ash cloud.
 - Other notable volcanoes include **Hekla, Grímsvötn, Hóluhraun, and Litli-Hrútur**, part of the Fagradalsfjall system.

What are the Other Volcano-Prone Regions in the World?

- Volcanoes are distributed all around the world, mostly along the edges of **Tectonic Plates**, although there are intraplate volcanoes that form from **mantle Hotspots**.

Circum-Pacific Belt:

- The **Pacific "Ring of Fire"** is a **string of volcanoes** and sites located on most of the **Earth's subduction zones** having **high seismic activity**, around the **edges of the Pacific Ocean**.
- The **Pacific Ring of Fire** has a total of **452 volcanoes**.
- Most of the active volcanoes are found on its western edge, from the **Kamchatka Peninsula** in **Russia**, through the **islands of Japan** and **Southeast Asia**, to **New Zealand**.

➤ Mid-Continental Belt:

- This volcanic belt extends along the **Alpine Mountain system** of **Europe, North America**, through **Asia Minor, Caucasus, Iran, Afghanistan and Pakistan** to the **Himalayan Mountain system**, including **Tibet**, the **pamir, Tien-Shan, Altai**, and the mountains of **China, Myanmar and eastern Siberia**.
- This belt includes the **volcanoes of Alps mountains, Mediterranean Sea** (Stromboli, Vesuvius, Etna, etc.), **volcanoes of Aegean Sea, Mt. Ararat (Turkey), Elburz, Hindu Kush** and **Himalayas**.

➤ Mid Atlantic Ridge:

- The Mid-Atlantic Ridge **separates the North and South American Plate from the Eurasian and African Plate**.
- Magma rises through the cracks and leaks out onto the ocean floor like a long, thin, undersea volcano. As magma meets the water, it cools and solidifies, adding to the edges of the sideways-moving plates.
- This process along the divergent boundary has created the **longest topographic feature in the form of Mid oceanic ridges** under the Oceans of the world.

➤ Intraplate Volcanoes:

- The **5%** of known volcanoes in the world that are not closely related to plate margins are generally regarded as **intraplate**, or **"hot-spot," volcanoes**.
 - A hot spot is believed to be related to the rising of a **deep-mantle plume**, which is caused by very slow convection of highly viscous material in Earth's mantle.
- It can be represented by a **single oceanic volcano** or **lines of volcanoes** such as the **Hawaiian-Emperor seamount chains**.

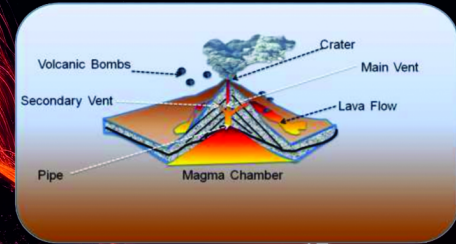
Note:



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VOLCANOES

A volcano is a vent or a fissure in the crust from which lava (molten rock), ash, gases, rock fragments erupt from a magma chamber below the surface



Types: On basis of -

Periodicity of Eruption:

- Active volcano: Recently Erupted
- Dormant Volcano: Potential for eruption, no imminent signs
- Extinct: No recent eruptions, low possibility in future

Nature of Eruption:

- Hawaiian: Calmest types (low gaseous content)
 - Strombolian: Formation of large gas bubbles in magma
 - Vulcanian: More explosive
 - Plinian eruptions: Magma's volatile gases rise via a narrow conduit
 - Icelandic: Often build lava plateaus
- ### Shape of Volcanoes:
- Shield volcanoes: Composed of basaltic lava, low slope
 - Cone volcanoes (Cinder Cones): Most abundant
 - Composite cones (stratovolcanoes): Formed by layers of diverse materials.

Volcanic Features:

Extrusive :

- Crater: Cone-shaped vent for magma
- Caldera: Large, crater-like depression
- Volcanic Plateaus: Levelled areas from fissure eruptions

Intrusive:

- Batholiths: Central core of a volcanic mountain.
 - Dyke: Vertical intrusion cutting across country rock bedding.
 - Sills: Tabular intrusions along sedimentary bedding.
 - Laccoliths: Magma injection along horizontal sedimentary bedding.
- ### Minor:
- Geysers: Underground water above 100°C, powered by magma, results in powerful eruptions with steam and diluted minerals.
 - Hot Springs: Heated water flows quietly along fault zones.

Distribution of Volcanoes:

- Subduction zones (Circum Pacific Belt)
- Divergence zones (Mid Atlantic Ridge)
- Intra-plate oceanic volcanism (Hawaiian chain)
- Mid-continental belt and volcanoes in Mediterranean region

Volcanoes in India:

- No volcanoes in Himalayans
- Barren Island (Only active volcano)

Products of Volcanic Eruption:

- Gases: H, C, O, S, N, CH₄, NH₃
- Solid: Pyroclastic materials
- Liquid: Lava



Persistence of Synchronized Extreme Rainfall in Changing Climates

Why in News?

Recently, a new study has been published by Advancing Earth and Space Sciences (AGU) titled- **Geographical Trapping of Synchronous Extremes Amidst Increasing Variability of Indian Summer Monsoon Rainfall**, highlighting that Indian Monsoon has undergone significant alterations due to **Global Warming**.

- The study investigates **synchronous extreme rainfall events** during the **Indian Summer Monsoon Rainfall (ISMR) from 1901 to 2019**. It highlights the consistent presence of interconnected extreme hubs in Central India, suggesting the geographical concentration of these concurrent events in the region.

How have been the Rainfall Trends in India?

- **Consistent Spatial Concentration:**
 - Despite the rising variability in Indian **Summer Monsoon** Rainfall (ISMR) over the past century, synchronous extreme rainfall events **have**

consistently concentrated within a specific geographical region, primarily in Central India (CI) that extends from parts of West Bengal and Odisha to parts of Gujarat and Rajasthan.

- This corridor has remained unchanged from 1901 to 2019!
- This indicates a **stable pattern of synchronized extreme** events despite overall increased variability.

➤ Network Cohesiveness:

- There is a **persistent network of highly interconnected extreme rainfall hubs** in CI. These hubs exhibit strong local connections, emphasizing a stable synchronization of extreme events in this region over the long term.

➤ Correlation with Climatic Patterns:

- India's monsoon forecasts rely heavily on its relation to the **El Niño and the La Niña phenomena**, although this relation holds only about 60% of the time.
- Indian Rainfall events are correlated with **El Niño Southern Oscillations (ENSO)**, with more **synchronization during strong El Niño periods** and less during La Niña conditions.

Note:



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➤ **Implications for Predictability:**

- The findings suggest that despite the increasing variability and complexity of ISMR, understanding the persistent nature of extreme rainfall synchronization in CI provides insights crucial for predicting synchronous extremes.
- This knowledge can aid in developing effective adaptation strategies and risk management during the monsoon season.

What are the Implications of the Findings on the Forecast?

➤ **Revisiting Stationarity:**

- Despite the belief that **stationary elements in climate systems no longer exist** due to global warming, the Indian monsoon's ability to synchronize heavy rain events **challenges this notion**.
- It suggests that certain consistent patterns, such as synchronized extreme rainfall events along specific corridors, **persist even in a changing climate**.

➤ **Understanding Corridor Dynamics:**

- The **identification of a geographic corridor**, primarily the mountain ranges **along the west coast and across Central India**, as the **potential trapping zone for synchronized extreme rainfall events** and monsoon depressions **provides a crucial insight**.
 - This hypothesis would significantly enhance the understanding of how and where these events occur, aiding in more accurate forecasts.

➤ **Forecast Improvement:**

- The research suggests that improving forecasts of synchronized extreme rainfall events doesn't necessarily require increased model resolution or higher computational costs.
- Instead, **focusing on understanding the dynamics of synchronization within the existing models could lead to more accurate predictions**. This highlights a strategic shift in forecasting approaches.

➤ **Risk Reduction Strategies:**

- Accurate forecasts of **these large-scale extreme rainfall events are vital for minimizing risks across various sectors** like agriculture, water management, energy, transportation, and public health.
 - The findings offer an **opportunity to refine risk reduction strategies at a smaller scale**, leveraging better forecasts **for preparedness and mitigation**.

➤ **Leveraging India's Resources:**

- The study **emphasizes India's strong modelling capacity and computational resources**, positioning the country well to exploit this potential for better forecasting.
- It highlights the capacity to delve deeper into understanding synchronization dynamics and optimizing forecasts, potentially minimizing the impacts of extreme rainfall events on various sectors.

What are the Factors Affecting the Indian Monsoon?

➤ **Himalayan Mountains:**

- The **Himalayas** are a **major factor in the formation of the monsoon winds** in India.
- During the **summer months, the landmass over the Indian subcontinent heats up** rapidly, leading to the formation of a low-pressure system.
 - The Himalayas, which act as a barrier, prevent the cool, dry air from the north from flowing into the region, resulting in a pressure gradient that draws in warm, moist air from the Indian Ocean.

➤ **Thar Desert:**

- The Thar Desert, also known as the **Great Indian Desert**, is a crucial factor in the formation of monsoon winds in India.
- It **acts as a rain shadow area for the Bay of Bengal branch of the monsoon**, meaning that it receives very little rainfall due to the barrier created by the **Aravalli Mountain range**.
 - Thus, the Arabian branch of the monsoon, which moves parallel to the Thar Desert, also leads to very little rainfall in the nearby regions.
 - **This lack of rainfall can have significant impacts on agriculture and the local economy in the region.**
 - The hot and dry air from the desert creates a low-pressure zone in the whole northwest parts of India, which draws in moisture-laden winds from the Indian Ocean, resulting in heavy rainfall during the summer months.

➤ **Indian Ocean:**

- The **Indian Ocean** is a significant contributor to the formation of monsoon winds in India.
 - The ocean's warm and moist air interacts with the low-pressure system over the Indian subcontinent, resulting in the formation of the monsoon winds.



Note:

Miscellaneous

Highlights

- Disputed Persian Gulf Islands
- Dharavi Revamp in Turmoil
- United Nations Convention against Corruption
- Indira Gandhi Peace Prize

Disputed Persian Gulf Islands

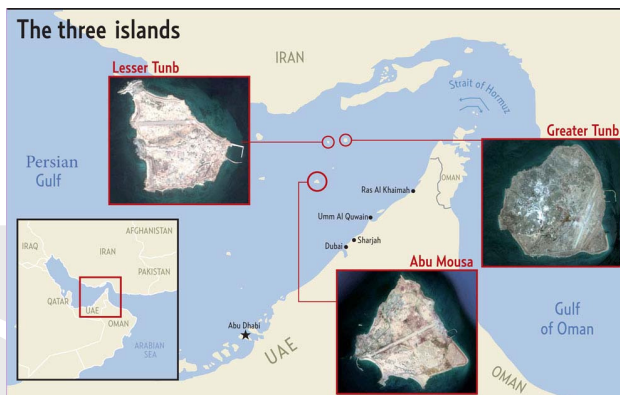
Why in News?

Tensions between **Iran** and the **United Arab Emirates (UAE)** have escalated as a joint statement issued at the **6th Arab-Russian Cooperation Forum in Morocco** challenged Iran's claims to three disputed islands in the **Persian Gulf**.

- A joint statement signed by Russia and Arab countries has called for a peaceful resolution to the Iran-UAE conflict over disputed islands. In response, Iran summoned the Russian envoy to express its protest against the joint statement.

What is the Dispute Over the Persian Gulf Islands?

- The dispute involves three islands in the **strategic Strait of Hormuz**, namely the **Greater Tunb**, **Lesser Tunb**, and **Abu Musa**.
- Iran claims that the islands have been part of Persian states since the ancient past until they were occupied by the **British in the early 20th century**.
 - Iran took control of the three islands after **British forces withdrew in 1971**. It considers them an **"inseparable" part of its territory**.
 - It also says that it has an agreement with Sharjah, one of the UAE's seven emirates, which gives it the right to **administer Abu Musa** and station troops there.
- The UAE asserts ownership of the disputed islands, with **Ras al-Khaimah (City in the UAE)** claiming **Greater and Lesser Tunbs**, and **Sharjah** claiming **Abu Musa**.
 - The UAE contends that Iran forcibly seized the islands from Ras al-Khaimah just before the formation of the **Emirati Federation in 1971**.



Persian Gulf

- The Persian Gulf is a shallow sea in the **Indian Ocean** that borders the **Arabian Peninsula** and southwestern **Iran**. It's also known as the **Arabian Gulf**.
- The Persian Gulf is bordered by **Iran, Iraq, Kuwait, Saudi Arabia, Bahrain, Qatar, the United Arab Emirates, and Oman**.
- The Persian Gulf is connected to the **Gulf of Oman** by the **Strait of Hormuz**.
 - The Strait of Hormuz is situated between **Qeshm Island** and the **Iranian coast** in the north and the **Musandam Peninsula** of the Arabian Peninsula in the south.
- Persian Gulf countries are **major producers of crude oil and natural gas**.

Dharavi Revamp in Turmoil

Why in News?

Recently, the **Dharavi Redevelopment Project (DRP)**, an initiative to rebuild Asia's largest slum **Dharavi**, has sparked heated controversies due to allegations of favoritism towards the winning bidder for the project.

Note:

- A **Special Purpose Vehicle (SPV)** named **Dharavi Redevelopment Project Pvt Ltd (DRPPL)** has been established for this project.

What is the Dharavi Redevelopment Project?

- In **2004**, the state government formed the **Dharavi Redevelopment Authority** under the **Slum Redevelopment Authority (SRA)** with the goal of making **Mumbai** a **slum-free city**.
- The initiative addresses the persistent urban challenge of **slum redevelopment** in **Mumbai**, a city with a significant slum population.
- The redevelopment plan aims for an **integrated development approach** encompassing residential, commercial, and industrial aspects.
- This project highlights the **public-private partnership aspect** in addressing urban redevelopment challenges.
- The redevelopment plan's **floor space index** of over **4** indicates a **significant intensity of land use**, emphasizing the **multi-dimensional nature** of the project.

What is Dharavi?

- **Dharavi** is the **biggest slum cluster of Asia** that lies on prime property right in the middle of **Mumbai**.
- It is spread over **300 hectares**, of which the **state government** has notified **240 hectares** for the project.
- It was founded in **1882** at the time of the **British Raj**.

What is a Special Purpose Vehicle (SPV)?

- A special purpose vehicle is a separate legal entity which has all the attributes of a corporation such as owning assets, capacity to and get sued etc.
- A **SPV**, also known as a **special purpose entity (SPE)**, is like a **separate company** created by a main company to protect against **financial risks**.
- Even if the main company faces **bankruptcy**, the SPV's independent legal status ensures that its obligations remain secure.
 - This is why an **SPV** is often referred to as a **bankruptcy-remote entity**.
- An **SPV** can be employed to take on a **risky project**, lessening any potential financial harm to the main company and its investors.
- Venture capitalists use SPVs to gather funds and invest in a startup.

What are the Recent Initiatives Related to Urban Development?

- **Atal Mission for Urban Rejuvenation and Urban Transformation (AMRUT)**
- **Pradhan Mantri Awas Yojana-Urban (PMAY-U)**
- **Climate Smart Cities Assessment Framework 2.0**
- **TULIP-The Urban Learning Internship Program**
- **Atmanirbhar Bharat Abhiyan (Self-Reliant India)**

United Nations Convention against Corruption

Why in News?

The year **2023** marks the **20th anniversary** of the **United Nations Convention against Corruption (UNCAC)**.

- The **G20** also addresses **anti-corruption efforts** globally through its **Anti-Corruption Working Group** and includes related topics in the **B20** and **SAI20** discussions within the **G20 Social track**.

What is United Nations Convention against Corruption (UNCAC)?

- The **UNCAC** was signed on **December 9, 2003** in **Mexico** and entered into force on **14th December 2005**.
- The **International Anti-Corruption Day** was established on **9th December** as a result of proposals by the **Brazilian delegation to the Convention**.
- It is the **only legally binding** multilateral international anti-corruption treaty.
- The Convention covers five main areas:
 - Preventive Measures, Criminalization and Law Enforcement, International Cooperation, Asset Recovery, and Technical Assistance and Information Exchange.
 - The Convention covers many different forms of corruption, such as **bribery**, **trading in influence**, **abuse of functions**, and **various acts of corruption** in the private sector.

What is the G-20 Anti-Corruption Working Group?

- The **G-20 Anti-Corruption Working Group (ACWG)** was set up in **June 2010** at the **Toronto Summit** of **G-20**.

Note:

- It concentrates on **sharing effective strategies to combat corruption**. It also addresses **emerging challenges**, including the **use of new technologies** in **countering corrupt practices**.
- The ACWG is chaired by the Presidency of the G20 and a co-chair.

Indira Gandhi Peace Prize

Why in News?

Recently, the Indira Gandhi Prize for Peace, Disarmament and Development for 2023 has been jointly awarded to **Daniel Barenboim and Ali Abu Awwad** for their efforts in bringing together the youth and peoples of Israel and the Arab World **for a non-violent resolution of the Israel-**



Palestine conflict.

- Barenboim is an Argentine-born distinguished classical pianist, and Awwad is an eminent Palestinian peace activist who has been working for a peaceful resolution of the ongoing conflict in the **Middle East**.

What is the Indira Gandhi Prize for Peace, Disarmament and Development?

- **About:**
 - The Indira Gandhi Prize for Peace, Disarmament, and Development award has **been conferred every year since 1986 by Indira Gandhi Memorial Trust** in honor of Indira Gandhi, the former Prime Minister of India.
 - The award recognizes **individuals or organizations for their exceptional contributions** to international peace, disarmament, and development.
 - The prize is awarded annually and is considered one of the highest honors in the field of peace and development.
 - It consists of a monetary award of **25 lakh rupees along with a citation**.
- **Categories:**
 - The award is bestowed in **three categories**: peace, disarmament, and development.
- **Criteria for Recognition:**
 - The recipients are chosen based on their exceptional and sustained efforts to address critical global challenges related to peace, disarmament, and development.
 - Their work should demonstrate a positive impact on the international community and contribute to the betterment of human welfare.



Note:

Rapid Fire Current Affairs

Highlights

- NYT vs. OpenAI: The Battle for AI IP Rights
- Mudi yettu Dance Drama of Kerala
- Antarctic Circumpolar Current (ACC)
- Prasar Bharati MoU with Malaysia
- Elevating Copra MSP: Boosting Farmers & Markets
- Impact of Climate Change on Aardvarks
- Government Declares MLJK-MA as Unlawful Association
- Angola Exits OPEC
- JAXA's SLIM Lunar Mission Analysis
- P-Note Surge in Indian Markets
- Palna Scheme
- Pong Dam Wildlife Sanctuary
- Black Tigers in Simlipal Tiger Reserve
- Kudumbashree Performed Chavittunatakam
- PT Instructors Come Within Definition of Teachers: SC
- MedTech Mitra: Revolutionizing India's Healthcare Innovations
- UNESCO's 2023 Prix Versailles
- Nematocyst a Cellular Weapon
- Tax Relief Strategies for Sugar
- Veer Baal Diwas
- National Consumer Rights Day
- Pandit Madan Mohan Malaviya Birth Anniversary
- Kraft Process: A Paper-Maker's Craft
- NHRC Directs Inquiry on Salwa Judum Victims
- Queen of Millet
- Working of Touchscreens
- Paat-Mitro App to Facilitate Jute Farmers
- Kashi Tamil Sangamam
- National Mathematics Day 2023
- CMFRI Commercializes Seaweed-Based Nutraceuticals
- LIC's Approach to 'Insurance For All by 2047
- Kolattam Dance
- FDA Approval to Gene Therapies for Sickle Cell Disease
- Night Vision in Animals
- WHO Designates JN.1 as Variant of Interest as Covid-19 Cases Rise
- Goa Liberation Day
- Exclusion of Blood Disorders from Job Reservations
- 109th Indian Science Congress (ISC)
- India, ADB Ink USD 250M Deal for Industrial Corridor Development
- SATHEE Portal
- Bonnet Macaque Monkey
- Value Investing
- Microsoft's Phi-2: Small Model, Big Impact
- Joint Anti-terrorism Exercise of SCO
- Improvement in India's Trade Deficit
- India's Participation in TIWB Programme
- Barracuda: India's Solar-Electric Maritime Boat
- Maldives Ends India's Hydrography Agreement
- Pandemic Accord
- Element Plutonium
- Kashi Vishwanath Corridor

NYT vs. OpenAI: The Battle for AI IP Rights

The **New York Times (NYT)** has taken legal action against **OpenAI and Microsoft**, alleging the unauthorized use of its copyrighted content to train AI models, including **ChatGPT**.

- This legal conflict underscores a broader debate on **intellectual property (IP) rights** in the era of **generative AI platforms**.
- The debate is gaining traction at a time when

countries around the world, including **India**, have archaic copyright laws that need reimagining keeping the AI wave in mind.

- In India, **creative works are regulated under the Copyright Act of 1957**.
 - In the act, an "author" is someone responsible for creating computer-generated works in literary, dramatic, musical, or artistic forms.
 - However, this definition overlooks the fact that **AI systems do not generate information independently**.

Read more: **AI-Generated Works and Copyright Ownership**

Note:

Mudiyettu Dance Drama of Kerala

Mudiyettu is a ritual theater and dance drama of Kerala that enacts the mythological tale of a battle between the goddess **Kali** and the demon **Darika**.

- The ritual is a part of the **bhagavathi** or **bhadrakali cult** and is performed in **Bhagavati temples**, usually between February and May, after the harvest.
- The performance is done by **members of the Marar and Kuruppu communities**, who paint their faces and wear elaborate costumes and headgears.
 - It involves various characters such as **Shiva, Narada, Darika, Kali, Daanavendra, Koyichaadar** and **Kooli**.
- The ritual ends with a victorious **Kali** entering the stage holding the head of **Darika**, followed by a song of praise to **Shiva**.
- **Mudiyettu** is a **UNESCO Intangible Cultural Heritage of Humanity** and the second art form from Kerala after **Kutiyattam**.

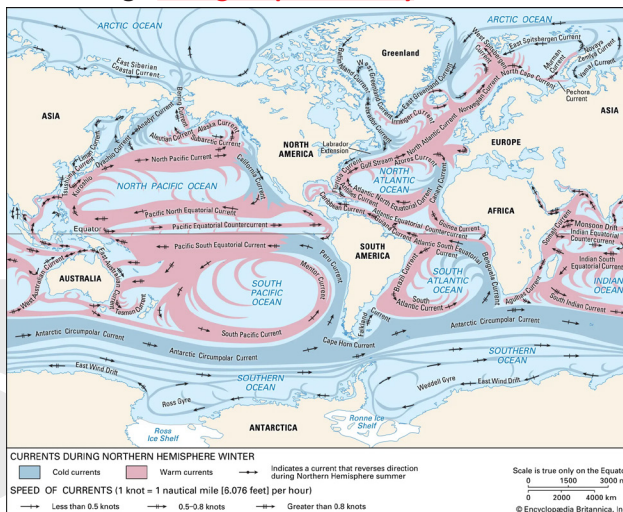


Antarctic Circumpolar Current (ACC)

Scientists have discovered an **ancient underwater mountain range** hidden within the world's strongest ocean current, the **Antarctic Circumpolar Current**.

- The **ACC** flows from **west to east** around **Antarctica**, connecting the **Atlantic, Indian, and Pacific Oceans**. It is the only current that flows completely around the globe.
- It is exceptionally wide, with a width of about **1250 kilometers**, making it the **widest of all ocean currents**.

- It plays a crucial role in **global ocean circulation** and **climate regulation**. It redistributes heat and influences the global climate system.
- The ACC is also known as the **West Wind Drift** because it is primarily driven by the **strong westerly winds** that circle **Antarctica** in the **Southern Hemisphere**.
- It forms the **Antarctic Convergence**, where the **cold Antarctic waters** meet the **warmer waters** of the **subantarctic**, creating a zone of **upwelling nutrients** and **high biological productivity**.



Read More: [Southern Ocean](#)

Prasar Bharati MoU with Malaysia

The Indian cabinet has approved the memorandum of understanding (MoU) signed between **India's Prasar Bharati** and **Radio Televisyen Malaysia (RTM)** in November 2023. This brings the total number of MoUs signed by Prasar Bharati with various countries to 46.

- These MoUs play a crucial role in distributing **content globally**, **fostering partnerships** with international broadcasters, and adapting to new technological demands.
- **Prasar Bharati** is India's **largest public broadcasting agency**. It is a **statutory autonomous body** set up by the **Prasar Bharati Act in 1997** and comprises the **Doordarshan Television Network** and **All India Radio**, which were earlier media units of the Ministry of Information and Broadcasting.
 - It is a vital contributor to **nation-building**, **diligently prioritizing the delivery of meaningful and accurate content** to a diverse audience, both domestically and internationally.

Read more: [Broadcasting only Through Prasar Bharati](#)

Note:

Elevating Copra MSP: Boosting Farmers & Markets

The [Cabinet Committee on Economic Affairs \(CCEA\)](#) recently announced a significant increase in the [Minimum Support Price \(MSP\)](#) for copra, setting it at ₹11,160 per quintal for milling copra and ₹12,000 per quintal for ball copra for the 2024 season.

- These adjustments aim to ensure substantial margins 51.84% for milling copra and 63.26% for ball copra benefiting **major producing states like Kerala, Tamil Nadu, and Karnataka.**
- The **National Agricultural Cooperative Marketing Federation of India Ltd. (NAFED)** and **National Cooperative Consumers' Federation (NCCF)** will continue as Central Nodal Agencies (CNAs) for procurement under the [Price Support Scheme \(PSS\)](#), ensuring sustained support for copra and de-husked coconut procurement.
- **MSP**, set by the government, ensures farmers receive a guaranteed amount for their produce. **Commission for Agricultural Costs and Prices (CACP)**, operating under the **Ministry of Agriculture and Farmers Welfare** since 1965, recommends MSP based on production costs, market trends, and demand-supply dynamics.

Read more: [Minimum Support Price](#)

Impact of Climate Change on Aardvarks

A recent study from Oregon State University highlights the **vulnerability of Aardvarks (*Orycteropus afer*)** in **sub-Saharan Africa** (south of the [Sahara Desert](#)) to the impacts of [climate change](#).

- Study reveals a concerning trend as **increasingly dry landscapes isolate aardvarks**, making them susceptible to rapid climate warming.
 - **Aridification** (a gradual process of a region becoming drier) **impacts their distribution and movement**, with long-term droughts becoming more likely, particularly in the Horn of Africa.
- The Aardvark, a **nocturnal mammal native to Africa**, belongs to the ***Tubulidentata* order** and is the sole living species within this group.
 - Aardvarks are **burrowing mammals** found across the southern **two-thirds of Africa**, primarily in savannah and semiarid areas.

- They are essential to the ecosystem as they **feed on termites**, which can damage human-built structures, and their burrows provide crucial habitat for numerous other species.
- [The IUCN Red List of Threatened Species](#): Least Concern.



Read more: [Global Climate Crisis and Net Zero](#)

Government Declares MLJK-MA as Unlawful Association

The Government of India has officially designated the '**Muslim League Jammu Kashmir (Masarat Alam faction)**' (MLJK-MA) as an 'Unlawful Association' under **Section 3(1) of the [Unlawful Activities \(Prevention\) Act \(UAPA\) 1967](#).**

- This decision is underscored by the organization's alleged engagement in **anti-national and secessionist activities**, explicit support for terrorism, and its purported role in inciting efforts to establish **Islamic rule in Jammu and Kashmir**.
- MLJK-MA is a separatist political organization in Jammu and Kashmir, led by **Masarat Alam Bhat**, a former militant.
- The UAPA, 1967, initially aimed at addressing secessionist movements and anti-national activities, has undergone multiple amendments.
 - The latest amendment in 2019 incorporated provisions concerning terrorist financing, cyber-terrorism, individual designation, and property seizure.
- This legislation grants the [National Investigation Agency \(NIA\)](#) authority to investigate and prosecute cases under UAPA nationwide jurisdiction.
 - According to **Section 3(1) of the UAPA 1967**, if the Central Government is of opinion that any

Note:



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association is, or has become, an unlawful association, it may, by notification in the Official Gazette, declare such association to be unlawful.

Read more: [Assessing the Unlawful Activities Prevention Act](#)

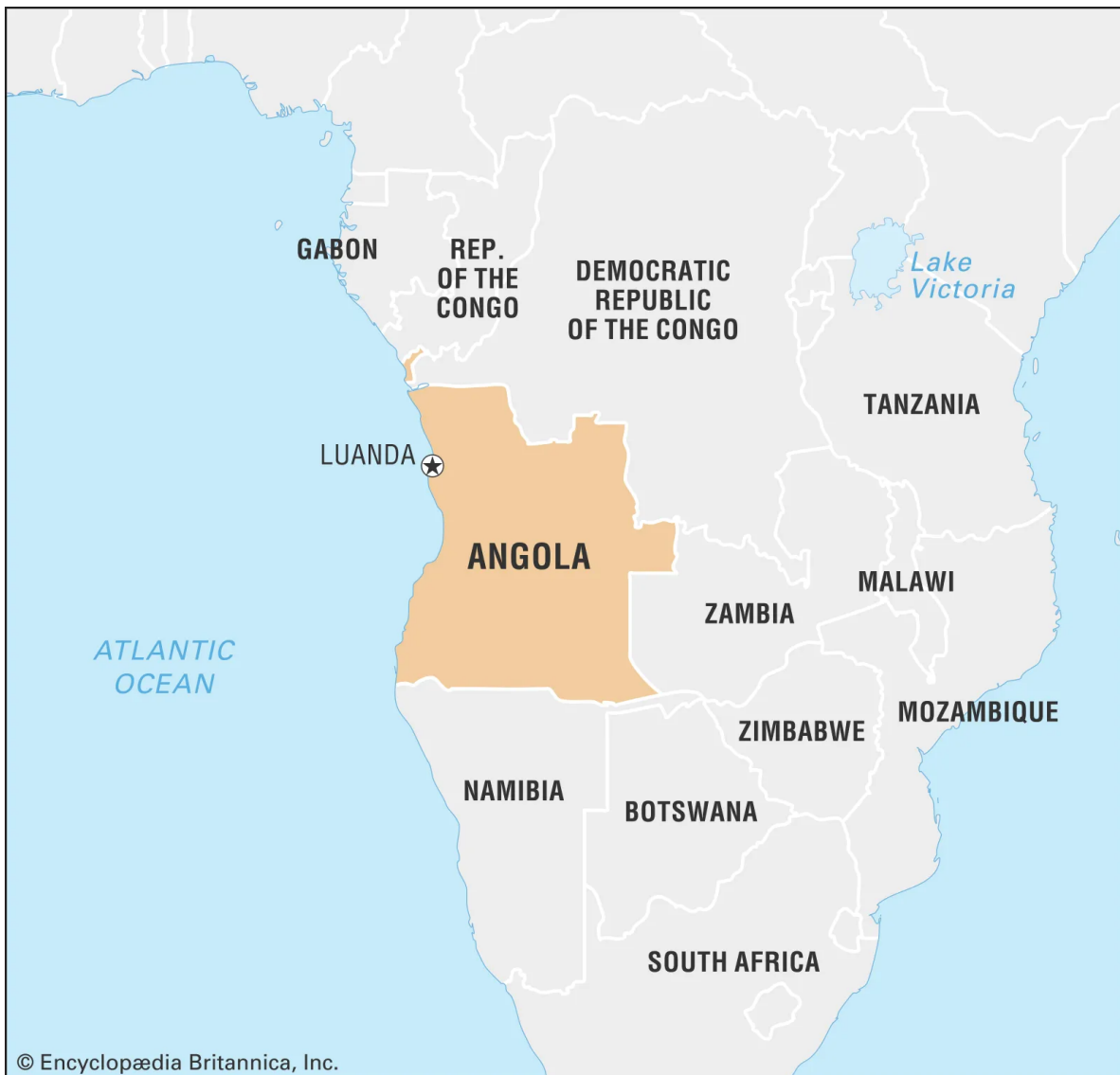
Angola Exits OPEC

Angola, one of Africa's two biggest oil producers, has announced it is leaving the **oil producers' organization Organization of the Petroleum Exporting Countries (OPEC)** over a dispute on output quotas.

➤ **OPEC and 10 allied nations** decided to further slash

oil production in **2024** to prop up **volatile global prices**, which Angola said goes against its **policy of avoiding decline and respecting contracts**.

- The **OPEC** (headquartered in Vienna, Austria) is a **permanent, intergovernmental organization**, created at the **Baghdad Conference** in **1960**, by **Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela**.
- Angola joined the group in 2007 and is not the first country to leave the cartel.
 - **Ecuador, Indonesia and Qatar** have all done the same.
- Angola's departure from OPEC will leave it with **12 members**.



Read More: [6th India-OPEC Energy Dialogue](#)

Note:



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JAXA's SLIM Lunar Mission Analysis

The Japan Aerospace Exploration Agency (JAXA) recently achieved a significant milestone as its "Smart Lander for Investigating Moon" (SLIM) successfully entered lunar orbit, aiming to join the elite group of countries capable of soft-landing probes on the Moon.

- This mission marks Japan's second attempt at a soft Moon landing after the **Hakuto-R mission**, a private commercial venture, met with failure earlier in 2023.
- **SLIM**, having a dry weight of around 190 kilograms, stands as an example of **precision technology**, aiming to touch down within 100 meters of its target site, the **Shinoli crater in the equatorial region**.

Read more: [Hakuto-R mission](#)

P-Note Surge in Indian Markets

In November 2023, there was an increase in **participatory note investments**, reaching a total of ₹1.31 lakh crore.

- **Participatory Notes (P-Notes)** are financial instruments used by foreign investors who wish to invest in Indian markets **without directly registering with the market regulator, the Securities and Exchange Board of India (SEBI)**.
 - They are issued by **registered foreign institutional investors (FIIs)** or their sub-accounts against underlying Indian securities.
- While P-Notes offer flexibility and ease of investment, they have been a **subject of regulatory scrutiny** due to concerns about their potential use in money laundering, round-tripping, and lack of transparency.

Read more: [Participatory Notes](#)

Palna Scheme

The Union Women and Child Development Ministry plans to set up **17,000 creches** within **Anganwadi centers** across India under the 'Palna' scheme.

- This initiative aims to **provide safe day-care facilities, enhancing the cognitive, nutritional, and health development** of children.
- With an increased participation rate of women in the workforce, **reaching 37% in 2022**, this expansion of creches signifies a concerted effort to support women while nurturing the development of future generations.

- In July 2022, the Ministry of Women and Child Development revamped the **National Creche Scheme into the Palna Scheme** under '**Mission Shakti**.'
 - This transformation brought about **Anganwadi cum Creches** and reclassified existing creches from the old scheme as **Stand Alone Creches**.

Read more: [Mission Shakti](#), [Anganwadi Services](#)

Pong Dam Wildlife Sanctuary

The Union Ministry of Environment and Forests has recently issued a draft notification declaring an area of one kilometre from the boundaries of **Pong Dam Wildlife Sanctuary** in Kangra district, Himachal Pradesh as an **eco-sensitive zone**.

- The Pong Dam Wildlife Sanctuary is located around the **Pong Dam Lake** (also known as **Maharana Pratap Sagar**), a **manmade reservoir** formed due to the construction of the Pong Dam on the **Beas River**.
 - The Pong Dam is the **highest earth-fill dam in India** and was constructed in 1975. In 1983, the entire reservoir was declared a Wildlife Sanctuary by the Himachal Pradesh government.
 - In 1994, the Government of India declared it a **"wetland of national importance"**. Pong Dam Lake was declared as a Ramsar Site in 2002.
- The sanctuary area is covered with **tropical and subtropical forests**.



Read more: [Pong Dam Lake Wildlife Sanctuary](#)

Black Tigers in Similipal Tiger Reserve

The Indian government informed the **Rajya Sabha** that there are **10 black tigers (melanistic tigers)** in India, all of which are **exclusively found in Odisha's Similipal tiger reserve**.

- Black Tigers are not a distinct species but a rare colour variant of **Bengal Tiger**. The coat colour and

Note:

patterning of black tigers are due to a single mutation in the **Transmembrane Aminopeptidase Q (Taqppe) gene**. This mutation is called **pseudo-melanism**.

- Similipal Tiger Reserve was designated in 1956, part of **Project Tiger** since 1973, and declared a **biosphere reserve** in 1994.
 - It is part of the UNESCO World Network of Biosphere Reserves and the **Similipal-Kuldiha-Hadgarh Elephant Reserve** popularly known as Mayurbhanj Elephant Reserve.
 - Similipal is rich in wildlife, housing tigers, elephants, different bird and amphibian species.
 - Two tribes, **Erenga Kharias and Mankirdias**, inhabit Similipal and engage in traditional agricultural activities.



Read more: [Black Tigers](#)

Kudumbashree Performed Chavittunatakam

A total of **504 members** of the **Kudumbashree Mission**, participated in a **Chavittunatakam** performance to set a **world record**.

- The **Chavittunatakam** performance told the story of the **Kudumbashree Mission**, which was set up in 1998 under the **People's Plan Campaign**.
 - Mission was launched as a **poverty eradication programme** aimed at ending **intergenerational transmission of poverty** and its growth into a **women's empowerment movement** was narrated by the women on stage with all the drama that accompanies a **Chavittunatakam** performance.
- **Chavittunatakam** is a drama form that has a great following in the **coastal districts** of central Kerala. The Kudumbashree performance also won the **World Talent Record**.
 - It was organized as part of the campaign to popularize the ongoing **National Saras Mela 2023**.

- Saras Mela has been organized with the aim of **empowering women** and giving market to the **goods** produced by Self Help Groups.

Read More: [Self Help Group Kudumbashree](#)

PT Instructors Come Within Definition of Teachers: SC

The **Supreme Court** has recently held that **Physical training instructors (PTIs) come within the definition of "teachers"** though they may not necessarily take classes within the four walls of a building.

- Highlighting the multifaceted responsibilities of a physical director, including **organizing sports activities, managing sports facilities, and overseeing tournaments**, the court underlined the inherent educational aspect of a PTI's role.
- SC was hearing a case involving a **sports officer/PTI** contesting the university's **retirement age policy**, seeking parity with other teaching faculty members.

MedTech Mitra: Revolutionizing India's Healthcare Innovations

Recently, the Ministry of Health and Family Welfare launched '**MedTech Mitra**,' a transformative platform aimed to empower **MedTech Innovators** and advance healthcare solutions.

- It seeks to **shape and finalize the research, knowledge, and logic of aspiring MedTech innovators** while aiding them in securing regulatory approvals.
 - It aims to streamline innovation and service, reducing the nation's reliance on imported medical devices, currently at **80%**.
- MedTech refers to "**Medical Technology**," which encompasses a wide range of technological innovations, devices, equipment, and solutions used in the field of healthcare.
 - **Examples** of MedTech include devices like **MRI machines, pacemakers, insulin pumps** and surgical instruments, among others.

Read more: [Policy Initiatives for Pharma Med Tech Sector](#)

UNESCO's 2023 Prix Versailles

Bengaluru's **Kempegowda International Airport's Terminal 2 (T2)** has recently garnered two prestigious recognitions at **UNESCO's 2023 Prix Versailles**.

Note:



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- It has been marked as one of the 'World's most beautiful airports' and secured the coveted 'World special prize for an interior 2023.'
- Annually announced by **UNESCO** since 2015, the Prix Versailles awards honor exceptional accomplishments in **global architecture and design**.
 - This prestigious recognition emphasizes the significance of **thoughtful sustainability as a cultural catalyst**, recognizing innovation, creativity, reflections of local **heritage**, ecological efficiency, and the promotion of social interaction.

Nematocyst a Cellular Weapon

Evolution has equipped certain aquatic animals with a potent **defence mechanism** known as the **nematocyst**.

- Nematocysts are specialized cells found in **Cnidarians** which include **jellyfish, corals, sea anemones, and hydras** that serve as potent weapons for hunting prey and defending against predators.
 - Each nematocyst contains a capsule with a coiled, thread-like tubule and toxins capable of rapid ejection with an acceleration surpassing that of a bullet.
- **Cnidarians** contain **cnidocytes** which release nematocysts when triggered by potential prey. Nematocysts pierce prey's outer layer or inject toxins into its body.
 - Toxins in nematocysts have **paralytic (paralysis) or cytolytic (destroying cells)** effects on the prey.
 - Cnidarians use a combination of toxins for predatory or defensive purposes.



Yashwanth

P Tag: Rapid Fire

S Tag: Rapid Fire CA, Quick Facts for Prelims, GS Paper - 3, Government Policies & Interventions

Meta Keywords: Union Government, Tax Remission, Sugar Exports, Restricted Category, RoDTEP Scheme, Reimbursement Mechanism, Export Entities, Taxes and Duties, RoDTEP Committee, Department of Revenue, Free Export, Export Benefits, Rapid Fire CA, UPSC, CSE, IAS.

Meta Description: This section includes a gist of topics important from the perspective of UPSC Prelims that were published in the newspapers.

Tax Relief Strategies for Sugar

The Union government is planning to **revive tax remission benefits on sugar exports**, which were placed in the 'restricted' category in mid-2022.

- The **Remission of Duties and Taxes on Export Products (RoDTEP) scheme**, which was launched in January 2021, aims to provide a mechanism for **reimbursement of taxes, duties and levies** that are incurred by the export entities in the process of **manufacture and distribution** of exported products.
 - The RoDTEP Scheme is a **Department of Commerce scheme (Ministry of Commerce & Industry)**, and it is being implemented by the **Department of Revenue (Ministry of Finance)**.
- However, under this scheme, sugar exporters faced a tax query from the customs authorities, as it is a **restricted commodity and is not eligible for export benefits**.
 - Industry challenges arose as sugar, previously under free export, sought RoDTEP benefits.

Read more: [Scheme for Remission of Duties and Taxes on Exported Products](#)

Veer Baal Diwas

Veer Bal Diwas is observed on 26th **December** every year to commemorate the **martyrdom** of the **four sons of Guru Gobind Singh** the tenth and last Sikh guru.

- The four sons were named **Zorawar Singh, Fateh Singh, Jai Singh** and **Kulwant Singh** who fought against the **Mughal emperor Aurangzeb** and his army.
- **Zorawar Singh** and **Fateh Singh** were captured by the Mughals at the **age of six and nine** respectively after they had defended their **fort of Anandpur Sahib** from a siege.

Note:

- They were taken to **Sirhind**, where they **refused to convert to Islam** and were sentenced to death by being bricked alive in 1705.
- **Jai Singh** and **Kulwant Singh** were also captured at **Anandpur Sahib**, but they managed to escape from **Sirhind** with the help of some loyal followers. They joined their father in his **final battle at Sirhind**, where he was wounded by a musket shot.
- Guru Gobind Singh's sons sacrificed their lives for the cause of **Sikhism** and their courage inspired generations of Sikhs.

Read More: [Veer Baal Diwas](#)

National Consumer Rights Day

India celebrates **National Consumer Rights Day** on **24th December every year** to raise awareness about consumer rights and responsibilities.

- The day commemorates the day when the **Consumer Protection Act 1986** received the President's assent on **December 24, 1986**.
- The Act aims to **protect consumers** from defective goods, negligent services, and unfair trade practices.
 - The six fundamental rights of the Consumer Protection Act are the Right to safety, the Right to choose, the Right to be informed, the Right to be heard, the Right to seek redressal and the Right to consumer education.

- The Consumer Protection Act, 2019 was passed by the Parliament to replace the Consumer Protection Act, 1986.

- The **World Consumer Rights Day** is observed on **15 March**.

Read more: [National Consumer Day, Safeguarding the Rights of Consumers](#)

Pandit Madan Mohan Malaviya Birth Anniversary

On the **162nd birth anniversary** of **Pandit Madan Mohan Malaviya** on **25th December 2023**, the Prime Minister is scheduled to release the first series of the '**Collected Works of Pandit Madan Mohan Malaviya**.'

- The **bilingual (English and Hindi)** work features writings, speeches, unpublished letters, and other works of Madan Mohan Malaviya.
- Madan Mohan Malaviya (25th December 1861 - 2nd November 1946) was an **Indian scholar, politician, and educational reformer**.
 - He was a leader in the Indian independence movement and served as president of the Indian National Congress four times. He was also the founder of the **Akhil Bharat Hindu Mahasabha** and the Banaras Hindu University.

Pt. MADAN MOHAN MALAVIYA

25th December 1861- 2nd November, 1946

Educationist, Journalist, Politician and Freedom Activist
Title of "Mahatma" by Mahatma Gandhi and "Karmayogi" by Dr. S. Radhakrishnan

ROLE IN FREEDOM STRUGGLE

- He was midway between the Moderates and the Extremists
- Took part in Salt Satyagraha and the Civil Disobedience Movement (1930)
- Elected President of the Indian National Congress for four sessions (1909, 1913, 1919, and 1932)

MAJOR CONTRIBUTIONS

- Ending the Indian Indenture system (bonded labour)
- Setting up the Ganga Mahasabha in 1905
- Member of the Imperial Legislative Council for 11 years
- Popularised the term "Satyamev Jayate"
- Introduction of Devnagri in British-Indian Courts
- Helped establish the Hindu Mahasabha in 1915
- Founded the Banaras Hindu University (BHU) in 1916



JOURNALISM

- Abhyudaya (Hindi weekly) and Maryada (Hindi monthly)
- Chairman of the Board of Directors of the Hindustan Times

HONOURS

- Bharat Ratna (2014)
- Varanasi-New Delhi Mahatma Express (2016)



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Read more: [Pt. Madan Mohan Malaviya](#)

Note:

Kraft Process: A Paper-Maker's Craft

The **kraft process** is used to produce **cellulose fibers** from **wood chips**, which are then used to make **paper** and other everyday materials.

- It is a **chemical process** involving the treatment of wood chips with **water**, **sodium hydroxide**, and **sodium sulfide** at high temperatures.
- The **mixture of sodium hydroxide** and **sodium sulfide** creates **white liquor**, which breaks the bonds between **lignin**, **hemicellulose**, and **cellulose** in the **wood chips**.
- This process is the most common method for **paper production**, yielding stronger paper determined by its sulphidity, indicating the relative sulfur content.
- The process releases substances like **lignin**, **dissolved carbon**, **alcohol ions**, and **heavy metals** into the water, making it **environmentally unfriendly**.

NHRC Directs Inquiry on Salwa Judum Victims

The **National Human Rights Commission (NHRC)** has responded to a petition, directing the **Union Ministry of Home Affairs** and **six state governments** to provide information on victims affected by Salwa Judum.

- It was argued that the displaced individuals, residing in forest areas across several states, have been **deprived of essential welfare schemes**, including land rights, tribal status, social welfare benefits, and **Forest Rights Act** entitlements.
- **Salwa Judum** is a **group of tribal persons** mobilized for resistance against outlawed armed **naxalites**. The group was reportedly backed by government machinery in Chhattisgarh.
 - In **2011**, Supreme Court of India ruled against arming civilians in this manner banned Salwa-Judum and **directed Chhattisgarh government to disband any militia force** founded to combat Maoist guerrillas.

Read more: [Left Wing Extremism](#)

Queen of Millet

Raimati Ghiuria, a tribal farmer from **Odisha's Koraput district**, has preserved **30 varieties of millets** and trained hundreds of women in cultivating rare millets.

- She was invited to the **G20 Summit** held to commemorate the **'International Year of Millets'**.
 - She has preserved **72 traditional paddy varieties** and at least **30 varieties of millets** including **Kundra bati mandia, jasra, juana, and jamkoli**.
- At the **G20 Summit** she was called the **'Queen of Millet'**. She has been recognized as a **pioneer in native seed conservation**.
- Millets are **drought-resistant**, require less water and can grow in poor soil conditions.
 - Millets are a good source of **fiber, protein, vitamins, and minerals**.
 - Millets are naturally **gluten-free**, making them suitable for people with **celiac disease** or **gluten intolerance**.

Working of Touchscreens

A **touchscreen** is a surface that combines two functions: to **receive inputs** for a computer (say, tapping on an app) and to **display the output** (launching the app).

- There are two most common types of touchscreens: **capacitive** and **resistive**.
 - **Capacitive touchscreens** are used in most smartphones and tablets. They work by sensing the **electrical properties** of the **human body** when a finger touches the screen.
 - Such a **touchscreen** consists of a surface with a **grid of capacitors**. Capacitor stores electric charges and when a finger touches the screen, sensors detect the distortion and **relay the information to determine the touch location**.
 - **Resistive touchscreens** are **pressure-sensitive** and work by sensing the pressure applied to the screen.
 - Resistive touchscreens are cheaper to make and require less power to operate.
 - A resistive touchscreen uses resistance. That is, there are two sheets, both **conductors**, separated by a small gap. When a finger touches one sheet, it moves it at that point to touch the underlying sheet, allowing a current to pass there.

Paat-Mitro App to Facilitate Jute Farmers

Recently, the Ministry of Textiles launched "**Paat-Mitro**", a mobile application, developed by the **Jute Corporation of India Limited (JCI)** during the **Jute Symposium**.

Note:

- The application is available in 6 languages and all the functionalities are made available to the users free of cost.
- The app also offers **agronomic practices, Minimum Support Prices (MSP) details, Jute Gradation Parameters, 'Jute-ICARE' schemes, weather forecasts, JCI's Purchase Centers' locations, and Procurement Policies.** It enables farmers to track their **jute** payments and uses a Chatbot for queries.
- India is the largest producer of jute followed by Bangladesh and China.
 - However, in terms of acreage and trade, Bangladesh takes the lead accounting for three-fourth of the global jute exports in comparison to India's 7%.

Read more: [Jute Industry](#)

Kashi Tamil Sangamam

The Prime Minister of India inaugurated the **Kashi Tamil Sangamam** at **Namo Ghat, Varanasi**, which aims to celebrate the historical and civilizational connections between **North and South India**.

- The event is a month-long celebration of **art, music, handloom, handicrafts, cuisines**, and other distinctive products from **Tamil Nadu** and **Varanasi**.
- The ancient connection between **Kashi (Uttar Pradesh)** and **Tamil Nadu** dates back to the **15th century** when **King Parakrama Pandya**, ruler of the region around **Madurai**, traveled to **Kashi** to bring back the **lingam** for his temple.
 - While returning, he stopped to rest under a tree. When he tried to continue his journey, the cow carrying the **lingam** refused to budge from its spot.
- **Parakrama Pandya** understood this to be the **Lord's wish** and **installed the lingam** there, a place that today is known as **Sivakasi**.
- The **Pandya**s also built the **Kasi Viswanathan Temple** which is known as **Tenkasi** in **southwestern Tamil Nadu**.

Read More: [KASHI TAMIL SANGAMAM](#)

National Mathematics Day 2023

National Mathematics Day is celebrated on **22nd December** annually since 2012. The day honours the birth anniversary of **Srinivasa Ramanujan**, a renowned Indian mathematician.

- Ramanujan, born on **22nd December 1887**, in **Erode, Tamil Nadu**, is known for his contributions to **number theory, infinite series, and continued fractions**.
- The number **1729**, known as the **Ramanujan number**, is the smallest number expressible as the **sum of two different cubes in two distinct ways**.
- Ramanujan compiled around 3,900 results consisting of equations and identities. One of his most treasured findings was **his infinite series for Pi**.
 - Made significant contributions to **hypergeometric series, Riemann series**, elliptic integrals, mock theta function, and theory of divergent series.
- The **Man Who Knew Infinity** is a 2015 biographical film about Ramanujan.



Read more: [National Mathematics Day](#)

CMFRI Commercializes Seaweed-Based Nutraceuticals

The **Indian Council of Agricultural Research(ICAR)**-**Central Marine Fisheries Research Institute (CMFRI)** has successfully commercialized two **seaweed-based**

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nutraceutical products, **Cadalmin™ Immunalginate extract (Cadalmine™ IME)** and **Cadalmin™ Antihypercholesterolemic extract (Cadalmine™ ACE)**.

- These products, developed with eco-friendly 'green' technology, aim to boost **anti-viral immunity and combat high cholesterol or dyslipidemia (imbalance of cholesterol)**.
- The product is positioned as a potential remedy against **post-Covid complications**, exhibiting antiviral properties against the delta variant of **SARS CoV-2**.
- Seaweeds, primitive **marine algae**, lacking roots, stems, and leaves, play a vital role in **marine ecosystems**.
 - Seaweeds offer nutritional benefits and medicinal properties, containing anti-inflammatory and anti-microbial agents with potential cancer-fighting effects.

Read more: **Seaweed Farming, Indian Council of Agricultural Research (ICAR)**

LIC's Approach to 'Insurance For All by 2047'

The **Life Insurance Corporation (LIC)** of India in alignment with the **'Insurance For All by 2047'** initiative, is set to play a pivotal role by introducing tailored products for rural areas and embracing digital transformation.

- The focus is on **extending insurance coverage** to maximum rural masses, aligning with the vision of making India a developed nation by 2047.
- LIC acknowledges the **Insurance Regulatory and Development Authority of India (IRDAI)** proposed **'Bima Vistar,'** a composite product covering **life, health, and property insurance**.
 - The distribution channel for these products, known as **'Bima Vahak,'** will be women-centric, in line with the proposed guidelines for dedicated distribution channels at the Gram Panchayat level.
- LIC has initiated a digital transformation project, **Digital Innovation and Value Enhancement (DIVE)**, with a focus on customer acquisition in the first phase.
 - The digital transformation aims to provide efficient services like claims settlement and loans at the click of a button, reducing the need for customers to visit offices.
- LIC is **fully owned by the government**. It was set up in 1956. It has the **biggest share in India's insurance business**.

Read more: **IRDAI Vision 2047, Bima Vahak**

Kolattam Dance

Recently, Kolattam dance was performed during Balotsav, a children's festival, in Vijayawada, Andhra Pradesh.

- Kolattam is a folk dance from the states of **Andhra Pradesh and Tamil Nadu**. It is part of a religious offering, where women dancers pay homage to the temple Goddess in many regions of Andhra Pradesh.
 - The Kolattam dance is predominantly a dance of women, without involving men.
- This form of dance is also called as **Kolkollannalu or Kollannalu**. This popular form of dance is usually performed together as a group where two artists each are **grouped as a pair**. Each dancer holds **two sticks and moves these sticks in rhythm**.
 - The **Kolattam Kara** is a solid wooden stick made of wood and lacquer is used in Kolattam.



Read more: **Indian Classical Dances**

FDA Approval to Gene Therapies for Sickle Cell Disease

Food and Drug Administration (FDA), an agency under U.S. Department of Health and Human Services, approved two gene therapies for **sickle cell disease**: **Lyfgenia from bluebird bio** and **Casgevy by Vertex Pharmaceuticals and CRISPR Therapeutics**.

- Sickle cell disease is a genetic blood disorder characterized by **an abnormality in hemoglobin**, the protein responsible for carrying oxygen in red blood cells (RBC).
 - It causes RBC to adopt a sickle or crescent shape, hindering their movement through vessels, leading to potential complications like severe pain, infections, anaemia, and strokes.

Note:

- These therapies aim to **transform treatment by leveraging CRISPR gene editing technology** to either insert modified genes or edit stem cells, potentially offering one-time treatments.
- Concerns exist about the therapies' long-term effectiveness and risks, including the need for **high-dose chemotherapy, potential infertility**, and concerns about unintended genomic alterations.

Read more: [CRISPR-Cas9 for Sickle-Cell Anaemia](#)

Night Vision in Animals

Animals **navigate darkness using a complex mix of eye structures and light-sensitive cells**. Unlike humans, many animals can detect light waves that escape our notice.

- Among vertebrates, there are two key types of **light-sensitive cells: rods and cones**. Rods work great in low light (like night vision), while cones handle daylight and colors.
- Day-active creatures have more **cone cells for sharper images** but may struggle in dim light. Whereas, nocturnal animals mainly rely on **rod cells in their retinas**, packed with a light-sensitive pigment called **rhodopsin**. This pigment helps them see better in the dark by regenerating slowly when light is scarce.

WHO Designates JN.1 as Variant of Interest as Covid-19 Cases Rise

The **World Health Organization (WHO)** has classified the **JN.1 sub-variant of Covid-19** as a "variant of interest" distinct from its parent lineage, **BA.2.86**, commonly known as **Pirola**. Once classified as such, the **WHO** closely monitors its global dissemination, evaluates its health risks, and facilitates international data sharing.

- Despite the rapid increase in its spread, the **WHO** clarified that **there's currently no evidence suggesting an elevated public health risk** posed by this variant.
- However, concerns arise with the onset of winter in the Northern Hemisphere, potentially burdening healthcare systems with increased respiratory infections.
- Notably, **India has reported several cases of JN.1**, with other countries worldwide, such as the US, Singapore, and China, also confirming its presence.

Read more: [Covid-19, WHO](#)

Goa Liberation Day

Goa Liberation Day is celebrated on **December 19th** every year to commemorate the **state's liberation** from **Portuguese rule in 1961**.

- The Indian government waited for **14 years after independence** to move troops to Goa because it was a sensitive issue and the government did not want to risk a war with Portugal.
- In **1961**, the Indian Government launched **Operation Vijay** and annexed **Daman and Diu** and **Goa** with the Indian mainland on **19th December**.
 - As a result, **Goa, Daman, and Diu** became Union Territories of India.
- Goa continued to be a **Union Territory** till **1987** and then was given **statehood** by becoming the **25th state of India**.
 - **30th May** is celebrated as the Statehood Day of Goa.
- **Wildlife Sanctuaries and National Parks of Goa:**
 - **Mhadei Wildlife Sanctuary**
 - **Netravali Wildlife Sanctuary**
 - **Cotigao Wildlife Sanctuary**
 - **Bhagwan Mahaveer Sanctuary**
 - **Mollem National Park**



Read More: [Goa Liberation Day](#)

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Exclusion of Blood Disorders from Job Reservations

The Centre's decision to **exclude individuals with thalassemia, sickle cell disease, and haemophilia**, from **government job reservations**, despite their recognition as disabilities in the **Right to Persons with Disabilities(RPWD) Act of 2016**, prompts concerns.

- The **government provides 4% reservation in government jobs for specific disabilities**, including total loss of vision and low vision, complete loss of hearing and low hearing, locomotor disability, etc.
 - Government cites Section 34 of RPWD Act, 2016, stating that persons with blood disorders, including thalassemia, are **not eligible for job reservation in government establishments**.
- Activists express dissatisfaction, asserting that excluding disabilities recognized in the Act from job reservations defeats the Act's purpose.

Read more: [World Haemophilia Day, Reservation In India](#)

109th Indian Science Congress (ISC)

Lovely Professional University(LPU) withdrew from hosting **109th Indian Science Congress (ISC)**, raising concern about the event's viability.

- The ISC is a prestigious and influential scientific organization that meets annually in the first week of January.
 - It was founded in 1914 to stimulate scientific research in India.

The **Indian Science Congress Association (ISCA)** is the official body that organizes the event.

- ISCA, is a professional body under the Department of Science & Technology, **Ministry of Science & Technology**.

- The theme of the 109th ISC is "The Global Perspective on Science and Technology for Sustainable Future".

Read more: [108th Indian Science Congress](#)

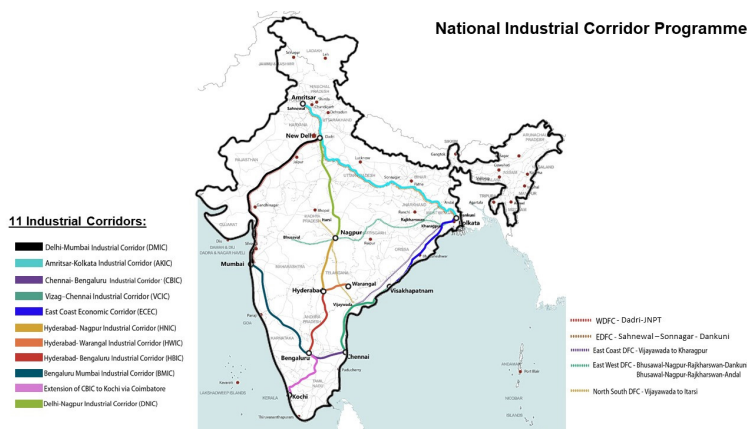
India, ADB Ink USD 250M Deal for Industrial Corridor Development

Recently, The **Government of India** and **Asian Development Bank (ADB)** signed a USD 250 million policy-based loan that will continue support to **industrial corridor development** to make **manufacturing** more **competitive**, **strengthen national supply chains** and links with **regional and global value chains**.

- This will help to strengthen policy frameworks for the Government of India's **National Industrial Corridor Development Programme (NICDP)** and develop **11 industrial corridors**.

- NICDP is India's most ambitious **infrastructure programme** aiming to develop new industrial cities as "**Smart Cities**" and converging next generation technologies across infrastructure sectors.

- **National Industrial Corridor Development and Implementation Trust (NICDIT)** is the implementing agency under the administrative control of **Department for Promotion of Industry and Internal Trade (DPIIT)**, Ministry of Commerce and Industry.



Read More: [New Industrial Infrastructure Projects](#)

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SATHEE Portal

Recently, the Minister of State for Education, in a written response in the [Lok Sabha](#), announced that the Department of Higher Education, Ministry of Education in collaboration with IIT Kanpur, has **initiated the SATHEE (Self-Assessment, Test, and Help for Entrance Examination) portal**.

- The objective of the portal is to provide **quality education** to every student who intends to participate in competitive education such as **JEE, NEET** and various **State level Engineering** and other Examinations.
- To support students preparing for **JEE** and other **engineering examinations**, a **45 days crash course of JEE** has been launched.
 - Course is curated by **IIT toppers, academicians and subject experts**. This crash course is available in **5 languages** including **English**.
- **All India Council of Technical Education (AICTE)** has developed an **AI** based **translation tool**. This tool supports **22 Indian languages**.

Read More: [Free of Cost Digital Tools to Marginalized Communities](#)

Bonnet Macaque Monkey

The discovery of **27 bonnet macaque monkey carcasses in a Karnataka village** spotlights the escalating human-monkey conflict driven by habitat encroachment and diminishing wildlife spaces.

- Instances of monkey incursions for food in human territories have led to distressing events, like the **suspected poisoning of macaques in Guthigaru village**.
- The encroachment of farming into forest fringes, particularly **coconut plantations and fruit orchards**, draws monkeys when natural food sources diminish.
- The **bonnet macaque (*Macaca radiata*)** is a species of **Old World monkey**. They are gray-brown in color, have large ears, wrinkly faces, and a mop of hair on their heads that is parted in the middle.
 - The bonnet macaque gets its name from the whorls of hair on the crown of its head that resemble a cap or bonnet.
 - Bonnet macaques are endemic commensals: they are found only in **peninsular India and live in close proximity with humans**.
 - IUCN Status: Vulnerable



Value Investing

Value investing entails purchasing assets below their intrinsic value, anticipating future appreciation. It was **pioneered by Benjamin Graham** and **popularized by Warren Buffet** on the belief that an asset's price will eventually match its intrinsic value.

- It focuses on **exploiting the gap between an asset's price and intrinsic value for profitable returns**, taking advantage of market fluctuations by buying during crises and selling during booms.
 - For example, if a company's stock has an intrinsic value of 100 rupees per share, but the market price is only 60 rupees. A value investor seizes the opportunity, buying the undervalued stock.
 - **As the stock price rises toward its intrinsic value**. The value investor then sells the stock at a profit, having taken advantage of the initial undervaluation.
- This **contrasts with efficient market theory**, as value investors capitalize on disparities between market prices and intrinsic worth, leveraging undervalued assets.

Microsoft's Phi-2: Small Model, Big Impact

Microsoft's recent release of **Phi-2**, a small language model marks a significant leap in the world of language models.

- Positioned as an upgraded version of **Phi-1.5**, this model boasts capabilities in **generative AI** that challenge larger counterparts like **Llama-2, Mistral, and Gemini-2**.

Note:



drishti

- The key lies in Phi-2's training on diverse, "**textbook-quality**" datasets, empowering it with common sense, language understanding, logical reasoning, and even prowess in solving complex mathematical and physics problems.

Read more: [Generative Artificial Intelligence](#)

Joint Anti-terrorism Exercise of SCO

Recently, the authorities of the [Shanghai Cooperation Organization \(SCO\)](#) member states, with the support of the Executive Committee of the Regional Anti-Terrorist Structure of the SCO, conducted a joint anti-terrorism drill to curb terrorist, separatist, and extremist online activities.

- Hosted by **India**, this exercise focused on curtailing the **Internet's exploitation for terrorist, separatist, and extremist purposes**.
- SCO is a permanent intergovernmental international organization that aims to promote a **new democratic, fair and rational international political and economic international order**. It was created in 2001.
 - The SCO Charter was signed in 2002, and entered into force in 2003.
 - **Membership**: Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, Uzbekistan, India, Pakistan and Iran.

Read more: [Shanghai Cooperation Organization](#)

Improvement in India's Trade Deficit

Recently, India's **trade deficit** showed significant **improvement**, with exports and imports both declining, leading to a narrower trade gap.

- Merchandise exports in November 2023 **decreased by 2.8% Year over Year (YoY)** to USD 33.9 billion, while **imports contracted by 4.3%** to USD 54.98 billion, resulting in a trade deficit of USD 20.58 billion.
 - The trade deficit showed a significant decline from the high of USD 29.9 billion recorded in October 2023.
- Trade Deficit is an **amount by which the cost of a country's imports exceeds its exports**. It is a part of the [Current Account Deficit](#).
- Decline in **petroleum and engineering product** shipments, which constitute nearly half of India's exports, contributed to the overall export contraction.

- Emerging sectors like **electronics (23.56% growth)** and positive contributions from gems and jewelry, iron ore, pharma, and minerals provided some support in November.

Read more: [Current Account Deficit, India's Export Outlook](#)

India's Participation in TIWB Programme

India's participation in the **Tax Inspectors Without Borders (TIWB)** programme for strengthening **Saint Lucia's (an island country in the Caribbean) tax administration** marks a significant step in international cooperation in tax matters.

- India has been chosen as the Partner Administration and will provide **Tax Experts** for this 12-18 months programme.
 - TIWB is a joint initiative of the United Nations Development Programme (UNDP) and the Organisation for Economic Cooperation and Development (OECD),
- The focus is on strengthening Saint Lucia's tax administration by transferring technical knowledge and skills, specifically emphasizing the effective use of OECD's **Automatic Exchange of Information (AEOI)** under the [Common Reporting Standard \(CRS\) framework](#).
- The CRS, established in response to a **G20** request and approved by the OECD Council in 2014, mandates **jurisdictions to exchange financial information** obtained from their institutions annually.
 - This framework outlines the types of accounts, taxpayers, and due diligence procedures for financial institutions. It aims to combat tax evasion globally.

Read more: [Common Reporting Standard: OECD](#)

Barracuda: India's Solar-Electric Maritime Boat

The **launch of Barracuda in Alappuzha, India's fastest solar-electric boat**, marks a significant step forward in eco-friendly maritime transportation.

- Developed by **Navalt Solar and Electric Boats**, the 14-meter-long vessel embodies efficiency and sustainability, capable of ferrying up to 12 passengers and cargo even in rough seas.
- Engineered to navigate waves as tall as four meters, **it operates silently without noise, vibration, or [air pollution](#)**.

Note:



Read more: [India's Maritime Doctrine](#)

Maldives Ends India's Hydrography Agreement

The current Maldives's government, steering away from the 'India First' policy, has **opted not to renew the hydrography agreement with India** citing national security concerns and the safeguarding of sensitive information.

- The **hydrographic survey agreement** was signed on **June 8, 2019**, during the Indian Prime Minister's visit to the Maldives.
 - Under the agreement, India was allowed to conduct a comprehensive study of the island nation's **territorial waters**, which includes reefs, lagoons, coastlines, ocean currents, and tide levels.
- The third Joint hydrographic survey by the **Indian Navy and the Maldives National Defense Force (MNDF)** was carried out by an **Indian Naval Ship Investigator (INS Investigator)** from 19th January to 26th February 2023.
- Earlier, the current Maldives's government also **requested India to withdraw its military personnel from the island.**



Read more: [India-Maldives Relations](#)

Pandemic Accord

Recently, the seventh round of deliberations on the **Pandemic Accord** was recently concluded by representatives from **28 countries**.

- The accord aims to strengthen **global prevention, preparedness, and response to disease outbreaks.**
- The delegates failed to reach a consensus on **Intellectual Property Rights** and **Relaxing Patents**.
- The **United States** did not change its stance on the

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protection of **Intellectual Property Rights (IPR)**, reiterating that canceling them would not improve access for poor countries during emergencies.

- **Developed** and **developing** countries had divergent opinions, with the former focusing on **prevention** and the latter demanding **equitable access** to medical products to be a guarantee in the treaty.
- The **International Federation of Pharmaceutical Manufacturers and Associations** was also in agreement when it came to retaining patent rights.

Element Plutonium

Plutonium, a radioactive element, was first produced and isolated at the **Berkeley Radiation Laboratory** by **Dr. Glenn T. Seaborg, Joseph W. Kennedy, Edwin M. McMillan, and Arthur C. Wahl** in 1940.

- They produced it by bombarding **uranium-238** with **deuterium nuclei** (alpha particles).
- Plutonium production was essential for the **Manhattan Project** (a top-secret program to make the first atomic bombs during World War II).
- Its basic chemistry is closely related to uranium.

- **Plutonium-239**, an isotope of plutonium, could undergo fission and be used as fuel for an **atomic bomb**.
- **Plutonium** is also a key material in the development of nuclear power.

Kashi Vishwanath Corridor

Recently, the Prime Minister of India has celebrated 2 years of Kashi Vishwanath Corridor.

- Kashi Vishwanath Corridor connects the iconic **Kashi Vishwanath temple** and the ghats along the river **Ganga**.
 - Kashi Vishwanath Temple is one of the most famous Hindu temples dedicated to **Lord Shiva**.
 - The temple stands **on the western bank of the holy river Ganga** and is one of the **twelve Jyotirlingas, the holiest of Shiva temples**.
 - Kashi Vishwanath Dham has become one of the top pilgrimage spots in India as a **record 12.9 crore devotees** visited the shrine in two years.

Read more: [Kashi Vishwanath Corridor](#)

Note: