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Weekly Current Affairs

🎯 To The Point

by Dhananjay Gautam

27 Oct - 02 Nov 2024

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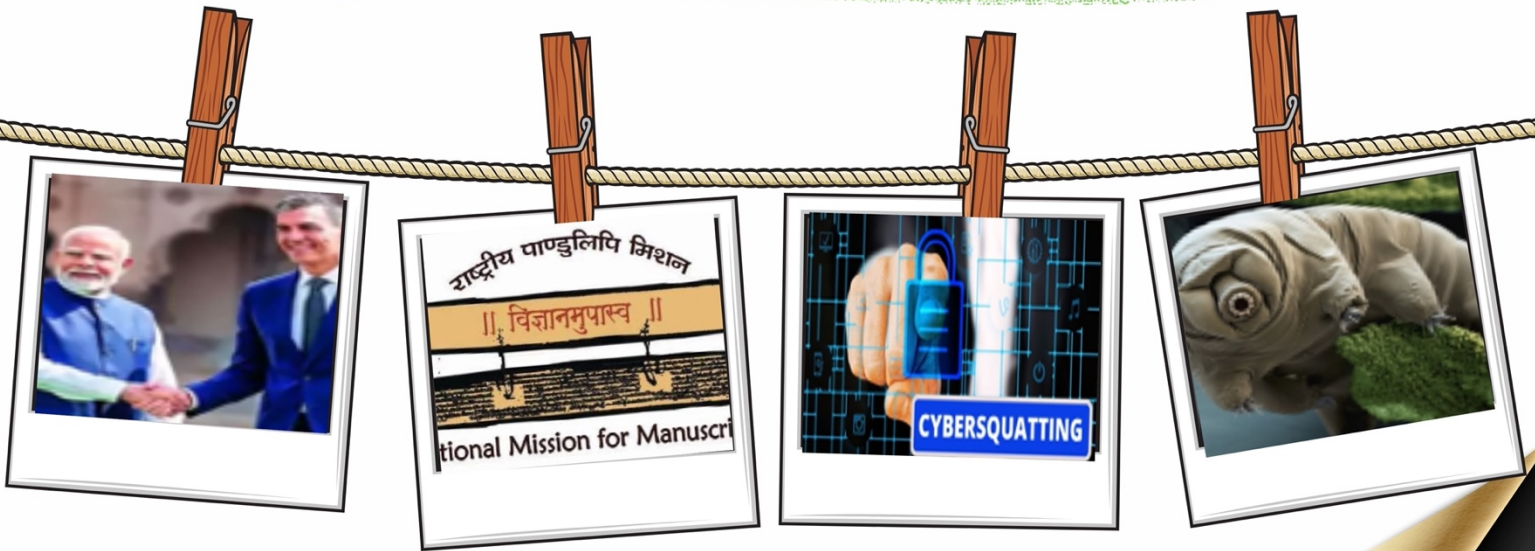
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7th India-Germany Inter-Governmental Consultations (IGC)

Context: The seventh edition of the India-Germany Inter-Governmental Consultations (IGC) was held, co-chaired by India's Prime Minister and Germany's Federal Chancellor, who visited India. The discussions were themed "Growing Together with Innovation, Mobility, and Sustainability," reflecting the shared vision for a sustainable, interconnected future.

Major Outcomes of the IGC:

1. **UN Security Council Reform**: India and Germany reiterated the need for UN Security Council reform, advocating for text-based negotiations under the Intergovernmental Negotiations (IGN) with a set timeframe.

2. **Upholding UN Charter Principles**: The two nations emphasized respect for the UN Charter, condemning any threats or force against nations' sovereignty and territorial integrity.

3. **Mutual Legal Assistance Treaty**: A treaty on mutual legal assistance in criminal matters was concluded to facilitate sharing information, evidence, capacity-building, and exchange of best practices in criminal justice.

4. **Agreement on Classified Information Protection**: An agreement for the exchange and mutual protection of classified information was finalized, creating a framework for handling, protecting, and transmitting classified data between the two countries.

5. **Regional Consultations on West Asia and North Africa (WANA)**: Regional consultations on WANA were established, complementing existing dialogues on Africa and East Asia, with the respective foreign ministries managing the consultations.

6. **Indo-Pacific Region**: Both nations committed to promoting a free, open, inclusive, peaceful, and prosperous Indo-Pacific region based on international law.

7. **Migration and Mobility Partnership Agreement (MMPA)**: India and Germany pledged to implement the MMPA fully. This agreement aims to enhance mobility and employment opportunities while addressing irregular migration and human trafficking.

India-Germany Relations:

Since establishing a **'Strategic Partnership' in 2000**, relations between India and Germany have strengthened, particularly with the launch of IGC in 2011.

Areas of Cooperation:

- **Multilateral Cooperation**: Both countries support each other's bids for UN Security Council reforms within the G4 framework.

- **Economic Relations**: Germany ranked as India's 12th largest trading partner in 2022-23, with India constituting about 1% of Germany's total foreign trade in 2022.

- **Sustainability:** The Indo-German Energy Forum (IGEF) has been pivotal in fostering cooperation on energy security, energy efficiency, renewable energy, and other sustainability initiatives.

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GS Paper 3 – Environment and Ecology

United Kingdom Ends Coal-Based Electricity Production

Context: The UK recently became the first country to cease electricity production from coal, closing its last coal-based power plant and marking the end **of 142 years of coal-generated electricity.** In 2012, coal accounted for **40% of the UK's electricity,** but it has been steadily replaced by cleaner energy sources. The world's first coal plant opened in London in **1882**, while India's first major thermal power plant, the **Hussain Sagar Thermal Power Station**, was commissioned in **Hyderabad in 1920.**

Reasons for Closing Coal-Based Electricity Production:

1. **Pollution**: The energy sector is responsible for approximately three-quarters of global greenhouse gas emissions, as per the International Energy Agency (IEA).

2. **Commitment Limitations**: IEA projections indicate that even with current commitments, limiting the temperature increase to 1.5°C, per the Paris Agreement, remains challenging.

3. **Feasibility of Renewable Technologies**: Renewables have become increasingly scalable, and advancements in energy storage and R&D investments are supporting their adoption.

Challenges in Closing Coal-Based Power Plants:

1. **Dependence on Coal**: Coal is still a primary energy source in low- and middle-income countries like India and China, where it meets crucial energy and employment needs.

2. **Economic Impact**: Shifting away from coal is financially challenging for countries with new coal power plants, such as China and India, where existing plants represent significant investment.

3. **Challenges with Renewables**: Renewable energy faces hurdles like intermittency, high capital costs, and policy uncertainties.

Status in India:

1. **Current Reliance on Coal**: As of September 2024, coal generates around 70% of India's total electricity, with significant coal dependency expected in the short term.

2. **Net-Zero Target**: India aims to achieve net-zero emissions by 2070.

3. **Government Initiatives for Renewable Energy**: Programs like the **National Green Hydrogen Mission**, **PM-KUSUM**, **PM Surya Ghar Yojana**, and **Production-Linked Incentive (PLI) schemes** for solar PV modules are driving India's transition toward cleaner energy sources.

The UK's coal phase-out sets a global benchmark, though transitioning away from coal remains complex for developing nations due to energy demands and economic dependencies.

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GS Paper 2 - Governance, Polity

Ministry of Fisheries, Animal Husbandry & Dairying Launches Pandemic Fund Project

Context: The Ministry of Fisheries, Animal Husbandry & Dairying has launched the **Pandemic Fund Project** to enhance animal health security in India, specifically to improve pandemic preparedness and response. The project aims to bolster the country's ability to tackle animal health threats and respond to potential zoonotic pandemics. As part of this initiative, the Minister also introduced **Standard Veterinary Treatment Guidelines (SVTG)** and a **Crisis Management Plan (CMP)** for animal diseases.

Launch
Pandemic Fund Project
Animal Health Security Strengthening in India for Pandemic Preparedness and Response
&
21st Livestock Census Operation

About the Pandemic Fund Project:

- **Funding**: $25 million, provided by the G20 Pandemic Fund.
- **Establishment**: Formed during Indonesia's G20 Presidency in 2022.
- **Objective**: To strengthen the capacity of low- and middle-income countries in responding to animal health threats through strategic investments.
- **Implementing Entities**: Asian Development Bank (ADB), World Bank, Food and Agriculture Organization (FAO).

Need to Focus on Animal Disease Outbreaks:

1. **Prevent Zoonotic Diseases**: WHO notes that 5 out of 6 recent public health emergencies had animal origins, highlighting the risk posed by zoonotic diseases.
2. **Minimize Socio-Economic Impacts**: Animal-related pandemics like SARS and Avian Flu have previously caused significant global economic losses, estimated at $50 billion and $30 billion, respectively.

Major Interventions Under the Project:

- **Upgrading Animal Health Infrastructure**: Expansion and modernization of animal health laboratories and vaccine manufacturing facilities.
- **Strengthening Early Warning and Surveillance**: Enhanced systems to detect outbreaks, allowing for prompt responses.
- **Data and Risk Assessment Enhancements**: Improved data management and analytical systems for better risk evaluation.
- **Institutional Capacity Development**: Addressing capacity gaps at the national and regional levels with a disaster management framework specifically for the livestock sector.

India's Initiatives to Improve Animal Health:

- **National Animal Disease Control Program (NADCP)**: Aims to control and eradicate Foot and Mouth Disease (FMD) and Brucellosis, which have significant impacts on animal health and productivity.
- **Rashtriya Gokul Mission**: Focuses on the development and conservation of indigenous bovine breeds, enhancing their productivity and supporting livestock sustainability.

This project aligns with India's broader efforts to improve animal health and resilience, reduce the risks associated with zoonotic diseases, and strengthen biosecurity measures.

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GS Paper 2 – Governance, Polity

New 'Guidelines for Import of Live Seaweeds into India' Notified

Context: The Ministry of Fisheries, Animal Husbandry, and Dairying has issued new guidelines for importing live seaweeds into India. These guidelines aim to streamline the import of high-quality seaweed seed material from abroad, promote seaweed enterprises in coastal regions, ensure environmental safety, and address biosecurity risks associated with seaweed importation.

Need for the Guidelines:

1. **Unique Characteristics of Seaweeds**: Seaweeds live underwater and are subject to various environmental conditions, including salinity changes and temperature fluctuations.
2. **Biosecurity Risks**: Seaweeds may carry diseases, pests, or pathogens that can affect local ecosystems.
3. **Biological Factors**: Differences in reproductive strategies and genetic traits may cause imported seaweeds to persist and spread in new environments, posing risks to local biodiversity.

Key Provisions of the Guidelines:

- **Restrictions on Certain Imports**: Import is prohibited for seaweeds known to carry pathogens or those listed under CITES, the IUCN threatened list, or the exporting country's threatened list, unless certified by the exporting country's competent authority.
- **Permit and Clearance Requirements**: Importers must obtain a permit from the Department of Fisheries, Government of India, and clearance from the National Committee on the Introduction of Exotic Aquatic Species into Indian Waters.
- **Market Restrictions**: Direct sale of imported seaweed in domestic or international markets is not permitted.
- **Intellectual Property Rights**: No intellectual property claims are allowed by either the exporter or importer on the imported seaweed material.

About Seaweeds:

- **Definition**: Seaweeds refer to various species of marine plants and algae that thrive in oceans, rivers, lakes, and other water bodies.
- **Examples**: Common types include *Kappaphycus alvarezii*, *Gelidiella acerosa* (red algae), and *Gracilaria edulis*.
- **Applications**: Widely used in laboratories, pharmaceuticals, cosmetics, cardboard, paper, paint, and processed foods.

India's Seaweed Production and Initiatives:

- **Current Production**: India's seaweed production is around 34,000 tonnes annually, while the potential is estimated at approximately 9.7 million tonnes per year.
- **Pradhan Mantri Matsya Sampada Yojana (PMMSY):** This flagship scheme aims to increase the country's seaweed production to over 1.12 million tonnes by 2025, promoting sustainable growth in the fisheries and seaweed sectors.

GS Paper 3 – Technology, Economic Development

Centre for Generative AI - Shrijan

Context: Meta, in partnership with the Ministry of Electronics and Information Technology (MeitY) and the All India Council for Technical Education (AICTE), has launched the Center for Generative AI, named **Shrijan**, at IIT Jodhpur. This center, along with the **YuvaAI initiative for Skilling and Capacity Building**, aims to enhance India's AI capabilities by fostering innovation, providing skill development opportunities, and addressing real-world challenges with generative AI.

Centre for Generative AI, Shrijan:

- **Objective**: Shrijan aims to support and empower the next generation of AI innovators and entrepreneurs in India.

- **Key Focus Areas**: Leveraging open-source AI and exploring the potential of large language models (LLMs) for various applications.

- **Target**: To nurture 100,000 youth developers and entrepreneurs with AI skills over the next three years, supporting India's AI talent pool and growth in the tech sector.

YuvaAI Initiative for Skilling and Capacity Building:

- **Purpose**: This initiative targets young individuals (ages 18-30) to equip them with essential AI skills, particularly focusing on open-source LLMs, to solve real-world challenges.

- **Goal**: Empower 100,000 students and young developers to bridge the AI talent gap and bolster India's AI workforce.

What is Generative AI?:

- **Definition**: Generative AI refers to deep learning models that can produce high-quality content, including text and images, based on their training data.

- **Technology**: It builds on large language models and other machine learning techniques that interpret and respond to human language.

Significance of Generative AI for India:

- **Employment**: AI has created approximately 416,000 jobs in India, with the potential for continued growth.

- **Sector Growth**: AI's growth rate is projected at 20-25%, reflecting rapid development in the field.

- **Economic Impact**: Expected to add $957 billion to India's economy by 2035.

Challenges:

- **Data Privacy and Security**: Safeguarding personal information remains a concern.

- **Regulatory Gaps**: AI regulation is still evolving in India.

- **Skill Shortage**: There is a need for more AI experts to keep pace with the sector's demands.

Kadar Tribe

Context: The **Kadar Tribe** of Kerala has recently taken up forest restoration efforts to address the degradation caused by invasive alien species. Here's an overview of the **Kadar tribe** and their unique relationship with the forest ecosystem:

About the Kadar Tribe:

- **Location**: Primarily found in Kerala and Tamil Nadu, specifically in the Vazhachal forest region of Kerala.

- **Status**: Classified as a **Particularly Vulnerable Tribal Group (PVTG)** by the Indian government.

- **Cultural Connection**: The name "Kadar" derives from "kaadu," meaning forest in Tamil and Malayalam, signifying their deep-rooted bond with forests.

- **Language**: They speak a Dravidian language, Kadar, which is influenced by Tamil and Malayalam.

Lifestyle and Occupation:

- **Traditional Lifestyle**: Traditionally a **nomadic hunter-gatherer** community, the Kadar are highly knowledgeable about the forest and depend on gathering honey, fruits, tubers, and medicinal plants.

- **Current Occupations**: Some Kadars have shifted towards small-scale agriculture and wage labor but still rely heavily on forest resources.

- **Medicinal Knowledge**: Known for their expertise in traditional medicine, especially herbal remedies from forest plants.

- **Sustainable Practices**: The Kadar follow traditional protocols to ensure sustainable harvesting, allowing resources to regenerate before being collected again.

Social Structure and Settlements:

- **Organization**: Their social structure revolves around extended families, often living in **small hamlets** or "oorus" made of bamboo, leaves, and other natural materials.

- **Population**: Approximately 2,000 individuals in the early 21st century.

- **Spiritual Beliefs**: They worship jungle spirits, a creator couple, and local forms of Hindu deities, reflecting their reverence for nature.

Kadar and Forest Restoration:

- **Recent Initiative**: For the first time, the Kadar are actively involved in restoring natural forests impacted by invasive species in Vazhachal, Kerala.

- **Philosophy**: Their symbiotic relationship with nature is central, and they believe in the coexistence of "Kadar" and "Kaadu" (forest).

About Particularly Vulnerable Tribal Groups (PVTGs):

- **Definition**: PVTGs are identified as a more vulnerable subset among tribal communities, characterized by geographical isolation, low literacy, and a near pre-agricultural level of technology.

- **Current Statistics**: There are 75 PVTGs in India across 220 districts in 18 states and UTs, comprising about 2.8 million individuals living in 22,544 villages.

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Unique Land Parcel Identification Number (ULPIN)/ Bhu-Aadhaar

Context: The **Unique Land Parcel Identification Number (ULPIN),** or **Bhu-Aadhaar**, is a landmark initiative launched by the Indian government in 2021 under the **Digital India Land Records Modernisation Programme (DILRMP)**. Its purpose is to assign each land parcel a unique, 14-digit alpha-numeric identity, helping to streamline land records, improve accuracy, and support efficient management of land ownership details across India.

Key Features of Bhu-Aadhaar (ULPIN):

- **Initiative**: Part of the **Digital India Land Records Modernisation Programme (DILRMP)**.

- **Launched**: 2021.

- **Identification Method**: Each land parcel is assigned a **14-digit alpha-numeric ID** based on **longitude and latitude coordinates** through detailed surveys and geo-referenced cadastral mapping.

- **Structure**: The 14-digit code includes:

    - **State code**

    - **District code**

    - **Sub-district code**

    - **Village code**

    - **Unique plot ID number**

Working and Application:

- **Permanent ID**: The ULPIN is permanently assigned to a land parcel, remaining unchanged even if ownership transfers, subdivisions, or boundary changes occur.

- **Stamping on Records**: Once generated, ULPIN is stamped on the land records held by the landowner.

- **Coverage**: As of now, approximately 30% of rural land parcels have been assigned a ULPIN.

Objectives of Bhu-Aadhaar:

1. **Unique Identification**: Assigning a unique ID to each plot for easy identification and retrieval.

2. **Accurate Digital Land Records**: Maintaining comprehensive records of land owners, plot boundaries, usage, and more.

3. **Linking with Registration**: Integrating land records with property registration processes.

4. **Online Services**: Enabling online access to land record services.

5. **Support for Government Planning**: Helping maintain updated land data, which aids in government schemes and infrastructure planning.

The National Mission for Manuscripts (NMM)

Context: The **National Mission for Manuscripts (NMM)** is an initiative established by the Government of India to preserve and promote the rich manuscript heritage of the country. It focuses on documenting, conserving, and disseminating the knowledge contained within these manuscripts, which are vital to India's cultural and historical identity.

Overview of the National Mission for Manuscripts (NMM):

- **Current Status**: The Union Ministry of Culture plans to "revive and relaunch" the NMM and is considering forming an autonomous body, likely named the **National Manuscripts Authority**, which will operate under the Ministry of Tourism and Culture.

- **Establishment**: The NMM was launched in **February 2003** as part of efforts to protect India's manuscript wealth.

Objectives of the NMM:

1. **Locate Manuscripts**: Conduct a national survey to identify manuscripts across the country.

2. **Document Manuscripts**: Create a **National Electronic Database** to compile information on manuscripts, currently housing data on approximately **four million manuscripts**.

3. **Conserve Manuscripts**: Use both modern and traditional conservation techniques to preserve manuscripts and train new conservators.

4. **Train Scholars**: Educate the next generation in **Manuscript Studies**, which includes language, script analysis, critical editing, cataloging, and conservation methods.

5. **Digitize Access**: Promote access to manuscripts by digitizing rare and endangered texts.

6. **Publish Editions**: Facilitate the publication of critical editions of unpublished manuscripts and catalogs to enhance accessibility.

7. **Public Engagement**: Increase public interest and knowledge about manuscripts through lectures, seminars, and other outreach programs.

Significance of Manuscripts:

- **Cultural Heritage**: India possesses an estimated **ten million manuscripts**, potentially the largest collection in the world, covering diverse themes, scripts, and aesthetics. Approximately **75%** of these manuscripts are in **Sanskrit**, while the remaining **25%** are in various regional languages.

- **Historical Importance**: Manuscripts are handwritten documents on materials like paper, cloth, palm leaf, or metal, dating back at least **seventy-five years**. They are distinct from printed volumes and hold significant scientific, historical, or aesthetic value.

What is a Manuscript?

A **manuscript** is defined as a handwritten document that meets specific criteria:

- It can be composed on various materials such as paper, bark, cloth, metal, or palm leaves.

- It must be at least **75 years old** and have significant historical, cultural, or aesthetic value.

- It does not include lithographs or printed works and is found in many languages and scripts, with a single language often represented in multiple scripts.

Conclusion: The National Mission for Manuscripts plays a crucial role in safeguarding India's literary heritage, ensuring that the knowledge contained within these manuscripts is preserved, studied, and made accessible to future generations. Its efforts contribute to enhancing cultural awareness and historical understanding in the country.

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GS Paper 3 – SCIENCE & TECHNOLOGY, Health

Nemaline Myopathy

Context: Recently, the Chief Justice of India discussed nemaline myopathy during a national consultation on children's rights, highlighting its impact on his foster daughters.

What is Nemaline Myopathy?

- **Definition:** Nemaline myopathy is a rare genetic muscle disorder characterized by the presence of thread-like structures called nemaline bodies within muscle fibers, leading to weakness in skeletal muscles.

- **Other Names:** It is also known as rod myopathy due to the rod-shaped structures seen in affected muscle tissue.

- **Prevalence:** The condition affects approximately **1 in every 50,000 births**, making it relatively rare.

- **Inheritance:** The disorder is hereditary, caused by genetic mutations that affect muscle proteins, which are essential for normal muscle function.

Severity:

- The severity of nemaline myopathy can vary significantly:
  - **Mild Cases:** Some individuals may experience minimal impact on daily life.
  - **Severe Cases:** Others may face substantial muscle weakness that necessitates significant medical intervention.

Symptoms: Symptoms of nemaline myopathy can include:

- **Muscle Weakness:** Primarily in the face, neck, and trunk.

- **Feeding Difficulties:** Challenges in feeding and swallowing.

- **Breathing Issues:** Respiratory complications due to weak chest muscles.

- **Physical Deformities:**
  - Foot deformities (e.g., clubfoot).
  - Abnormal curvature of the spine (scoliosis).
  - Joint deformities (contractures).

Treatment:

- **No Cure:** Currently, there is no cure for nemaline myopathy.

- **Supportive Care:** Treatment focuses on managing symptoms and improving quality of life, which may include:

  o **Physiotherapy:** To enhance muscle strength and mobility.

  o **Occupational Therapy:** To assist with daily activities and adaptations.

  o **Speech Therapy:** If speech or swallowing is affected.

What is a Genetic Mutation?

- A genetic mutation refers to a permanent alteration in a gene's DNA sequence. These mutations can:

  o Change the way a gene functions.

  o Result in the production of different proteins.

- **Importance of Genetic Variation:** While some mutations can lead to diseases (like nemaline myopathy), genetic variations are also essential for evolution, contributing to the diversity of traits in populations over generations.

Conclusion: Nemaline myopathy is a complex condition that poses significant challenges for affected individuals and their families. While supportive treatments can help manage symptoms, ongoing research is crucial for developing effective therapies and interventions for this rare genetic disorder.

Right to Die with Dignity: SC Guidelines and Legal Framework in India

Context: The Ministry of Health and Family Welfare has released draft guidelines to implement the Supreme Court's orders regarding the right to die with dignity, aiming to provide a framework for state governments and hospitals to withdraw life support for terminally ill patients.

Key Concepts:

Withholding or Withdrawing Life-Sustaining Treatment:

- **Definition:** Involves ending medical interventions (e.g., ventilators, feeding tubes) when they no longer benefit the patient and may prolong suffering. The goal is to allow the natural progression of the illness, focusing on comfort care instead of futile treatments.

Right to Refuse Medical Treatment:

- **Legal Basis:** The right to refuse medical treatment is upheld under common law and recognized as a fundamental right under **Article 21** (Right to life and personal liberty) of the Indian Constitution. This was affirmed in the **2018 Supreme Court decision** in *Common Cause vs Union of India*.

- **Patient Autonomy:** Patients have the right to refuse life-sustaining treatments even if it may lead to death.

Process for Withholding or Withdrawing Life Support:

1. **Patient Consent:** If a patient has decision-making capacity, they can refuse treatment.

2. **Advance Directives (Living Wills):** Patients may outline their wishes regarding future medical care in a living will if they lose decision-making capacity.

3. **For Patients Without Capacity or Living Will:** If a patient cannot make decisions and lacks a living will, the treating physician may recommend withholding or withdrawing treatment if recovery is unlikely and further intervention would prolong suffering.

Euthanasia:

- **Definition:** Euthanasia refers to intentionally ending the life of a terminally ill patient by a doctor to relieve suffering.

- **Passive Euthanasia Misconception:** Often equated with withholding or withdrawing life-sustaining treatment, passive euthanasia has caused misunderstandings about the right to die with dignity.

Do-Not-Attempt-Resuscitation (DNAR) Orders:

- **Explanation:** DNAR orders indicate that resuscitation efforts will not be attempted, decided upon in consultation with the patient or family. It does not mean that other medical treatments will stop.

Living Will:

- **Purpose:** A living will allows individuals aged 18 or older to specify their medical care preferences should they lose decision-making capacity.

- **Requirements:** It must name at least two trusted surrogate decision-makers and be signed before an executor, two witnesses, and attested by a notary or gazetted officer.

Medical Procedure for Withholding or Withdrawing Life-Sustaining Treatment

The Supreme Court's guidelines outline a structured procedure involving the following:

1. **Primary Medical Board Assessment:**

   o Composed of the treating doctor and two subject-matter experts with at least five years of experience.

   o This board assesses the patient's condition and determines the appropriateness of stopping life-sustaining treatment.

2. **Secondary Medical Board Review:** A separate board reviews the Primary Board's decision, comprising a registered medical practitioner appointed by the district Chief Medical Officer and two experienced subject-matter experts.

3. **Consent from Family or Surrogate Decision-Makers:** Consent is required from the patient's nominated representatives in an advance directive or surrogate decision-makers before withholding or withdrawing treatment.

4. **Judicial Notification:** Hospitals must notify the local judicial magistrate about the decision to withdraw treatment.

5. **Shared Decision-Making:** This process promotes collaboration between the medical team and the patient's family or surrogates, ensuring that treatment decisions are made collectively, respecting patient autonomy and ethical standards.

Conclusion : The Supreme Court's guidelines and the draft from the Ministry of Health and Family Welfare provide a crucial framework for addressing the right to die with dignity in India. These measures aim to balance patient autonomy, ethical medical practice, and legal responsibilities in end-of-life care.

U.S., Japan and South Korea join hands to support digital infrastructure in India

Context: The **Digital Infrastructure Growth Initiative for India (DiGi) Framework** was signed by the **United States**, **Japan**, and **South Korea** to strengthen digital infrastructure cooperation with **India** in areas of shared priorities.

DiGi Framework:

- **Partner Agencies**:
    - **U.S. International Development Finance Corporation (DFC)**
    - **Japan Bank for International Cooperation (JBIC)**
    - **Export-Import Bank of Korea (Korea Exim-bank)**
- **Objective**: To collaborate with the **Indian private sector** in advancing **digital infrastructure**.
- **Implementation**: Focuses on **information and communications technology (ICT)** projects, including:
    - **5G** and **Open RAN**
    - **Submarine cables** and **optical fiber networks**
    - **Data centers, smart cities, e-commerce**
    - **Artificial intelligence (AI)** and **quantum technology**

Digital Public Infrastructure (DPI) in India:

- **India Stack**: India is the first country to establish three foundational DPIs:
    - **Digital identification** (Aadhaar)
    - **Real-time payments** (UPI)
    - **Data Empowerment and Protection Architecture** (DEPA)
- **Significance**:
    - **Inclusive Development**: Achieved **80% financial inclusion** (2018-2023) and **87% direct benefit transfers** to poor households during COVID-19.
    - **Economic Growth**: DPI can increase economic growth by **33%** in the financial sector.
   - **Emission Reduction**: DPI in climate sector could **accelerate emissions control** by 5-10 years.

India's Global DPI Efforts:

- **US-India Global Digital Development Partnership**: Aims to promote **responsible use of digital technologies** in Asia and Africa.
- **G20 Framework for DPI**: Established under **India's G20 leadership** to provide principles for **DPI design and deployment**.
- **Virtual Global DPI Repository**: India is setting up this repository to offer **DPI tools, resources, and global experiences**.

The **DiGi Framework** and India's DPI initiatives underscore a commitment to **digital transformation** and **inclusive development** through global partnerships and responsible technology use.

Heritable Human Genome Editing (HHGE)

Context: South Africa has become the **first country to permit Heritable Human Genome Editing (HHGE)**, according to its new **Ethics in Health Research guidelines**. This move allows **genome editing to create genetically modified children**, marking a departure from the restrictive frameworks promoted by entities like the **WHO**, which advocate for broad **societal consensus**.
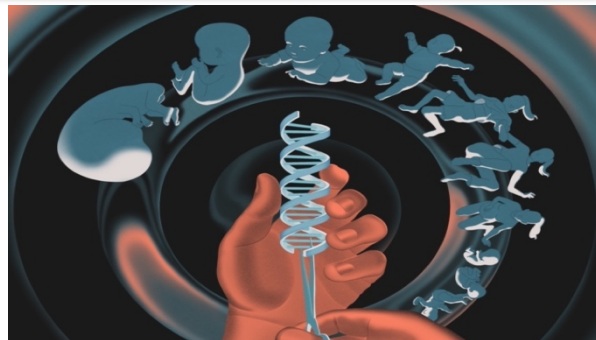
About HHGE:

- **Germline Cell Editing**: Unlike **somatic cell editing**, which affects only the treated individual, **HHGE** introduces edits in **germline cells** (sperm, eggs, or embryos), making these changes **inheritable**.

- **Techniques**: Achieved through tools like:
    - **Zinc-finger nucleases (ZFNs)**
    - **Transcription Activator-Like Effector Nucleases (TALENs)**
    - **CRISPR/Cas9**
    - **Mega-nucleases**

Potential Applications of Heritable Genome Editing:

- **Disease Prevention**: Could prevent **heritable diseases** like **cystic fibrosis**, **Huntington's disease**, and **sickle cell anemia**.

- **Genetic Research**: Potential to enhance understanding of **human biology, genetics**, and **disease mechanisms**.

- **Assisted Reproductive Technology**: Can improve technologies like **in vitro fertilization (IVF)**.

Concerns with Heritable Genome Editing

- **Unforeseen Consequences**: Heritable edits affect future generations, posing risks of **multigenerational impacts**.

- **Ethical Issues**: Raises questions on **human dignity** and **genetic diversity**, challenging **religious** and **moral values**.

- **Societal Impact**: Risks the creation of **"designer babies"**, where traits like **intelligence, appearance, and athleticism** might be engineered, potentially deepening **social inequality**.

Steps for Regulating Human Genome Editing:

- **Oviedo Convention**: Adopted by European nations, prohibits **creation of human embryos** through genome editing.

- **International Commission on Human Germline Genome Editing**: Evaluates potential **clinical uses** of human germline editing.

- **India's Stance**: **Human germline editing** and **reproductive cloning** are banned by India's **National Guidelines for Stem Cell Research**.

South Africa's decision on **HHGE** places it at the forefront of genome editing, sparking a global dialogue on the **ethics, risks, and societal impacts** of inheritable genetic modifications.

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GS Paper 2 – International Relations

Global South's role in shaping Multilateral Development Banks

Context: India's **Finance Minister** recently emphasized the role of the **Global South** in shaping and reforming **Multilateral Development Banks (MDBs)** at the **1944 Bretton Woods Conference**, which led to the establishment of the **World Bank** and **International Monetary Fund (IMF)**. Highlighting the contributions and evolving needs of the Global South, she advocated for **MDB reforms** that promote **inclusivity** and **better representation**.

Contribution of the Global South to MDBs:

- **Founding Role**: The Global South, including developing countries, played a crucial role at the **Bretton Woods Conference**, which laid the groundwork for the **World Bank** and **IMF**.

- **New Institutions**: The establishment of alternative institutions such as the **New Development Bank (NDB)** and the **Asian Infrastructure Investment Bank (AIIB)** demonstrates the South's active role in shaping MDBs that better address **regional needs**.

- **Increased Commitments**: Economically rising nations like **India** and **China** have expanded their financial commitments to MDBs, underscoring their investment in **global economic stability**.

Need for MDB Reforms from the Perspective of the Global South:

1. **Inadequate Representation**: Currently, **59.1%** of **IMF voting shares** are held by countries that represent only **13.7%** of the global population, highlighting the **underrepresentation** of developing countries.

2. **Debt Relief Requirements**: Many Global South nations face high levels of **debt distress**, with around **79 low- and middle-income countries** needing relief.

3. **Addressing Global Challenges**: Issues like **climate change**, **pandemics**, and **supply chain disruptions** impact the Global South more acutely, calling for additional support from MDBs.

India's Recommendations for MDBs:

1. **Promote Two-Way Exchange of Innovations**: MDBs should draw from the Global South's experiences in areas like **digital inclusion** and **sustainable energy**, which could enrich **development financing** strategies.

2. **Competitive Pricing Models**: Adopting more **competitive pricing** would encourage **middle-income countries** to participate actively in MDB initiatives, deepening the impact of **development finance**.

3. **Evidence-Based Index Development**: Global indices, such as the **Worldwide Governance Indicators** and the **B-Ready Index**, should rely on a **data-driven**, **evidence-based approach**, ensuring accurate representation and relevance.

India's emphasis on MDB reforms reflects its commitment to ensuring that MDBs evolve to support **inclusive, data-driven**, and **need-based development**, addressing both regional and global challenges effectively.

95% of Land Records in Rural India Digitized

Context: The **Minister of Rural Development** recently announced that **95%** of **rural land records** in India have been digitized, covering **over 6.26 lakh villages** since 2016. This achievement represents a significant advancement in **secure, transparent**, and **accessible land ownership** in India.

Significance of Digitizing Land Records:

1. **Addressing Traditional Challenges**: Digitization helps tackle **land disputes**, which constitute over **60% of litigation in India**. It also aids in addressing **encroachments, benami property issues**, and inefficient **manual processes**.

2. **Accurate Surveys and Planning**: **Geospatial mapping** brings transparency, ensuring **access and equity** for vulnerable groups, enhancing planning accuracy.

3. **Promoting Agricultural Credit**: With **clear land titles**, farmers can access **capital** and **credit** more easily, supporting agricultural productivity.

4. **Additional Benefits**: **Improved subsidy targeting**, timely **compensations** for land acquisition or disaster relief, and potential **GDP growth**.

Issues in Digitizing Land Records:

1. **Cumbersome and Resource-Intensive Process**: Many **land records remain incomplete** and are spread across multiple departments.

2. **Slow Digitization Process**: Delays affect **infrastructure projects** and leave **land ownership data outdated**.

3. **Need for Legal and Administrative Overhaul**: Digitization alone isn't enough—there is a need to **update tenancy laws** and **land-use regulations** for accurate reporting.

Way Forward:

- **Technological Integration**: Employ **blockchain**, **artificial intelligence (AI)**, and **machine learning (ML)** for secure and efficient land governance.

- **Policy Reforms**: **Review the Registration Act** and other regulations to streamline digitization efforts.

Government Initiatives Enhancing Land Digitization:

- **Digital India Land Records Modernization Programme (DILRMP)**: Aims to establish a **modern, transparent land records system**.

- **Unique Land Parcel Identification Number (ULPIN)** or **Bhu-Aadhaar**: A **14-digit alphanumeric code** uniquely identifying each land parcel using geo-coordinates.

- **National Generic Document Registration System (NGDRS)**: Standardizes **document registration** across states for consistency.

- **SVAMITVA Scheme**: Provides **Record of Rights** to household owners in **inhabited village areas**, promoting formal ownership.

India's land digitization drive underlines the government's commitment to **streamlined governance, boosting agriculture**, and **improving economic productivity** through effective land management.

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GS Paper 2 – Polity

Arbitration and Conciliation (Amendment) Bill, 2024

Context: The **Government of India** has invited public comments on the **draft Arbitration and Conciliation (Amendment) Bill, 2024**, which aims to amend the **Arbitration and Conciliation Act, 1996**. The proposed amendments seek to **strengthen institutional arbitration**, reduce **court intervention**, and ensure **timely conclusion** of arbitration proceedings in India.

Key Aspects of Arbitration in India:

- **Arbitration**: A method of **alternative dispute resolution** where parties agree to have their case heard by a **qualified arbitrator**.

- **Arbitration and Conciliation Act, 1996**: Governs arbitral proceedings in India, based on the **UNCITRAL Model Law on International Commercial Arbitration (1985)** and **UNCITRAL Conciliation Rules (1980)**. The Act was amended in **2015, 2019, and 2021**.

Key Features of the Draft Bill, 2024

1. **Omission of Conciliation**: The Act will now be called the **Arbitration Act, 1996** as **conciliation provisions** have been moved to the **Mediation Act, 2023**.

2. **Emergency Arbitrator**: Allows for the appointment of an **emergency arbitrator** to grant **interim measures** before an arbitral tribunal is constituted.

3. **Institutional Focus**: Promotes **institutional arbitration** over **ad-hoc arbitration**, aiming for greater **efficiency**.

4. **Arbitration Council of India (ACI)**: ACI is empowered to **create model procedural rules** for arbitral proceedings and **recognize arbitral institutions**.

5. **Video Conferencing**: Permits **arbitrations to be conducted via video conferencing**, facilitating remote participation.

6. **Appellate Arbitral Tribunal**: Establishes a tribunal to **handle applications against arbitral awards**, adding an appellate layer.

Issues in the Current Arbitration System

1. **Lack of Diversity**: Retired judges dominate arbitrator appointments, limiting **diversity**.

2. **Trust Issues**: Concerns about the **independence and impartiality** of arbitrators persist.

3. **Judicial Intervention**: Frequent **court involvement** in arbitral matters often leads to **delays** in awards.

These amendments, if implemented, would align India's arbitration framework with global standards and bolster its attractiveness as a **hub for institutional arbitration**.

21st Livestock Census

Context: The **21st Livestock Census** has been launched by the **Union Minister of Fisheries, Animal Husbandry, and Dairying** in **New Delhi**, aiming to provide updated data on **India's livestock population**.

About the 21st Livestock Census

- **Frequency**: Conducted every **five years**.

- **Scope**: Includes a **headcount** of **domesticated animals, poultry, and stray animals**.

- **Data Collected**: Includes **species, breed, age, sex, and ownership status** of animals.

- **History**: Began in **1919**, with **20 censuses** conducted so far; the last was in **2019**.

- **Enumeration Period**: Scheduled between **October 2024 and February 2025**.

Focus of the 21st Livestock Census

- **Animal Species**: Covers **16 animal species**, including:

  o **Cattle, buffalo, mithun, yak, sheep, goat, pig, camel, horse, ponies, mule, donkey, dog, rabbit, and elephant**.

- **Breeds Counted**: Information on **219 indigenous breeds** as recognized by **ICAR-NBAGR** (National Bureau of Animal Genetic Resources).

- **Poultry**: Includes **fowl, chicken, duck, turkey, geese, quail, ostrich, and emu**.

New Features in the 21st Census

- **Fully Digitized**: Like the **2019 census**, it will feature:

  o **Online data collection via a mobile app**

  o **Monitoring through a digital dashboard**

  o **Location tagging** with latitude and longitude

  o **Automated report generation** through software.

- **New Data Points**:

  o **Pastoral Animals and Pastoralists**: Data on pastoralists' contributions, **socio-economic status**, and **livestock holdings**.

  o **Income Data**: Identifies households for whom **livestock is a primary income source**.

  o **Stray Cattle Details**: Includes data on the **gender of stray cattle**.

The 21st Livestock Census aims to provide a more comprehensive and **granular view of India's livestock sector**, enhancing planning and policy decisions.

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What is Cybersquatting?

Context: Recently, a Delhi-based developer registered the domain **'JioHotstar,'** sparking discussions about **cybersquatting**.

Definition of Cybersquatting:

Cybersquatting is the act of registering or using a domain name that is identical or confusingly similar to a trademark, corporate, or personal name, typically with the intent to profit from it. This practice is often viewed as a form of **extortion** or an attempt to undermine competitors by taking control of their brand identities online.

Types of Cybersquatting:

1. **Typosquatting**:

   o This involves registering domain names that contain typographical errors of well-known brands.

   o **Example**: Domains like **yajoo.com** (for Yahoo) or **facebok.com** (for Facebook) aim to capture traffic from users who accidentally misspell the brand name.

2. **Identity Theft**:

   o This occurs when a cybersquatter creates a website that mimics an existing brand to confuse consumers.

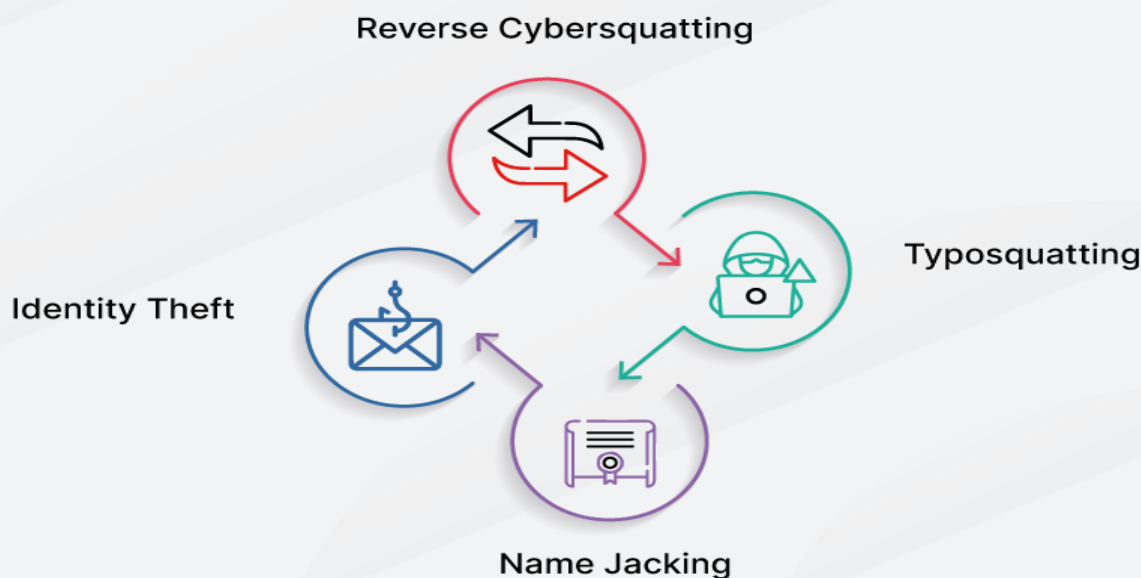   o The intention is to mislead users into thinking they are visiting the legitimate site.

3. **Name Jacking**:

   o This involves impersonating a well-known individual or celebrity online.

   o It includes creating fake websites or social media profiles using a celebrity's name to mislead or deceive the audience.

4. **Reverse Cybersquatting**:

   o This is when individuals falsely claim a trademark as their own and accuse the legitimate domain owner of cybersquatting.

   o Essentially, it flips the concept of cybersquatting on its head.

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Types of **Cybersquatting**

Reverse Cybersquatting

Identity Theft

Typosquatting

Name Jacking

Legal Framework in India:

In India, there are currently **no specific laws** that directly condemn, prohibit, or penalize cybersquatting. However:

- Domain names are considered trademarks under the **Trademark Act, 1999**.

- Individuals who register or use an identical or confusingly similar domain name can be held liable for **trademark infringement**, as defined under **Section 29** of the Trademark Act, 1999.

What is Phishing?

Definition: Phishing is a type of cybercrime that involves tricking individuals into providing sensitive information, such as usernames, passwords, credit card numbers, bank account details, or other personal data.

- **Method**: Phishing typically occurs through deceptive emails, messages, or websites that appear to be from legitimate sources. Attackers aim to manipulate victims into divulging their confidential information so they can utilize or sell it for malicious purposes.

Both cybersquatting and phishing are significant issues in the realm of internet security, highlighting the need for robust legal frameworks and consumer awareness to mitigate risks.

What are Tardigrades?

Context: Recent research has revealed the genetic mechanisms that enable a newly discovered species of tardigrades, **Hypsibius henanensis**, to withstand high levels of radiation.

About Tardigrades:

- **Common Names**: Tardigrades are often referred to as **water bears** or **moss piglets**.
- **Classification**: They are tiny, free-living invertebrates that belong to the phylum **Tardigrada**.
- **Diversity**: Approximately **1,300 species** of tardigrades have been identified globally.

Habitat:

- **Environmental Preferences**: While tardigrades are considered aquatic because they need a thin layer of water to prevent dehydration, they thrive in a variety of environments, ranging from the deep sea to sandy dunes.
- **Preferred Habitats**: They are commonly found in **freshwater mosses** and **lichens**, which is why they are nicknamed **moss piglets**.

Radiation Resistance Mechanisms: Researchers have identified three key factors that help **Hypsibius henanensis** survive radiation:

1. **DNA Repair:** Tardigrades have a remarkable ability to quickly repair **double-strand breaks in DNA** caused by radiation exposure, utilizing a protein known as **TRID1**.
2. **Gene Activation**: During radiation exposure, a specific gene is activated, leading to the production of two proteins that play crucial roles in **mitochondrial ATP synthesis**. Interestingly, these proteins also contribute to DNA repair processes in tardigrades.
3. **Antioxidant Production**: Tardigrades can minimize radiation damage by generating a substantial amount of proteins that act as effective **antioxidants**, which help eliminate **free radicals** before they can harm cellular components.

Significance of Research: The findings from this research hold promise for various applications, including:

- **Space Exploration**: Potentially protecting astronauts from harmful radiation during space missions.
- **Nuclear Cleanup**: Assisting in the remediation of nuclear pollution.
- **Cancer Treatment**: Improving therapeutic strategies for cancer patients by understanding DNA repair mechanisms.

What is Radiation?

Definition: Radiation is energy that travels in the form of **waves** or **particles** and is an inherent part of our environment.

- **Sources of Exposure**: People are exposed to radiation from several sources, including:
  o **Cosmic Rays**: High-energy particles from outer space.
  o **Natural Radioactive Materials**: Found in soil, water, food, and air, as well as within the human body itself.

Understanding the resilience of tardigrades to extreme conditions, including radiation, not only sheds light on their biology but also opens avenues for advancements in science and technology that could benefit humanity in various fields.

Global Nature Conservation Index (NCI) 2024

Context: India has received a concerning score of **45.5** (out of 100) and is ranked **176th** in the **Global Nature Conservation Index (NCI) 2024**.

About Nature Conservation Index (NCI):

- **Developed By**: The index was created by the **Goldman Sonnenfeldt School of Sustainability and Climate Change** at **Ben-Gurion University of the Negev**.
- **Purpose**: The NCI provides a data-driven analysis to evaluate each country's efforts in balancing conservation with development.
- **Target Audience**: It aims to assist governments, researchers, and organizations in identifying key issues and enhancing conservation policies for long-term biodiversity protection.
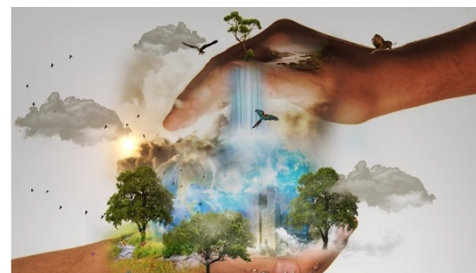
Pillars of the Index:

This inaugural edition of the NCI ranks countries based on their efforts in relation to four key pillars:

1. **Managing Protected Areas**: Evaluating the effectiveness and coverage of protected regions.
2. **Addressing Threats Against Biodiversity**: Assessing actions taken to mitigate threats to ecosystems.
3. **Nature and Conservation Governance**: Analyzing the frameworks in place to support conservation efforts.
4. **Future Trends in Natural Resource Management**: Projecting how countries plan to manage their natural resources sustainably.

Highlights of the 2024 Index:

- **India's Ranking**: India's low ranking is primarily due to **inefficient land management** practices and increasing threats to its biodiversity.
- **Biodiversity Threats**: The assessment identified several threats to India's biodiversity, including:
    - **Habitat Loss and Fragmentation**: Driven by agriculture, urbanization, and infrastructural development.
    - **Climate Change**: Compounding the risks faced by various species and ecosystems.
- **Top-Ranking Countries**:
    - **First Place**: **Luxembourg**
    - **Other Top Performers**: **Estonia**, **Denmark**, and countries like **Zimbabwe** and **Costa Rica** also ranked in the top 10.

What is Biological Diversity?

Definition: Biological diversity, or **biodiversity**, encompasses:

- The variety of **genes** among individuals of a species.
- The richness and variety of all **plant** and **animal species** within an ecosystem.
- The diverse **ecosystems** present on Earth.

Importance: Biodiversity is crucial for ecosystem health, resilience, and the overall functioning of the planet, influencing food security, climate stability, and human health.

C-295 Military Aircraft

Context: Prime Minister **Narendra Modi** and Spanish Prime Minister **Pedro Sanchez** recently inaugurated India's first **private sector Final Assembly Line (FAL)** for manufacturing **C-295 military aircraft** at the **Tata Aircraft Complex** in Vadodara, Gujarat. This project aligns with the goal of promoting self-reliance in the Indian defence industry and is a significant part of the **"Make in India"** initiative.

C-295 Aircraft Deal:

- **Agreement Amount**: The Government of India signed a deal with **Airbus Defence and Space** from Spain in **September 2021** for **56 C-295 aircraft** valued at **₹21,935 crore**.

- **Production Details**:
  - **Manufacture in India**: Out of the 56 aircraft, **40 will be produced in India** in collaboration with **Tata Advanced Systems** and Airbus.
  - **Imported Aircraft**: **16 aircraft** will be imported in ready condition from Spain.

- **Arrival Timeline**:
  - The **first aircraft** arrived in India in **September 2023**.
  - All **16 imported aircraft** are expected to be delivered by **August 2025**.
  - The manufacturing of the **first C-295 aircraft in India** is projected to be completed by **September 2026**, with the remaining **39 aircraft** ready by **2031**.

Significance of the Project:

- **Employment Opportunities**: The project is expected to generate **15,000 highly skilled** jobs and an additional **10,000 indirect jobs**.

- **Promotion of Self-Reliance**: This initiative supports self-reliance in the Indian defence sector.

- **Private Sector Participation**: This marks the first military aircraft manufacturing project by a **private sector entity** in India, with **Tata Advanced Systems** leading the effort in partnership with Airbus Defence and Space.

Features of the C-295 Aircraft:

- **Short Take-Off and Landing**: Capable of taking off in **320 meters** and landing in **670 meters**, making it suitable for operations in challenging terrains like **Ladakh, Kashmir, Assam**, and **Sikkim**.

- **Payload Capacity**: Can carry a payload of **7,050 kg**, accommodating **71 troops**, **44 paratroopers**, **24 stretchers**, or **5 cargo pallets**.

- **Flight Duration**: The aircraft has a continuous flight capability of up to **11 hours**.

- **Modern Control System**: Features a smart control system with **touchscreen controls** in the crew cabin.

- **Ramp Door**: Includes a ramp door at the rear for faster loading and unloading.

- **Engine Specifications**: Equipped with two **Pratt & Whitney PW127 turboprop engines**.

- **Indigenous Electronic Warfare Suite**: All aircraft will have an **indigenously built electronic warfare suite**, enhancing India's defence capabilities.

Conclusion: The manufacturing of the C-295 aircraft represents a major advancement in India's defence industry, contributing to self-reliance and local job creation while fostering technological development. This project highlights India's commitment to enhancing its defence capabilities and encouraging private sector involvement in military production.

India-Spain Joint Statement: Key Outcomes and Bilateral Relations

Context: After the visit of the President of the Government of Spain to India—the first such visit in 18 years—India and Spain issued a joint statement highlighting important areas of cooperation.

Key Outcomes:

1. **Defence Manufacturing**: The **C295 Aircraft Final Assembly Line** was inaugurated in Vadodara by **Tata Advanced Systems** in collaboration with **Airbus Spain**. This is a landmark project in defence manufacturing and part of India's "Make in India" initiative.

2. **Investment Facilitation**: The establishment of a **Fast Track Mechanism** between India's **DPIIT** and Spain's **Directorate General of International Trade and Investment** to ease and encourage mutual investments.

3. **Consular Expansion**: **Spain announced a new Consulate** in **Bengaluru**, while **India's Consulate in Barcelona** was made operational, enhancing consular services and people-to-people ties.

4. **Cultural Cooperation**:

   o Launch of the **Cultural Exchange Programme for 2024–2028**.

   o **2026 declared as the India-Spain Year of Culture, Tourism, and Artificial Intelligence**, promoting greater cultural and technological collaboration.

India-Spain Bilateral Relations

- **Diplomatic Relations**: Established in 1956, marking a long-standing diplomatic partnership.

Significance of Bilateral Relations

1. **Defence Ties**: **India-Spain Defence Joint Working Group** facilitates defence cooperation, exemplified by the **C295 aircraft manufacturing** initiative in India.

2. **Economic and Commercial Growth**: Spain is India's **6th largest trade partner in Europe**, with bilateral trade reaching **US$ 9.9 billion in 2023**.

3. **Multilateral and Global Cooperation**:

   o Support for each other's **United Nations Security Council candidacies**.

   o Commitment to addressing shared global challenges, including **climate change**, **counter-terrorism**, and **sustainable development**.

This joint statement underscores the strengthening of India-Spain ties across defence, investment, culture, and global cooperation, signifying mutual commitments to long-term partnership.

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IEEFA Report: "India's Hunt for Critical Minerals"

Context: The **Institute for Energy Economics and Financial Analysis (IEEFA)** released a report on India's dependency on critical minerals like **cobalt, copper, graphite, lithium, and nickel**. This report addresses India's reliance on imports, the expected surge in demand, and potential economic and strategic implications.

Key Findings:

1. **Import Dependency**:
   o India is **100% reliant** on imports for minerals like **lithium, cobalt, and nickel**, which are crucial for renewable energy, electronics, and other sectors.
   o Demand for these minerals is expected to more than double by 2030.

2. **Significance of Critical Minerals**:
   o **Definition**: Critical minerals are those with high economic importance and supply risks. Shortages can significantly impact industries reliant on these resources.
   o **Applications**: These minerals are essential for:
      ▪ **Renewable Energy** (solar panels, batteries),
      ▪ **Electronics** (semiconductors, devices),
      ▪ **Medical Technology** (MRIs, medical equipment),
      ▪ **Defence/Aerospace** (military equipment, aircraft components).

Concerns Related to Import Dependence:

1. **Strategic Vulnerability**: Heavy reliance on specific countries, particularly **China**, poses a strategic risk.
2. **Price Volatility**: Fluctuations in global prices can impact **manufacturing costs** and **energy production**.
3. **Economic Impact**: Increasing import expenses could reduce **India's global competitiveness**.
4. **Renewable Energy Ambitions**: India's **clean energy goals** and **electric vehicle initiatives** are at risk due to high import dependency.

Report Recommendations:

- **Risk Mitigation**: Develop strategies to reduce import dependency and encourage **domestic mineral production**.
- **International Investments**: Explore partnerships with **mineral-rich, friendly countries** like Australia, Chile, Ghana, and South Africa.

Measures Taken by India:

1. **Regulatory Reforms**: Six critical minerals, including lithium, have been delisted from the **Mines and Minerals (Development and Regulation) Amendment Act, 2023** to enable private sector investment in exploration and mining.
2. **India-Australia Partnership**: India and Australia have established a **Critical Minerals Investment Partnership** to boost resource security.
3. **Khanij Bidesh India Limited (KABIL)**: Created to **acquire overseas mineral assets**, KABIL focuses on securing critical minerals through strategic international investments.

The IEEFA report underscores the urgency for India to develop self-reliance in critical minerals to secure its economic stability, renewable energy targets, and global competitiveness.

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GS Paper 3 – Technology

CERT-In Advisory on Online Scams

Context: The **Computer Emergency Response Team of India (CERT-In)** has released an advisory detailing various online scams perpetrated across India, including a recent scam trend known as **"digital arrest"**.

Cybercrime Statistics:

According to the **National Crime Records Bureau (NCRB)** report for **2022**, there were **17,470 cases** registered under cyber fraud.

Key Advisory Points:

1. **Avoid Money Transfers Under Pressure**: Legitimate law enforcement agencies will not demand immediate money transfers.

2. **Do Not Disclose Sensitive Information**: Avoid sharing personal or financial details over calls, especially to unfamiliar numbers.

About "Digital Arrest" Scams:

In this **new form of cybercrime**, fraudsters impersonate law enforcement officials—such as CBI agents, income tax officers, or customs agents—contacting victims through calls. Victims are pressured to transfer money to avoid "arrest."

- **Reported Loss**: Citizens in India reportedly lost around **₹120 crore** to digital arrest scams in the first quarter of **2024**.

- **Origins**: The Ministry of Home Affairs (MHA) notes that many perpetrators are based in **Myanmar, Laos,** and **Cambodia**.

Challenges in Tackling Cybercrime:

- **Shortage of Qualified Personnel**: Limited trained manpower to implement cybersecurity measures.

- **Lack of Cyber Awareness**: Insufficient awareness and cybersecurity practices at both individual and organizational levels.

Government Initiatives to Tackle Cybercrime:

1. **Indian Cyber Coordination Centre (I4C)**: Coordinated by the MHA, it centralizes cybercrime control measures across India.

2. **CERT-In**: Acts as the national agency for addressing computer security incidents.

3. **National Cyber Crime Reporting Portal**: Part of I4C, this portal allows the public to report cybercrime incidents.

4. **National Toll-free Helpline Number 1930**: Provides assistance in lodging cyber complaints.

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World Meteorological Organisation's (WMO) Greenhouse Gas Bulletin

Context: The **Greenhouse Gas Bulletin (GGB)**, released by the **World Meteorological Organisation (WMO)**, provides the latest analysis of global atmospheric concentrations of **long-lived greenhouse gases (LLGHGs)**, based on observations from the WMO's **Global Atmosphere Watch (GAW) Programme**. This bulletin assesses changes in greenhouse gases like **carbon dioxide (CO_2)**, **methane (CH_4)**, and **nitrous oxide (N_2O)** and examines their implications for climate change.

WORLD METEOROLOGICAL ORGANIZATION

GLOBAL ATMOSPHERE WATCH

WMO GREENHOUSE GAS BULLETIN

Key Highlights of the GGB:

1. **Greenhouse Gas Concentrations**: As of 2023, globally averaged surface concentrations of:

   - CO_2 are at **151%** of pre-industrial levels,
   - CH_4 at **265%**,
   - N_2O at **125%** of levels recorded before 1750.

2. **Radiative Forcing Increase**: Radiative forcing by long-lived greenhouse gases has surged by **51.5%** from **1990 to 2023**, with CO_2 alone contributing approximately **81%** to this increase.

3. **Methane (CH_4)**: Atmospheric methane has witnessed its **largest three-year increase on record**, mainly due to emissions from **natural wetlands** exacerbated by climate change.

4. **Impacts of Climate Change**: Climate change is amplifying greenhouse gas emissions through:

   - Ecosystems releasing additional GHGs,
   - **Wildfires** emitting more CO_2,
   - Oceans absorbing less CO_2, which also contributes to **ocean acidification**.

Radiative Forcing by Long-lived GHGs:

- **Definition**: Radiative forcing measures the energy per unit area added to or removed from the climate system by greenhouse gases.

- **Significance**: GHGs, by trapping heat that would otherwise escape to space, disrupt Earth's energy balance and cause **global warming**.

About the WMO

- **Established**: 1950

- **Headquarters**: Geneva, Switzerland

- **Membership**: 187 Member States and 6 Member Territories, including India

- **Role**: As a **UN specialized agency**, WMO monitors atmospheric composition and interactions between the **atmosphere, oceans, and biosphere** to help countries understand and address climate challenges.

Space Biotechnology

Context: The **Indian Space Research Organisation (ISRO)** and **Department of Biotechnology (DBT)** have partnered to advance **space biotechnology research**. This collaboration aims to address critical challenges in space exploration, such as nutrient availability, waste management, food preservation, and health risks due to microgravity and radiation. The partnership seeks to explore how organisms adapt and function in space environments to support human survival on extended missions.

Key Applications of Space Biotechnology and Their Significance:

1. **Microgravity Research:** Space-based microgravity enhances **protein crystal growth**, which improves our understanding of protein structures for more precise drug development.

2. **Radiation Research: BioSentinel**, a NASA program launched in 2022 on **Artemis I**, is an example. It examines cellular repair mechanisms in response to space radiation, providing insights to protect human health.

3. **Environmental Monitoring:** Studying microbes in space could enable **bioremediation** to convert lunar or Martian regolith into soil suitable for plant growth, supporting potential habitation efforts on these celestial bodies.

4. **Disease Modeling:** Space biotechnology helps model diseases encountered during long-duration missions, addressing challenges like **bone and muscle loss** and radiation-induced cancers.

5. **Bioregenerative Life Support Systems:** Developing self-sustaining **life support systems** in space—through waste recycling and resource regeneration—contributes to both space and Earth's sustainability goals.

Notable Initiatives:

- **India:** Key missions like **Axiom-4** and **Gaganyaan** involve components of space biotechnology to support human spaceflight and long-term missions.

- **Global Programs:**
  - **NASA:** Space Biology Program
  - **European Space Agency (ESA):** Biolab
  - **China National Space Administration (CNSA):** Space breeding programs

This collaboration between ISRO and DBT is expected to drive innovation and sustainability in space missions, fostering advancements in biotechnology with applications for both space and Earth.

GS Paper 2 – Governance

Pradhan Mantri Vanbandhu Kalyan Yojana (PMVKY)

Context: The **Pradhan Mantri Vanbandhu Kalyan Yojana (PMVKY)**, launched in 2014, recently celebrated its 10-year milestone. It is a **centrally sponsored scheme** focused on the comprehensive development of tribal communities, aiming to enhance their socio-economic status and preserve their cultural heritage. The **Ministry of Tribal Affairs (MoTA)** implements the scheme, ensuring that the programs address the unique challenges faced by India's tribal population.

Key Initiatives Under PMVKY:

1. **Pradhan Mantri Adi Adarsh Gram Yojana**: Focuses on critical sectors such as **road and telecom connectivity**, education, health, and basic infrastructure development.

2. **Development of Particularly Vulnerable Tribal Groups (PVTGs)**: The **Pradhan Mantri PVTGs Development Mission**, launched in 2023-24, aims to provide essential services like housing, drinking water, sanitation, education, health, and nutrition for PVTGs.

3. **Support to Tribal Research Institutes (TRI)**: This initiative facilitates **research and documentation** of tribal cultures, helping to preserve and promote the heritage of tribal communities.

4. **Scholarship Programs**: Includes **Pre-Matric and Post-Matric Scholarships** to support the education of tribal students.

5. **Administrative Assistance**: Support for **Project Management Units** to efficiently implement and manage various tribal welfare projects.

Tribal Community in India:

- **Scheduled Tribes (ST)** make up about **8.6% of India's population**.

- There are **over 730 Scheduled Tribes** notified under Article 342 of the Indian Constitution.

- **Particularly Vulnerable Tribal Groups (PVTGs)**: 75 identified PVTGs are spread across 18 states and the Union Territory of Andaman & Nicobar Islands.

Other Major Steps for Tribal Welfare:

- **Eklavya Model Residential Schools**: Provide quality education to tribal students from grades VI to XII.

- **Pradhan Mantri Janjatiya Vikas Mission (PMJVM)**: Combines support mechanisms for marketing **Minor Forest Produce (MFP)** at Minimum Support Prices and promoting tribal products.

- **Development Action Plan for Scheduled Tribes (DAPST)**: In addition to MoTA, **41 ministries** and departments allocate a portion of their budgets to programs specifically for tribal development.

The PMVKY has helped strengthen the socio-economic fabric of India's tribal regions, laying the foundation for a more inclusive approach to national development.

GS Paper 2 – Governance

Indian Cyber Crime Coordination Centre (I4C)

Context: The **Indian Cyber Crime Coordination Centre (I4C)** is a government initiative established by the **Ministry of Home Affairs (MHA)** to address the growing threat of cybercrime in India through a comprehensive, multi-faceted approach. Located in **New Delhi**, I4C serves as a **central hub** for managing and coordinating responses to cybercrime across law enforcement agencies (LEAs) and other stakeholders.

Objectives and Functions of I4C:

- **Nodal Agency for Cybercrime**: I4C is the central point for coordinating efforts against cybercrime across agencies.

- **Research and Development**: It collaborates with research institutions and academia to develop advanced cyber tools and forensic technologies.

- **Legal and Policy Framework**: Provides inputs for amending cyber laws to adapt to new technologies and ensures international cooperation through **Mutual Legal Assistance Treaties (MLATs)**.

- **Cybercrime Prevention**: Focuses on preventing cyber activities that promote terrorism and extremism.

- **Public Awareness and Assistance**: Aims to enhance cyber hygiene among citizens and offers quick reporting channels for financial cyber fraud.

Key Components of I4C:

1. **National Cybercrime Threat Analytics Unit (TAU)**: Monitors and analyzes cybercrime threats at the national level.

2. **National Cybercrime Reporting Portal (NCRP)**: A 24/7 platform for citizens to report cybercrime complaints from anywhere in India.

3. **National Cybercrime Training Centre (NCTC)**: Provides training to officials, especially for state LEAs, to handle cybercrime cases.

4. **National Cybercrime Research and Innovation Centre**: Drives research for indigenous cybercrime prevention tools.

5. **Joint Cyber Crime Coordination Team**: Facilitates collaboration among states/UTs for sharing data and strategies.

6. **Cybercrime Ecosystem Management Unit**: Promotes cyber awareness and hygiene to prevent cybercrimes.

7. **National Cybercrime Forensic Laboratory**: Supports LEAs with forensic investigations.

Other Initiatives and Programs:

- **Cyber Crime Volunteers Program**: Engages citizens to help combat cybercrime through volunteerism.

- **Citizen Financial Cyber Fraud Reporting and Management System**: Enables near-real-time reporting and response to financial cyber fraud.

- **National Toll-Free Helpline '1930'**: Provides immediate assistance for online cyber complaints.

- **CyberDost**: An initiative on social media to raise cyber awareness.

Through **I4C**, the Indian government integrates public and private sectors, academia, and international partners in a unified response against cybercrime, emphasizing both **prevention** and **real-time intervention**.

Land Ports Authority of India

Context: The **Land Ports Authority of India (LPAI)** is a statutory body established under the **Land Ports Authority Act, 2010**, tasked with developing, managing, and maintaining border infrastructure for facilitating cross-border trade and movement between India and its neighbouring countries.

Objectives and Mandate:

- **Border Infrastructure Development**: LPAI is responsible for creating, upgrading, maintaining, and managing Integrated Check Posts (ICPs) and other facilities at designated international border points.

- **Cross-Border Movement Management**: It facilitates the seamless movement of passengers and goods by providing essential services at border points.

- **Security and Sanitation**: LPAI ensures that all necessary security and sanitation measures are in place at these crossing points.

Structure and Composition:

- **Appointments**: The Chairperson and Members of LPAI are appointed by the **Central Government**.

- **Tenure**: They serve a five-year term or until the age of sixty, whichever comes first.

- **Nodal Ministry**: It operates under the **Ministry of Home Affairs**.

Recent Development: Petrapole, West Bengal

Recently, the **Union Home Minister inaugurated a new Passenger Terminal Building and a Maitri Dwar (Friendship Gate)** at Petrapole, built by LPAI at a cost of ₹487 crore. Key highlights include:

- **Petrapole's Significance**: It is the **largest land port in South Asia** and serves as a major trade gateway between **India and Bangladesh**.

- **Passenger Movement**: Facilitates the annual transit of over 2.35 million passengers, making it India's **eighth-largest international immigration port**.

By streamlining infrastructure at border points, LPAI plays a crucial role in bolstering **trade, commerce,** and **people-to-people connectivity** with India's neighbouring countries.

FCI Grievance Redressal System App

Context: Union Minister of Consumer Affairs, Food and Public Distribution, and New & Renewable Energy, Shri Pralhad Joshi launched the Mobile Application of FCI Grievance Redressal System (FCI GRS) for Rice Millers in New Delhi.

About FCI Grievance Redressal System App:

The **FCI Grievance Redressal System App** is an initiative by the **Food Corporation of India (FCI)** to streamline the grievance redressal process for rice millers, making it efficient and transparent. This digital platform enables millers to lodge complaints, track progress, and receive timely responses, aligning with the government's aim to use technology for good governance.

Objectives and Benefits:

- **Enhanced Responsiveness**: Provides rice millers a convenient, digital platform for submitting grievances.

- **Improved Accountability**: Ensures transparency in addressing grievances and fosters trust in FCI's processes.

Key Features of the App

1. **User-Friendly Grievance Submission**: Rice millers can easily register and submit grievances with a simple interface. Each grievance receives a **Unique Grievance ID** for tracking.

2. **Real-Time Tracking**: The app provides real-time updates on each grievance's status, ensuring transparency and accountability.

3. **Automatic Assignment and Fast Resolution**: Grievances are automatically assigned to Nodal Officers, who can investigate through a **Quick Response Team (QRT)** or consult relevant divisions for prompt resolution.

4. **Geo-Fencing for QRTs**: For on-site visits, the app uses geo-fencing to verify QRT members' physical presence, ensuring efficient and accountable field operations.

By digitalizing the grievance process, the app aims to foster efficient communication between FCI and rice millers, ultimately enhancing **responsiveness, accountability, and transparency** in the FCI's operations.

GS Paper 2 – Government Initiatives for Social Awareness

Dyslexia

Context: Recently, as part of the nation-wide **'Act4Dyslexia'** campaign, key monuments in Delhi, including **Rashtrapati Bhawan, Parliament House, North and South Blocks, and India Gate**, have been illuminated in red, the colour for Dyslexia Awareness.

About Dyslexia:

Dyslexia is a common learning disorder characterized by difficulties in reading due to challenges in identifying speech sounds and understanding their relationship to letters and words, a process known as **decoding**. It is a neurological condition affecting language processing areas of the brain and is **not related to intelligence, hearing, or vision problems**. Often, dyslexia is mistakenly perceived as a "slow-learner syndrome."
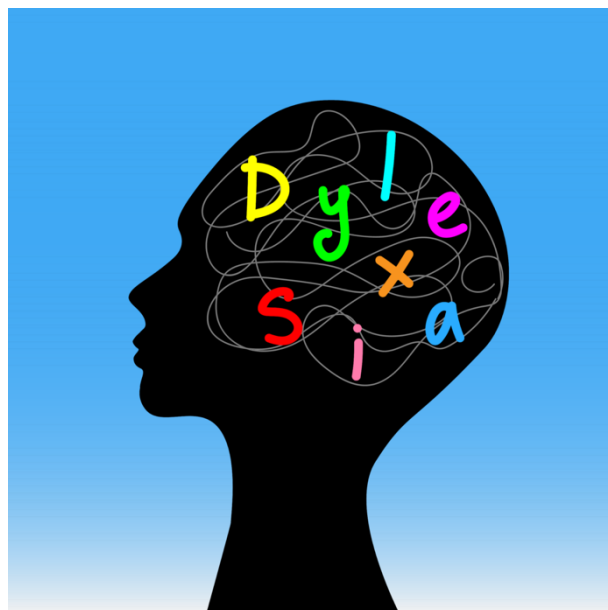
Causes of Dyslexia:

1. **Genetics**: Dyslexia is strongly hereditary, with children having a 30-50% likelihood of inheriting it if one parent has the condition.

2. **Brain Development and Function**: Differences in brain structure and function, particularly in areas responsible for language processing, are common in individuals with dyslexia.

3. **Developmental Disruptions**: Exposure to toxins, infections, or other factors during fetal development can impact brain function and may increase the risk of dyslexia.

Legal Recognition and Support in India:

- **Rights of Persons with Disabilities Act, 2016**: Dyslexia and other specific learning disabilities are officially recognized, entitling individuals to equal opportunities in education, employment, and life.

- **National Education Policy (NEP) 2020**: Emphasizes inclusive education by focusing on early identification, teacher training, and accommodations to support students with dyslexia.