



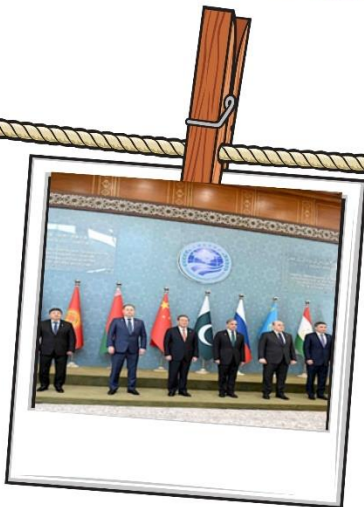
Weekly Current Affairs



To The Point

by Dhananjay Gautam

15 - 19 October 2024



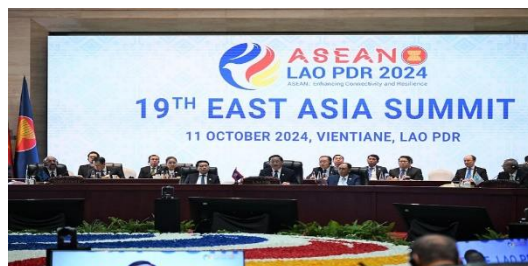
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1 19th East Asia Summit (EAS), 2024

Context: The Prime Minister recently attended the **19th East Asia Summit (EAS)** held in **Vientiane, Lao People's Democratic Republic (PDR)**. This summit serves as the Indo-Pacific's premier forum for strategic dialogue among member countries, focusing on critical regional issues and fostering cooperation.



Key Announcements by India:

1. **ASEAN's Centrality:** India emphasized the importance of the **Association of Southeast Asian Nations (ASEAN)** in the Indo-Pacific regional architecture, asserting its pivotal role in India's Indo-Pacific Vision and collaboration within the **Quad** framework.
2. **Education Conclave at Nalanda University:** India extended an invitation to EAS countries for a **Heads of Higher Education Conclave** to be held at **Nalanda University** in Bihar, promoting educational cooperation and exchanges among member nations.
3. **Support for ASEAN's Approach on Myanmar:**
 - India reiterated the stance that **Myanmar** should be engaged rather than isolated.
 - India endorsed ASEAN's **Five-Point Consensus (5PC)** regarding the situation in Myanmar, which includes:
 - An immediate end to violence in the country.
 - Dialogue among all parties involved.
 - The appointment of a special envoy.
 - Humanitarian assistance provided by ASEAN.
 - A visit by the special envoy to Myanmar to meet with all parties.
4. **Call for Code of Conduct (CoC) for Navigation:**
 - India advocated for a robust **Code of Conduct (CoC)** for maritime activities, emphasizing that these activities should align with the **United Nations Convention on the Law of the Sea (UNCLOS)**.
 - The CoC should not impose restrictions on the foreign policies of regional countries.
5. **Development-Focused Approach:** India highlighted the necessity for the region to adopt a development-based approach rather than one focused on expansionism, promoting sustainable growth and cooperation.

Conclusion: The Prime Minister's participation in the EAS underscores India's commitment to fostering regional stability, educational collaboration, and engagement with ASEAN, particularly concerning Myanmar's situation and maritime governance. Through these initiatives, India aims to strengthen ties with Indo-Pacific nations and promote a cooperative framework that prioritizes development and engagement over isolation.

2 What is X-Band Radar?

Context: In response to recent severe floods and landslides in Kerala's Wayanad district, the Union Ministry of Earth Sciences has approved the installation of an X-band radar in the region to enhance monitoring and early warning systems.



About X-Band Radar:

- **Definition:** An X-band radar operates by emitting radiation within the X-band of the electromagnetic spectrum, specifically between 8 to 12 GHz. This frequency range corresponds to wavelengths of approximately 2 to 4 cm.
- **High Resolution:** The shorter wavelengths of X-band radar allow for higher resolution imaging, making it effective in detecting fine details in the monitored area.
- **Attenuation:** While higher frequencies can provide better resolution, they also have a higher rate of attenuation, meaning the signals can weaken more quickly over distance or when interacting with atmospheric conditions.

Applications of X-Band Radar:

1. **Monitoring Landslides:** The primary application of the new radar will be to monitor particle movements, such as soil displacement, which can provide critical data for landslide warnings.
2. **High Temporal Sampling:** X-band radar can rapidly sample its environment, enabling the detection of particle movements that occur over short time spans, enhancing the ability to issue timely alerts.
3. **Meteorological Studies:** X-band radars are commonly used in meteorology to study cloud development and light precipitation due to their sensitivity to small water particles and snowflakes.

Conclusion: The implementation of X-band radar technology in Wayanad represents a significant step towards improving disaster preparedness and response capabilities in vulnerable regions. By enhancing the ability to monitor environmental changes, this radar can play a crucial role in mitigating the impacts of natural disasters, particularly in the context of increasing climate variability.

What is Radar?

- **Definition:** Radar, short for "radio detection and ranging," is a technology that uses radio waves to determine the distance, velocity, and physical characteristics of objects in its vicinity.
- **How It Works:** A radar system consists of a transmitter that emits radio signals directed at an object (e.g., a cloud). When these signals hit the object, some of the energy is reflected back to the radar system. A receiver then captures and analyzes the reflected signals.
- **Types of Radar:** Weather radar, often referred to as Doppler radar, is a common type used in meteorology. It utilizes the Doppler effect, which describes changes in frequency of sound waves when the source moves towards or away from a listener.
 - **Doppler Effect:** In meteorological applications, Doppler radar can determine the speed and direction of cloud movement based on frequency changes in the returned signals.
 - **Pulse-Doppler Radar:** This variant measures precipitation intensity by emitting signals in pulses and tracking the frequency and timing of the reflected signals. It provides insights into weather conditions, potential storm formations, and new wind patterns.

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3 What are Dragon Drones?

Context: Dragon drones have emerged as a significant and deadly weapon in the ongoing Russia-Ukraine war. Both Ukrainian and Russian forces have shared videos showcasing these drones as they deploy incendiary attacks, leading to their nickname as “dragon drones.”



About Dragon Drones:

- **Functionality:** Dragon drones are designed to release a substance known as thermite, which is a mixture of aluminium and iron oxide. This compound has been used for over a century, initially developed for applications like welding railroad tracks.

Working Mechanism:

- **Thermite Reaction:** When thermite is ignited (typically using an electrical fuse), it initiates a self-sustaining exothermic reaction. This reaction generates extremely high temperatures that can burn through various materials, including:
 - **Metals:** Military-grade vehicles and other hard targets.
 - **Organic Materials:** Fabrics, trees, and other combustible materials.
 - **Water:** Notably, thermite can continue to burn even underwater, making it particularly versatile.
- **Impact on Humans:** The intense heat generated by thermite can cause severe burns and bone damage to humans, often resulting in fatal injuries.

Advantages of Dragon Drones:

- **Precision and Evasion:** When combined with high-precision drones, which are capable of evading traditional defense systems, dragon drones become highly effective and dangerous weapons on the battlefield.
- **Deployment Timeline:** Reports suggest that dragon drones were first deployed in the Russia-Ukraine conflict around September, marking a significant evolution in drone warfare tactics.

International Regulation:

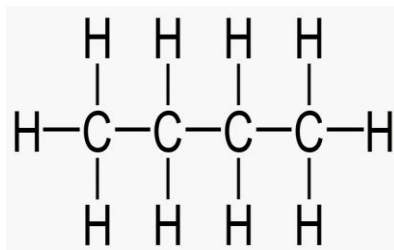
- **Legality:** The use of thermite itself is not prohibited under international law. However, deploying incendiary weapons like thermite against civilian targets is restricted by the **Convention on Certain Conventional Weapons**. This Cold War-era guidance, developed under the auspices of the United Nations, aims to protect civilian populations from the impacts of certain types of warfare.

Conclusion:

Dragon drones represent a notable advancement in modern warfare, utilizing innovative technologies to deliver devastating incendiary effects. As conflicts continue to evolve, the implications of such weaponry raise important ethical and regulatory questions regarding their use, especially in civilian-populated areas. The ongoing discussions around the legality and moral ramifications of employing such weapons highlight the need for clear international guidelines to address the changing landscape of warfare.

4 What are Alkanes?

Context: Alkanes are a fundamental class of organic compounds characterized by their simplicity and stability. Recent research has unveiled innovative methods to activate these compounds, enhancing their utility in various chemical reactions.



Characteristics of Alkanes:

- **Structure:** Alkanes consist entirely of single-bonded carbon (C) and hydrogen (H) atoms. They lack other functional groups, making them relatively straightforward in structure.
- **General Formula:** The general formula of alkanes is C_nH_{2n+2} , indicating that for every "n" carbon atom, alkanes have "2n+2" hydrogen atoms. The Lewis structure of alkanes can be simplified using the condensed structural formula.
- **Subgroups:**
 - **Linear Straight-Chain Alkanes:** These have a continuous chain of carbon atoms.
 - **Branched Alkanes:** These contain branches off the main carbon chain.
 - **Cycloalkanes:** These have carbon atoms arranged in a ring structure.

Chemical Properties:

- **Inertness:** Alkanes exhibit minimal chemical reactivity towards most laboratory reagents. Their lack of functional groups contributes to their chemical inertness.
- **Biological Stability:** Alkanes are relatively inert biologically and are not typically involved in the chemical processes of living organisms.
- **Reactivity:** While generally stable, alkanes can react under certain conditions, notably with:
 - **Oxygen:** Alkanes undergo combustion when reacting with oxygen, especially in engines or furnaces, producing carbon dioxide (CO_2) and water (H_2O) along with significant heat.
 - **Halogens:** Alkanes can react with halogens (such as chlorine or bromine) in halogenation reactions under specific conditions.

Importance and Applications:

- **Commercial Significance:** Alkanes are commercially crucial, serving as the primary constituents of fuels like gasoline and lubricating oils. Their stability and energy content make them essential in various industrial applications.
- **Organic Chemistry:** Alkanes are extensively utilized in organic chemistry as starting materials and solvents, thanks to their relative inertness and ability to undergo specific reactions when activated.

Recent Developments: Recent research has focused on the activation of alkanes using confined chiral Brønsted acids. This novel method aims to improve the efficiency and selectivity of chemical reactions involving alkanes, potentially leading to new pathways for their utilization in synthetic chemistry.

Conclusion: Alkanes are vital compounds in both commercial and chemical contexts. Understanding their properties and reactivity enhances our ability to use them effectively, especially as new methods for activation and transformation continue to emerge in the field of organic chemistry.

5 Murine Typhus disease

Context: Murine typhus is a bacterial disease caused by **Rickettsia typhi**, primarily transmitted through flea bites. This disease recently came into focus after a 75-year-old man from Kerala, who had travelled to Vietnam and Cambodia, was diagnosed with it.



Transmission:

- **Vectors:** Murine typhus is transmitted to humans mainly through the bites of infected fleas.
- **Reservoirs:** Rodents, including rats, mice, and mongooses, serve as the primary reservoirs for the disease. The fleas that carry the bacteria can also infest other small mammals, including domestic pets like cats and dogs.
- **Flea Lifespan:** Once infected, fleas can spread the disease for the remainder of their lives.
- **Alternative Transmission:** Humans can contract the disease by coming into contact with flea feces, particularly if the feces enter the body through cuts or scrapes.
- **Human-to-Human Transmission:** Murine typhus is **not** transmitted from person to person or from person to fleas.

Geographic Distribution:

The disease is commonly reported in coastal tropical and subtropical regions where rat populations are abundant. In India, cases have been documented in the Northeast, Madhya Pradesh, and Kashmir.

Symptoms: Symptoms typically manifest **seven to fourteen days** after exposure and may include:

- Fever
- Headaches
- Body aches
- Joint pains
- Nausea and vomiting
- Abdominal pain

Some individuals may later develop rashes on their skin, which can appear days after the initial symptoms.

Treatment:

- **Vaccine:** Currently, there is no vaccine available for murine typhus.
- **Antibiotic Therapy:** The antibiotic **doxycycline** is considered effective for treating murine typhus, but **early diagnosis** is crucial for successful treatment.

Conclusion: Murine typhus poses a significant health risk, particularly in regions with high rodent populations and flea infestations. Awareness of its transmission, symptoms, and treatment options is essential for prevention and effective management of the disease. Prompt medical attention and the use of appropriate antibiotics are key to improving outcomes for those affected.

6

National Regulatory Authority (NRA) of India Meets WHO International Standards for Vaccine Regulations

Context: India's vaccine regulatory systems, overseen by the National Regulatory Authority (NRA) and its affiliated institutions, have been declared functional in all key regulatory functions according to the **World Health Organization's (WHO) Global Benchmarking Tool (GBT)**. This assessment highlights India's commitment to maintaining high standards in vaccine regulation.

Key Highlights:1. **Reassessment with Updated GBT:**

- In 2017, India's NRA was assessed using the older version of GBT (version V).
- The recent reassessment utilized the updated GBT version VI, which incorporates more rigorous evaluation criteria.

2. **Maturity Level 3:**

- India retained a **Maturity Level 3** rating, which confirms a stable, well-functioning, and integrated regulatory system.
- The NRA achieved the highest marks in several key regulatory functions, reflecting its effectiveness in overseeing vaccine quality and safety.

**About WHO's Global Benchmarking Tool (GBT):**

- The GBT is a framework used by WHO to evaluate national regulatory systems for various health products, including medicines, vaccines, blood products, and medical devices.
- It incorporates a concept of 'maturity level' ranging from:
 - **Level 1:** Existence of some elements of the regulatory system.
 - **Level 4:** Advanced level of performance and continuous improvement.

National Regulatory Authority (NRA) of India:

- The NRA comprises institutions engaged in the regulation, control, and testing of vaccines. Its primary responsibility is to ensure that vaccines meet international standards for quality, safety, and efficacy.
- Key components of the NRA include:
 - **Central Drugs Standard Control Organization (CDSCO)**
 - **State Drug Regulatory Authorities**
 - **Central Drugs Laboratory**
 - **Immunization Division**
 - **Pharmacovigilance Programme of India (PvPI)**

**Regulation of Vaccines in India:**

- **Import and Manufacturing:** The regulation is governed by the **Drugs and Cosmetics Act, 1940**, along with related rules.
 - Manufacturing licenses are granted after a joint evaluation by the concerned State Licensing Authority and CDSCO.
- **New Vaccines Manufacturing:** The **New Drugs and Clinical Trials Rules, 2019** outlines the requirements for conducting clinical studies and obtaining approvals for new vaccines.
- **Recombinant DNA (r-DNA) Vaccines:** Compliance with guidelines issued by the **Department of Biotechnology** is mandatory for r-DNA vaccines.

Conclusion: The recognition of India's NRA as meeting WHO international standards reinforces the country's commitment to ensuring the safety, efficacy, and quality of vaccines. This not only enhances public confidence in vaccination programs but also positions India as a key player in the global health landscape. The regulatory framework established ensures that vaccines developed and administered in India are of the highest standards, contributing to global health security.

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7 Precision Medicine

Context: Precision medicine is ushering in a transformative era of **personalized healthcare**, evolving significantly since its foundations were laid by scientists during the completion of the **Human Genome Project**. This innovative approach integrates genomics and advanced technologies to tailor medical treatments to the individual characteristics of **patients, ensuring better diagnosis and treatment outcomes.**

**Advancements in Precision Medicine:**

The Role of Genomics: Genomics has become pivotal in revolutionizing the diagnosis and treatment of various health conditions, including cancers, chronic illnesses, and diseases affecting the immune, cardiovascular, and liver systems. Emerging technologies, such as gene editing and mRNA therapeutics, further enhance the capabilities of precision medicine.

Key Examples:

1. **Gene Therapy:** Researchers successfully restored vision in individuals who lost their sight due to genetic mutations.
2. **Stem Cell Research:** In the U.K., scientists reversed an individual's diabetes by transplanting reengineered stem cells.
3. **COVID-19 Vaccines:** During the pandemic, researchers rapidly developed new **mRNA vaccines**, a breakthrough that earned a **Nobel Prize in 2023.**
4. **Organ-on-Chips:** These microfluidic devices contain human cells that replicate tumor microenvironments, enabling researchers to test drugs in more realistic settings.

Advancements in Precision Medicine in India:

The Indian precision medicine market is experiencing significant growth, projected to reach over **\$5 billion by 2030**, with a compound annual growth rate (CAGR) of **16%**. Key developments include:

- **BioE3 Policy:** This new policy focuses on developing precision therapeutics and harnessing biotechnology to create innovative manufacturing processes that mimic natural biological systems. It emphasizes research and development (R&D) and entrepreneurship, aiming to establish biomanufacturing, Bio-AI hubs, and bio-foundries in India.
- **NexCAR19:** In 2023, India's Central Drugs Standard Control Organization approved NexCAR19, the country's first domestically developed CAR-T cell therapy.
- **AI-Driven Facilities:** Siemens Healthineers partnered with the Indian Institute of Science in Bengaluru to launch AI-driven facilities focused on precision medicine.

The Role of Biobanks in Advancing Precision Medicine:

Biobanks are essential for precision medicine, serving as repositories for biological samples (blood, DNA, cells, tissues, and organs) alongside genetic data. These samples, collected from consenting individuals, are crucial for research. The success of precision medicine relies on extensive and diverse biobanks that ensure research benefits a wide range of individuals.

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Growth of Biobanks in India:

India currently has 19 registered biobanks hosting a variety of biological specimens, including cancer cell lines. Recent initiatives include:

- **Genome India Program:** Completed sequencing 10,000 genomes from 99 ethnic groups to identify treatments for rare genetic diseases.
- **Phenome India Project:** Collected 10,000 samples to create better prediction models for cardio-metabolic diseases.
- **PRaGeD Mission:** Focused on identifying new genes or variants for targeted therapies for pediatric genetic disorders.

Despite these advancements, stringent regulations around biobanks in India present significant challenges to fully leveraging the benefits of precision medicine.

Challenges in Regulating Biobanks in India

1. **Global Standards vs. Regulatory Gaps:** Countries like the U.K., U.S., Japan, and many European nations have established comprehensive biobanking regulations. In contrast, India's regulations are inconsistent, which can undermine public trust and limit the potential of precision medicine.
2. **Inadequate Ethical Guidelines:** The Indian Council for Medical Research's guidelines have gaps, such as insufficient clarity on how participants' data will be used and the duration of data storage. This raises concerns about privacy and potential discrimination based on genetic information.
3. **Lack of Central Regulation:** The absence of a single authority to regulate biobanks leads to inconsistencies and ethical violations, including unauthorized data sharing.
4. **Unregulated Access to Biological Samples:** Many international pharmaceutical companies can access Indian samples, creating risks associated with research collaborations.
5. **Impact on Data Ownership and Profits:** Regulatory gaps may lead to Indians losing ownership of their biological samples and the profits generated from research findings.

Seizing the Opportunity for Leadership in Biobanking:

1. **Enhancing Public Trust:** Strong protections for data privacy and regulatory oversight will encourage participation in biobanks, providing a solid foundation for research.
2. **Pharmaceutical Diplomacy and Global Aspirations:** As a member of international groups like the Quad and BRICS, India aims to leverage its pharmaceutical capabilities. Aligning biobanking laws with global standards will enhance public trust and participation in precision medicine.

Conclusion: Precision medicine holds tremendous potential to transform healthcare, but to realize this potential, India must address regulatory challenges and establish robust biobanking practices. By enhancing public trust and aligning with global standards, India can emerge as a leader in precision medicine and biotechnology.



8

WHO and UNICEF Release Report on Mental Health of Children and Young People

Context: On **October 10**, the World Health Organization (WHO) and UNICEF released a significant report titled “*Mental Health of Children and Young People - Service Guidance*” to coincide with **World Mental Health Day**.



- **World Mental Health Day**, an event celebrated annually since 1992, initiated by the World Federation for Mental Health. The report emphasizes the urgent need for improved mental health services for children and adolescents, reflecting the growing recognition of mental health issues in young populations.

Understanding Mental Health:

Mental health encompasses a state of well-being that enables individuals to cope with life stresses, realize their potential, learn effectively, work productively, and contribute to their communities.

Key Findings of the Report

1. **Early Onset of Mental Health Conditions:** One-third of mental health conditions manifest before the age of **14**, with half emerging by the age of **18**.
2. **Prevalence Among Adolescents:** An estimated **15%** of adolescents aged **10-19** experience mental health conditions, with anxiety, depression, and behavioral disorders being the most common.
3. **Suicide Statistics:** Suicide ranks as the **fourth leading cause of death** among individuals aged **15-19**.
4. **Barriers to Care:** Many young people face challenges in accessing necessary mental health care due to limited availability, high costs, and stigma.
5. **Funding and Resource Gaps:** Public funding and human resources for mental health services are notably low worldwide, particularly for children and adolescents.
6. **Recommendation for Community-Based Care:** The report advocates for phasing out institutional care in favor of community-based services that enable children to grow within their families and communities, ensuring continuity in their education, social relationships, and overall development.

India's Efforts in Mental Health:

The report acknowledges India's progress in addressing mental health issues among young people:

- **Mental Health Care Act 2017:** This legislation decriminalized suicidal behaviors, promoting a more supportive environment for individuals struggling with mental health challenges.
- **Schizophrenia Research Foundation (SCARF):** Based in Chennai, SCARF provides free care in line with international standards, particularly focusing on early psychosis services.
- **Centre for Mental Health Law and Policy:** Located in Maharashtra, this center engages young adults in co-producing *Outlive*, a prevention program aimed at reducing urban suicides among marginalized young people aged **18-24**, addressing issues related to caste, class, gender, and sexuality.

Conclusion: The WHO and UNICEF report serves as a crucial reminder of the pressing need for enhanced mental health services for children and young people globally. With one in seven adolescents facing mental health issues, the emphasis on community-based care, along with the recognition of initiatives like those in India, is vital for fostering a healthier future for the younger generation.

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9 Serious Fraud Investigation Office (SFIO)

Context: The Serious Fraud Investigation Office (SFIO) has recently been in the spotlight following the recording of the statement of the daughter of Kerala's Chief Minister, who is also the owner of a now-dormant information technology firm. This development has raised significant political controversy.

About Serious Fraud Investigation Office (SFIO):

- **Establishment:** The SFIO was established on **July 21, 2015**, and was granted statutory status under **Section 211** of the **Companies Act, 2013**.
- **Nature and Function:**
 - SFIO is a specialized corporate fraud investigation agency functioning under the **Ministry of Corporate Affairs**.
 - It is a **multi-disciplinary organization** comprising experts in various fields, including:
 - **Accountancy**
 - **Forensic Auditing**
 - **Law**
 - **Information Technology**
 - **Investigation**
 - **Company Law**
 - **Capital Markets**
 - **Taxation**
- **Objective:** The primary aim of the SFIO is to detect and prosecute white-collar crimes and frauds within the corporate sector.



Criteria for Investigation:

The SFIO investigates cases that exhibit certain characteristics:

1. **Complexity:** Cases that are complex and involve interdepartmental and multidisciplinary implications.
2. **Public Interest:** Cases with substantial public interest, assessed by the monetary size or impact.
3. **Systemic Improvement:** Cases where investigations can lead to improvements in systems, laws, or procedures.
4. **Source of Referral:** The SFIO takes up investigations based on referrals from:
 - The **Department of Company Affairs**.
 - Reports from the **Registrar** or inspector under **Section 208** of the Companies Act, 2013.
 - Special resolutions passed by companies requiring investigation.
 - Requests from the Central or State Governments.



5. **Independent Cases:** The SFIO can also initiate investigations independently, as determined by the Director, who must provide written reasons for taking up the case.

Authority and Structure:

- Upon assignment of a case to the SFIO, no other investigative agency can concurrently investigate any offense under the Companies Act.
- **Leadership:** The SFIO is headed by a director, who holds the rank of **Joint Secretary** in the Government of India. The Director is supported by:
 - Additional Directors
 - Joint Directors
 - Deputy Directors
 - Senior Assistant Directors
 - Assistant Directors
 - Prosecutors
 - Other secretarial staff
- **Headquarters and Regional Offices:** The SFIO is headquartered in **New Delhi**, with regional offices located in:
 - **Mumbai**
 - **Chennai**
 - **Hyderabad**
 - **Kolkata**

Conclusion: The Serious Fraud Investigation Office plays a critical role in maintaining corporate governance and integrity in India. By investigating complex fraud cases and ensuring accountability in the corporate sector, the SFIO contributes to enhancing public trust in financial systems and practices.



10 Space Based Surveillance (SBS) Mission

Context: The **Cabinet Committee on Security (CCS)** has recently approved the third phase of the **Space Based Surveillance (SBS)** mission. This mission aims to enhance awareness of land and maritime domains for both civilian and military applications.

**Key Points of the SBS Mission:**

- **Launch of Satellites:** The SBS mission will involve the deployment of at least **52 satellites** in **Low Earth Orbit (LEO)** and **Geostationary Orbit (GEO)**.
 - **21 satellites** will be constructed by the **Indian Space Research Organisation (ISRO)**.
 - **31 satellites** will be developed by various private companies.
- **Operations:** The mission will be operated by the **National Security Council Secretariat** and the **Defence Space Agency**, both under the **Ministry of Defence**.
- **Support to Armed Forces:** Each of the three armed forces (Army, Navy, and Air Force) will have dedicated satellites for operations related to land, sea, or air missions.

Phases of the SBS Mission:

1. **Phase I:** Initiated in **2001**, the first phase included the launch of four satellites, notably **RISAT 2**.
2. **Phase II:** Launched in **2013**, the second phase involved the deployment of six satellites, including **RISAT 2A**.

Support and Goals

- **International Cooperation:** The SBS 3 mission will be bolstered by:
 - Acquisition of **31 Predator drones** from the United States.
 - Joint manufacturing of military satellites with **France**.
 - Development of **anti-satellite missile capabilities**.
- **Strategic Objectives:** India aims to enhance its capabilities in:
 - Detecting enemy submarines in the **Indo-Pacific region**.
 - Monitoring infrastructure developments by adversaries along its land and maritime borders.

Overview of the Cabinet Committee on Security (CCS): The CCS is a vital body within the Government of India, focusing on national security and defense policy matters.

Key Information:

- **Chairman:** The Prime Minister serves as the chair of the CCS.
- **Members:**
 - Prime Minister

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- Defence Minister
- Home Minister
- Finance Minister
- External Affairs Minister

Functions of the CCS:

- The CCS addresses all issues related to **India's defence and security**.
- It reviews matters concerning **law and order** and **national security**.
- The committee discusses various measures necessary to enhance national security.
- It deals with foreign policy matters that could impact internal or external security.
- The CCS considers security-related agreements with other countries and discusses political issues affecting national security.

Cabinet Committees in India: Cabinet committees, though not mentioned in the Indian Constitution, allow smaller groups of ministers to streamline decision-making on specific policy areas, thus easing the workload of the Union Cabinet.

Formation and Reorganization: Cabinet committees are formed or reconstituted following a new government's formation or a cabinet reshuffle.

Major Cabinet Committees:

1. Cabinet Committee on Economic Affairs
2. Cabinet Committee on Political Affairs
3. Cabinet Committee on Investment and Development
4. **Cabinet Committee on Security**
5. Cabinet Committee on Parliamentary Affairs
6. Cabinet Committee on Employment and Skill Development
7. Cabinet Committee on Housing
8. Appointments Committee of the Cabinet

This comprehensive framework reflects India's strategic approach to enhancing its national security through advanced technological initiatives like the SBS mission while ensuring effective governance through the CCS.

1 India-Canada Diplomatic Dispute

Context: Recently, India recalled its High Commissioner from **Canada and expelled several Canadian diplomats** in response to escalating tensions between the two nations. The conflict intensified when Canada requested India to waive diplomatic immunity for its officials, alleging their involvement in a matter under investigation. India viewed this request as unreasonable and contrary to established diplomatic norms.



Diplomatic Immunity Overview

Diplomatic immunity is a fundamental principle of international law that protects foreign government officials from being subjected to local jurisdiction for both their official and personal actions. The **Vienna Convention on Diplomatic Relations (1961)**, which **India ratified in 1972**, outlines these privileges and immunities for diplomatic staff.

Recent Fallout in India-Canada Relations

- Khalistani Extremism:**
 - Issue:** The support of Sikh separatist groups by Canada has been a significant strain on India-Canada relations.
 - Impact:** India's repeated warnings about Khalistani activities, including an unofficial referendum in 2023 to establish an independent Sikh state, are viewed as direct attacks on Indian sovereignty.
- Security Cooperation:** India has made multiple extradition requests for terrorists and organized crime figures residing in Canada, which have largely been ignored by the Canadian government.
- Stalled Agreements:** Key agreements such as the Comprehensive Economic Partnership Agreement and the Foreign Investment Promotion and Protection Agreement have seen no significant progress, leading to further diplomatic strain.
- Vote Bank Politics:** The Sikh community, particularly in Ontario and British Columbia, constitutes a critical vote bank for political parties like the Liberal Party in Canada, influencing their stance on issues related to Khalistani extremism.

Overview of India-Canada Relations:

- Bilateral Trade:** The trade in goods between India and Canada has been declining, with figures dropping from **USD 10.50 billion in 2022 to USD 7.65 billion in 2023**.
- Consular Relations:** India and Canada signed a **Mutual Legal Assistance Treaty** in 1994 and an **Extradition Treaty** in 1987 to facilitate legal cooperation.
- Nuclear Cooperation:** In 2010, both countries signed a Nuclear Cooperation Agreement, leading to the establishment of a **Joint Committee on Civil Nuclear Cooperation**.
- Space Collaboration:** India's **ISRO** launched its **100th satellite** from **PSLV in 2018** and also flew Canada's first Low Earth Orbit (LEO) satellite.

Conclusion: The recent diplomatic actions and ongoing issues highlight the complex and often tense relationship between India and Canada. With unresolved matters regarding security, economic agreements, and sovereignty concerns, the future of India-Canada relations remains uncertain as both nations navigate these significant challenges.

2

Anusandhan National Research Foundation (ANRF) Launches PMECRG and MAHA-EV Initiatives

Context: The Anusandhan National Research Foundation (ANRF) has launched two significant initiatives aimed at strengthening India's research ecosystem and fostering innovation in critical technology areas. These initiatives are poised to transform the landscape of research and development (R&D) in the country by bridging the gap between academic research and industrial applications.

1. Prime Minister Early Career Research Grant (PMECRG)

Objective: The PMECRG is designed to position India as a leader in science and technology by providing financial support to early-career researchers. It encourages high-quality, innovative research and enables researchers to expand their knowledge, ultimately driving technological progress.

Key Features:

- **Flexible Budget:** Researchers are provided with a flexible budget to ensure ease of research.
- **Support for Early-Career Researchers:** This grant is aimed at nurturing young scientists and fostering new research frontiers.

Significance:

- The initiative aims to foster **innovative research** and promote the **advancement of technology**.
- It is a step towards **expanding knowledge boundaries** in various scientific disciplines.

2. Mission for Advancement in High-Impact Areas - Electric Vehicle (MAHA-EV)

Objective: The MAHA-EV initiative focuses on advancing India's electric vehicle (EV) industry by developing key EV technologies. The mission is aligned with the government's **Atmanirbhar Bharat** vision, reducing dependency on imports and promoting domestic innovation.

Key Focus Areas:

- **Tropical EV Batteries and Battery Cells:** Research and development of EV batteries suited for tropical climates.
- **Power Electronics, Machines, and Drives:** Enhancing power electronics systems critical for EV performance.
- **EV Charging Infrastructure:** Developing efficient and scalable charging infrastructure to support electric mobility.

Significance:

- It will **position India as a global hub** for EV component development, boosting the nation's **global competitiveness**.
- Accelerating the shift towards **electric mobility**, contributing to a **greener and more sustainable future**.

About ANRF:

The Anusandhan National Research Foundation was established under the **ANRF Act 2023** and operates under the **Department of Science & Technology**. With its establishment, the **Science and Engineering Research Board (SERB)** has been merged into ANRF.

Key Objectives:

- The foundation aims to **seed, grow, and promote R&D** across India's universities, colleges, research institutions, and laboratories.
- It serves as an **apex body** for guiding the strategic direction of scientific research in the country, as per the recommendations of the **National Education Policy (NEP)**.

Conclusion: By launching these initiatives, ANRF is making a transformative impact on India's research and industrial sectors, driving innovation and positioning the country as a global leader in science, technology, and electric mobility.

ANRF launches 1st Mission for Advancement in High-Impact Areas (MAHA)- EV Mission

Objectives

- Enhance domestic R&D capabilities on Electric Vehicle (EV) components to achieve strategic advantages in EVs for self-reliance and global competitiveness
- Position India as a hub for development of EV components

Technology Verticals for establishment of e-Nodes

- Tropical EV Batteries & Battery Cells
- Power Electronics, Machines, and Drives (PEMD)
- Electric Vehicle Charging Infrastructure

General Conditions

- Applicants (Lead PI and PIs) must hold a regular academic/research position in a recognized academic/institutional/lab/industry/any other recognized R&D institution in India with a proven track record in the relevant domain
- Participation of relevant industry/PSUs/start-ups is mandatory

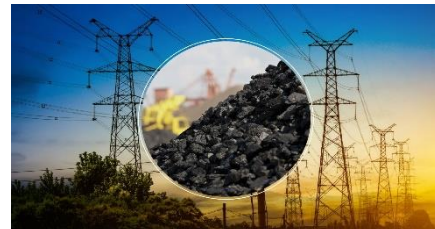
Stakeholders Meeting
October 26, 2024 (11 AM onwards) at IIT-Bombay

Website: anrfonline.in

Call Opening Date: 14.10.2024
Call Closing Date: 25.11.2024

3 Union Ministry of Power Launches National Electricity Plan (Transmission)

Context: Recently, the Union Ministry of Power launched the **National Electricity Plan (NEP)** focusing on transmission, developed by the **Central Electricity Authority (CEA)** as mandated under the **Electricity Act, 2003**. This plan is critical for enhancing India's electricity transmission infrastructure, aiming to ensure efficient delivery from generation sources to consumers.

**Key Highlights of the NEP (Transmission)**

- **Renewable Energy Goals:** The plan targets the transmission of **500 GW** of renewable energy installed capacity by **2030** and over **600 GW** by **2032**.
- **Peak Demand Management:** It aims to meet a peak demand of **458 GW** by **2032**.
- **Transmission Network Expansion:** The transmission network is expected to grow from **4.85 lakh ckm (circular kilometres)** in **2024** to **6.48 lakh ckm** by **2032**.
- **Inter-regional Transmission Capacity:** The plan includes an increase in inter-regional transmission capacity from **119 GW** to **168 GW** by **2032**.
- **Innovative Elements:** The NEP incorporates innovative elements such as:
 - **10 GW** of offshore wind farms
 - **47 GW** of battery energy storage systems
 - **30 GW** of pumped storage plants
- **Green Hydrogen and Ammonia:** It addresses the power needs for manufacturing hubs of green hydrogen and green ammonia, particularly in coastal areas.
- **Cross-Border Interconnections:** The plan covers interconnections with neighbouring countries such as **Nepal, Bhutan, Myanmar, Bangladesh, and Sri Lanka**, as well as potential interconnections with **Saudi Arabia and UAE**.

Challenges in India's Transmission System

The NEP acknowledges several challenges faced by India's transmission system, including:

- **Transmission Losses:** High losses during power transmission.
- **Integration Issues:** Difficulties in integrating renewable energy sources into the grid.
- **Obsolete Technology:** Outdated technology affecting efficiency.
- **Regulatory Focus:** A skewed focus of regulators primarily on generation rather than transmission.
- **Cybersecurity Threats:** Increasing risks associated with cyber threats in the energy sector.

Central Electricity Authority (CEA)

- **Establishment:** The CEA was established under the now-repealed **Electricity (Supply) Act, 1948**, which was replaced by the **Electricity Act, 2003**.
- **Composition:** It consists of no more than **14 members**, including a chairperson, with up to **8 full-time members** appointed by the Central Government.
- **Functions:** The CEA advises the Central Government on the National Electricity Policy and specifies technical standards for constructing electric plants, electric lines, and grid connectivity.

Conclusion: This launch marks a significant step towards enhancing India's energy infrastructure and facilitating the transition to a sustainable energy future.

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4 PM GatiShakti National Master Plan (PMGS-NMP) : Three-Year

The PM GatiShakti National Master Plan (PMGS-NMP), launched in 2021, aims to enhance multimodal connectivity infrastructure across various economic zones in India.



Key Achievements of PMGS-NMP:

- Whole of Government Integration:** Integrated **44 Central Ministries** and **36 States/UTs** for collaborative planning and execution of infrastructure projects.
- Infrastructure Development:**
 - Planned a **300 km coastal corridor in Gujarat**.
 - Developed **over 8,891 km of roads** and **27,000 km of railway lines** across the country.
- Social Sector Impact:**
 - Improved infrastructure planning in critical sectors such as **primary healthcare, education, and tribal development**, especially in remote and underserved areas.
 - Example: Used the **Pahunch Portal** to identify locations for new schools in underserved areas of Uttar Pradesh.
- State Master Plans:**
 - Established **PM GatiShakti State Master Plan portals** in all States/UTs, mapping **533+ projects** to streamline capital investments.
 - Goa developed a **Disaster Management Plan** for flood-prone areas along the **Amona River** using NMP.
- Trade Facilitation:** Instrumental in reducing logistics costs, improving India's **Logistics Performance Index** rank from **44 to 38**.
- Data-Driven Development:** Utilized **GIS-based tools** and real-time monitoring to enable informed decision-making and align projects with national priorities.
- District-Level Planning:** Development of the **PMGS - District Master Plan portal** to facilitate collaborative planning at the district level.

Overview of the PM GatiShakti National Master Plan:

- Objective:** To create next-generation infrastructure by leveraging past experiences.
- Digital Master Planning Tool:** Developed by **BISAG-N** (Bhaskaracharya National Institute for Space Applications and Geoinformatics), providing a comprehensive database of ongoing and future projects from various ministries and states involved in the development of economic zones.
- Seven Engines of NMP:** Focus areas include **Railways, Roads, Ports, Waterways, Airports, Mass Transport, and Logistics Infrastructure**.

Conclusion: The PMGS-NMP marks a significant step towards transforming infrastructure development in India, promoting economic growth and enhancing the quality of life through improved connectivity.



5 Inter-Parliamentary Union (IPU)

Context: Recently, the **Lok Sabha Speaker** led an Indian Parliamentary Delegation at the **149th Assembly of the Inter-Parliamentary Union (IPU)** held in **Geneva**. During his address, he highlighted the critical importance of **multilateralism** in addressing global challenges and fostering international cooperation.



Inter-Parliamentary Union
For democracy. For everyone.

About Inter-Parliamentary Union (IPU):

The **Inter-Parliamentary Union (IPU)** is an international organization of national parliaments that aims to promote representative democracy and world peace. Established in **1889** in Paris, it was the first multilateral political organization globally and plays a crucial role in fostering cooperation and dialogue among nations.

Key Functions and Objectives

- **Parliamentary Diplomacy:** The IPU facilitates diplomatic interactions between parliamentarians from different countries, enabling discussions on global challenges and fostering collaborative solutions.
- **Promotion of Peace and Democracy:** The organization empowers parliaments and parliamentarians to promote peace, democracy, and sustainable development worldwide.
- **Human Rights Advocacy:** The IPU defends the rights of parliamentarians through a dedicated committee composed of members from various national parliaments.

Membership:

- The IPU comprises **180 member parliaments** and **15 associate members**, working collectively to strengthen parliamentary governance and representation.
- It focuses on making parliaments more inclusive by promoting gender balance, youth participation, and diversity.

Headquarters: The IPU moved its headquarters to **Geneva** in **1921**, further establishing its role in international diplomacy and cooperation.

Funding: The organization is primarily funded by its member parliaments through public funds, which supports its activities and initiatives.

Structure:

1. **IPU Assembly:** This is the principal statutory body that articulates the views of the IPU on political issues. It convenes parliamentarians to analyse international problems and recommend actions.
2. **Governing Council:** Composed of three representatives from each member parliament, the Governing Council is the policymaking body responsible for setting the annual program and budget of the IPU. The President of the IPU serves as the ex-officio President of the Council.
3. **Executive Committees:** This 17-member body oversees the administration of the IPU and advises the Governing Council. The Executive Committee consists of 15 members elected for a four-year term, with the IPU President as an ex-officio member.
4. **Standing Committees:** The IPU has three Standing Committees established by the Governing Council to support the Assembly's work and focus on specific areas of parliamentary concern.

Conclusion: The Inter-Parliamentary Union plays a vital role in promoting democratic governance and international cooperation. By providing a platform for dialogue among parliamentarians, the IPU contributes to addressing global challenges, enhancing democratic processes, and advocating for the rights of parliamentarians worldwide.

6 Haber-Bosch process

Context: The **Haber-Bosch process** is a groundbreaking industrial method that enables the conversion of atmospheric nitrogen into ammonia, a key ingredient for fertilizers. Currently, this process removes approximately **100 million tonnes of nitrogen** from the atmosphere annually, resulting in the addition of **165 million tonnes of reactive nitrogen** to the soil. This industrial process plays a crucial role in modern agriculture, especially when compared to biological processes, which are estimated to replenish only **100-140 million tonnes** of reactive nitrogen each year.

Haber-Bosch process:

The **Haber-Bosch process** is a significant industrial method that converts nitrogen from the atmosphere into ammonia (NH_3), which is a crucial component in the production of fertilizers. This process has had a transformative impact on agriculture, enabling the mass production of fertilizers that support global food production.

Key Highlights:

- **Nitrogen Fixation:** The process removes approximately **100 million tonnes of nitrogen** from the atmosphere, converting it into **165 million tonnes of reactive nitrogen** that enriches the soil.
- **Historical Development:** Developed in the early **1900s** by **Fritz Haber** and later modified into an industrial process by **Carl Bosch**, the Haber-Bosch process is hailed as one of the most important technological advancements of the 20th century.

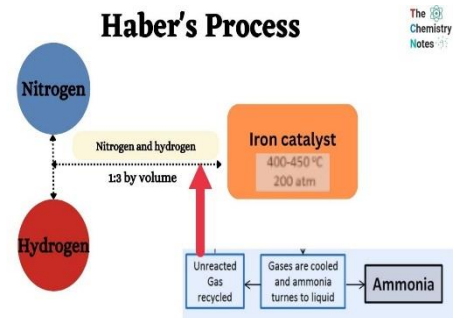
Importance:

- **Mass Production of Fertilizers:** The Haber-Bosch process was the first to enable the large-scale production of ammonia, facilitating widespread access to fertilizers and significantly enhancing agricultural productivity.
- **Innovative Chemical Engineering:** It was the first industrial chemical process to implement high pressure to facilitate chemical reactions, marking a significant advancement in chemical engineering.

How the Haber-Bosch Process Works:

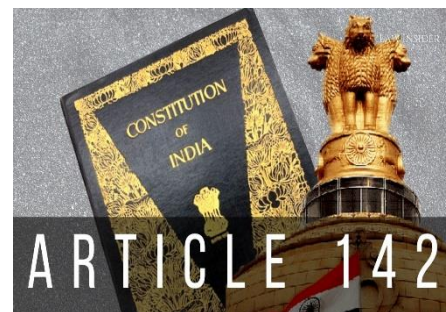
1. **Basic Reaction:** The process involves the direct combination of nitrogen gas (N_2) from the air with hydrogen gas (H_2) to form ammonia (NH_3):
2. **Conditions:**
 - The reaction occurs under **high pressures** (around 150-300 atmospheres) and **moderate temperatures** (400-500°C).
 - **Catalyst:** A catalyst, primarily composed of iron, is used to facilitate the reaction, allowing it to occur at lower temperatures than would otherwise be necessary.
3. **Maintaining Equilibrium:**
 - To enhance ammonia production, ammonia is continuously removed from the reaction mixture as it is formed. This practice helps maintain an equilibrium that Favors product formation.
 - The yield of ammonia can be increased by employing lower temperatures and higher pressures.

Conclusion: The Haber-Bosch process has revolutionized agriculture and has played a critical role in feeding the world's population by enabling the efficient production of fertilizers. Its development marked a turning point in chemical manufacturing and agricultural practices, illustrating the profound impact of scientific innovation on global food security.



7 Article 142 of the Indian Constitution

Context: Recently, the Supreme Court of India declined to entertain a **Public Interest Litigation (PIL)** that sought directions under Article 142 to include sexual offences against men, trans persons, and animals under the newly enacted **Bharatiya Nyaya Sanhita (BNS)**. This refusal highlights the scope and application of Article 142 within the Indian legal framework.

**About Article 142:**

Article 142 of the Indian Constitution empowers the Supreme Court to ensure complete justice in any cause or matter pending before it. This article endows the apex court with special and extraordinary powers, allowing it to address situations where litigants have suffered due to illegality or injustice in the course of legal proceedings.

- **Article 142(1) states:**

“The Supreme Court, in the exercise of its jurisdiction, may pass such decree or make such order as is necessary for doing complete justice in any cause or matter pending before it, and any decree so passed or order so made shall be enforceable throughout the territory of India in such manner as may be prescribed by or under any law made by Parliament and, until provision in that behalf is so made, in such manner as the President may by order prescribe.”

Key Features:

- **Exceptional Justice:** Article 142 allows the Supreme Court to deliver justice in exceptional cases where existing laws may not provide a remedy or where enforcement is challenged.
- **Supremacy of Orders:** If a legislative enactment attempts to make unenforceable the decree or order of the Supreme Court under Article 142, such a law would be rendered void, as it contravenes the authority of Article 142.
- **Limitations:** The powers under Article 142 cannot be used to replace or supplant the substantive laws applicable to the specific case being considered.

Significant Cases Involving Article 142:

1. **Babri Masjid Case:** Article 142 played a critical role in the Ram Janmabhoomi-Babri Masjid land dispute, where the Supreme Court ordered the handover of the disputed land to a trust formed by the Union Government.
2. **Bhopal Gas Tragedy:** The Supreme Court invoked Article 142 in the case of *Union Carbide vs. Union Govt* to provide compensation to the victims of the catastrophic Bhopal Gas Tragedy, demonstrating the court's role in ensuring justice when legislative frameworks fall short.

Conclusion: Article 142 serves as a vital tool for the Supreme Court to address complex legal issues and ensure that justice is delivered effectively, particularly in cases where conventional legal remedies may be inadequate. Its significance is underscored in landmark cases that have shaped Indian jurisprudence, highlighting the court's commitment to upholding justice in exceptional circumstances.

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8

Mount Adams

Context: Mount Adams, Washington's largest volcano, has recently experienced a surge in seismic activity after being largely dormant for thousands of years. This increased activity has drawn attention to the stratovolcano's potential for future eruptions.

**About Mount Adams:**

- **Location:** Mount Adams is situated in Washington State, United States.
- **Height and Size:** Standing at **12,277 feet (3,742 meters)** tall and spanning **18 miles (29 kilometres)** wide, it is the largest active volcano in Washington, surpassing Mount Rainier in volume.
- **Volcanic Field:** The mountain is located in the Mount Adams volcanic field, a **1,250 sq. km area** that includes at least **120 mostly basaltic volcanoes**, characterized by spatter and scoria cones, shield volcanoes, and extensive lava flows.
- **Glaciers:** Mount Adams is home to over **10 active glaciers** that contribute vital water resources to the surrounding forests, streams, and meadows.
- **Last Eruption:** The most recent eruption at Mount Adams occurred sometime between 3,800 and 7,600 years ago, during the Stone Age.

What is a Stratovolcano?

Stratovolcanoes, also known as composite volcanoes, are notable for their tall, steep, cone-shaped structures. Here are key characteristics of stratovolcanoes:

- **Structure:** Stratovolcanoes are built from successive layers of ash and lava, resulting in higher peaks compared to flatter shield volcanoes.
- **Magma Characteristics:** The magma within stratovolcanoes is viscous and often contains trapped gases, which can lead to explosive eruptions.
- **Tectonic Plate Margins:** These volcanoes typically form at the margins of tectonic plates, where the denser oceanic plates are subducted beneath lighter continental plates. The magma generated from the subducting plate rises through cracks in the Earth's crust, eventually resulting in a volcanic eruption.
- **Distribution:** Stratovolcanoes constitute about **60% of the Earth's** individual volcanoes. Approximately **85%** of them are located around the Pacific Ocean, forming a region known as the "Ring of Fire."

Conclusion: Mount Adams stands as a significant geological feature in Washington State, representing the power and complexity of stratovolcano systems. With recent seismic activity indicating potential unrest, monitoring this volcano is crucial for understanding its behaviour and mitigating risks to nearby communities.

9 THAAD Missile System

Context: In response to Israel's ongoing military operations against Hezbollah militants in Lebanon, the United States has announced the deployment of the Terminal High Altitude Area Defence (THAAD) missile defence system to Israel.



About THAAD Missile System:

THAAD is an advanced missile defence system designed to engage and destroy short-, medium-, and intermediate-range ballistic missiles during their terminal phase of flight.

Key Features:

- **Hit-to-Kill Technology:** THAAD employs a "hit to kill" approach, which means it intercepts and destroys missiles by colliding with them, effectively blasting them apart as they enter their target zone during descent.
- **Kinetic Energy Interception:** The system uses kinetic energy to neutralize incoming threats, including nuclear warheads, by targeting them directly without relying on explosives.
- **Engagement Range:** THAAD can cover a wide operational area, capable of engaging targets at distances ranging from 150 to 200 kilometres (approximately 93 to 124 miles).

Development of THAAD:

- **Origins:** THAAD was developed by the United States following its experiences with Iraq's Scud missile attacks during the Persian Gulf War in 1991. The need for an effective defence against such threats spurred the development of this advanced system.
- **Deployments:** In 2008, the US deployed an early missile warning radar, a component of the THAAD system, to Israel. Additional deployments occurred in 2012 and 2019, enhancing Israel's missile defence capabilities and reinforcing its position as a military power in the region.

Conclusion: The THAAD missile defence system plays a crucial role in enhancing the defence capabilities of nations facing ballistic missile threats. With its advanced interception technology and strategic deployments, THAAD serves as a significant deterrent against potential missile attacks, particularly in volatile regions like the Middle East.

10 Diphtheria

Context: A team from the World Health Organization (WHO) has arrived in **Deeg, Rajasthan**, due to a rise in cases of diphtheria in the region.

About Diphtheria:

- Diphtheria is a serious contagious bacterial infection primarily affecting the nose and throat.

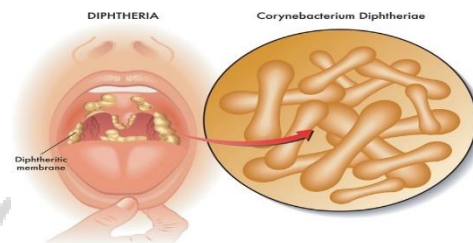
Cause: It is caused by strains of the bacterium *Corynebacterium diphtheriae*, which produce a toxin that leads to severe complications.

Transmission

- Diphtheria spreads from person to person, primarily through respiratory droplets from coughing or sneezing.
- Infection can also occur through contact with open sores or ulcers from infected individuals.
- While *Corynebacterium diphtheriae* can infect the skin, leading to open sores, these skin infections rarely result in severe illness.

Symptoms: The disease presents with:

- **A thick, Gray membrane covering the throat and tonsils**
- **Sore throat and hoarseness**
- **Swollen glands (enlarged lymph nodes) in the neck**
- **Difficulty breathing**



Complications: If untreated or advanced, the bacterial infection can damage vital organs such as the heart, kidneys, and nervous system.

Current Treatments: Treatment strategies include:

- **Neutralization of Toxin:** Using Diphtheria Antitoxin (DAT) to neutralize unbound toxins.
- **Antibiotics:** Administering antibiotics to inhibit further bacterial growth.
- **Monitoring and Supportive Care:** Essential for managing complications like airway obstruction and myocarditis.

WHO Recommendations: The World Health Organization (WHO) has issued the following new recommendations regarding the treatment of diphtheria:

1. **Antibiotic Preference:** In patients with suspected or confirmed diphtheria, WHO recommends the use of macrolide antibiotics (such as azithromycin and erythromycin) over penicillin antibiotics.
2. **Sensitivity Testing:** WHO advises against routine sensitivity testing prior to administering Diphtheria Antitoxin (DAT) in patients with suspected or confirmed diphtheria.
3. **Dosing Regimen for DAT:** For patients with suspected or confirmed symptomatic diphtheria, WHO suggests implementing an escalating dosing regimen for **Diphtheria Antitoxin (DAT)** based on the severity of the disease and the time elapsed since symptom onset, rather than using a fixed dose for all patients

Conclusion: Diphtheria remains a significant public health concern, especially among children. Vaccination is crucial in preventing outbreaks and protecting vulnerable populations. The recent rise in cases highlights the need for increased awareness and vaccination efforts in affected areas.



1 5th Global Standards Symposium (GSS-24)

Context: The 5th Global Standards Symposium (GSS-24), held in New Delhi, marked a significant event as the first of its kind in the Asia-Pacific region, organized by the International Telecommunication Union (ITU) and hosted by India's Department of Telecommunications.

Key Highlights of GSS-24:

1. Theme and Focus:

- The theme was “Charting the Next Digital Wave: Emerging Technologies, Innovation, and International Standards.”
- The symposium focused on how emerging digital technologies like AI, IoT, and 5G can drive the next wave of digital transformation through innovation and the creation of international standards.

2. Key Outcomes:

- **Bridging the standardization gap:** Emphasis on reducing the gap between developed and developing nations in technological standardization. The ITU Bridging the Standardization Gap programme was highlighted as a critical effort.
- **International collaboration for digital technologies:** Strengthened partnerships between Standards Development Organizations (SDOs) to assist developing nations in adopting digital innovation.
- **Global Digital Compact:** Emphasized the role of international cooperation in fostering emerging digital technologies for transformation.
- **Standards for SDGs:** The role of international standards in achieving the Sustainable Development Goals (SDGs), e.g., through the #Standards4SDGs campaign.
- **Smart Sustainable Cities:** The symposium acknowledged initiatives under the United for Smart Sustainable Cities (U4SSC) framework, promoting cities' sustainability goals.

3. United for Smart Sustainable Cities (U4SSC):

- Led by ITU, UN Economic Commission for Europe (UNECE), and UN-Habitat, U4SSC fosters partnerships for empowering cities to align with the UN SDGs.



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Significance of International Standards

- Facilitating **global trade** by ensuring uniformity across borders.
- Ensuring **consumer protection** and product safety.
- Enhancing **efficiency and cost-effectiveness** by reducing complexities.
- Promoting **environmental sustainability** by developing eco-friendly technologies.
- Enabling **global collaboration** to align technological advancements.

International Telecommunication Union (ITU)

- The **International Telecommunication Union (ITU)**, a specialized agency of the United Nations, plays a pivotal role in **information and communication technologies (ICTs)**.
- **Established - 1865**
- **Headquartered - Geneva, Switzerland**
- **Sector: Telecommunications**
- **Member - 194** Member States and more than **1000 companies, universities and international and regional organizations**
- **Is India a member? - Yes, since 1869**
- ITU is the oldest UN agency, initially formed to manage international telegraph communications. Its core mission revolves around enabling global connectivity, managing radio spectrum and satellite orbits, developing **technical standards** to ensure seamless communication across networks, and fostering **digital access** in underserved regions.



Key Functions of ITU:

- **Global Connectivity:** ITU facilitates international communication networks by ensuring compatibility among technologies through global standards.
- **Radio Spectrum and Satellite Orbit Allocation:** It allocates and manages these crucial resources to prevent interference and ensure fair usage.
- **Technical Standards:** ITU develops essential standards to enable seamless interaction between networks, technologies, and devices.
- **Closing the Digital Divide:** The organization works towards universal digital inclusion, aiming to connect the **2.6 billion people** who still lack access to the internet, especially in developing countries.
- **Trusted Multilateral Platform:** ITU brokers international agreements, provides a platform for knowledge sharing, and collaborates with governments, private companies, universities, and international organizations.

Conclusion: This symposium provided a platform for addressing the challenges and opportunities in setting **global digital standards**, enhancing collaboration among nations, and focusing on sustainability in the digital era.

2 eMigrate Project

Context: The eMigrate project is a significant initiative launched by the **Government of India** to facilitate the migration process for Indian workers seeking employment abroad, ensuring their protection and providing a safe framework for international labor mobility. Recently, both the Union External Affairs Minister and the Labour and Employment Minister introduced an upgraded version of the **eMigrate portal and mobile app**, making it even more accessible and efficient for users.

**Key Objectives of eMigrate Portal:**

- 1. Safe and Transparent Migration:** The platform aims to provide a secure system for Indian workers migrating abroad, ensuring their rights are safeguarded throughout the migration process.
- 2. Comprehensive Services:** It offers essential services, such as access to information, streamlined documentation, helpline support, and integration with relevant services.
- 3. Legal and Orderly Mobility:** The portal promotes safe and legal channels for migration, in line with India's commitment to facilitating regulated and responsible migration practices.

Features of the Updated eMigrate Portal:

- 1. 24/7 Multilingual Helpline:** The platform provides round-the-clock support for migrant workers, particularly for those facing challenges abroad. This helpline is available in multiple languages to cater to diverse populations, especially those in the **Gulf region**, where many Indian workers are employed.
- 2. Digilocker Integration:** The revamped portal integrates with **Digilocker**, allowing users to submit documents digitally, ensuring a **paperless**, secure, and efficient documentation process.
- 3. Collaboration with Common Service Centres (CSCs):** The platform is now linked with CSCs, which extends immigration services to **rural areas** in local languages. This partnership enhances accessibility for migrant workers, particularly those from remote regions.
- 4. Overseas Job Marketplace:** The eMigrate portal offers a **one-stop marketplace** for Indian job-seekers to explore and apply for overseas employment opportunities in a safe and reliable manner.

Alignment with SDG 10:

The enhanced portal aligns with the **United Nations' Sustainable Development Goal 10**, which aims to reduce inequality within and among countries. It supports **orderly, safe, regular, and responsible migration**, thereby contributing to inclusive growth and reducing socio-economic disparities.

3 Food and Agriculture Organization (FAO)

Context: World Food Day is celebrated annually on **October 16** to commemorate the establishment of the **Food and Agriculture Organization (FAO)**. This day serves as a reminder of the vital role that food and agriculture play in global health and sustainability.

About Food and Agriculture Organization (FAO):

The **Food and Agriculture Organization** is a specialized agency of the **United Nations (UN)** dedicated to combating hunger and promoting food security worldwide.



Key Points About FAO

- **Establishment:** Founded in **October 1945**, FAO is the oldest permanent specialized agency of the UN, laying the groundwork for international efforts in food security and agricultural development.
- **Mandate:** The organization focuses on several critical objectives:
 - **Improving Nutrition:** Ensuring that all people have access to sufficient, safe, and nutritious food.
 - **Increasing Agricultural Productivity:** Promoting sustainable practices to boost crop yields and agricultural output.
 - **Raising Living Standards:** Enhancing the quality of life for rural populations and farmers.
 - **Contributing to Global Economic Growth:** Supporting economic development through agriculture and food systems.

- **Establishment:** Founded in 1945 in Quebec City, Canada, as a specialized UN agency.
- **Headquarters:** Rome, Italy
- **Membership:** Comprises 195 members (194 countries + the European Union).
- **Global Reach:** Operates in over 130 countries worldwide.
- **Mission:** Aims to defeat hunger and achieve food security for all.
- **Goal:** Ensures access to high-quality food for active, healthy lives.
- **Call to Action:** Invites collaboration for a world without hunger and poverty.

Key Functions of FAO: The FAO plays a crucial role in coordinating international efforts in various agricultural sectors:

- **Research:** Conducting studies to inform policy and practice in food and agriculture.

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- **Technical Assistance:** Offering support for agricultural projects tailored to the needs of individual countries.
- **Education and Training:** Running seminars and training centers to build capacity among stakeholders in agriculture.
- **Information Services:** Maintaining databases and statistics on global agricultural production, trade, and consumption.
- **Publications:** Producing periodicals, yearbooks, and research bulletins to disseminate knowledge.

Headquarters and Membership:

- **Headquarters:** The FAO is headquartered in **Rome, Italy**, a hub for international dialogue on food and agriculture.
- **Members:** The organization currently has **194 Member States** plus the **European Union**, reflecting its global reach and influence.

Funding: FAO is funded entirely by its member countries, ensuring that its operations align with the priorities and needs of its diverse membership.

Role in Crises: In situations of food scarcity or conflict, the FAO generally refrains from direct intervention in food relief operations. Instead, these responsibilities are typically handled by the **World Food Program**, which operates within the UN system.

Key Reports Published by FAO:

The FAO regularly releases important reports that provide insights into various aspects of food and agriculture, including:

- **The State of the World's Forests (SOFO)**
- **The State of World Fisheries and Aquaculture (SOFIA)**
- **The State of Agricultural Commodity Markets (SOCO)**
- **The State of Food Security and Nutrition in the World (SOFI)**

Conclusion: The Food and Agriculture Organization stands at the forefront of global efforts to eradicate hunger, enhance nutrition, and promote sustainable agriculture. As we celebrate World Food Day, we are reminded of the critical work FAO does in fostering a world where everyone has access to enough nutritious food.



4 Hellfire Missile

Context: India recently finalized a deal with the United States for the procurement of **170 AGM-114R Hellfire missiles**, enhancing its defence capabilities.

Overview of Hellfire Missile

The **AGM-114 Hellfire missile** is a highly regarded short-range air-to-ground (and occasionally air-to-air) laser-guided tactical missile. It has been extensively utilized by the **United States military** and over **30 allied nations**, making it one of the most versatile and widely used missiles in modern warfare.



Targeting Capabilities

- Armoured vehicles (e.g., tanks)
- Bunkers
- Radar systems
- Communications equipment
- Soft targets (e.g., personnel)
- Hovering helicopters

- **Development Background:** The development of the AGM-114 Hellfire began in **1972** to meet the Army's demand for a helicopter-launched anti-tank missile. The goal was to effectively counter Soviet Armor formations during the Cold War.

Key Features:

- **Dimensions:**
 - **Length:** 1.62 meters
 - **Diameter:** 17.7 centimetres
 - **Wingspan:** 0.71 meters
- **Weight:** Each Hellfire missile weighs between **45.4 kg to 49 kg**, which includes a warhead weighing between **8 kg to 9 kg**.
- **Propulsion:** The missile is powered by a **single-stage solid-propellant rocket motor**, enabling efficient flight.
- **Velocity:** It has a maximum speed of **950 mph** (approximately 1,530 km/h).
- **Range:** The effective operational range of the Hellfire missile is between **7 to 11 kilometres**.

AGM-114R Hellfire Missile: The **AGM-114R**, also known as **Hellfire Romeo**, is the latest addition to the Hellfire II missile family. This variant integrates features from all previous Hellfire II models, making it a multipurpose missile capable of various applications.

- **Launch Platforms:** The AGM-114R can be launched from:
 - Various fixed-wing aircraft
 - Helicopters
 - Surface ships
 - Military ground vehicles
- **Guidance System:** It employs a **semi-active laser guidance system**, which allows it to accurately engage targets. The missile also features an integrated **blast fragmentation sleeve warhead**, enabling it to destroy targets that previously required multiple Hellfire variants.

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5 Doctrine of Lis Pendens

Context: The **Supreme Court** recently clarified that the **non-applicability** of provisions in **Section 52** of the **Transfer of Property Act, 1881** (TPA) does not impede the applicability of the principles of **Lis pendens**, which are founded on justice, equity, and good conscience.



Overview of the Doctrine of Lis Pendens:

The term **Lis pendens** translates to “a pending legal action.” This legal doctrine asserts that during the pendency of litigation regarding a property, no new transactions or transfers should occur that might affect the parties involved in the lawsuit. The guiding principle is to maintain the **status quo** and prevent any actions that could impact the rights of the parties engaged in the legal dispute.

- **Legal Foundation:** The doctrine is encapsulated in **Section 52** of the **Transfer of Property Act, 1882**, which stipulates that any transfer of immovable property during the pendency of litigation shall not affect the rights of the parties concerning that property. The outcome of the litigation, decided by a court of competent jurisdiction, will bind any purchaser who acquires the property while the litigation is ongoing.
- **Purpose:** The doctrine aims to protect the rights and interests of the parties involved in litigation over a specific property, ensuring that no third party can acquire an interest that would undermine the court's decision.

Effects of the Doctrine of Lis Pendens:

The key effect of Lis pendens is not to invalidate a transfer but rather to make it **subject to the outcome of the ongoing litigation**. According to this rule:

- Any person purchasing property while a suit is pending is bound by the judgment rendered against the original titleholder, even if the purchaser was not part of the litigation and had no knowledge of it.

Conditions for Applicability:

The Supreme Court has outlined the necessary elements for the applicability of the Lis pendens doctrine under **Section 52**:

1. **Suit Must Be Pending:** There should be an ongoing legal proceeding.
2. **Competent Jurisdiction:** The suit must be filed in a court that has the authority to adjudicate the matter.

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3. **Directly Affects Title:** The right to title of the immovable property in question must be directly and specifically contested.
4. **Impact on Rights:** The suit must directly affect the rights of the involved parties.
5. **Transfer of Property:** The property in question must be subject to transfer by either party involved in the litigation.
6. **Non-Collusive Nature:** The suit must not be collusive, meaning it should not involve fraudulent agreements to manipulate outcomes.

Non-Applicability of the Doctrine:

The doctrine of Lis pendens does not apply in certain scenarios, including:

- **Sales by Mortgagers:** Transfers made by mortgagers exercising their rights under a deed.
- **Effect on Transferor Only:** Situations where only the transferor's rights are affected.
- **Collusive Proceedings:** Cases that involve collusion or deceit to obtain a favourable decree.
- **Unidentifiable Property:** Situations where the property is inadequately described and cannot be clearly identified.
- **Indirectly Affected Rights:** Instances where the rights to the property are not directly in question and where alienation is permissible.

What is the Transfer of Property Act, 1882?

The Transfer of Property Act, 1882, is an essential piece of legislation in India that governs the transfer of movable and immovable property between individuals. This law is vital as it upholds the integrity of property transactions, ensuring that sales and purchases are conducted fairly. Its primary objective is to provide a robust legal framework for transferring ownership and to outline the procedures necessary for these transfers to be recognized by law. This Act simplifies the process of property conveyance for individuals, corporations, and non-profit organizations. Additionally, it protects the rights of all parties involved in real estate transactions, from sellers to buyers.

Conclusion: The doctrine of Lis pendens serves as an essential legal principle to safeguard the interests of parties involved in litigation concerning immovable property. By ensuring that ongoing legal actions remain undisturbed by external transactions, it upholds the integrity of the judicial process and prevents unjust enrichment during legal disputes. Understanding its conditions and limitations is crucial for legal practitioners and individuals involved in property transactions.

6 What is Mechazilla?

Context: Recently, **SpaceX** achieved a remarkable milestone in space exploration by successfully landing its **Starship** rocket using an innovative structure known as **Mechazilla**.

About Mechazilla:

Mechazilla is the nickname for SpaceX's impressive 400-foot rocket-catching structure located at the company's Starbase in Texas. This groundbreaking technology represents a significant leap in the methods used for rocket recovery and reuse.



Features:

- **Mechanical Arms:** Mechazilla is equipped with two enormous mechanical arms, often referred to as "chopsticks." These robust arms are engineered to catch the **Super Heavy** booster in midair during its return to Earth.
- **Height:** Standing at 400 feet, Mechazilla is one of the tallest structures in the world specifically designed for rocket recovery.

Working of Mechazilla:

1. **Launch and Ascent:** The SpaceX Starship rocket, along with its Super Heavy booster, is launched from the ground.
2. **Booster Separation:** After reaching a predetermined altitude, the Super Heavy booster separates from the upper stage of the rocket.
3. **Controlled Descent:** The booster begins its descent back to Earth, utilizing precision thrusters to control its trajectory and speed.
4. **Catching the Booster:** As the booster approaches the landing site, Mechazilla's massive arms position themselves to intercept it. The booster hovers briefly, allowing the arms to secure it safely, ensuring a controlled and gentle landing.

Significance:

- **Reusability:** Mechazilla's innovative method of rocket recovery is a game changer for space missions. By catching the booster midair, it facilitates quick refurbishment and reusability, significantly enhancing operational efficiency.
- **Cost-Effectiveness:** This approach greatly reduces launch costs, as the need for extensive recovery and refurbishment processes is minimized. The ability to reuse boosters rapidly contributes to the sustainability of space exploration efforts.

Conclusion: **Mechazilla** is a cutting-edge advancement in rocket recovery technology, reflecting SpaceX's commitment to innovation in space travel. By improving the reusability and cost-effectiveness of its rockets, SpaceX is paving the way for a new era in space exploration, making it more accessible and sustainable for future missions. The successful operation of Mechazilla marks a significant step forward in SpaceX's ambition to revolutionize the aerospace industry.

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7 What is an Ossification Test?

Context: Recently, a **Mumbai court** ordered an ossification test to determine the age of one of the individuals accused in the murder case of a political leader, aiming to establish whether the accused is a minor.

About Ossification Test:

An **ossification test** is a medical procedure that evaluates the state of bone development to ascertain an individual's age. This method is particularly relevant in legal and forensic contexts, where age determination can have significant implications.

How It Works:

- **X-Ray Examination:** The procedure involves taking X-rays of specific bones in the body, such as the **clavicle**, **sternum**, and **pelvis**. These bones are selected due to their susceptibility to growth changes as a person matures.
- **Bone Development:** As individuals age, certain bones undergo a process called ossification, where they harden and fuse at specific developmental stages. By analysing these changes, medical professionals can estimate the age of the individual.

Key Bones Involved:

- **Clavicle:** This long bone connects the shoulder blade to the sternum and is critical in assessing age since it experiences gradual fusion of growth plates during maturation.
- **Sternum and Pelvis:** These bones also exhibit significant changes that correlate with age progression.

Importance of the Test:

- **Age Determination:** The ossification test serves as a reliable method for determining age, especially in legal scenarios where an individual's minority can affect legal outcomes.
- **Skeletal Maturity:** In medical settings, this test is valuable for assessing skeletal maturity in children and adolescents, particularly those with growth disorders or other health conditions.

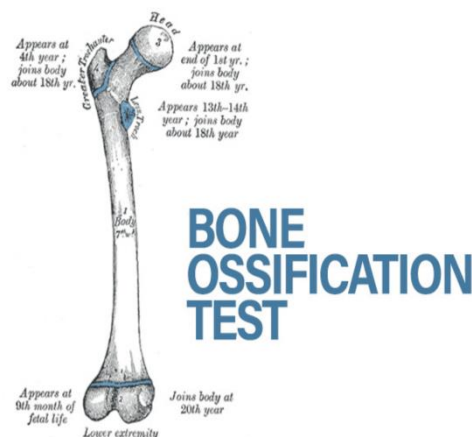
Applications:

- **Forensic Science:** Commonly used in legal contexts to accurately establish the age of individuals, when necessary, especially in criminal cases involving minors.
- **Medical Assessment:** Employed in paediatric medicine to monitor growth and development in children, ensuring that they are on track for their age group.

Conclusion: The ossification test is a vital tool in both forensic science and medicine, providing crucial insights into bone development and age determination. Its application in legal cases, such as the recent court order in Mumbai, highlights its significance in addressing issues of age and responsibility in criminal matters.

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8 Heavy Reliance on AI Could Pose Risks in the Financial Sector: RBI Governor

Context: In a recent address at the **90th High-Level Conference** organized by the **Reserve Bank of India (RBI)** in New Delhi, **RBI Governor Shaktikant Das** raised important concerns regarding the growing reliance on artificial intelligence (AI) within the financial sector. He warned that this heavy dependence could allow a small number of technology providers to dominate the market, potentially creating systemic vulnerabilities in the financial ecosystem.



Current Applications of AI in the Financial Sector: AI technologies are increasingly being integrated into various aspects of the financial system, including:

- **Algorithmic and High-Frequency Trading:** Utilizing AI algorithms to execute trades at high speeds based on real-time market data.
- **Credit Scoring and Approvals:** AI systems are employed to assess creditworthiness and streamline loan approvals, making the process faster and more efficient.
- **Customer Service:** Tools like chatbots are enhancing customer engagement and support through automated responses and assistance.
- **Predictive Analytics:** AI is used to analyse market trends for improved risk management and investment strategies.



Risks Posed by AI to Banking and Financial Services: Despite the potential benefits, the growing reliance on AI presents several significant risks:

1. Concentration Risks:

- If multiple financial institutions utilize similar AI models for trading or risk assessment, a failure in these algorithms can lead to widespread repercussions across global financial markets.
- For example, AI trading systems can amplify market volatility, triggering mass sell-offs during market downturns.



2. Algorithmic Biases:

- AI systems trained on historical data may perpetuate existing biases, leading to unfair lending practices and discriminatory credit decisions.
- For instance, an AI-driven loan approval system might inadvertently deny loans to certain demographic groups based on biased training data.

3. Data Security and Privacy: Breaches or misuse of sensitive data can result in identity theft, fraud, and significant financial losses for both institutions and their customers.

4. Lack of Transparency:

- The '**Black Box**' problem, where the decision-making process of AI systems is opaque, complicates accountability and trust in automated systems.
- Potential misleading information due to **AI hallucinations**, where AI systems generate inaccurate or nonsensical outputs.

Measures to Address These Risks: To mitigate these risks, the RBI Governor recommended several proactive measures:

1. Comprehensive AI Regulation:

- Encourage industry-wide collaboration with researchers, security experts, and policymakers to create a robust regulatory framework.
- Learning from global best practices, such as the **Algorithmic Accountability Act of 2023** in the United States, can provide valuable insights.

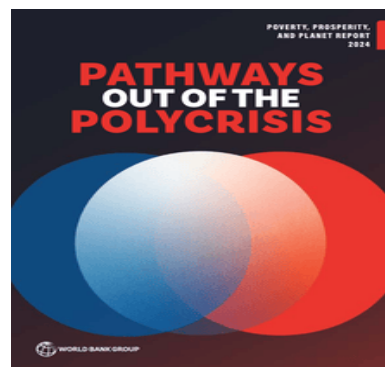
2. Maximize Defence Capabilities: Adopt a '**Security by Design**' approach, incorporating robust security features at every stage of the AI development lifecycle to ensure the foundational integrity of AI systems.

3. Learning and Adaptation: Implement advanced threat detection mechanisms that analyse vast data sets in real-time to uncover patterns and anomalies indicative of cyber threats, ensuring a proactive response to potential risks.

Conclusion: As AI continues to reshape the financial landscape, it is crucial for stakeholders to remain vigilant about the associated risks. The RBI Governor's insights highlight the need for a balanced approach that harnesses the benefits of AI while safeguarding against its vulnerabilities. By prioritizing comprehensive regulation and enhancing security measures, the financial sector can navigate the complexities of AI integration and ensure a resilient and equitable financial ecosystem.

9 Pathways out of the Polycrisis: Poverty, Prosperity, and Planet Report 2024

Context: The **World Bank Group** has recently released its **2024 report**, titled *Pathways out of the Polycrisis: Poverty, Prosperity, and Planet*. This report aims to provide a comprehensive framework to navigate the intricate trade-offs among three crucial aspects of economic development: **Poverty, Prosperity, and Planet**.



Key Findings of the Report

1. Stalled Global Poverty Reduction:

- The report highlights that global poverty reduction has come to a near standstill over the past five years due to a condition referred to as the “**polycrisis.**”
- The polycrisis encompasses simultaneous challenges such as slow economic growth, increased fragility, climate risks, and heightened uncertainty, complicating national development strategies and international cooperation.

2. Non-attainment of Targets:

- The global population living in extreme poverty is projected to be **7.3% by 2030** (up from **8.5% in 2024**).
- This figure is significantly above the **World Bank's target of 3%** and falls far short of the UN Sustainable Development Goals (SDGs) aimed at eliminating extreme poverty.

3. Global Prosperity Gap:

- The report notes a **stagnation in inclusive income growth** since the pandemic, highlighting a widening prosperity gap.
- The **Prosperity Gap** represents the average factor by which incomes need to be multiplied to elevate everyone globally to a standard of **\$25 per person per day**.

4. India's Progress:

- In 2024, approximately **129 million Indians** are projected to live in extreme poverty, defined as living on less than **\$2.15** (around **Rs 181**) per day.
- This marks a significant reduction from **431 million** individuals living in extreme poverty in **1990**, demonstrating a notable decrease over the decades.





- When considering a higher poverty threshold of **\$6.85** (approximately **Rs 576**) per day, more Indians are estimated to be living below the poverty line in **2024** than in **1990**. This highlights the challenges of rising living costs and economic pressures that impact a larger segment of the population.
- The increase in the number of people living in poverty, particularly above the **\$6.85** threshold, can be largely attributed to **population growth**. As the population expands, the number of individuals affected by poverty also rises, complicating efforts to combat poverty effectively.
- In **2021**, the World Bank reported a decline in extreme poverty levels, noting a reduction of **38 million** individuals, bringing the total to **167.49 million**. This fluctuation indicates that poverty levels in India are influenced by a variety of **social and economic factors**.

Proposed Pathways and Priorities: To address these challenges, the report proposes several pathways and priorities:

1. **Faster and Inclusive Growth:** The report emphasizes the need to increase **labour productivity**, income, and employment opportunities to stimulate economic growth that is both rapid and inclusive.
2. **Climate Resilience:** Enhancing climate resilience is essential to protect communities from climate shocks. This can be achieved by improving risk management and mitigation strategies, and synergizing policies that balance income growth with emissions reduction.

Priorities from a Global Perspective: The report outlines tailored strategies for different income groups of countries:

- **Low-Income Countries:** Focus on poverty reduction through investments in **human, physical, and financial capital**.
- **Middle-Income Countries:** Emphasize income growth that reduces vulnerability, while also pursuing synergies, such as improving air quality.
- **High-Income and Upper-Middle-Income Countries:** Accelerate mitigation efforts to combat climate change while effectively managing the associated transition costs.

Conclusion The *Pathways out of the Polycrisis* report by the World Bank Group serves as a critical call to action, outlining the urgent need for cohesive strategies that balance economic development with environmental sustainability. By focusing on inclusive growth and resilience, the report aims to pave the way for a more equitable and sustainable future for all.

10 Guidelines for Prevention and Regulation of Greenwashing, 2024

Context: The Guidelines for Prevention and Regulation of Greenwashing and Misleading Environmental Claims, 2024, issued by the Central Consumer Protection Authority (CCPA), aim to promote honest practices regarding environmental claims. These guidelines were established under the Consumer Protection Act, 2019, in response to the rise in misleading advertisements for "green" products, which not only confuse well-meaning consumers but also detract from broader environmental initiatives.

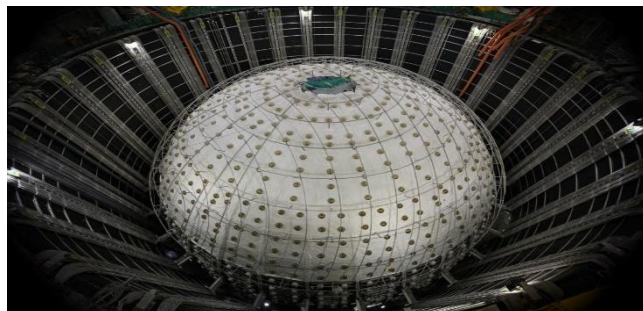
**Key Highlights of the Guidelines:**

- **Definition of Greenwashing:** Greenwashing is described as any deceptive or misleading practice, including:
 - Concealing, omitting, or hiding relevant information.
 - Exaggerating, using vague, false, or unsubstantiated environmental claims.
 - Utilizing symbols or imagery that emphasize positive environmental aspects while downplaying harmful attributes.
- **Applicability:** The guidelines apply to all environmental claims made by businesses.
- **Transparency Requirements:**
 - Prohibits the use of generic terms like "eco-friendly," "green," and "sustainable" without providing adequate, accurate, and easily accessible evidence.
 - Requires detailed information on the methodology and data supporting such claims.
- **Third-Party Certifications:** Mandates statutory or independent third-party verification to substantiate claims regarding product attributes such as compostable, degradable, recyclable, or climate-positive.
- **Aspirational or Futuristic Claims:** Such claims can only be made if there are clear, actionable plans outlining how these goals will be achieved.

Conclusion: These guidelines are designed to ensure that environmental claims are both truthful and meaningful, ultimately helping consumers make informed choices and supporting genuine environmental efforts.

1 China's Jiangmen Underground Neutrino Observatory (JUNO)

Context: The Jiangmen Underground Neutrino Observatory (JUNO) in China is set to begin collecting data on neutrinos, a significant step towards solving various mysteries surrounding these elusive subatomic particles, including their origins and interactions with other particles.



What are Neutrinos?

- **Definition:** Neutrinos are subatomic particles with a mass much smaller than that of other elementary particles. They are fundamental constituents of the universe.
- **Types:** There are three types of neutrinos:
 1. **Electron Neutrinos**
 2. **Muon Neutrinos**
 3. **Tau Neutrinos**
- **Neutrino Oscillation:** Neutrinos can change between these types as they travel, a phenomenon known as neutrino oscillation.

Key Characteristics of Neutrinos:

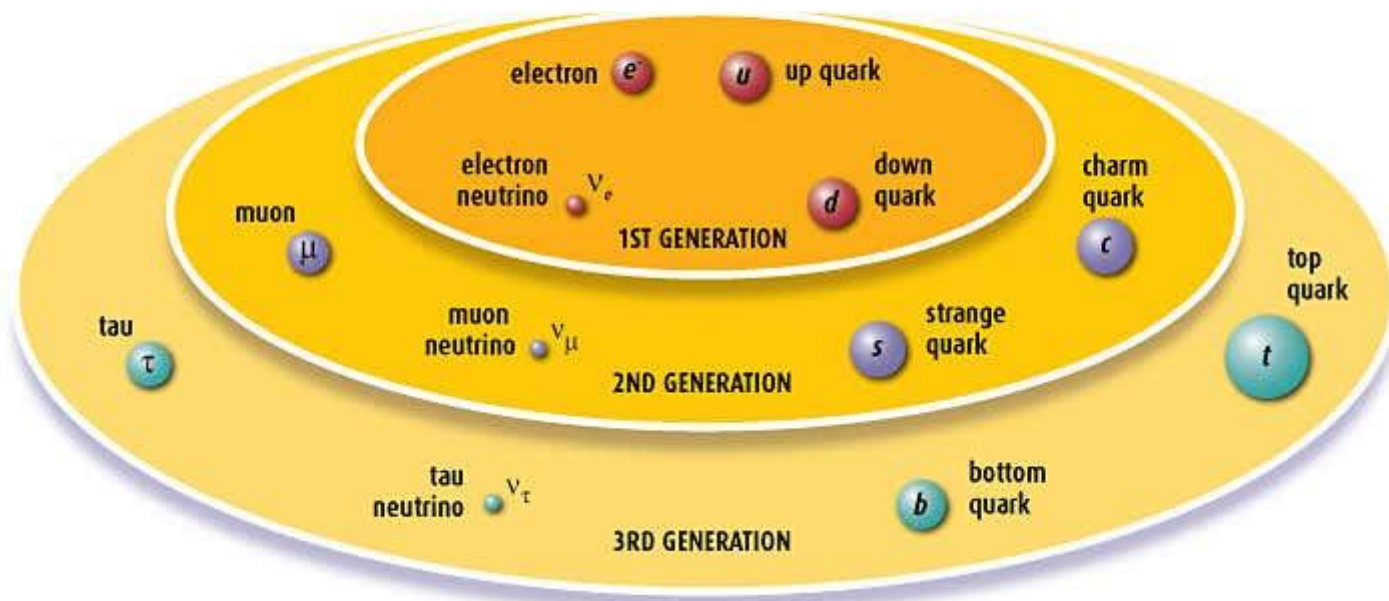
- **Spin:** Neutrinos have a spin of $1/2$, which is a half-integer value.
- **Speed:** They travel at nearly the speed of light and move in straight lines from their sources.
- **Interactions:** Neutrinos rarely interact with other matter, which is why they are often referred to as "ghost particles." The primary interactions they undergo are through gravity and the weak nuclear force.
- **Abundance:** Neutrinos are the most abundant particles that have mass in the universe.

JUNO's Contributions to Neutrino Studies:

- **Solar Neutrinos:** JUNO will observe neutrinos emitted from the sun, providing real-time insights into solar processes and nuclear reactions occurring within.
- **Geophysical Studies:** It will study neutrinos produced by the radioactive decay of uranium and thorium in the Earth, helping to enhance our understanding of mantle convection and the driving forces behind tectonic plate movements.
- **Astrophysical Sources:** JUNO may contribute to probing some of the most violent astrophysical phenomena, such as supernovae and gamma-ray bursts, by observing neutrinos emitted during these events.

THE STANDARD MODEL

The particles that make up the standard model are grouped in three families, or generations. Neutrino measurements could reveal other families



Key Neutrino Observatories Worldwide:

1. India-based Neutrino Observatory (INO):

- **Funding:** Jointly funded by the Department of Atomic Energy (DAE) and the Department of Science and Technology (DST).
- **Location:** Bodi West hills of Theni District, Tamil Nadu.

2. IceCube Neutrino Observatory:

- The first neutrino detector of its kind, located at the South Pole, designed to observe cosmic neutrinos from deep within the ice.

3. Other Notable Observatories:

- **TRIDENT (Tropical Deep-sea Neutrino Telescope)** in China.
- **DUNE (Deep Underground Neutrino Experiment)** in the USA.

Note: The name "JUNO" is shared with a NASA mission launched in 2011 to study Jupiter, but the two missions are unrelated.

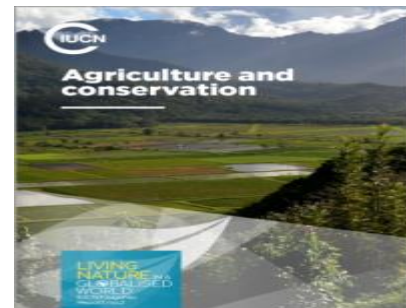
Conclusion: JUNO's ability to observe neutrinos will significantly advance our understanding of fundamental physics, geophysics, and astrophysics, highlighting the importance of neutrinos in various scientific fields.

2 IUCN Report: “Agriculture and Conservation”

Context: The IUCN has released a comprehensive flagship report titled “Agriculture and Conservation,” which examines the intricate relationship between agricultural practices and biodiversity conservation.

Key Findings:

Impact of Agriculture on Biodiversity



1. Negative Impacts:

- **Threat to Species:** Agriculture poses a direct threat to 34% of species listed on the IUCN Red List of Threatened Species.
- **Habitat Conversion:** Conversion of natural habitats into croplands, pasturelands, and plantations is a primary driver of biodiversity loss.
- **Indirect Threats:** Agriculture also contributes to indirect threats such as:
 - Introduction of invasive alien species
 - Nutrient loading and soil erosion
 - Use of agrochemicals
 - Climate change impacts

- 2. **Positive Impact:** Approximately 17% of species on the IUCN Red List are documented as having agriculture as a habitat, indicating some agricultural practices can support certain species.

Impact of Biodiversity on Agriculture

1. Positive Contributions:

- **Ecosystem Services:** Biodiversity supports agriculture through:
 - **Provisioning Services:** Production of biomass and genetic materials essential for food production.
 - **Regulating and Maintenance Services:** These include climate regulation, sediment retention, nutrient cycling, water flow regulation, and pollination, all of which are critical for agricultural productivity.

2. Negative Contributions:

- **Ecosystem Disservices:** Biodiversity can also present challenges, including:
 - Crop predation
 - Pests and pathogens that threaten agricultural output.



Recommendations for Aligning Agriculture with Conservation:

1. **Agriculture Sustainability:** Safeguard critical habitats and species that cannot coexist with agricultural practices to ensure both biodiversity and food security.
2. **Ecosystem Service Maintenance:** Maintain the natural state of climate, soil, and water to support agricultural productivity.
3. **Policy Alignment:** Align agricultural and economic policies with the conservation of biodiversity. Notably, less than 5% of agricultural subsidies worldwide are classified as "green subsidies," which promote sustainable practices.
4. **Food Policy Reform:** Implement strategies to reduce food wastage and encourage positive dietary changes, including a shift towards reduced meat consumption, to minimize environmental impacts.

About International Union for Conservation of Nature (IUCN)

- **Founded:** 1948
- **Type:** The world's largest and most diverse environmental network.
- **Purpose:** To assess the status of the natural world and develop measures to safeguard it.

Membership:

- **Members:** Over 1,400 member organizations.
- **Composition:** Includes government and civil society organizations, along with a global network of experts.

Global Reach:

- **Active Countries:** IUCN operates in more than 160 countries worldwide.
- **Activities:** Engages in research, analysis, project implementation, and informing environmental policy.

Expertise and Contributions

- **Duration:** Over 75 years of experience in conservation efforts.
- **Outputs:** Produces authoritative reports, standards, guidelines, and tools to support environmental conservation and sustainable development.

Significance:

- **Global Authority:** IUCN is recognized as the global authority on the conservation status of natural resources and biodiversity.
- **Impact:** Works to influence policy, promote sustainable practices, and facilitate collaboration among various stakeholders in environmental conservation.

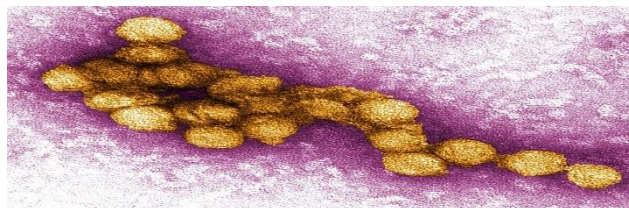
Conclusion: The IUCN's report emphasizes the need for a balanced approach that recognizes the interconnectedness of agriculture and biodiversity. By adopting sustainable agricultural practices and reforming policies, it is possible to protect ecosystems while ensuring food security and promoting agricultural productivity.

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3 West Nile virus (WNV)

Context: Ukraine is currently facing a serious outbreak of **West Nile virus (WNV)**, leading to rising fatalities. This has alarmed health officials as they work to contain the spread.



About West Nile Virus (WNV):

- **Family and Genus:** WNV is part of the **Flaviviridae family** and the **flavivirus genus**.
- **First Identified:** It was first discovered in **Uganda's West Nile district** in **1937**.
- **Geographical Presence:** WNV is commonly found in **Africa, Europe, the Middle East, North America, and West Asia**.
- **Peak Season:** According to the **World Health Organization (WHO)**, cases tend to spike between **June and September**, during the summer and autumn months.

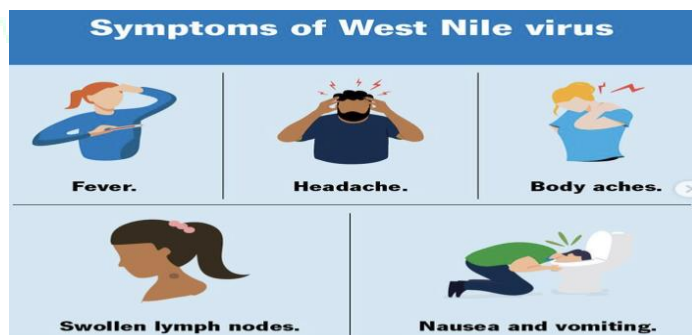
Transmission:

- **Mosquito Bites:** The virus is primarily transmitted to humans through the bites of **infected mosquitoes**, which contract the virus after feeding on infected birds.
- **Other Transmission Modes:** Less commonly, WNV can be transmitted through contact with **infected animals**, their **blood**, or other **tissues**.

Symptoms:

- **Asymptomatic Cases:** About **80%** of infected individuals show **no symptoms**.
- **West Nile Fever:** Around **20%** develop **West Nile fever**, with symptoms such as:

- Fever
- Headache
- Tiredness
- Body aches
- Nausea and vomiting
- Occasionally, a skin rash



- **Severe Disease:** In some cases, WNV can progress to **severe neuroinvasive disease**, which may affect the brain and spinal cord.

Global Spread:

- **Countries Affected:** **19 countries** have reported WNV outbreaks, including:
 - **Albania, Austria, Bulgaria, Croatia, Cyprus, Czechia, France, Germany, Greece, Hungary, Italy, North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Türkiye, and Kosovo.**

Treatment:

- **No Vaccine:** Currently, there is **no vaccine** available for WNV.

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- **Supportive Care:** Treatment is **supportive**, focusing on alleviating symptoms, especially in cases of **neuroinvasive disease**.

The outbreak in Ukraine adds to the growing number of cases reported across Europe and neighbouring regions, underscoring the need for vigilant public health measures and mosquito control strategies.

History of West Nile Virus (WNV)

West Nile Virus (WNV) has a significant history that illustrates how it became a global health concern.

- **First Isolation (1937):** WNV was first identified in a human in **Uganda's** West Nile district.
- **Bird Transmission (1953):** It was later found in **birds** (particularly crows and Columbiformes) in the **Nile Delta**.

Key Milestones in WNV Spread:

1. **Before 1997:** WNV was not considered harmful to birds, but in **1997**, a more virulent strain in **Israel** caused severe illness and death in birds due to **encephalitis and paralysis**.
2. **Human Infections:** For over 50 years, human cases of WNV have been reported worldwide.
3. **USA Outbreak (1999-2010):** In **1999**, a WNV strain circulating in **Israel** and **Tunisia** was imported into **New York**, leading to a major outbreak across the **United States**.
 - This outbreak spread across the **continental USA** and showed the dangers of vector-borne pathogens spreading outside their typical habitats.
4. **Global Impact:** Some of the largest outbreaks have occurred in **Greece, Israel, Romania, Russia, and the USA**.
 - Many of these sites are along **bird migratory routes**, linking the spread of the virus to migratory birds.

Current Spread:

- In its original range, WNV was widespread in **Africa**, parts of **Europe**, the **Middle East**, **West Asia**, and **Australia**.
- Since its **1999 introduction** into the USA, WNV has spread extensively and is now found from **Canada to Venezuela**.

This history highlights the virus's adaptability, as it now poses a global threat due to its ability to be carried by birds and mosquitoes across continents.

4 Delhi High Court allows Posthumous Reproduction

Context: Recently, the **Delhi High Court** granted a significant ruling allowing a 60-year-old couple to use the frozen sperm of their deceased son for surrogacy, highlighting the evolving legal landscape regarding reproductive rights in India.

**Key Highlights of the Judgment:**

- 1. Legal Framework:** The Court noted that Indian law does not prohibit posthumous reproduction in the absence of a spouse, provided that the consent of the sperm or egg owner is demonstrated. This ruling marks a progressive interpretation of existing laws surrounding assisted reproductive technologies.
- 2. Posthumous Reproduction Defined:** Posthumous reproduction involves conceiving a child using Assisted Reproductive Technology (ART) after the death of one or both biological parents. In this context, cryopreserved gametes (sperm or eggs) are utilized to achieve conception.
- 3. Property Rights:** The Court concluded that a semen sample or ovum sample qualifies as 'property' since it is part of an individual's biological material. As such, it can be inherited by legal heirs, providing a basis for the couple's request to use their son's cryopreserved sperm.

Understanding Assisted Reproductive Technology (ART)

- **Definition:**
 - ART encompasses various techniques aimed at obtaining pregnancy through manipulation of sperm or oocytes outside the human body, followed by transferring the gamete or embryo into a woman's reproductive system.
- **Methods:**
 - Key methods under ART include:
 - In-Vitro Fertilization (IVF)
 - Surrogacy
 - Gamete Cryopreservation
 - Gamete Intra-Fallopian Transfer (GIFT)

Regulatory Framework for ART in India

- 1. ART (Regulation) Act, 2021:** This act provides regulations and supervision for ART clinics and banks in India, aiming to prevent misuse and ensure safe and ethical practices in ART services.
- 2. Surrogacy (Regulation) Act, 2021:** The Act prohibits and penalizes commercial surrogacy, permitting it only for altruistic reasons, thereby safeguarding the rights of surrogate mothers and intended parents.

Conclusion: The Delhi High Court's ruling on the posthumous use of cryopreserved sperm underscores a critical development in reproductive rights and the recognition of individual autonomy over biological materials. This decision not only sets a precedent for similar cases in the future but also highlights the importance of clear legal frameworks to support ethical practices in assisted reproductive technologies in India.

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5 Gram Nyayalayas

Context: The Supreme Court of India has raised significant concerns regarding the feasibility of establishing Gram Nyayalayas (village courts) as mandated by the **Gram Nyayalayas Act of 2008**. These courts were intended to ensure that citizens have access to justice, regardless of social, economic, or other disabilities.

Key Concerns Raised by the Supreme Court:

1. **Mandatory Establishment:** The Court questioned whether the establishment of Gram Nyayalayas by States and Union Territories (UTs) is mandatory. Section 3 of the Gram Nyayalayas Act states that governments "may" constitute these courts, leading to ambiguity about the obligation to set them up.
2. **Resource Constraints:** State governments are already grappling with limited resources for their regular court systems, making it challenging to allocate funds for additional Gram Nyayalayas.
3. **Increased Burden on Higher Courts:** There are concerns that the establishment of these village courts may lead to an increase in appeals and writ petitions, consequently burdening the higher judiciary.



Key Features of Gram Nyayalayas:

- **Location:** Gram Nyayalayas are to be established at the intermediate level of Panchayati Raj institutions or in groups of contiguous Panchayats.
- **Appointment of Nyayadhikaris:** The state government appoints a 'Nyayadhikari' for each Gram Nyayalaya in consultation with the respective High Court.
- **Jurisdiction:** These are mobile courts with both civil and criminal jurisdiction.
- **Dispute Resolution:** Disputes are ideally resolved through conciliation, with social workers potentially appointed as conciliators.
- **Legal Framework:** Gram Nyayalayas are not bound by the Indian Evidence Act, 1872, but must adhere to the principles of natural justice.

Implementation Status of Gram Nyayalayas

- **Targets vs. Reality:** Initially, the target was to establish around 2,500 Gram Nyayalayas. However, fewer than 500 have been set up, with only **314 currently operational** across India.
- **Regional Disparities:** Some states like Maharashtra, Madhya Pradesh, and Rajasthan have made progress in establishing these courts, while others, such as Uttar Pradesh and Bihar, have seen limited or no implementation.

Initiative to Support Gram Nyayalayas

The **Union Government** has initiated a Centrally Sponsored Scheme (CSS) that provides financial assistance to states to facilitate the establishment of Gram Nyayalayas, aiming to enhance access to justice at the grassroots level.

Conclusion: The Supreme Court's scrutiny of the Gram Nyayalayas raises crucial questions about the viability of these institutions in the context of resource constraints and existing judicial workloads. The success of Gram Nyayalayas hinges on effective implementation, adequate funding, and clarity regarding the legal obligations of state governments to establish them. Addressing these challenges will be essential for realizing the goals of justice accessibility and equity in rural India.

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6 Union Government Announces MSP Hike for Rabi Crops

Context: The Union government has declared minimum support prices (MSP) for six rabi crops for the 2025-26 marketing season, notably increasing the MSP for wheat by ₹150 per quintal to ₹2,425, marking a 6.59% rise from the previous MSP.



Minimum Support Price (MSP) Regime in India:

- **About MSP:** MSP is a form of **market intervention** (a policy decision not enforceable by law) by the Government of India to insure agricultural producers against any sharp fall in farm prices during bumper production years.
- **Announced by:** These are announced by the **Cabinet Committee on Economic Affairs** (Chaired by the PM of India) on the basis of the recommendations of the Commission for Agricultural Costs and Prices (**CACP**) at the beginning of the sowing season for certain crops.
- **Objectives:**
 - **MSPs are a guarantee price** for farmer's produce from the Government to prevent the farmers from distress sales and to procure food grains for public distribution.
 - **For example**, if the market price for a commodity falls below the specified minimum price due to market surplus, government agencies will buy the entire quantity supplied by farmers at the announced minimum price.
 - The MSP hikes are **essential not only for farmers' welfare but also for stabilising agricultural markets**, especially as India aims to enhance domestic pulse production amid rising imports.
- **Background:**
 - India's agriculture was **devastated under British rule** and the farmers were impoverished.
 - **The Food-Grain Enquiry Committee**, established by the Jawaharlal Nehru administration in 1957, was the first attempt to address the agricultural earning issue.
 - In 1964, **Lal Bahadur Shastri** formed the Food Grain Price Committee (under LK Jha), to push for a MSP regime.
 - **The first MSP announcement** was made in 1967 by the then Agriculture Minister Jagjivan Ram.
 - Thus, the MSP regime came into existence as a **policy decision** (to be applicable uniformly across India) and the government set up the Agricultural Prices Commission (renamed as the CACP in 1985) for fixing MSP for crops.
- **Crops covered:**
 - Government announces MSPs for **22** mandated crops and fair and remunerative price (FRP) for **sugarcane** (total 23).
 - The mandated crops are **14** crops of the **kharif** season, **6 rabi crops** (Wheat, Barley, Gram, Masur [Lentil], Rapeseed & Mustard, Safflower) and two other commercial crops.



Issues Faced by the MSP Regime in India:

- **Limited coverage:** MSP is only applicable to certain crops, primarily those included in the government procurement system. Many farmers grow crops not covered by MSP, leaving them vulnerable to price fluctuations.
- **Regional disparities:** The implementation of MSP varies across states. Some regions benefit more due to better procurement infrastructure, while others face challenges in accessing MSP, leading to uneven support for farmers.
- **Discourage diversification:** Farmers may become overly reliant on MSP, which can discourage diversification and lead to overproduction of specific crops, causing market imbalances.
- **Procurement challenges:** While MSP aims to ensure fair pricing, actual procurement processes can be inefficient. Issues like delays in payments, inadequate storage facilities, and corruption can hinder farmers from benefiting fully.
- **Market distortions:** MSP can distort market signals by encouraging farmers to produce crops primarily for government support rather than responding to market demand, potentially leading to surpluses and wastage.
- **Neglect of non-cereal crops:** The MSP regime has historically focused on staple crops like wheat and rice, often neglecting pulses, oilseeds, and other essential crops. **This can impact nutritional diversity and food security.**
- **Inflationary pressure:** Increasing MSP without corresponding productivity improvements can contribute to inflation in food prices, affecting consumers and the overall economy.
- **Sustainability concerns:** The emphasis on certain crops may lead to unsustainable farming practices, such as excessive water use and soil degradation, affecting long-term agricultural viability.
- **Underutilisation of available support:** Many farmers are not fully aware of the MSP policies or how to access them, leading to underutilisation of available support.
- **Political interference:** MSP decisions can be influenced by political considerations, leading to inconsistencies in pricing and procurement policies that do not necessarily align with economic realities.

The Cabinet increased the minimum support prices for rabi crops

Crop	MSP for rabi 2025-26*	MSP for rabi 2024-25*	Increase in MSP
Wheat	₹2,425	₹2,275	₹150
Barley	₹1,980	₹1,850	₹130
Gram	₹5,650	₹5,440	₹210
Lentil (masoor)	₹6,700	₹6,425	₹275
Rapeseed & mustard	₹5,950	₹5,650	₹300
Safflower	₹5,940	₹5,800	₹140

(*per quintal)

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7 SAMARTH Scheme

Context: Recently, the central government has extended the **Samarth Scheme** for an additional two years (FY 2024-25 and 2025-26), with a budget allocation of ₹495 crore aimed at training **3 lakh persons** in textile-related skills.



About SAMARTH Scheme:

- **Full Name:** The Scheme for Capacity Building in Textiles Sector (SAMARTH) is designed as a demand-driven and placement-oriented umbrella skilling program.
- **Aim:** The scheme's primary objective is to incentivize and support the efforts of the textile industry in generating employment opportunities within the organized textile and related sectors. It covers the entire textile value chain, excluding spinning and weaving.
- **Key Features:**
 - **Entry-Level Skilling:** The scheme provides training for individuals entering the textile workforce.
 - **Upskilling/Re-skilling Program:** A special provision is included to enhance the skills of existing workers, particularly in the apparel and garmenting segments, thereby improving their productivity.

Implementation: The skilling program under SAMARTH is implemented through several agencies, including:

1. **Textile Industry:** Direct participation of industry players in training and employment.
2. **Ministry of Textiles and State Governments:** Institutions and organizations with established training infrastructure and placement partnerships with the textile industry.
3. **Reputed Training Institutions:** Non-Governmental Organizations (NGOs), societies, trusts, organizations, companies, startups, and entrepreneurs actively involved in the textile sector, also with placement tie-ups.

Nodal Ministry:

- The scheme is overseen by the **Ministry of Textiles**, which coordinates its implementation and ensures alignment with industry needs.

Conclusion: The SAMARTH Scheme plays a crucial role in enhancing the skill set of the workforce in the textile sector, contributing to employment generation and productivity improvements. By extending the scheme, the government reaffirms its commitment to developing the textile industry and addressing skill gaps in the labour market.

8 What is Kaizen?

Context: The recent month-long strike at Samsung’s manufacturing facility in Tamil Nadu has highlighted the challenging working conditions influenced by management philosophies such as **Kaizen**, a Japanese production method focused on continuous improvement.



About Kaizen:

- **Meaning:** Kaizen is derived from two Japanese words that together mean "good change" or "improvement."
- **Philosophy:** It is a Japanese business philosophy that promotes continuous improvement by involving employees at all levels of an organization.
- **Key Aspects:** Kaizen encompasses various strategies, including:
 - Enhancing the efficiency of the work environment.
 - Fostering a team atmosphere.
 - Improving processes and procedures.
 - Ensuring employee engagement.
 - Making jobs more fulfilling, less tiring, and safer.
- **Goal:** The primary aim of Kaizen is to implement small, incremental changes consistently over time to drive continuous improvement within a company. This method emphasizes that even minor adjustments can accumulate to produce significant impacts in the long run.
- **Benefits:** The Kaizen process can lead to:
 - Better quality control.
 - More efficient operations.
 - Reduction of waste.
 - Enhanced employee morale and engagement.
- **Inclusivity:** Under the Kaizen philosophy, any employee can initiate improvements at any time, reinforcing the idea that every team member has a stake in the company’s success and should actively contribute to enhancing the business.



Conclusion: This approach encourages a culture of continuous improvement, where every employee feels empowered to identify issues and propose solutions, ultimately fostering a more effective and harmonious work environment.



9 Drugs Technical Advisory Board (DTAB)

Context: The Drugs Technical Advisory Board (DTAB) recently recommended that all antibiotics be included in the definition of "new drugs" under the New Drugs and Clinical Trial (NDCT) Rules, 2019.



About DTAB:

- **Role:** DTAB is the highest statutory decision-making body in India for technical matters related to drugs.
- **Establishment:** It was established under the **Drugs and Cosmetics Act, 1940**.
- **Part of:** DTAB functions within the **Central Drugs Standard Control Organization (CDSCO)**.
- **Primary Function:** The board advises the **Central and State Governments** on technical matters concerning the administration of the Drugs and Cosmetics Act, 1940, and also carries out other functions as directed by the Act.
- **Nodal Ministry:** It operates under the **Ministry of Health and Family Welfare**.

What is a New Drug?

According to **Rule 122 E** of the **Drugs and Cosmetic Rules, 1945**, a new drug can be:

- A drug not used previously in the country and not recognized as safe and effective by the licensing authority.
- An already approved drug with modifications or new claims, including new indications, dosage, or routes of administration.

Implications of Including Antibiotics as New Drugs:

- **Documentation:** The manufacturing, marketing, and sale of antibiotics will be formally recorded.
- **Regulatory Oversight:** Approvals for manufacturing and marketing will need clearance from the **Central Government**, rather than **State-level drug administration**.
- **Prescription-based Sale:** Antibiotics will be sold only with a valid prescription, ensuring more regulated use and potentially curbing antibiotic misuse.

This step is aimed at enhancing the safety and efficacy of antibiotic use in India, preventing antimicrobial resistance, and improving overall public health.

10 Graded Response Action Plan (GRAP)

Context: The **Graded Response Action Plan (GRAP)** is a strategic framework aimed at mitigating air pollution in the **Delhi-NCR** (National Capital Region). It was introduced as an emergency mechanism to tackle deteriorating air quality, especially during the winter months when pollution levels in the region tend to rise dramatically.



TOGETHER WE SCALE HEIGHTS

Key Features of GRAP:

- **Purpose:** GRAP was created to systematically address and reduce air pollution levels in **Delhi-NCR**, triggered when the **Air Quality Index (AQI)** reaches the "poor" category or worse.
- **Seasonality:** GRAP is particularly crucial during the **winter** due to the tendency for air pollution to spike because of factors like stubble burning, vehicular emissions, and meteorological conditions (like lower temperatures and slower wind speeds).

Implementation:

- **Commission for Air Quality Management (CAQM):** The **CAQM** is responsible for overseeing GRAP's implementation. It coordinates with the **Ministry of Environment, Forest and Climate Change (MoEFCC)** and pollution control boards of various NCR states (Delhi, Uttar Pradesh, Haryana, Rajasthan).
- **Sub-Committee:** A sub-committee formed by CAQM includes officials from state pollution control boards, scientists from the **India Meteorological Department (IMD)**, IITM, and

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other experts. This committee is responsible for meeting frequently and issuing orders as per the GRAP stages.

In case of any conflict between state-level directives and CAQM directions, CAQM's orders will take precedence.

Stages of GRAP:

GRAP consists of **four stages**, each corresponding to the severity of air pollution levels, based on the AQI:

- 1. Stage I ("Poor" air quality):** AQI between **201-300**.
 - This stage triggers basic pollution control measures such as restricting certain construction activities and encouraging the use of public transport.
- 2. Stage II ("Very Poor" air quality):** AQI between **301-400**.
 - Actions may include stricter enforcement of pollution norms, restrictions on diesel generators, and enhancing public transportation services.
- 3. Stage III ("Severe" air quality):** AQI between **401-450**.
 - This stage introduces bans on construction activities, entry of trucks into Delhi, and encouraging carpooling to reduce vehicular emissions.
- 4. Stage IV ("Severe+" air quality):** AQI greater than **450**.
 - The most stringent measures come into play, such as banning non-essential vehicles and further restricting industrial activities.

Air Quality Index (AQI):

The **AQI** is a tool used by government agencies to measure air pollution levels and assess their health impact. The **AQI scale** provides the following ranges:

- **0-50:** "Good"
- **51-100:** "Satisfactory"
- **101-200:** "Moderate"
- **201-300:** "Poor"
- **301-400:** "Very Poor"
- **401-450:** "Severe"
- **450+:** "Severe+"

Higher AQI values indicate more serious health risks, particularly for vulnerable populations, and the advisories and actions under GRAP are tailored to each AQI category to protect public health.

1 23rd Meeting of the SCO Council of Heads of Government

Context: The 23rd Meeting of the Shanghai Cooperation Organization (SCO) Council of Heads of Government was recently hosted by Islamabad. The summit saw the signing of eight significant agreements, focusing on issues like the **SCO budget**, the operations of the **SCO Secretariat**, and **counterterrorism efforts**.



Key Takeaways from the Summit:

1. **India's Focus:** India emphasized the need to combat the three evils: **terrorism, extremism, and separatism**, which threaten regional peace and development.
2. **Opposition to China's BRI:** India reiterated its position of **not endorsing China's Belt and Road Initiative (BRI)** due to concerns over territorial integrity and sovereignty.
3. **Criticism of Unilateral Sanctions:** Some members criticized **Western sanctions** imposed on countries like Russia, calling them unfair and counterproductive.
4. **India's Digital Agenda:** India pushed forward its digital initiatives, emphasizing **Digital Public Infrastructure (DPI)** and **digital inclusion**, incorporating them into the SCO's cooperation framework.

Significance of SCO for India:

- **Counterterrorism Cooperation:** India benefits from the **Regional Anti-Terrorist Structure (RATS)**, which provides crucial intelligence and information on terrorist movements and drug trafficking.
- **Platform for Central Asian Engagement:** The SCO offers India a forum for pursuing its **Connect Central Asia policy**, strengthening its ties with Central Asian nations.
- **Indo-Russian Cooperation:** SCO is an important platform for **India-Russia collaboration**, especially in the face of changing global dynamics.
- **Energy Security:** The SCO region is rich in energy resources, holding about **4% of the world's natural gas** and **3% of oil reserves**, which is crucial for India's energy needs.
- **Balancing China's Influence:** India's involvement in the SCO allows it to counterbalance China's regional dominance through projects like **Chabahar Port** and the **International North-South Transport Corridor (INSTC)**.

Challenges within the SCO:

- **Disputes among Member States:** Ongoing tensions between member countries, including India and Pakistan, sometimes hinder effective cooperation.
- **Competition for Dominance:** The rivalry between **China and Russia** for influence within the SCO complicates its operations.
- **Divergent Interests:** Member countries often have varying political and economic interests, creating challenges in formulating a cohesive strategy.

About the SCO

- **Headquarters:** Beijing, China
- **Established:** 2001 in **Shanghai**, by Kazakhstan, China, Kyrgyzstan, Russia, Tajikistan, and Uzbekistan.
- **Current Members:** India, Iran, Kazakhstan, China, Kyrgyzstan, Pakistan, Russia, Tajikistan, Uzbekistan, and Belarus.
- **Observers:** Afghanistan and Mongolia.
- **Goals:** The SCO aims to strengthen **mutual trust, cooperation, and neighbourly relations** among member states and to promote cooperation in political, economic, and cultural spheres.

2 Evaluating Trustworthy Artificial Intelligence (ETAI) Framework

Context: The **Evaluating Trustworthy Artificial Intelligence (ETAI) Framework** has been introduced by India's Chief of Defence Staff, aiming to integrate trustworthy AI into critical defence operations. This **risk-based assessment framework** is tailored specifically for the defence sector to ensure that the adoption of AI technologies aligns with key ethical and operational principles.

Key Features of the ETAI Framework:

1. Five Principles of Trustworthy AI:

- **Reliability and Robustness:** Ensuring that AI systems function consistently under various conditions, without failures or unpredictable behaviour.
- **Safety and Security:** AI systems must safeguard against malicious attacks or misuse, especially in sensitive defence contexts.
- **Transparency:** Providing clear insights into AI operations, decision-making processes, and the reasoning behind AI-driven actions.
- **Fairness:** AI systems should prevent bias and ensure equitable treatment across different scenarios.
- **Privacy:** Protecting sensitive information and ensuring that AI systems adhere to privacy standards.

2. **Comprehensive Evaluation Criteria:** The framework defines structured criteria to **evaluate AI trustworthiness** and guide the development and deployment of AI technologies in defence operations.

AI's Role in Revolutionizing Modern Warfare:

1. **Intelligent Weapons Systems:** AI enhances the capabilities of **autonomous systems** such as drones and other unmanned vehicles. Examples include **Israeli UAVs Harpy and Harop**, which leverage AI for improved targeting and operational efficiency.
2. **Command and Control:** AI can process vast amounts of battlefield data in real-time, helping military leaders make informed decisions. An example is **Sarvatra Pehchaan**, an AI-based intrusion detection system integrated with command stations.
3. **Decision-Support Systems:** AI-driven systems help assess complex battlefield scenarios and suggest optimal strategies. For instance, the **Storm drone**, used by the Indian Army, enhances battlefield situational awareness.





Concerns Regarding AI Use in Defence:

1. **Accidental Damage:** The use of **autonomously controlled weapons**, such as **killer robots**, poses risks of **civilian casualties** and unintended harm during operations.
2. **Legal and Ethical Ambiguity:** AI systems in warfare raise questions around **human rights violations** and **civilian casualties**, as accountability and oversight are often unclear.
3. **Other Issues:**
 - **Cybersecurity risks:** AI systems can be vulnerable to cyber-attacks.
 - **Lack of reliability:** Unforeseen malfunctions may cause operational failures.
 - **Potential for unrest:** AI-driven weapons could intensify conflicts and escalate tensions.

Steps Taken by India for AI Adoption in Defence:

1. **Defence AI Council (DAIC):** Established to **provide strategic guidance and policy changes** for adopting AI in defence.
2. **Defence AI Project Agency (DAIPA):** Prepares the **roadmap** for developing AI-enabled applications within the defence sector.
3. **AI Roadmap for Defence Public Sector Units (DPSUs):** A set of **61 defence-specific AI projects** has been identified for development and implementation.
4. **Innovations for Defence Excellence (iDEX):** This framework promotes **innovation and collaboration** within the defence sector by supporting AI-related projects.

India's move towards AI integration in defence through the ETAI framework reflects a commitment to **technological advancement** while ensuring **trustworthiness, ethical integrity, and operational safety**.



3 RBI bars four NBFCs from Granting Loans

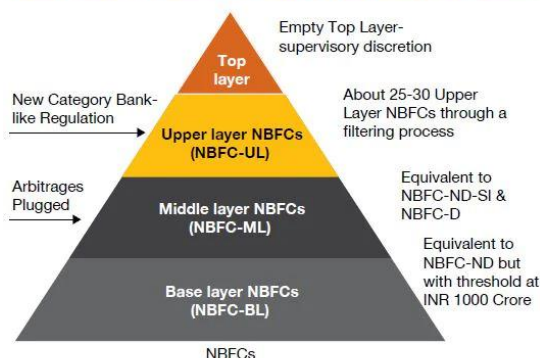
Context: The Reserve Bank of India (RBI) has barred four Non-Banking Financial Companies (NBFCs) from granting loans due to concerns over their lending practices. This action was taken under **Section 45L(1)(b)** of the Reserve Bank of India Act, 1934. The decision is based on **supervisory concerns** regarding their pricing policies, specifically related to the **weighted average lending rate (WALR)** and the interest spread charged over their cost of funds.

Key Points About NBFCs:

1. **Classification:** NBFCs are regulated by the RBI and categorized into **four layers** based on their size, activity, and perceived risk:

- Base Layer
- Middle Layer
- Upper Layer
- Top Layer

Scale Based Approach – Introducing Scale Based Framework



Source: RBI's Discussion Paper on Revised Regulatory Framework for NBFCs - A Scale-Based Approach

2. **NBFC Definition:** An NBFC is a company registered under the **Companies Act, 1956**, primarily involved in lending, but excluding those involved in **agriculture, industrial activity, trading goods (except securities)**, and the **construction or sale of immovable property**.

3. **Differences from Banks:**

- **Cannot accept demand deposits.**
- **Not part of the payment and settlement system**, hence cannot issue cheques.
- **Deposit insurance** from the Deposit Insurance and Credit Guarantee Corporation (DICGC) is not available to NBFC depositors.

Issues Faced by NBFCs:

- **Multiple Regulatory Bodies:** Different NBFCs fall under various regulators like **SEBI, IRDAI**, etc., creating a complex regulatory environment.
- **Maturity Mismatch:** NBFCs often borrow funds for the **short term** but lend for **long tenures**, leading to liquidity issues.
- **Non-Performing Assets (NPAs):** Many NBFCs face the problem of increasing NPAs, affecting their financial health.

The RBI's decision reflects its ongoing efforts to ensure that NBFCs operate under sound financial principles and do not engage in unfair lending practices.

4 Key Facts about Petra

Context: Recent archaeological excavations in Petra, Jordan, have uncovered a **2,000-year-old tomb** containing skeletons and a chalice resembling the **Holy Grail**.



About Petra:

- **Location:** Petra is a historic city located in **southern Jordan**.
- **Establishment:** Petra was founded around **312 BC**, making it approximately **2,000 years old**.
- **Capital of Nabataeans:** Petra became the capital of the **Nabataeans**, an Arab tribe known for their mention in the Bible.
- **Trade Hub:** Under Nabataean rule, Petra thrived as a center for the **spice trade**, connecting China, Egypt, Greece, and India.
- **Roman Conquest:** In **106 AD**, Petra was conquered by the Romans and became a Roman province.
- **Islamic Era and Rediscovery:** Petra continued to grow until the 7th century when it fell under **Islamic rule**. It remained largely hidden until it was rediscovered by **Swiss explorer Johann Ludwig Burckhardt** in 1812.

Features:

- **Architecture:** Petra is famous for its **rock-cut architecture**, with buildings carved directly into sandstone cliffs.
- **Meaning of Name:** The name **Petra** is derived from the Greek word for "**rock**."
- **Geography:** Petra is built on a **terrace** with the **Wadi Musa** (Valley of Moses) running through it.
- **Colourful Cliffs:** The city's cliffs display a stunning range of colours, from **red** and **purple** to **pale yellow**.
- **Tombs:** Petra houses around **800 tombs**, earning it the title "**Royal Tombs**", with the most famous structure being **The Treasury**.
- **Hydrology:** To sustain its population, Petra had an extensive **hydrological system**, including dams, cisterns, and water channels.
- **Rose City:** Petra is often called the "**Rose City**" because of the pinkish hue of its stone buildings.

UNESCO World Heritage Site:

- Petra was designated as a **UNESCO World Heritage Site** in **1985** due to its cultural and historical significance.

What is a UNESCO World Heritage Site?

A **World Heritage Site** is a location recognized by **UNESCO** for its outstanding cultural, historical, or natural value to humanity. These sites are protected under an international convention administered by UNESCO, aimed at preserving the heritage for future generations. Sites designated as **World Heritage** are considered of exceptional value and importance to the global community.

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5 World Energy Outlook 2024

Context: According to the **World Energy Outlook 2024**, India is expected to experience a significant increase in energy demand over the next decade, more than any other country. This report, published annually by the **International Energy Agency (IEA)**, serves as a vital resource for understanding global energy trends, security, and economic implications.

About the World Energy Outlook 2024:

- **Publication Authority:** International Energy Agency (IEA)
- **Significance:** Considered the most authoritative source for global energy analysis and projections.
- **Focus Areas:**
 - Energy demand and supply trends
 - Implications for energy security and emissions
 - Economic development projections

Highlights from the 2024 Report:

- **Emerging Energy Context:** The world is entering a new energy phase characterized by geopolitical challenges alongside abundant fuels and technologies.
- **Surplus Projections:** A surplus of oil and liquefied natural gas (LNG) is expected in the latter half of the 2020s, coupled with a rise in clean energy manufacturing capabilities.
- **Electricity Generation:** Low-emission energy sources are anticipated to generate more than half of the world's electricity by 2030.
- **Peak Demand:** The demand for coal, oil, and gas is predicted to peak by the end of this decade.
- **Electricity Demand Growth:** Global electricity demand is projected to accelerate, adding an annual consumption equivalent to Japan's total use.

Highlights Related to India:

- **Energy Demand Increase:** India is set to face the highest growth in energy demand globally, attributed to its size and rising demand across all sectors.
- **Vehicle Growth:** By 2035, India is projected to add over **12,000 cars daily**.
- **Construction Expansion:** Built-up space is expected to increase by over **1 billion square meters annually**, surpassing South Africa's total built space.
- **Industrial Growth:** Iron and steel production is set to grow by **70%**, and cement output is expected to rise by nearly **55%** by 2035.



- **Air Conditioning Demand:** The stock of air conditioners is projected to increase by over **4.5 times**, leading to electricity demand that exceeds Mexico's total expected consumption by 2035.
- **Overall Energy Demand:** Total energy demand in India is anticipated to increase by nearly **35%** by 2035, with electricity generation capacity nearly tripling to **1400 GW**.
- **Coal's Role:** Coal is expected to maintain a significant role in India's energy mix, with projections to add about **60 gigawatts** of new coal-fired power capacity by 2030. Coal-based electricity generation is forecasted to increase by over **15%**, with coal providing **40%** of energy for industries like steel, cement, and manufacturing in 2023.

What is the International Energy Agency (IEA)?

- **Type:** Autonomous inter-governmental organization within the OECD framework.
- **Mission:** To collaborate with governments and industry to shape a secure and sustainable energy future globally.
- **Establishment:** Founded in **1974** in response to the 1973-1974 oil crisis, aimed at ensuring the security of oil supplies.
- **Membership:** Comprises **31 member countries** and **11 association countries**.

Conclusion: The **World Energy Outlook 2024** underscores India's impending energy demand surge, reflecting both challenges and opportunities for sustainable development. As the country navigates this complex landscape, effective policies and technological advancements will be critical to meeting its energy needs while addressing environmental concerns.

6 Hand-in-Hand Initiative

Context: The **Hand-in-Hand Initiative**, recently highlighted during the third Hand-in-Hand Investment Forum opened by the Director-General of the **Food and Agricultural Organization (FAO)**, aims to address pressing issues related to poverty and hunger.



About the Hand-in-Hand Initiative

- **Launch Year:** 2019
- **Agency:** A flagship initiative of the FAO.
- **Focus:** Targets countries and territories with the highest levels of poverty and hunger, limited national capacities, or significant operational challenges due to natural or man-made crises.

Objectives:

- **Eradicate Poverty (SDG 1):** Work towards eliminating extreme poverty in all its forms.
- **End Hunger and Malnutrition (SDG 2):** Ensure that all people have sufficient and nutritious food year-round.
- **Reduce Inequalities (SDG 10):** Promote inclusive growth that benefits everyone.

Approach:

- Utilizes **geospatial, biophysical, and socio-economic data** along with advanced analytics to identify areas where agricultural transformation and sustainable management of forests and fisheries can significantly alleviate poverty and hunger.
- **Interventions Include:**
 - Developing value chains for priority commodities.
 - Building agro-industries and efficient water management systems.
 - Introducing digital services and precision agriculture practices.

Member Countries

- The initiative has garnered support from **72 countries**.

What is the FAO?

- **Full Name:** Food and Agricultural Organization of the United Nations.
- **Established:** October 1945, making it the oldest permanent specialized agency of the UN.
- **Mandate:** Focused on improving nutrition, increasing agricultural productivity, enhancing the standard of living for rural populations, and contributing to global economic growth.
- **Membership:** Comprises **194 Member States** and the **European Union**.
- **Headquarters:** Located in **Rome, Italy**.

What are Sustainable Development Goals (SDGs)?

- **Introduction:** The **2030 Agenda for Sustainable Development**, adopted by all UN Member States in 2015, serves as a blueprint for peace and prosperity for people and the planet.
- **Core:** The agenda includes **17 Sustainable Development Goals (SDGs)**, which represent a universal call to action for all countries—both developed and developing—to work in partnership toward sustainable development.

Conclusion: The **Hand-in-Hand Initiative** represents a crucial step in the global effort to tackle hunger and poverty, emphasizing collaboration and targeted interventions in the most vulnerable regions. By harnessing data and promoting sustainable practices, the initiative aligns closely with the broader objectives of the FAO and the United Nations' Sustainable Development Goals.

7 SARTHI System

Context: The **Solar Assisted Reefer Transportation with Hybrid Controls and Intelligence (SARTHI)** system has been introduced by the **National Institute of Food Technology Entrepreneurship and Management (NIFTEM-K)** in Kundli. This innovative solution aims to minimize post-harvest losses during the transportation of perishable food items.

**Key Features of the SARTHI System**

- **Dual Compartment Design:** The system includes dual compartments specifically designed to store fruits and vegetables at different temperatures, catering to their distinct storage requirements.
- **Integration of IoT:**
 - The SARTHI system utilizes **Internet of Things (IoT)** technology for real-time monitoring.
 - It incorporates sensors that gather crucial data regarding the transportation environment.
- **Real-Time Data Monitoring:**
 - The sensors measure essential quality parameters such as:
 - **Temperature**
 - **Humidity**
 - **Ethylene levels**
 - **CO2 levels**
 - This data is transmitted to the cloud and can be accessed through a mobile app, providing transporters with real-time information on the quality of the produce and any physiological changes occurring during transit.
- **Solar-Powered Air Handling Unit:**
 - The system includes a solar-powered air handling unit that helps maintain optimal temperature control during halts, ensuring that the produce remains in ideal conditions throughout the journey.

Significance of the SARTHI System

- **Shelf-Life Extension:** By monitoring and controlling environmental conditions, the SARTHI system helps extend the shelf life of perishable goods, reducing spoilage.
- **Reduction of Post-Harvest Losses:** The technology addresses issues such as chilling injury and moisture loss, significantly lowering post-harvest losses in the supply chain.
- **Informed Decision-Making:** Transporters can make timely and informed decisions based on the quality data received. If spoilage is detected, they can potentially reroute the produce to closer markets, minimizing waste.
- **Energy Efficiency and Sustainability:** By optimizing transport routes and conditions, the system contributes to energy conservation and reduces the carbon footprint associated with food transportation.

Conclusion: The SARTHI system represents a significant advancement in the field of perishable food transportation, leveraging modern technology to enhance efficiency and sustainability. By integrating IoT and solar power, it not only aims to reduce food waste but also supports the broader goal of creating a more resilient and efficient food supply chain.

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8 INS Samarthak

Context: INS Samarthak is a newly launched multi-purpose vessel for the Indian Navy, developed by **Larsen and Toubro (L&T)**.

About INS Samarthak

- **Type:** First of two multi-purpose vessels (MPVs) for the Indian Navy.
- **Design and Construction:**
 - Designed and built in-house at L&T Shipyard, Kattupalli.
 - Aligns with the Indian government's '**Make in India**' initiative and '**Atmanirbhar Vision**' (self-reliant vision).



Specifications:

- **Dimensions:**
 - Length: 107 meters
 - Width: 18.6 meters
 - Displacement: Over 3,750 tonnes
- **Speed:** Maximum speed of 15 knots.

Functions and Capabilities:

- **Development and Testing:** Supports the development and testing of next-generation weapons and sensors for the Indian Navy.
- **Other Roles:**
 - Maritime surveillance
 - Patrolling
 - Launching and recovering surface and aerial targets
 - Providing humanitarian assistance
 - Combating sea pollution

Key Points

- **Location of Shipyard:**
 - L&T's Kattupalli Shipyard is located in Ennore, approximately 45 km north of Chennai, Tamil Nadu.
 - It is one of India's most advanced shipbuilding and repair facilities, equipped with shiplift, dry berths, and wet berths to facilitate concurrent construction and repairs.

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- **Current Projects:** In addition to the two MPVs, Kattupalli Shipyard is constructing three Cadet Training Ships and six other defence vessels for the Indian Navy under a Public-Private Partnership model.
- **International Collaboration:** The yard is also engaged in the repair of the US Naval Ship **Charles Drew** under a Master Ship Repair Agreement with the US Navy.

What is Larsen and Toubro (L&T)?

- **Profile:** L&T is an Indian multinational company involved in technology, engineering, construction, manufacturing, and financial services.
- **Sectors Served:** It operates in critical sectors including Hydrocarbon, Infrastructure, Power, Process Industries, and Defence.
- **Global Presence:** L&T serves customers in over 50 countries worldwide.
- **Sustainability:** It was the first engineering and construction company in India to publicly disclose its sustainability performance.

Conclusion: The launch of **INS Samarthak** underscores India's commitment to enhancing its naval capabilities through indigenous development, aligning with the broader goals of self-reliance and modernization in defence. The vessel's multifunctional roles are expected to significantly contribute to the Indian Navy's operational readiness and versatility.

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9 Employees Deposit Linked Insurance (EDLI) Scheme

Context: The **Employees Deposit Linked Insurance (EDLI) Scheme** is a social security initiative launched by the Indian government in **1976**. Its primary goal is to provide life insurance benefits to employees in the private sector, ensuring financial support for their families in case of untimely demise.

Key Features of the EDLI Scheme

- **Insurance Coverage:** The scheme offers a term life insurance cover linked to the employee's provident fund (EPF) membership.
- **Eligibility:** It covers all organizations registered under the **Employees Provident Fund and Miscellaneous Provisions Act, 1952**.
- **Integration with EPF:** The EDLI scheme works in conjunction with the **Employees Provident Fund (EPF)** and the **Employees' Pension Scheme (EPS)**.
- **Benefit Calculation:** The benefit amount is determined by the employee's last drawn salary:
 - **Maximum Assured Benefit:** Up to **₹7 lakh** payable to the nominee or legal heir upon the death of the EPF member while in service.
 - **Minimum Assurance Benefit:** A minimum of **₹2.5 lakh** if the deceased member had continuous employment for at least **12 months** prior to death.
- **Cost-Free Insurance:** The life insurance coverage provided under the EDLI scheme is **free of cost** for EPF members.
- **Employer Contribution:** Employers contribute **0.5%** of the employee's monthly wages (up to a wage ceiling of ₹15,000). Employees do not make any contribution to this scheme.
- **Auto-Enrolment:** All EPF members are automatically enrolled in the EDLI scheme.
- **Claim Process:** The insurance benefit is directly credited to the bank account of the legal heir or nominee.

EMPLOYEES' DEPOSIT-LINKED INSURANCE SCHEME (EDLI)



What is the Employees Provident Fund Organisation (EPFO)?

- **Definition:** The EPFO is a statutory body established under the **Employees' Provident Funds and Miscellaneous Act, 1952**.
- **Administrative Control:** It operates under the **Union Ministry of Labor and Employment**.
- **Governing Body:** The EPFO is managed by a tri-partite Board known as the **Central Board of Trustees**, which includes representatives from the Government (both Central and State), Employers, and Employees.
- **Functions:** The EPFO administers:
 - A **contributory provident fund**.
 - A **pension scheme**.
 - An **insurance scheme** for employees in the organized sector in India.

Conclusion: The **EDLI Scheme** serves as an essential safety net for employees in the private sector, providing their families with financial security in the event of their untimely death. The scheme's integration with the EPF and the minimal contribution requirement from employers further supports its accessibility and efficacy in enhancing social security for the workforce.

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10 Why organic food can lead to a risk of gut disease

Context: A recent review published in the **European Journal of Clinical Nutrition** highlights that consuming organic food—produced without harmful pesticides, artificial fertilizers, or genetically engineered organisms—can reduce the risk of health conditions like obesity, diabetes, and high blood pressure. People opting for organic foods often lead healthier lifestyles overall, reflecting a broader trend towards health-conscious living.

**What is Organic Food?**

Organic food refers to food items that are cultivated without the use of chemical fertilizers, pesticides, and biotechnology. Natural methods are employed for cultivation, such as using natural fertilizers, organic pesticides, and processes that maintain soil health.

Key Aspects of Organic Food:

1. **Chemical-Free:** Organic farming does not use chemical fertilizers, pesticides, or herbicides.
2. **Natural Fertilizers:** Natural manures such as cow dung, compost, and green manures are used.
3. **Soil Health:** Organic farming practices include crop rotation and mixed cropping to maintain the natural nutrients in the soil.
4. **GMO-Free:** Organic food is grown without the use of genetically modified organisms (GMOs).

Health Benefits:

1. **Reduced Risk of Diseases:** Consuming organic food lowers the risk of diseases such as obesity, diabetes, and hypertension due to the absence of harmful chemicals and processing.
2. **Increased Nutrition:** Studies show that organic fruits and vegetables contain higher levels of antioxidants compared to conventional foods.
3. **Taste and Quality:** According to consumer opinions, organically grown food is considered to have better taste and quality than conventionally grown products.

Growth and Challenges:

- In 2022, the organic food market in India was valued at \$1.278 million, and it is projected to grow to \$4.6 million by 2028.
- Consumers have become more aware and are shifting toward healthier and safer food, free from chemical residues and pesticides.
- However, the increasing prevalence of organic farming has raised some concerns related to food security.

Food Security Challenges:

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1. **Intestinal Bacteria and Pathogens:** The risk of infections from intestinal bacteria that cause diseases such as salmonellosis, cholera, and dysentery is increasing in organic products. This issue arises from the use of natural manures and animal waste in organic farming practices.
2. **Microbial Contamination:** Bacteria often cling to the surfaces of organic fruits and vegetables and can reside internally, making them difficult to remove.
3. **Contaminated Irrigation Water:** The contamination of irrigation water used in organic farming is also a major concern, as pathogens can spread to crops through contaminated water.

Safety Measures:

1. **Good Agricultural Practices:** Organic fertilizers should be produced through safe thermal and aerobic processes to eliminate harmful bacteria. Additionally, attention must be paid to clean irrigation water and environmental management.
2. **Sanitizing Techniques:** Sanitizing techniques should be adopted for processing and washing fresh produce to reduce bacterial impact.
3. **Real-Time Monitoring:** The use of real-time microbial monitoring techniques is essential to maintain food safety.

Conclusion: Despite the numerous health benefits of organic food, strong food safety measures are necessary to reduce contamination risks during production and distribution. Protecting plant health and preventing the spread of intestinal pathogens is crucial for preventing gastrointestinal diseases, ensuring that consumers can safely enjoy organic food.

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