



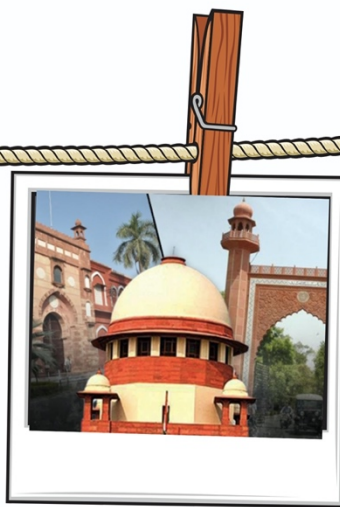
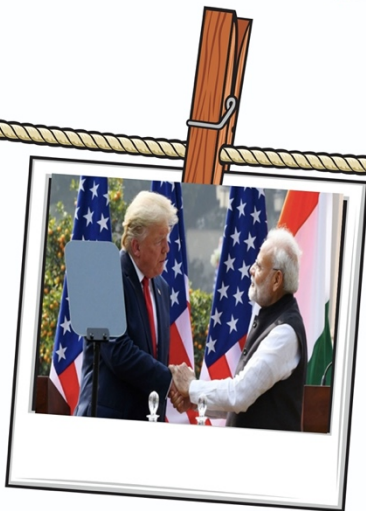
Weekly Current Affairs



To The Point

by Dhananjay Gautam

03 - 09 November 2024



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India's updated National Biodiversity Strategy and Action Plan (NBSAP)

Context: India's updated National Biodiversity Strategy and Action Plan (NBSAP) for 2024-2030 was launched at COP 16 of the Convention on Biological Diversity (CBD) to advance biodiversity conservation efforts in line with global biodiversity targets. Here are the key points:

Major Highlights of NBSAP:

- Alignment with Global Frameworks:** India's NBSAP is designed to meet the objectives of the Kunming-Montreal Global Biodiversity Framework (KM-GBF), setting forth 23 National Biodiversity Targets (NBTs) aimed at reducing threats to biodiversity, ensuring sustainable use of resources, and strengthening conservation tools.
- Focus on Ecosystem Resilience:** Each target links to strategies for ecosystem resilience, species recovery, and sustainable management practices.
- Centralized Implementation:** The Ministry of Environment, Forest and Climate Change (MoEFCC) is the central agency responsible for overseeing the action plan's execution across India.



Convention on Biological Diversity (CBD):

- Objectives:** Established under the United Nations Environment Programme (UNEP) in 1993, the CBD focuses on conserving biological diversity, ensuring sustainable use, and promoting equitable sharing of biodiversity benefits.

The Kunming-Montreal Global Biodiversity Framework (GBF):

- Overview:** Adopted during COP15 in 2022, it is often referred to as the "Paris Agreement for Nature."
- Goals and Targets:** The GBF includes four global goals and 23 targets to be met by 2030, such as reducing invasive species by half, curbing harmful subsidies, and establishing a \$500 billion annual reduction in harmful incentives.
- 30X30 Target:** Aiming to protect 30% of land and marine areas by 2030, the framework promotes the restoration of degraded ecosystems and strives to minimize the destruction of biodiversity-rich areas.

Major Outcomes of COP 16:

- Calvi Fund:** A new global mechanism designed to equitably distribute the benefits derived from digital sequence information (DSI) on genetic resources. This voluntary fund encourages firms to contribute 1% of profits or 0.1% of revenue.
- Indigenous Peoples and Local Communities (IPLC):** A program to strengthen IPLCs' role in biodiversity conservation through meaningful participation and contribution.
- Synthetic Biology:** An expert group will assess synthetic biology's potential benefits and evaluate the impact of new technologies.
- Invasive Alien Species:** Guidelines were proposed for controlling invasive species, with recommendations covering e-commerce and analysis methodologies.
- Biodiversity and Health:** A Global Action Plan promoting a "One Health" approach to curb zoonotic and non-communicable diseases.
- Risk Assessment on Biosafety:** New voluntary guidelines were issued for assessing risks of living modified organisms (LMOs) with gene drives, allowing countries to adapt these to their ecological contexts.

Women's Labour Force Participation in India

Context: India faces significant challenges in female labour force participation, a concern recently highlighted by the International Labour Organisation (ILO) in its report on the impact of care responsibilities. This situation primarily results from gendered caregiving roles, which burden women disproportionately, restricting their access to the workforce.



Key Statistics on Women's Labour Force Participation in India

- High Percentage Outside the Workforce:** Over 53% of Indian women are not part of the labour force, mainly due to unpaid caregiving duties. In contrast, only 1.1% of men are outside the workforce for similar reasons.
- Unpaid Household Work:** The 2023-24 Periodic Labour Force Survey (PLFS) shows that 36.7% of women engage in unpaid household duties, a significantly higher share than men.
- Time Spent on Domestic Work:** According to the 2019 Time Use Survey, 81% of females aged 6 and above spend over five hours daily on unpaid domestic activities.
- Caregiving Time Disparities:** Data indicates that 26.2% of females aged six and older dedicate more than two hours per day to caregiving tasks, in contrast to 12.4% of males.

Global Perspectives:

- Globally, caregiving responsibilities prevent millions of women from joining the workforce. In 2023, of the 748 million people worldwide not in the labour force due to caregiving, 708 million were women. Regions such as Northern Africa, the Arab states, and Asia-Pacific report particularly high rates of women limited by caregiving roles.

In contrast, countries with high female workforce participation, like Belarus, Bulgaria, and Sweden, achieve lower rates of women outside the workforce (under 10%) by investing heavily in Early Childhood Care and Education (ECCE), dedicating around 1% of their GDP to these programs.

Key Barriers to Workforce Inclusion:

- Educational and Employment Barriers:** Low education levels and limited job opportunities restrict women's workforce participation.
- Inadequate Infrastructure:** Insufficient care facilities make it difficult for women to balance work with caregiving.
- Cultural Norms:** Societal expectations of women's caregiving roles further hinder their labour market access, especially in rural areas.

Way Forward:

To increase female workforce participation, India must:

- Invest in the Care Economy:** Significant investments in ECCE could relieve some of the caregiving burdens on women.
- Promote Gender Equality:** Such investments can foster greater gender parity, unlocking the economic potential of women by enabling them to participate more fully in the workforce.

Strengthening India's care infrastructure and addressing cultural expectations will be crucial to reducing the gender disparity in labour force participation and enhancing economic growth.

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The paradox of stagnant rural wages

Context: India's economic growth has been impressive in recent years, with an average GDP increase of 7.8% over the past three fiscal years. However, rural wage growth has remained stagnant, particularly in real terms, revealing a paradox between the nation's macroeconomic achievements and the limited financial gains experienced by rural workers.



Overview: Rural Wages vs. Economic Growth

- **Economic Growth:** Between 2019-20 and 2023-24, India's GDP grew by an average of 4.6%, with an accelerated growth of 7.8% over the last three years. The agricultural sector also performed relatively well, with growth rates of 4.2% and 3.6% for the same periods.
- **Wage Growth Data:** Rural wages rose by 5.2% annually in nominal terms from 2019 to 2024, but after accounting for inflation, the real wage growth was actually -0.4%. This highlights a disconnect between macroeconomic growth and improvements in real income for rural workers.

Factors Contributing to Stagnant Rural Wages

1. Increasing Female Labour Force Participation (LFPR):

- The female LFPR has risen from 24.5% in 2018-19 to 41.7% in 2023-24, with rural female LFPR reaching 47.6%.
- Initiatives such as Ujjwala, Har Ghar Jal, and Swachh Bharat have freed up time for women, allowing them to enter the workforce. This influx has expanded the rural labour pool, creating a supply-demand imbalance that exerts downward pressure on wages.

2. Shift in Labour Demand:

- Although more women are joining the labour force, many find employment in agriculture, which offers lower wages than industrial jobs.
- Economic growth has focused on capital-intensive sectors that rely less on labour, thus limiting wage growth opportunities in rural areas. As more workers join agriculture—a sector with already low productivity per worker—wages remain suppressed due to an oversupply of labour.

Steps Taken to Address Low Rural Wages:

1. Income Transfer Schemes:

- **State Initiatives:** States have launched income support schemes that target women, with an estimated budget allocation of Rs 2 lakh crore annually. For instance, Maharashtra's Ladki Bahin Yojana offers direct financial aid to women, helping to cushion low wages.
- **Central Government Schemes:** The Centre's PM-KISAN scheme provides Rs 6,000 annually to farmer households, while PM Garib Kalyan Anna Yojana (PMGKAY) distributes free grain to low-income families, providing a crucial buffer against low rural income levels.

Conclusion: Despite the government's efforts through income support programs, real rural wage growth remains sluggish. For inclusive economic prosperity, addressing the structural causes of low rural wages is essential. Policies should aim to shift rural labour towards higher-paying sectors and balance the labour supply to alleviate the downward wage pressures seen in the agricultural sector.

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India has brought back 1 lakh kg of gold from UK

Context: The Reserve Bank of India (RBI) has recently repatriated around 130 metric tonnes of gold from the Bank of England, marking a notable shift in its reserve management strategy. This decision reflects India's commitment to bolstering its economy, reducing dependence on foreign reserves, and aligning with global trends in gold acquisition.



Rise in the RBI's Domestic Gold Holdings:

- As of September 2024, the RBI's domestic gold holdings have surged to 510.46 metric tonnes, up from 295.82 metric tonnes in March 2022.
- Gold held abroad with the Bank of England has decreased from 453.52 metric tonnes in March 2022 to 324 metric tonnes.
- The share of gold in India's foreign exchange reserves has also increased, with the value proportion rising from 8.15% in March 2024 to 9.32% in September 2024.

Gold Reserves at the Bank of England:

The Bank of England, housing one of the world's largest gold vaults, secures reserves for numerous central banks globally. Storing part of India's gold in London provides the RBI with quick access to the London bullion market, enhancing liquidity in times of need. Notably, in 1991, India deposited 47 tonnes of gold in London to address a balance of payments crisis, marking a contrasting period when gold was seen as a last resort for an economically stressed India.

Factors Behind the RBI's Gold Repatriation Strategy

1. Global Trend of Central Banks Increasing Gold Reserves:

- Since the U.S. imposed sanctions on Russia in 2022, there has been a trend of "de-dollarisation" as central banks seek to reduce dependence on the U.S. dollar by accumulating gold.
- India has emerged as one of the largest gold buyers in the G20, surpassing both Russia and China.

2. Cost and Strategic Benefits:

- Storing gold domestically reduces expenses associated with international storage fees.
- Increasing domestic reserves signifies India's economic strength, contrasting with the 1991 scenario when pledging gold represented economic vulnerability.

3. **Enhanced Domestic Storage Capacity:** The RBI's repatriation of gold signals India's improved storage capacity, allowing a more strategic and secure reserve management approach.

4. **Economic Diversification and Inflation Hedge:** Gold offers stability amidst currency fluctuations, economic uncertainty, and inflation, balancing India's reserves portfolio and providing resilience against economic shocks.

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Significance of Increasing Gold Reserves:

- **Sign of Economic Strength:** Repatriating gold symbolizes a transformation from a vulnerable economy in 1991 to a stable, self-reliant one today.
- **Strategic Value:** Storing gold in India allows the RBI to manage this national asset directly, providing more control over the country's reserves.
- **Enhanced Financial Security:** A diversified reserve portfolio with higher gold holdings offers a hedge against inflation, protecting the Indian economy from currency devaluation and inflationary pressures.

Reserve Bank of India (RBI) Overview:

- **Establishment:** Formed on April 1, 1935, under the Reserve Bank of India Act, 1934.
- **Location:** Initially in Kolkata, moved permanently to Mumbai in 1937.
- **Ownership:** Originally privately owned; nationalized in 1949, now fully owned by the Government of India.

Preamble:

- RBI's primary role is to ensure monetary stability, manage currency and credit systems, and maintain a modern monetary policy for price stability and growth.

Central Board:

- **Governance:** Directed by a central board appointed by the Government of India, with a tenure of four years.
 - **Composition:**
 - *Official Directors:* Governor and up to four Deputy Governors.
 - *Non-Official Directors:* Ten experts from various fields, two government officials, and one director from each of the four local boards.

Main Functions:

1. **Monetary Authority:**
2. **Financial System Regulator & Supervisor:**
3. **Foreign Exchange Manager:**
4. **Currency Issuer:**
5. **Developmental Role:**
6. **Payment and Settlement Systems Regulator:**

Related Roles: Acts as **Banker to the Government** and **Banker to Banks**.

Offices: Operates in 33 locations across India.

Conclusion: The RBI's move to bring back gold reserves marks a strategic strengthening of India's economy. By increasing gold holdings domestically, India joins other global central banks in prioritizing gold as a safe-haven asset. This approach supports long-term stability, provides a buffer against economic uncertainties, and affirms India's economic resilience in an increasingly uncertain global environment.

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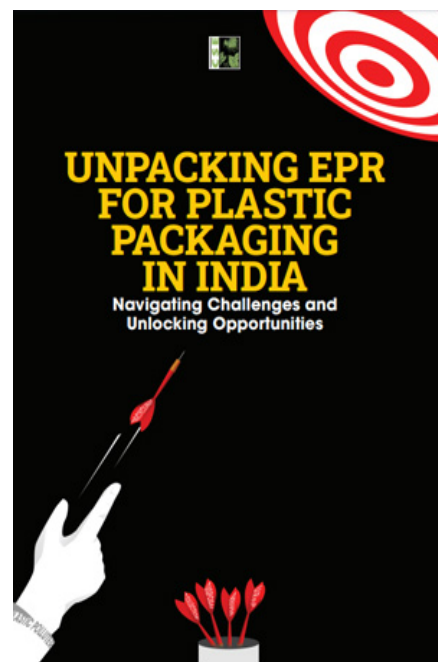
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Report on EPR by CSE for Plastic Packaging

Context: The Centre for Science and Environment (CSE) recently released a report addressing Extended Producer Responsibility (EPR) for plastic packaging, spotlighting EPR as an effective measure to counter the escalating plastic waste crisis. With global plastic waste projected to triple by 2060 and less than 20% likely to be recycled, the report emphasizes the urgency of adopting comprehensive EPR policies.

EPR for Plastic Packaging: Background and Key Components

- **Genesis:** The Plastic Waste Management Rules of 2016 first introduced EPR in India, and in 2022, the Ministry of Environment, Forest, and Climate Change issued specific guidelines for plastic packaging under EPR.
- **Tenure:** These guidelines are to remain in effect until the fiscal year 2027–28.
- **Polluters in the Value Chain:** Under EPR, key players termed PIBOs—Producers, Importers, Brand Owners, and Manufacturers—are identified as "polluters." They are held accountable for collecting 100% of the plastic packaging they introduce to the market.



EPR Compliance Mechanism:

- **EPR Certificates:** These certificates are generated by Plastic Waste Processors (PWP) to track the recycling and disposal of plastic. PIBOs must purchase EPR certificates from PWP to demonstrate compliance, effectively trading proof of their commitment to plastic waste recovery.

Challenges in India's EPR System for Plastic Packaging:

1. **Lack of Monitoring for Importers:** Many importers operate without sufficient regulatory oversight, complicating enforcement.
2. **Distinguishing Waste Types:** Differentiating between packaging and non-packaging plastic waste remains challenging.
3. **Fraudulent Certificates:** There have been cases where PWP issue fake EPR certificates to PIBOs, undermining the system's integrity.



Recommendations from the CSE Report:

To address these challenges, CSE suggests:

- **Fair EPR Pricing:** Ensure transparent and equitable pricing for EPR compliance.
- **Invalidate Fake Certificates:** Introduce stronger checks to prevent fraudulent EPR certificates.
- **Inclusion of the Informal Sector:** Acknowledge and integrate the informal waste management sector, which plays a significant role in waste collection and recycling.

Understanding Extended Producer Responsibility (EPR):

- **Definition:** EPR holds producers accountable for the environmental impact of their products throughout the product lifecycle, especially in take-back, recycling, and disposal stages.
- **Core Elements:** Key principles include producer responsibility, waste minimization, lifecycle management, and the "polluter pays" principle.
- **Applicable Waste Streams:** EPR policies can apply to various waste streams such as packaging, electronics, batteries, and hazardous waste.

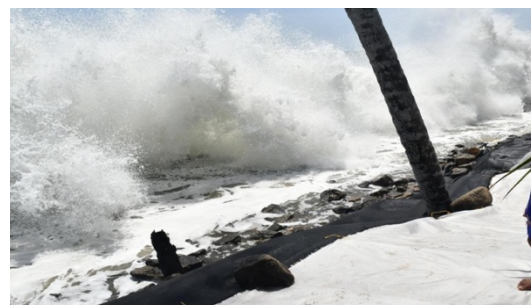
Role of Implementing Agencies:

Producer Responsibility Organizations (PROs) act as third-party entities that assist PIBOs in fulfilling EPR obligations, facilitating compliance, and promoting efficient waste management practices.

Conclusion: The CSE report underscores the importance of a strengthened EPR framework to address plastic pollution in India. By refining the EPR system, establishing fair pricing, improving monitoring mechanisms, and including the informal sector, India can better manage plastic waste, thus contributing to global efforts in sustainable plastic use and waste management.

New coastal zone plan of Kerala

Context: The Ministry of Environment, Forest, and Climate Change (MoEF&CC) has approved the Coastal Zone Management Plans (CZMPs) for ten coastal districts in Kerala, including Kasaragod, Kannur, Kozhikode, Malappuram, Thrissur, and Ernakulam. This approval allows Kerala to implement the Coastal Regulation Zone (CRZ) Notification 2019 and avail relaxed norms under it, which is a prerequisite for sustainable coastal development.



About Coastal Zone Management Plan (CZMP):

CZMPs are strategic frameworks for managing and regulating human activities along coastal areas to protect ecological resources while allowing sustainable use. Key components of CZMPs include:

1. **Zoning:** Coastal areas are categorized into various zones:
 - **No Development Zones (NDZ):** Restricted areas where development is not permitted.
 - **Coastal Regulation Zones (CRZs):** Specific zones with distinct regulations based on ecological and demographic considerations.
2. **Public Participation:** CZMP development includes consultations with local communities, ensuring that their perspectives and concerns are considered.

Coastal Regulation Zone (CRZ) Classification: The CRZ Notification defines coastal areas and water zones within India's territorial limits, excluding the Andaman and Nicobar and Lakshadweep Islands. The notification was first issued in 1991, updated in 2011, and revised as CRZ 2019. The CRZ framework divides coastal areas into the following zones:

- **CRZ-IA:** Ecologically Sensitive Areas (ESAs) such as mangroves, coral reefs, sand dunes, and salt marshes.
- **CRZ-IB:** Intertidal zones, the areas between the Low Tide Line (LTL) and High Tide Line (HTL).
- **CRZ-II:** Developed land areas near shorelines within existing municipal limits or legally designated urban areas.
- **CRZ-III:**
 - **CRZ-III A:** Areas with a population density above 2161 people per square kilometre. Here, the NDZ extends 50 meters from the HTL, provided the CZMP is approved.
 - **CRZ-III B:** Areas with a population density below 2161 people per square kilometre. In these areas, the NDZ extends 200 meters from the HTL.
- **CRZ-IV:** Water areas classified further into:
 - **CRZ-IVA:** Includes water zones and tidal-influenced water bodies.
 - **CRZ-IVB:** Reserved for fishing and aquaculture zones.

Significance of CZMP Approval:

The approval of Kerala's CZMPs will enable the state to enforce CRZ 2019 guidelines, balancing ecological protection with sustainable development. This alignment allows Kerala to address its unique coastal needs while meeting the national framework for coastal regulation and environmental protection.

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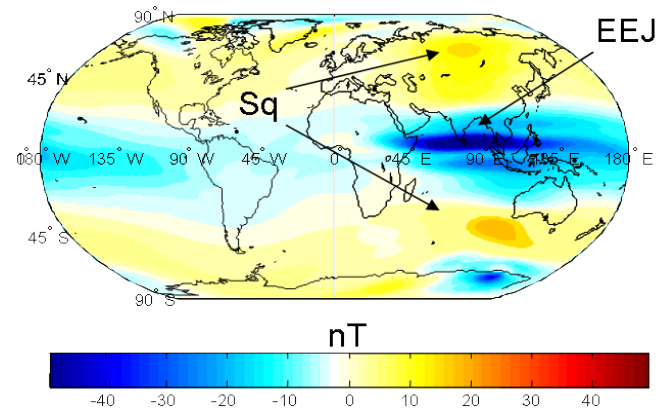
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Equatorial ElectroJet (EEJ)

Context: Indian scientists have developed a model to better understand the Equatorial Electrojet (EEJ), a powerful electric current flowing in Earth's ionosphere. This model is expected to enhance understanding of the EEJ's impact on orbiting satellites, Global Navigation Satellite System (GNSS)-based navigation and positioning, satellite communication links, and even power grids.



About the Equatorial Electrojet (EEJ):

- **Definition:** The EEJ is an intense electric current, approximately 100 kiloamperes (kA), flowing in the Earth's ionosphere at around 100 km altitude along the magnetic equator.
- **Width:** The EEJ spans a few hundred kilometres in width, roughly 600 km from north to south.
- **Formation:** Occurs along Earth's magnetic equator where the magnetic field lines run parallel to the surface, leading to a high current density in the ionosphere.
- **Path and Direction:** The EEJ current flows eastward during the day and reverses at night. This change in direction produces a distinctive magnetic signature, detectable by ground and space-based magnetometers.

Effects of the EEJ:

1. **Geomagnetic Field:** The EEJ intensifies Earth's geomagnetic field near the equator.
2. **Power Infrastructure:** Disruptions in the EEJ can impact power infrastructure and electricity monitoring systems in equatorial regions, highlighting the need for effective EEJ monitoring and prediction.

Magnetic Equator vs. Geographic Equator:

- **Geographic Equator:** A fixed line at 0° latitude, dividing Earth into the Northern and Southern Hemispheres.
- **Magnetic Equator:** A fluctuating line of zero magnetic dip, where a magnetic needle experiences no vertical deflection. Unlike the geographic equator, it shifts slightly north and south over time due to changes in Earth's magnetic field.

This EEJ model by Indian scientists represents an important step towards improving satellite and navigation systems and protecting infrastructure from geomagnetic disturbances.

Black hole triple system

Context: Astronomers have discovered the first-ever "black hole triple system" in the V404 Cygni system, located about 8,000 light-years from Earth within the Milky Way galaxy. This discovery challenges existing theories about black hole formation and provides new insights into gravitational interactions in complex systems.



About the V404 Cygni System:

- **Components:** The V404 Cygni was previously thought to be a binary black hole system, comprising a central black hole and a small star orbiting it closely. This close star orbits the black hole every 6.5 days and is actively being consumed by it.
- **Triple System Discovery:** Recent findings revealed a third component: a second, distant star orbiting the black hole at a vast distance, taking roughly 70,000 years to complete one orbit. This makes V404 Cygni the first confirmed triple black hole system.

Significance of the Discovery:

1. **Challenges Supernova Theory:** Traditionally, black holes are thought to form from supernova explosions, which would likely have expelled a distant star. However, the presence of the distant star in V404 Cygni suggests an alternative formation mechanism.
2. **Direct Collapse Theory:** Scientists propose that the black hole in V404 Cygni likely formed through "direct collapse," where a massive star implodes quietly without an explosive supernova. This process would allow distant objects to remain gravitationally bound to the black hole.

About Black Holes:

- **Definition:** A black hole is a region of space with extremely strong gravity, from which nothing, not even light, can escape.
- **Event Horizon:** The "surface" of a black hole, called the event horizon, marks the boundary beyond which escape velocity exceeds the speed of light.
- **Significant Milestones:** In 2019, the Event Horizon Telescope (EHT) captured the first-ever image of a black hole, located at the center of the M87 galaxy, about 55 million light-years away.

This new discovery of a triple black hole system expands our understanding of black hole formation and the diversity of celestial systems.

Global tuberculosis (TB) Report 2024

Context: The World Health Organization (WHO) released its Global TB Report 2024. The report has acknowledged the tremendous progress India has made in closing the gap of missed TB cases since 2015.

About the Global TB Report

The WHO's *Global TB Report* is an annual publication that provides detailed data on the global TB epidemic, tracking progress in prevention, diagnosis, and treatment. It offers insights at global, regional, and national levels.



Highlights of the 2024 Report:

- Rising TB Cases:** 8.2 million people were newly diagnosed with TB in 2023, the highest number recorded since WHO began TB monitoring in 1995. This is a significant increase from the 7.5 million cases reported in 2022.
- TB Mortality:** An estimated 1.25 million TB deaths occurred in 2023, a reduction from 1.32 million in 2022. While deaths have decreased from COVID-19 pandemic highs, TB fatalities far exceeded the 320,000 COVID deaths reported to WHO last year.
- Disproportionate Impact on LMICs:**
 - High-Burden Countries:** Around 87% of TB cases are in 30 low- and middle-income countries (LMICs). India (26%), Indonesia (10%), China (6.8%), the Philippines (6.8%), and Pakistan (6.3%) together represent 56% of the global burden.
 - Demographics:** Of the total TB cases, 55% were men, 33% women, and 12% children and young adolescents.
- Major Risk Factors:** The report identifies five key risk factors contributing to new TB cases: **undernutrition, HIV infection, alcohol use disorders, smoking, and diabetes.**
- India's Progress in TB Control:**
 - High Case Detection:** India saw 27 lakh (2.7 million) TB cases in 2023, with 25.1 lakh (2.51 million) diagnosed and put on treatment. This has raised India's treatment coverage to 89% in 2023, up from 72% in 2015, significantly reducing the gap of undiagnosed cases.
 - Decline in TB Incidence:** India's TB incidence has dropped from 237 cases per lakh population in 2015 to 195 per lakh in 2023, reflecting a 17.7% decline.

Conclusion: This report underscores both progress in TB treatment coverage and the persistent challenges, especially in high-burden LMICs. Enhanced screening, targeted interventions, and addressing risk factors remain crucial in reducing TB cases and mortality further.



Indian Green Building Council

Context: Recently, the Himachal Pradesh Chief Minister announced that the upcoming Durgesh Aranya Zoological Park will become India's first zoo to earn certification from the Indian Green Building Council (IGBC) for sustainable and eco-friendly infrastructure.

About Indian Green Building Council:

The **Indian Green Building Council (IGBC)**, a division of the **Confederation of Indian Industry (CII)** established in 2001, is India's foremost certification body for promoting sustainable building practices. IGBC's mission is to foster an eco-friendly built environment through certification, rating programs, and education on green construction.

Key Roles and Activities of IGBC



- **Green Building Rating Programs:** IGBC develops rating systems across various categories to certify sustainable buildings, assessing aspects like energy efficiency, water use, and health standards.
- **Certification Services:** The council provides certification for buildings meeting eco-friendly criteria.
- **Training Programs:** Green building training programs are conducted to increase awareness and expertise in sustainable construction practices.
- **Annual Event:** IGBC hosts the **Green Building Congress**, its annual conference, which gathers experts and stakeholders to discuss advancements in green building.

The IGBC rating system evaluates projects based on six primary categories:

- **Sustainable Station Facility**
- **Health, Hygiene, and Sanitation**
- **Energy Efficiency**
- **Water Efficiency**
- **Smart and Green Initiatives**
- **Innovation and Development**

Headquartered in **Hyderabad**, IGBC is also a board member of the **World Green Building Council**, representing India in global sustainability discussions at platforms like COP.

Durgesh Aranya Zoological Park:

The **Durgesh Aranya Zoological Park** in Kangra, Himachal Pradesh, will be the first zoo in India certified by IGBC. Located in **Bankhandi** within the Dehra assembly constituency, the park features 34 enclosures approved by the **Central Zoo Authority (CZA)**, housing 73 animal species, including Asiatic lions, hog deer, crocodiles, monitor lizards, gharials, and a variety of birds. The project aligns with the state government's eco-tourism and sustainable development goals, enhancing Kangra's reputation as Himachal Pradesh's "Tourism Capital."

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Namo Drone Didi Scheme

Context: The Indian government recently released the **Operational Guidelines** for the *Namo Drone Didi Scheme*. This initiative, governed at the national level by an **Empowered Committee of Secretaries** from key departments, is set to promote women's empowerment and technological advancement in agriculture.



About the Namu Drone Didi Scheme:

- **Type:** *Central Sector Scheme*, part of the **DAY-NRLM (Deendayal Antyodaya Yojana – National Rural Livelihood Mission)**.
- **Objective:** Empower **Self-Help Groups (SHGs)**, particularly women's SHGs, by enabling them to provide drone rental services for agricultural purposes. The scheme targets support for **14,500 SHGs** across India from 2024 to 2026.
- **Ministry:** Ministry of Agriculture & Farmers Welfare.

Key Features:

- **Financial Assistance:**
 - Provides **80% subsidy** (up to Rs 8 lakh) for SHGs to buy drones.
 - Additional financing is available through the **Agriculture Infrastructure Financing Facility (AIF)**, offering a **3% interest subvention on loans**.
- **Drone Package:**
 - Includes **spray assemblies, batteries, cameras, chargers, and measurement tools**.
 - Extra batteries and propellers are included, allowing drones to cover **up to 20 acres per day**.
- **Training Program:**
 - Each SHG will assign a **drone pilot** who will receive a **15-day training** program focused on agriculture-related tasks such as nutrient and pesticide spraying.
- **Implementation and Oversight:**
 - **Lead Fertilizer Companies (LFCs)** will coordinate the scheme at the state level, working with state departments, drone manufacturers, and SHG federations.
 - An **IT-Based Drone Portal (MIS)** will provide real-time monitoring, fund management, and drone usage tracking.

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**Significance:**

1. **Empowers Women:** Offers income-generating opportunities for SHGs by establishing them as drone service providers.
2. **Modernizes Agriculture:** Introduces **precision agriculture** for efficient fertilizer and pesticide application, increasing productivity.
3. **Reduces Farming Costs:** Saves time and labor, making advanced farming more affordable for farmers.
4. **Promotes Rural Skill Development:** Enhances digital literacy and drone operation skills in rural areas.
5. **Supports Government Initiatives:** Aligns with **DAY-NRLM** and the **Kisan Drones** program, furthering rural empowerment and sustainable agriculture.
6. **Enhances Technological Access:** Brings advanced technology to rural regions, promoting inclusivity in the agricultural sector.

Challenges and Concerns:

1. **Financial Burden on SHGs:** SHGs must cover the remaining 20% of the drone cost, which may be challenging for financially vulnerable groups, especially if the economic returns do not meet expectations.
2. **Limited Training for Technical Complexity:** The **15-day training** may be insufficient for managing complex tasks or troubleshooting technical issues in drone operation.
3. **Bureaucratic Layers:** Dependence on Lead Fertilizer Companies for coordination may cause bureaucratic delays in implementation.
4. **Environmental and Health Risks:** There are concerns about potential harm to **biodiversity** in ecologically sensitive areas, such as the Nilgiris district in Tamil Nadu, where conservationists worry that aerial spraying may impact pollinators and fragile ecosystems.

Way Ahead:

1. **Enhanced Financial Support:** Consider grants or full subsidies to cover the remaining 20% of costs, minimizing financial stress for SHGs.
2. **Extended Training Programs:** Offer comprehensive training and refresher courses to better equip SHGs for handling technical and operational challenges.
3. **Environmental Safeguards:** Establish guidelines for safe pesticide application via drones, particularly near ecologically sensitive zones, to protect biodiversity and prevent environmental damage.

Conclusion: The *Namo Drone Didi Scheme* represents a significant step towards integrating women's empowerment with technology-driven agriculture, yet its success will depend on addressing financial, technical, and environmental concerns effectively.



Dedicated Freight Corridors (DFCs)

Context: A recent study by the *University of New South Wales* highlights that **Dedicated Freight Corridors (DFCs)** have had a positive impact on India's GDP. The study analysed data on freight costs, industry inputs, and population statistics, revealing significant benefits for the western regions and lower per-capita GDP states through reduced transportation costs.



Key Findings from the Study:

- **Revenue Boost for Indian Railways:** Between FY 2018-19 and FY 2022-23, DFCs increased Indian Railways' revenue by **2.94%**.
- **Lowered Commodity Prices:** Improved efficiency and reduced freight costs on DFCs have contributed to a **0.5% reduction in commodity prices**.
- **Regional Economic Benefits:** The study found that DFCs significantly benefited states with lower per-capita GDP, particularly in western India.

What are Dedicated Freight Corridors (DFCs)?

Dedicated Freight Corridors are **specialized railway lines exclusively for freight transport**, designed to allow faster, higher-capacity movement of goods. These corridors enhance the efficiency of supply chains and support export-import activities, helping to reduce logistics costs across India.

- **Initiation:** The DFC initiative was first announced in the *Railway Budget for FY 2005-06*.
- **Special Purpose Vehicle:** The *Dedicated Freight Corridor Corporation of India Limited (DFCCIL)* was created in 2006 to oversee the construction and operation of DFCs.

Current Status of DFC Projects: The Ministry of Railways launched two major DFCs in 2006:

1. Eastern Dedicated Freight Corridor (EDFC):

- **Length:** 1,337 km from **Sonnagar, Bihar to Sahnewal, Punjab**.
- **Status:** Completed.

2. Western Dedicated Freight Corridor (WDFC):

- **Length:** 1,506 km from **Jawaharlal Nehru Port, Mumbai to Dadri, Uttar Pradesh**.
- **Status:** 93% commissioned, with full completion expected by **December 2025**.

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Upcoming DFC Projects: India has proposed four additional DFCs to expand the network:

- **East-West DFC:** Kolkata to Mumbai
- **North-South DFC:** Delhi to Chennai
- **East Coast DFC:** Kharagpur to Vijayawada
- **Southern DFC:** Chennai to Goa



Importance of Dedicated Freight Corridors

1. **Reducing Congestion on Rail Networks:** DFCs alleviate congestion on the **Golden Quadrilateral** rail network, which connects India's major metro cities (Delhi, Mumbai, Chennai, and Howrah) and is currently overburdened by high traffic.
2. **Improving Freight Efficiency and Reducing Travel Time:** DFCs provide **dedicated tracks for freight**, ensuring faster, uninterrupted goods movement, and reducing transit times.
3. **Economic Impact and Revenue Growth:** DFCs aim to cut logistics costs for industries and improve Indian Railways' revenue. Between FY 2018-19 and FY 2022-23, DFCs contributed **2.94% revenue growth** for Indian Railways.
4. **Lower Freight Costs and Reduced Commodity Prices:** DFCs improve the efficiency of freight movement, lowering transportation costs and subsequently reducing commodity prices, benefiting the broader economy.

Conclusion: Dedicated Freight Corridors are transforming India's transportation infrastructure by enhancing efficiency, supporting economic growth, and reducing logistics costs. The completion of ongoing and proposed DFCs is expected to play a vital role in boosting India's trade, industry, and overall economic competitiveness.

Supreme Court Directions on Permanent Remission for Convicts

Context: The Supreme Court of India recently issued directives to improve transparency and standardization in granting **permanent remission** to convicts. This move addresses the need for clear guidelines, timely communication, and greater accessibility to remission policies across the country.



Key Points of the Ruling

1. Policy Accessibility and Information:

- States must make remission policies accessible to all convicts by providing copies in prisons and publishing them on government websites.
- Jail authorities are required to inform eligible convicts of these remission policies.

2. Timely Communication of Decisions: States and Union Territories must notify convicts within one week if their remission application is rejected.

3. Updated Policy Availability: Any modifications to remission policies must be promptly updated in prisons and online.

What is Permanent Remission?

Permanent remission refers to reducing or shortening a convict's sentence or allowing early release based on factors such as good conduct or special circumstances. Legal provisions under which remission can be granted include:

- Article 72 (President's Power):** Grants the President the authority to pardon, reprieve, or remit punishment, including for death sentences, in consultation with the Union Cabinet.
- Article 161 (Governor's Power):** Empowers state Governors to grant remission for sentences passed by courts within the state, based on the state government's advice.
- Section 432, Criminal Procedure Code (CrPC):** Allows central or state governments to grant remission or suspend a convict's sentence, either temporarily or permanently, depending on specific circumstances.

Types of Remission:

- Full Remission:** The convict's sentence is completely removed, leading to immediate release.
- Partial Remission:** The duration of the sentence is reduced, but the convict is not released immediately.
- Special Remission:** Granted as part of special amnesty, often on national holidays or for certain categories of prisoners (e.g., elderly or sick).

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Guidelines for Premature Release: *Laxman Naskar v. Union of India (2000)*

In this landmark case, the Supreme Court outlined criteria for considering premature release:

- Whether the crime was an isolated act, without broader social impact.
- Likelihood of the convict committing future crimes.
- Whether the convict has lost the capacity to commit a crime.
- Whether continued confinement serves any purpose.
- The socio-economic condition of the convict's family.

Landmark Cases and Principles on Remission:

Several cases, including *Maru Ram v. Union of India (1981)* and *Union of India v. V. Sriharan (2016)*, emphasize key principles in remission:

- **Discretionary Powers:** The President and Governor have discretionary powers to grant remission.
- **Executive-Judiciary Relationship:** Judiciary reviews remission decisions to ensure alignment with justice.
- **Focus on Rehabilitation:** Good conduct, rehabilitation, and judicial oversight are essential for granting remission, especially for life convicts and death row inmates.

Bail Provisions in India:

The **Code of Criminal Procedure (CrPC), 1973**, governs bail provisions, with updates introduced through the **Bharatiya Nyaya Sanhita (BNS), 2023**. Common types of bail include:

1. **Regular Bail:** Granted during a trial upon meeting court conditions.
2. **Anticipatory Bail:** For those who fear arrest in non-bailable offenses, allowing advance bail.
3. **Interim Bail:** Short-term bail granted pending a regular bail decision.
4. **Default Bail:** Granted when the accused isn't released within a specified period, typically 90 days in non-bailable offenses.

Conclusion: Permanent remission serves as a crucial instrument for offering a second chance to rehabilitated convicts or those with special circumstances. However, this power is regulated by strict legal standards and requires a comprehensive review of each convict's situation to ensure the decision aligns with justice and public interest. The Supreme Court's directives aim to create a consistent, fair, and transparent remission process across states, ultimately reinforcing the importance of reform and rehabilitation in the criminal justice system.

G-20 DRRWG Ministerial Meeting in Brazil

Context: India recently participated in the G-20's Disaster Risk Reduction Working Group (DRRWG) ministerial meeting in Brazil, where G20 ministers and delegates adopted a Ministerial Declaration emphasizing accelerated action to implement the Sendai Framework for Disaster Risk Reduction (DRR).

Key Highlights of the Ministerial Declaration:

The declaration underscored:

- The importance of mobilizing financial resources for disaster risk reduction.
- The need to adopt **nature-based solutions** and **ecosystem-based approaches** to effectively manage disaster risks.



About G-20's Disaster Risk Reduction Working Group (DRRWG)

- **Established:** 2023, during India's G-20 Presidency.
- **Objective:** Integrate disaster risk reduction into G-20 activities, reinforcing collective action against disasters.
- **Five Priority Areas:**
 1. **Early Warning Systems:** Improving alert mechanisms for early disaster warning.
 2. **Disaster-Resilient Infrastructure:** Strengthening infrastructure to withstand disasters.
 3. **DRR Financing:** Ensuring adequate financial resources for disaster preparedness and response.
 4. **Disaster Recovery, Rehabilitation, and Reconstruction:** Enhancing post-disaster rebuilding efforts.
 5. **Nature-Based Solutions and Ecosystem Approaches for DRR:** Utilizing natural solutions to mitigate disaster risks.

Sendai Framework for Disaster Risk Reduction (2015-2030)

The **Sendai Framework** is a 15-year, non-binding agreement that replaced the **Hyogo Framework for Action (2005-2015)**. It was adopted at the **Third United Nations World Conference on Disaster Risk Reduction** held in **2015 in Sendai, Japan**.

Objectives: The framework aims to significantly reduce disaster risk and losses in terms of:

- Lives, livelihoods, and health.
- Economic, physical, social, cultural, and environmental assets.

Priorities of the Sendai Framework:

1. **Understanding Disaster Risk:** Recognizing the need for a comprehensive understanding of risks associated with various hazards.
2. **Strengthening Disaster Risk Governance:** Improving policies and frameworks to manage and reduce risks effectively.
3. **Investing in Disaster Risk Reduction for Resilience:** Allocating resources to enhance resilience against disasters.
4. **Enhancing Disaster Preparedness for Effective Response:** Preparing adequately for response and recovery to mitigate impact.
5. **Building Back Better:** A focus on recovery, rehabilitation, and reconstruction efforts to strengthen resilience against future disasters.

The **G-20's DRRWG** and its alignment with the **Sendai Framework** reflect global efforts to enhance resilience, particularly through financial mobilization, nature-based solutions, and comprehensive DRR strategies. India's active role in this working group underscores its commitment to strengthening disaster preparedness and risk reduction both domestically and globally.

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Marine Protected Areas (MPAs): Enhancing Biodiversity and Nutritional Security

Context: A recent study highlights the role of **Marine Protected Areas (MPAs)** in conserving biodiversity and improving nutritional security, particularly for coastal communities. The study emphasizes that sustainable MPA management can have substantial benefits for global fisheries, revenue, and nutrition.

Key Highlights of the Study:

- **Sustainable-Use MPAs** contribute:
 - **13.6% of global catch**
 - **14% of fisheries revenue**
 - **13.7% of nutrient supply** to the global population
- **7% of global catches** come from within **Exclusive Economic Zones (EEZs)**.
- Establishing MPAs in **nutritionally vulnerable coastal regions** can enhance **human health and nutrition** by ensuring sustainable fish stocks and marine resources.

**Understanding Marine Protected Areas (MPAs):**

MPAs are specific areas in oceans where **human activities** are **regulated more strictly** than in surrounding waters to protect **marine biodiversity**. Managed by various levels of government and indigenous authorities, MPAs help preserve both **natural** and **historical marine resources**.

Significance of MPAs:

1. **Genetic Reservoirs:** Provide sources of genetic material to help recover areas affected by **pollution** or **overfishing**.
2. **Refuge for Marine Species:** Offer safe zones for countless species, protecting them from **overfishing, habitat destruction, and pollution**.
3. **Research Baselines:** Serve as control sites for **scientific research** on marine ecology.
4. **Tourism and Recreation:** Attract **nature-based tourism**, supporting local economies.
5. **Climate Change Mitigation:** Aid in **carbon sequestration** and improve ecosystems' resilience to climate change.

Challenges in Conserving MPAs:

- **Enforcement Issues:** Difficulties in enforcing regulations across vast marine areas.
- **Resource Demands:** Requires significant financial and human resources for effective management.
- **Impact on Local Livelihoods:** Restrictions on fishing can affect the income of local communities dependent on marine resources.

Global Initiatives for Marine Biodiversity Protection:

1. **Kunming-Montreal Global Biodiversity Framework:** Aims to protect **30% of oceans and lands by 2030**.
2. **High Seas Treaty:** The **Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ)**, commonly known as the **High Seas Treaty**, addresses biodiversity conservation in areas outside national jurisdiction.

Marine Protected Areas in India:

- **Gulf of Mannar Marine National Park** (Tamil Nadu)
- **Lothian Island** (West Bengal)
- **Gahirmatha Marine Sanctuary** (Odisha)

Conclusion: MPAs play a critical role in **biodiversity conservation, nutritional security, and climate resilience**, especially for **coastal and marine-dependent communities**. With global support and sustainable management, MPAs can ensure both ecological preservation and human well-being.

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Tumaini Festival

The **Tumaini Festival** in Malawi is a unique cultural event held annually at the **Dzaleka Refugee Camp**. Since its founding in **2014**, the festival has served as a powerful platform for **refugees and local Malawians** to connect through **music, art, dance, and crafts**, fostering a sense of community, solidarity, and hope. It is notably the only festival of its kind hosted within a refugee camp and is organized and managed by the refugees themselves.



Highlights of the Tumaini Festival:

- **Global Reach:** The festival features performances from artists worldwide, attracting thousands of attendees each year.
- **Cultural Exchange:** It offers a diverse lineup of **music, dance, theater, and visual arts**, celebrating both local and global cultures.
- **Award-Winning Impact:** In **2024**, the Tumaini Festival was honored with the **Cultures of Resistance Award** for its role in promoting peace and cultural resilience.

About Dzaleka Refugee Camp:

Located in **Malawi**, Dzaleka is the country's only permanent refugee camp, established in **1994** to shelter displaced people from **Burundi, Rwanda, and the Democratic Republic of Congo**. Over the years, it has also received refugees from **Somalia, Ethiopia, and other regions**.

Key Facts about Malawi:

- **Geography:** A landlocked nation in **Southeastern Africa**, covering **118,484 sq. km**, bordered by **Tanzania, Mozambique, and Zambia**.
- **Capital:** Lilongwe
- **Official Languages:** **English** and **Chichewa**
- **Currency:** **Malawi kwacha (MWK)**
- **Natural Landmarks:** Known for its **highlands** and **Lake Malawi** (Lake Nyasa), one of the world's deepest lakes.
- **Economy:** Malawi relies heavily on **agriculture**, employing over **80%** of its population, yet remains one of the poorest countries globally.

The Tumaini Festival not only showcases the **artistic talents** of refugees and locals but also exemplifies the resilience and cultural richness that can emerge from the challenges of displacement.

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Central Water Commission (CWC)

Context: The **Central Water Commission (CWC)** is India's leading technical organization for water resource management. It functions under the **Ministry of Jal Shakti**, specifically the **Department of Water Resources, River Development, and Ganga Rejuvenation**.

Key Functions of the CWC

- **Water Resource Development:** Oversees projects for **flood control, irrigation, navigation, drinking water supply, and water power development**.
- **Coordination and Consultation:** Works with State Governments to develop and implement water management schemes.
- **Project Execution:** Undertakes the planning, investigation, and construction of major water projects when necessary.



Organizational Structure:

- **Leadership:** Led by a **Chairman** with the rank of Ex-Officio Secretary to the Government of India.
- **Three Main Wings:**
 - **Designs and Research (D&R) Wing**
 - **River Management (RM) Wing**
 - **Water Planning and Projects (WP&P) Wing**
- **Training Facility:** The **National Water Academy** in Pune trains engineers from both central and state services under the Chairman's guidance.

Recent Findings on Glacial Lakes:

According to a **2024 CWC report**, the **area of glacial lakes and other water bodies** across the Himalayan region has increased by **10.81%** from 2011 to 2024 due to climate change. This expansion heightens the risk of **glacial lake outburst floods (GLOFs)**, which occur when the boundaries of these lakes, often composed of unstable ice or loose debris, break and release large volumes of water, potentially causing downstream flooding.

Understanding Glacial Lakes and GLOFs:

- **Glacial Lakes:** These lakes form in depressions left behind by retreating glaciers, filling with meltwater. The more a glacier recedes, the larger and more hazardous the lake becomes.
- **Glacial Lake Outburst Floods (GLOFs):** When the natural dam of ice or loose debris fails, massive floods can occur, posing significant risks to downstream communities.

The CWC plays a crucial role in monitoring these developments and strategizing responses to manage and mitigate such natural hazards effectively.

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Orphan drugs

Context: Orphan Drugs are specialized pharmaceutical agents designed to treat rare, often serious or life-threatening diseases. In India, the development, affordability, and accessibility of these drugs face considerable challenges compared to countries like the United States and the European Union.



Key Aspects of Orphan Drugs:

- **Purpose:** These drugs target **rare diseases**, which, though they affect only a small fraction of the population, can lead to severe and chronic health issues.
- **Categories:** Orphan drugs cater to conditions such as:
 - **Genetic Disorders:** e.g., **cystic fibrosis, Duchenne muscular dystrophy**
 - **Rare Cancers:** e.g., **neuroblastoma, gliomas**
 - **Metabolic Disorders:** e.g., **Gaucher's disease, Fabry disease**
 - **Autoimmune Conditions:** e.g., **systemic sclerosis**

Definition and Regulation of Orphan Drugs:

- **India's Regulatory Framework:** India currently lacks a formal prevalence-based definition for orphan drugs. However, the **National Policy for Rare Diseases (NPRD) of 2021** provides guidance on diagnosing and treating rare diseases, albeit with limited specificity.
- **International Standards:** In countries like the U.S. and EU, orphan drug designation generally requires that:
 - The disease has **low prevalence**.
 - There are **no existing approved treatments**, or the orphan drug offers notable advantages over current options.

Incentives for Orphan Drug Development:

To encourage the development of orphan drugs, various incentives are offered, particularly in the U.S. and EU, such as:

- **Market Exclusivity:** Extended market protection periods.
- **Tax Credits:** For research and development costs.
- **Fee Waivers:** Reduced regulatory fees to ease the financial burden of drug approval.

India's approach to orphan drugs is evolving, but it faces challenges in creating a comprehensive support system to make these treatments affordable and accessible.

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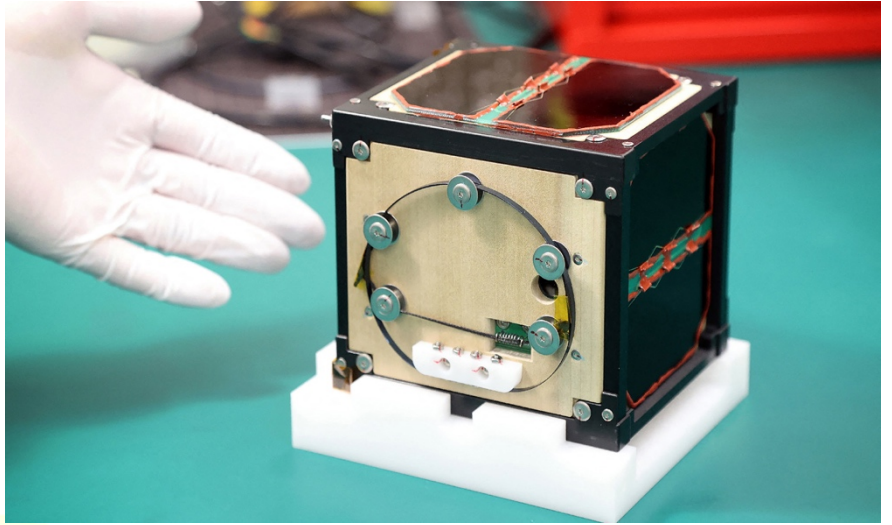
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LignoSat

LignoSat is the world's first wooden satellite, developed by Japanese researchers as an innovative step in space exploration. This satellite is intended to demonstrate the viability of using timber in space technology, potentially opening up new environmentally friendly materials for lunar and Mars exploration.



About LignoSat:

- **Name Origin:** The name "LignoSat" combines "ligno" (Latin for wood) and "satellite."
- **Developers:** Created through collaboration between **Kyoto University** and **Sumitomo Forestry Co.**
- **Objective:** LignoSat aims to explore the use of **eco-friendly, cost-effective materials** in space exploration, with a particular focus on renewable wood.

Construction and Launch:

- **Material:** Made from **magnolia wood**, selected for its high durability and adaptability.
- **Mission Path:** LignoSat will be sent to the **International Space Station (ISS)** on a SpaceX rocket. Once on the ISS, it will be released from Japan's experimental module to test its durability and resilience in space.
- **Data Collection:** Researchers will receive data on how the wooden satellite withstands the harsh conditions of space, including extreme temperatures and potential structural strain.

Why Wood?

Wooden satellites offer a **sustainable alternative** to metal. Unlike metal-based satellites, which generate polluting metal particles when re-entering Earth's atmosphere, wooden satellites are expected to **burn up cleanly** and minimize air pollution. This advantage positions wooden satellites as a promising green technology in space exploration.

Mount Lewotobi Laki-Laki

Context: Mount Lewotobi Laki-Laki recently erupted, resulting in the tragic loss of at least 10 lives and prompting evacuations in nearby villages in eastern Indonesia.



About Mount Lewotobi Laki-Laki:

- **Location:** Situated on **Flores Island** in **East Nusa Tenggara** province, Indonesia.
- **Twin-Volcano System:** Mount Lewotobi Laki-Laki is part of a **twin-volcano system**, viewed by locals as a male and female pair. The recent eruption occurred at the male volcano, **Lewotobi Laki-Laki**, while the adjacent female volcano is called **Lewotobi Perempuan**.
- **Volcano Type:** Both mountains are **stratovolcanoes**—steep, cone-shaped volcanoes known for their layered structure formed by successive lava flows.

Indonesia's Volcanic Context:

- Indonesia is highly prone to volcanic activity due to its location on the **Pacific Ring of Fire**, where intense tectonic activity leads to frequent volcanic eruptions, earthquakes, and tsunamis.

What are Stratovolcanoes?

- **Structure:** Stratovolcanoes are **tall, steep, and cone-shaped** in contrast to flatter shield volcanoes.
- **Location and Formation:** They commonly form above **subduction zones** where tectonic plates converge and one plate sinks beneath another.
- **Global Presence:** Stratovolcanoes account for about **60% of Earth's volcanoes** and are primarily found in regions like the **Ring of Fire**.
- **Lava Composition:** Their eruptions often involve **andesitic and dacitic lava**, which is cooler and more viscous than basaltic lava found in shield volcanoes.

The Ring of Fire:

- The **Ring of Fire** is a horseshoe-shaped zone around the Pacific Ocean, marked by numerous active volcanoes and frequent seismic activity due to tectonic plate interactions, making it one of the world's most geologically dynamic regions.

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Asian Buddhist Summit (ABS), 2024

Context: The Ministry of Culture, in collaboration with the International Buddhist Confederation (IBC), organized the First Asian Buddhist Summit (ABS), aiming to bring together Buddhist leaders, scholars, and practitioners to foster unity and cooperation across Asia through the teachings of Buddhism.

**About the Summit:**

- **Theme:** "Role of Buddha Dhamma in Strengthening Asia" — reflecting the summit's goal of utilizing Buddhist principles to promote peace, stability, and unity in the Asian continent.
- **Participants:** Sangha leaders, scholars, and practitioners from diverse Buddhist traditions across Asia gathered to discuss Buddhism's potential to address contemporary issues.
- **Key Themes Discussed:**
 - **Buddhist Art, Architecture, and Heritage:** Exploring how Buddhist cultural expressions can foster regional unity.
 - **Buddha Cārikā and Dissemination of Buddha Dhamma:** Focusing on spreading Buddha's teachings to promote ethical values.
 - **Role of Holy Buddhist Relics:** Discussing the relevance of relics as symbols of spiritual heritage and unity.
 - **Significance of Buddha Dhamma in Scientific Research and Well-Being:** Bridging Buddhism with science to enhance mental well-being and resilience.
 - **Role of Buddhist Literature and Philosophy in the 21st Century:** Emphasizing the timeless relevance of Buddhist philosophy in today's society.

The summit aligns with India's Act East Policy, which seeks regional collaboration grounded in shared spiritual and cultural heritage to promote Asia's development.

Buddhism: An Overview

Buddhism, founded on the teachings of Siddhartha Gautama (the Buddha) in the 5th–4th century BCE, is centered on understanding and overcoming human suffering through a spiritual path. Key principles include:

- **Four Noble Truths:** The nature of suffering, its cause, its cessation, and the path to overcome it.
- **Nirvana:** The ultimate goal, which is the liberation from the cycle of birth, death, and rebirth.

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Relevance of Buddhist Teachings in Today's World:

- **Mindfulness and Meditation:** Widely adopted for mental health benefits, promoting focus and stress reduction.
- **Emotional Resilience:** Buddhism encourages acceptance of suffering (dukkha), fostering resilience in adversity.
- **Peace and Nonviolence:** The principle of ahimsa advocates for peaceful resolutions and tolerance.
- **Forgiveness and Compassion:** Relevant in conflict-ridden societies, emphasizing reconciliation and compassion.
- **Countering Materialism:** Offering an alternative perspective that values inner peace and contentment over material wealth.

Buddhism as India's Cultural Soft Power Diplomacy:

Buddhism plays a pivotal role in India's soft power strategy, fostering cultural ties and promoting peace across Asia. Key aspects include:

- **Strengthening Regional Ties:** Many Southeast Asian nations, like Thailand, Myanmar, and Sri Lanka, have strong Buddhist traditions. India's Buddhist diplomacy aims to strengthen these connections, particularly in countering China's influence in the region.
- **Promoting India's Historical Roots:** India, as the birthplace of Buddhism, hosts significant sites like Bodh Gaya, emphasizing shared heritage.
- **The Dalai Lama's Influence:** India's support for the Dalai Lama has strengthened its influence among Buddhist communities worldwide.
- **Revival of Nalanda University:** The new Nalanda University, rooted in the legacy of the ancient institution, aims to be a global center for Buddhist studies.
- **Buddhist Art and Monuments:** UNESCO World Heritage sites like the Ajanta and Ellora Caves, Sanchi Stupa, and Great Stupa at Sarnath are iconic representations of India's Buddhist heritage.
- **Tourism:** India, home to seven of the eight most important Buddhist pilgrimage sites, promotes Buddhist Circuit tourism to connect devotees and travelers with the sacred sites associated with the Buddha's life and teachings.

Conclusion: India's initiatives, such as the Asian Buddhist Summit and the revival of Nalanda University, reflect its commitment to strengthening historical, cultural, and religious ties with Asia. By promoting Buddhist tourism and educational collaboration, India seeks to bolster its leadership in academia and cultural diplomacy, fostering mutual understanding, goodwill, and cooperation in the region.

Every Private Property Not a Community Resource: Supreme Court

Context: The recent Supreme Court ruling in India marks a significant development in the legal understanding of private property rights, especially concerning the State's ability to acquire private assets for the "common good."

Background of the Case:

The case stemmed from a challenge by the Property Owners Association in Mumbai against Chapter VIII-A of the Maharashtra Housing and Area Development Act, 1976. This provision allowed the State to acquire private property with a compensation cap at one hundred times the monthly rent, which the petitioners argued was inadequate. Initially filed in 1992, the case reached a nine-judge Constitution Bench in 2002 and was finally ruled upon in 2024.



Evolution of Private Property Rights in India:

Initially, private property was protected as a fundamental right under Article 19(1)(f) and Article 31 of the Indian Constitution. However, the 44th Amendment in 1978 changed this, making it a constitutional right under Article 300A, thereby allowing State acquisition of private property but only with due process and fair compensation.

Supreme Court's Ruling:

The majority opinion led by the Chief Justice held that not all private property could be considered "community resources." The ruling overturned the broader interpretation of Article 39(b) put forth by Justice Krishna Iyer in 1978, which suggested that private property could broadly serve as community resources. The recent ruling asserts that such classifications require careful case-by-case analysis.

Key points include:

- **Article 39(b)** directs the State to distribute resources in ways that "subserve the common good." However, this ruling establishes that private property should not automatically be included under this mandate.
- **Article 31C** protects laws under Articles 39(b) and 39(c), allowing the State to acquire resources crucial for the welfare of the community. However, the recent judgment suggests this power should be used judiciously, balancing individual rights with community interests.

Dissenting Opinion:

Justice B.V. Nagarathna emphasized a need for a balanced approach, distinguishing between State-owned resources held in public trust and privately owned resources. She highlighted that "material resources" should not include intimate or personal belongings of individuals and suggested a more context-specific understanding of "community resources."

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Criteria for 'Material Resources of the Community'

The court set out criteria to help determine whether a private resource could be classified as a community resource:

1. **Nature and characteristics** of the resource.
2. **Impact on public welfare.**
3. **State control** vs. private ownership.
4. **Scarcity and availability** of the resource.
5. **Ownership concentration** among private entities.

Implications of the Ruling:

The ruling has significant implications for future cases involving property rights and state powers, including:

- **Protection Against Arbitrary Acquisition:** The court emphasized the need for due process and fair compensation in any State acquisition of private property.
- **Shift Toward Market-Oriented Policies:** This reflects a gradual shift from the socialist economic policies that influenced earlier judgments, aligning more closely with India's evolving, market-oriented economy.
- **Impact on Economic Growth:** The court noted that India's recent economic policies have helped establish it as one of the fastest-growing economies, and this ruling may further support that trajectory by upholding property rights.

Conclusion: The Supreme Court's decision underscores the balance between individual property rights and community needs. It reinforces the protection of private property rights against arbitrary state actions while acknowledging the State's role in redistributing resources. This judgment is poised to shape India's property rights landscape as the country advances economically, ensuring a balanced approach to resource distribution.

World Solar Report Series

Context: The release of the 3rd edition of the **World Solar Report series** at the 7th Assembly of the **International Solar Alliance (ISA)** highlights crucial insights into global solar energy advancements, investment trends, technology developments, and green hydrogen potential in Africa.

Overview of the World Solar Report Series

The World Solar Report series, first launched in 2022, provides a comprehensive view of the global solar landscape, focusing on industry trends, challenges, and technological progress in solar energy. The 3rd edition includes four reports:

1. World Solar Market Report:

- **Growth in Solar Capacity:** Global solar capacity surged from **1.22 GW in 2000 to 1,418.97 GW in 2023**, with an impressive **40% annual growth rate**.
- **Employment Impact:** The solar sector supports **16.2 million jobs globally**, with **7.1 million** directly in solar—a rise of **44%** in recent years.

2. World Investment Report:

- **Investment Growth:** Global energy investments are expected to rise from **\$2.4 trillion in 2018 to \$3.1 trillion in 2024**, growing at around **5% annually**.
- **Regional Leaders:** The Asia-Pacific (APAC) region leads in solar investments, channeling **\$223 billion into solar energy in 2023**.

3. World Technology Report:

- **Efficiency & Cost Reduction:** The report showcases record-breaking **24.9% efficiency in solar PV modules** and an **88% reduction in silicon usage since 2004**. Utility-scale solar PV costs have decreased by **90%**, making solar a more resilient and cost-effective energy solution.

4. Green Hydrogen Readiness Assessment for African Countries

- **Transition Potential:** Green hydrogen offers a sustainable alternative to fossil fuels for Africa, supporting the continent's clean energy transition.

About the International Solar Alliance (ISA):

- **Established:** Jointly by Indian Prime Minister Narendra Modi and French President Francois Hollande in 2015.
- **Headquarters:** ISA is the first international intergovernmental organization headquartered in **India**.
- **Mission:** To mobilize **\$1 trillion in solar investments by 2030**, reduce solar technology costs, and ease access to financing.



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India's Renewable Energy Landscape:

- **Installed Capacity:** India's total electricity generation capacity is **452.69 GW**, with non-fossil fuel sources contributing nearly **half**.
- **Renewable Energy:** By 2024, India's renewable capacity is **201.45 GW** (46.3% of total capacity), including:
 - **Solar Power:** 90.76 GW
 - **Wind Power:** 47.36 GW
 - **Hydroelectric Power:** 46.92 GW
 - **Small Hydro Power:** 5.07 GW
 - **Biopower** (biomass and biogas): 11.32 GW

India's Climate Targets:

India is committed to achieving **Net Zero Emissions by 2070** and has set ambitious short-term targets, including:

- **Increasing renewable capacity to 500 GW by 2030.**
- **Meeting 50% of energy needs from renewables.**
- **Reducing cumulative emissions by 1 billion tonnes by 2030.**
- **Lowering emissions intensity of GDP by 45% from 2005 levels by 2030.**

Conclusion: The World Solar Report series underscores the transformative role of solar energy, investment trends, and emerging technologies in achieving global energy goals. India's proactive stance in renewable energy aligns with the ISA's vision and showcases its commitment to a sustainable energy future. This progress, along with international collaboration, positions solar energy as a pivotal force in the global energy transition.

Biopiracy

Biopiracy involves the unauthorized appropriation of biological resources and traditional knowledge, often by corporations, researchers, or nations, for commercial gains without proper compensation to the communities or countries of origin. It frequently affects biodiversity-rich regions, particularly in the Global South, where indigenous plants, animals, or knowledge are patented without permission or benefit-sharing.



Common Forms of Biopiracy:

- **Patent Claims on Traditional Medicinal Plants:** Companies or individuals may patent traditional medicinal plants, exploiting indigenous knowledge without acknowledgment or compensation.
- **Unauthorized Collection of Genetic Resources:** Genetic resources are taken from biodiversity-rich regions for research or product development without permission.

Digital Biopiracy:

With the advancement of biotechnology, **digital biopiracy** has emerged, where genetic and biological data is accessed through digital tools, often from online databases, and used for profit in areas like pharmaceuticals, agriculture, and synthetic biology.

Key Concerns:

- Digital databases of genetic information allow companies to bypass traditional biopiracy laws, as they no longer need physical samples.
- Nations and indigenous communities risk losing control over their genetic resources in the digital sphere, complicating regulation and benefit-sharing.

India's Legal Frameworks Against Biopiracy:

1. The Biological Diversity Act, 2002:

- Regulates access to India's biological resources and associated knowledge.
- Requires foreign entities to seek permission from the National Biodiversity Authority (NBA) for resource access.
- Mandates benefit-sharing if commercial products are developed from Indian biological resources.

2. Protection of Plant Varieties and Farmers' Rights (PPVFR) Act, 2001:

- Grants rights to plant breeders and recognizes farmers for conserving plant varieties.
- Prevents the patenting of traditional crop varieties developed by Indian farmers, preserving farmers' knowledge and contributions.

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3. Traditional Knowledge Digital Library (TKDL):

- A digital repository of documented traditional knowledge on Indian medicinal plants and practices.
- Prevents unjust patent claims by providing evidence of this knowledge in the public domain.

International Laws and Agreements on Biopiracy:

1. Convention on Biological Diversity (CBD), 1992:

- This landmark treaty aims to conserve biological diversity, promote sustainable use, and ensure fair benefit-sharing.
- Provides countries with sovereign rights over their biological resources and sets guidelines for access and benefit-sharing (ABS) arrangements with indigenous communities.

2. Nagoya Protocol on Access and Benefit-Sharing (ABS), 2010:

- A supplement to the CBD, providing a legal framework for equitable benefit-sharing of genetic resources.
- Supports benefit-sharing through agreements, often involving monetary or technology transfer arrangements.

3. TRIPS Agreement (Trade-Related Aspects of Intellectual Property Rights), 1995:

- Administered by the WTO, it sets minimum standards for intellectual property rights globally.
- Although not directly addressing biopiracy, it has been criticized for allowing patents on genetic resources without adequate compensation.

4. International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), 2001:

- Also known as the "Seed Treaty," it emphasizes the conservation and sustainable use of plant genetic resources in agriculture.
- Promotes farmers' rights to share benefits derived from plant genetic resources and supports equitable exchange and benefit-sharing.

Challenges and Issues in Biopiracy Regulation:

- **Enforcement:** Enforcing biopiracy laws is challenging, especially on a global scale, due to variations in legal frameworks and advancements in biotechnology.
- **Equitable Benefit-Sharing:** Ensuring that indigenous communities receive fair compensation for the use of their knowledge and resources is complex and varies by country.
- **Digital Biopiracy Regulation:** Current legal frameworks are not fully equipped to address the challenges posed by digital biopiracy, where genetic information can be digitized, shared, and used without physical access to resources.

The ongoing challenge with biopiracy highlights the need for updated international agreements and robust enforcement mechanisms to protect the rights of biodiversity-rich countries and indigenous communities in both physical and digital spaces.

Regional Rural Banks (RRBs)

Context: The Finance Ministry has proposed a fourth phase of consolidation for **Regional Rural Banks (RRBs)**, aiming to reduce the number from 43 to 28, enhancing their efficiency and aligning with the vision of **One State-One RRB**. The consolidation is expected to streamline operations, reduce overhead costs, promote technology adoption, strengthen capital, and expand operational areas for RRBs, enabling them to serve rural communities better.

**Background on Regional Rural Banks (RRBs):**

- **Established:** In 1975, following recommendations from the **Narsimhan Working Group (1975)**, under the **Regional Rural Banks Act, 1976**.
- **Objective:** To support the rural economy by offering credit and other essential financial services to small and marginal farmers, agricultural laborers, and small entrepreneurs.
- **Shareholding Structure:**
 - Government of India: 50%
 - State Government: 15%
 - Sponsor Bank: 35%
- **Regulation and Supervision:** RRBs are **Scheduled Commercial Banks** regulated by the **Reserve Bank of India (RBI)** and supervised by the **National Bank for Agriculture and Rural Development (NABARD)**.
- **Primary Focus:** Rural regions, though RRBs can also establish urban branches.

History of RRB Consolidation:

Consolidation began in **2004-05**, based on recommendations from the **Dr. Vyas Committee (2001)**, reducing RRBs from 196 to 43 by **2020-21** through three phases.

Significance of RRB Consolidation

- **Cost Efficiency:** Reduces overhead expenses.
- **Capital and Technology:** Enhances capital base and promotes modern technological integration.
- **Expanded Operations:** Increases the geographical reach and service capabilities.
- **Exposure:** Provides RRBs with greater resources and support to cater to rural clients effectively.

Additional Initiatives for RRBs:

- **Recapitalization:** The Government of India decided to infuse **₹10,890 crore** into RRBs during FY 2021-22 and FY 2022-23 to strengthen their capital base.
- **Sustainable Viability Plan:** Focuses on credit expansion, business diversification, reducing non-performing assets (NPAs), cost rationalization, and enhancing corporate governance.
- **Supervisory Action Framework for Prompt Corrective Action (PCA):** Targets financial stability and a stronger capital structure, ensuring RRBs remain robust and well-regulated.

Through these consolidation and support measures, the government aims to make RRBs more viable and capable of fostering rural economic growth.

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Protected Planet Report 2024

The **Protected Planet Report 2024**, released by the **UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC)** and **IUCN**, provides the first global assessment of **Protected and Conserved Areas (PCA)** under **Target 3** of the **Kunming-Montreal Global Biodiversity Framework (GBF)**. This target calls for expanding PCAs to cover **30%** of global terrestrial and marine areas by 2030, with an emphasis on equity and the inclusion of **Indigenous Peoples and Local Communities (IPLC)**.



Key Concepts:

- **Protected Areas:** Defined, regulated areas managed for specific conservation goals.
- **Conserved Areas:** Areas outside traditional protected zones managed to conserve biodiversity, ecosystem services, and local values.

Key Findings:

- **Global Coverage:**
 - **17.6%** of terrestrial and inland waters and **8.4%** of marine areas are protected.
 - Over **two-thirds** of **Key Biodiversity Areas (KBAs)** are partially or fully protected, but **32%** remain unprotected.
- **Connectivity and Governance:**
 - Only **8.5%** of terrestrial areas are both protected and ecologically connected.
 - Limited governance data indicates **only 4%** of protected areas are managed by IPLCs.

Way Forward:

- **Recognize Indigenous and Traditional Territories:** These territories, covering **13.6%** of global land, should be integrated into conservation frameworks.
- **Enhance International Financing:** Under the GBF, countries committed to **USD 200 billion per year** in biodiversity investment by **2030** to support conservation efforts, especially in developing countries.

Initiatives Supporting Protected and Conserved Areas:

1. **Wildlife (Protection) Act, 1972 (India):** Establishes five types of protected areas—**Sanctuaries, National Parks, Conservation Reserves, Community Reserves, and Tiger Reserves**.
2. **Biodiversity Beyond National Jurisdiction (BBNJ) Agreement:** India's commitment to protect ocean biodiversity beyond national borders.
3. **Climate Adaptation and Protected Areas (CAPA) Initiative:** Uses nature-based solutions to enhance climate resilience in and around protected areas.

The **Protected Planet Report 2024** highlights the need for accelerated global action, equitable inclusion of IPLCs, and greater investment to achieve biodiversity and conservation targets.

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International Energy Agency

Context: The International Energy Agency (IEA) is a key global authority on energy, providing data, analysis, and policy solutions for all fuel types and technologies, with a strong focus on clean energy and sustainability. Its recent study highlights that the global market for clean energy technologies is projected to expand from **\$700 billion in 2023 to over \$2 trillion by 2035**, nearing the value of the crude oil market in recent years.



About the IEA:

- **Established:** 1974, following the 1973–74 oil crisis, to ensure oil supply security and reduce dependency on imports.
- **Mission:** To collaborate with governments and industries to shape a secure, sustainable energy future for all.
- **Expanded Mandate:** The IEA has broadened its role to include global energy trend analysis, sound energy policy promotion, and multinational cooperation in energy technology. It has recently prioritized renewable energy and climate initiatives.
- **Membership:**
 - **31 member countries** (OECD countries), **13 association countries**, and **5 accession countries**.
 - **India** joined as an Associate member in **2017**.

Membership Criteria:

For membership, a candidate must be an OECD member and meet specific criteria:

1. **Oil reserves** equivalent to 90 days of previous year's net imports.
2. **Demand restraint programs** to reduce national oil consumption by up to 10%.
3. **National legislation** to execute the Coordinated Emergency Response Measures (CERM).
4. **Data reporting** from oil companies under its jurisdiction.
5. **Contribution to collective action** in case of global oil supply disruptions.

Key Reports Published by IEA:

- **World Energy Outlook**
- **World Energy Balances**
- **Energy Technology Perspectives**
- **World Energy Statistics**
- **Net Zero by 2050**

Organisation for Economic Co-operation and Development (OECD)

- **Established:** 1960, with 38 democratic, market-economy nations.
- **Goal:** To shape policies fostering prosperity, equality, and well-being globally.

The IEA, as part of the OECD framework, is instrumental in shaping sustainable energy policies worldwide, especially in clean energy advancements essential for addressing climate change.

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IL-35 Protein

Context: Researchers at the Institute of Advanced Study in Science and Technology (IASST) in Guwahati have discovered that **IL-35**, a protein comprised of **IL-12 α** and **IL-27 β** chains, may offer new avenues for treating **type 1 diabetes (T1DM)** and other autoimmune forms of diabetes.



About IL-35 Protein:

- **Function:** IL-35 plays a role in modulating immune responses, specifically aiding in the protection against T1DM and autoimmune diabetes.
- **Mechanism:**
 - **Macrophage Activation and T-cell Regulation:** IL-35 helps control macrophage and T-cell proteins, which are involved in immune responses.
 - **Regulatory B Cells:** It supports regulatory B cells that play a role in suppressing autoimmune reactions.
 - **Inhibition of Immune Cells:** IL-35 reduces the activity of immune cells that attack pancreatic beta cells, which produce insulin.
 - **Reduction of Inflammatory Chemicals:** It lowers levels of immune cells that release inflammatory chemicals, limiting pancreatic cell infiltration—a key factor in T1DM progression.

About Autoimmune Diabetes Mellitus (Type 1 Diabetes Mellitus, T1DM):

- **Definition:** An organ-specific autoimmune disorder that targets the insulin-producing **pancreatic beta cells**, leading to a chronic **insulin deficiency**.
- **Lifelong Dependency:** Individuals affected by T1DM require lifelong **exogenous insulin** due to their inability to produce insulin naturally.
- **Causes:**
 - **Genetic Susceptibility:** T1DM often occurs in those with genetic predispositions.
 - **Environmental Triggers:** These may include viral infections, high birth weight, rapid weight gain during infancy, gut microbiota imbalance, and dietary factors such as low vitamin D, omega-3 fatty acid deficiencies, and high milk intake.
- **Challenges:** Currently, there are no therapies capable of preventing or reversing the autoimmune destruction of pancreatic beta cells.

The discovery of IL-35's potential therapeutic role is promising, as it could lead to treatments that better manage immune responses, helping to protect pancreatic cells and reduce the need for continuous insulin therapy.

What is Minuteman III?

Context: The **LGM-30G Minuteman III** is a U.S. intercontinental ballistic missile (ICBM) designed as part of the nation's nuclear deterrence strategy.

Overview:

- **Type:** Intercontinental ballistic missile (ICBM)
- **Role in U.S. Nuclear Triad:** The Minuteman III is the only land-based component of the U.S. nuclear triad, which also includes submarine-launched and air-launched nuclear weapons.
- **Manufacturer:** Boeing Corporation
- **Operational Since:** Early 1970s
- **Future Replacement:** Initially planned for a 10-year service life, it has been continuously modernized, with the **Ground-Based Strategic Deterrent (GBSD)** expected to replace it around 2029.

Designation Breakdown

- **LGM:**
 - L - Silo-launched
 - G - Surface attack
 - M - Guided missile

Features and Specifications:

- **Stages:** Three-stage, solid-fuel missile
- **Dimensions:** 18.2 meters in length and 1.85 meters in diameter
- **Launch Weight:** 34,467 kg
- **Speed:** Approximately **15,000 mph** (Mach 23 or 24,000 kph) at burnout, classifying it as a hypersonic missile.
- **Range:** Maximum range of **13,000 km**
- **Payload:** Originally designed to carry multiple independently targetable re-entry vehicles (MIRVs), but it currently carries a **single nuclear warhead** in line with arms control agreements between the U.S. and Russia.
- **Deployment:** Dispersed in hardened underground silos, with hardened cables linking to control centers for resilient command and control.



Strategic Capabilities:

- **Retaliatory Capacity:** The Minuteman III features a rapid launch capability, high reliability, and backup systems, including airborne launch controllers, to ensure retaliatory capabilities even in extreme scenarios.
- **Current Arsenal:** The U.S. possesses approximately **440 Minuteman III missiles**.

The Minuteman III has been periodically tested to ensure its effectiveness and maintain strategic deterrence. Despite its age, it remains an essential component of the U.S. defense strategy until it is eventually replaced by the GBSD.

Vitamin D

Context: Vitamin D, also known as **calciferol**, is essential for various bodily functions, including immune support and bone health. Recent research highlights how early vitamin D deficiency can disrupt immune system development.

What is Vitamin D?

- **Type:** Fat-soluble vitamin
- **Sources:**
 - **Natural:** Found in foods like egg yolks, saltwater fish, and liver.
 - **Supplemented:** Added to fortified foods and available as supplements.
 - **Sunlight:** Synthesized by the body when skin is exposed to UV rays from sunlight.
- **Storage:** Stored in body fat during sunny months, releasing in times of low sunlight.



Why is Vitamin D Important?

1. **Bone Health:** Promotes calcium and phosphorus absorption, supporting strong bones and teeth.
 - **Deficiency Risks:** Can lead to brittle, misshapen bones, and conditions like **osteoporosis** and **rickets**.
2. **System Support:**
 - **Nervous System:** Aids in nerve signaling.
 - **Musculoskeletal System:** Supports muscle function.
 - **Immune System:** Boosts immune function, potentially reducing susceptibility to infections.

Vitamin D Deficiency:

- **Consequences:**
 - **Bone Disorders:** Leads to bone diseases like osteoporosis (weakened bones) and rickets (bone softening).
 - **Hypocalcemia:** Low blood calcium due to poor calcium absorption.
 - **Secondary Hyperparathyroidism:** Overactive parathyroid glands in response to low calcium.
- **Symptoms:**
 - Muscle weakness, cramps, fatigue, and even depression.

Ensuring adequate vitamin D intake, through sunlight exposure, diet, or supplementation, is crucial for maintaining overall health, particularly for bones and immune function.

India-US Ties under Trump as US President

Context: Donald Trump's return to the U.S. presidency as its 47th President brings mixed implications for India-US relations. His first term (2017-2021) saw India and the United States enhance cooperation across multiple areas, including defence, counter-terrorism, and strategic energy partnerships, while also facing tensions in areas like trade and immigration. Trump's second term, referred to as "Trump 2.0," is anticipated to build on these foundations while presenting fresh challenges.

Trump's First Term – Strengthening Indo-US Strategic Ties:

Overview:

Under Trump's leadership, the India-US relationship moved from being merely a strategic partnership to becoming a stronger alliance, largely united on mutual defence and strategic interests. This phase saw high-level diplomatic interactions, with Prime Minister Modi's visit to the White House in 2017 and Trump's reciprocal visit to India in 2020 underscoring this evolution.

Key Areas of Cooperation:

1. Defence and Security:

- **Counter-terrorism:** Trump's administration openly supported India's stance on terrorism, with specific backing for designating Jaish-e-Mohammad chief Masood Azhar as a global terrorist. The US also advocated Pakistan's grey-listing by the Financial Action Task Force (FATF).
- **Defence Trade and Technology:** India's defence imports from the US rose significantly, with imports reaching \$18 billion, which strengthened India's military capabilities and diversified its defence procurement sources.

2. **Energy Partnership:** The 2018 Strategic Energy Partnership between India and the US helped diversify India's energy sources. The US became India's sixth-largest hydrocarbon supplier, aiding in energy security and stability.

3. **China as a Mutual Rival:** Trump's framing of China as a common strategic threat aligned with India's own security concerns. His administration revived the Quad alliance and promoted the Indo-Pacific strategy, both aimed at countering China's regional influence.

Challenges During Trump's First Term:

Despite these advances, Trump's presidency had its share of friction points with India:

- **Energy Restrictions:** Trump pressured India to stop oil imports from Iran, impacting India's traditional energy sources.
- **Trade Disputes:** Trump's push for lower tariffs on U.S. exports, such as Harley Davidson motorcycles, and his demands for a fairer trade balance created economic friction.





- **Immigration Policies:** The Trump administration's restrictions on H1-B visas affected India's IT industry, which relies heavily on skilled migration.
- **Kashmir Mediation:** Trump's offer to mediate between India and Pakistan on Kashmir was met with backlash from India, which opposes third-party involvement on the issue.

Trump's Return and Its Potential Impact on India-US Relations:

With Trump poised to start a second term, both opportunities and potential areas of friction arise for India-US ties.

Opportunities for Stronger India-US Relations:

1. Reviving Trade and Defence Deals:

- Trump has indicated a desire to resume talks on a Free Trade Agreement, potentially enhancing bilateral trade.
- Further U.S. military hardware sales could bolster India's defence capabilities, building on the \$18 billion in defence imports during Trump's first term.

2. **Energy Independence and Security:** Trump's previous support for energy independence included an MoU for the Driftwood LNG plant. Reviving such partnerships could strengthen India's energy security and reduce dependency on unstable suppliers.

3. **Reduced Pressure on Domestic Issues:** Under Trump, diplomatic pressure over India's domestic issues like press freedoms, NGO treatment, and human rights may ease, reducing tension that arose with the Biden administration on these fronts.

4. **Regional Policy:** Trump's firm stance on reducing funding to Pakistan is likely to continue, aligning with India's concerns regarding security in the region. Additionally, he may take a strong stance against Khalistani separatist groups.

Potential Areas of Friction:

1. **Trade and Tariff Policies:** Trump's focus on reducing trade tariffs could revive disputes over India's tariff policies, potentially creating friction in trade relations.
2. **Diplomatic Sensitivities:** As seen during his first term, Trump's statements on sensitive topics like Kashmir and India-China conflicts could lead to diplomatic tensions. Maintaining clear communication will be essential to avoiding misunderstandings.
3. **Sanctions on Energy Imports:** Trump's previous administration imposed pressure on India to cut oil imports from Iran and Venezuela. A similar approach during his second term could strain India's energy policies and its relationships in the region.

Conclusion: Trump's first term laid a solid foundation for Indo-US relations by enhancing cooperation in defence, counter-terrorism, and energy security. While Trump 2.0 presents opportunities to deepen this partnership, particularly through trade and defence ties, India will need to be vigilant in managing potential challenges. The evolving regional dynamics in Asia-Pacific and ongoing economic interests make it crucial for India to maintain a balanced approach in its ties with the United States under Trump's renewed presidency.

What Trumponomics Means for India?

Context: Donald Trump's proposed economic policies, widely referred to as "Trumponomics," could have significant implications for India, especially in areas of trade, immigration, and the economy.

1. Trade and Economic Impact:

- **Higher Tariffs and Trade Wars:** Trump's plan to impose a 20% tariff on all imports and a duty of over 200% on cars could escalate global trade tensions. These protectionist measures could disrupt supply chains and increase the cost of exports to the U.S., impacting Indian sectors reliant on U.S. markets, including textiles, auto parts, and electronics.
- **Impact on the IT Sector:** Trumponomics also emphasizes boosting domestic production, which may limit outsourcing. However, his proposal to cut corporate taxes from 21% to 15% could free up budgets for U.S. firms to invest in services from Indian IT companies. This tax cut could improve the demand for Indian IT services and benefit Indian tech stocks.
- **Forex and Bond Market Volatility:** Increased tariffs could lead to inflation in the U.S., forcing the Federal Reserve to rethink its rate-cut agenda. Higher U.S. interest rates may draw capital away from emerging markets like India, adding pressure on the rupee and affecting India's bond market.



2. H-1B Visa Reforms and Immigration Impact:

- **Stricter H-1B Policies:** Trump's proposed policies include reducing the number of H-1B visas and possibly imposing shorter durations, especially for third-party placements. Indian professionals, who make up over 70% of H-1B holders, could face limited job opportunities and greater job insecurity in the U.S. This restriction could significantly affect the Indian IT sector and limit family reunifications.
- **Green Card Proposal:** Trump's recent proposal to grant automatic green cards to foreign graduates from U.S. colleges is favorable for Indian students, as it could lead to more stable career pathways in the U.S. This shift may offset some of the adverse effects of tighter H-1B restrictions.
- **Impact on the U.S. Tech Sector:** Companies like Amazon and Google, which heavily rely on skilled immigrant labor, may face hiring challenges due to more restrictive immigration policies. This, in turn, may reduce the demand for Indian tech talent in the U.S.

3. Fiscal Policy and Global Economic Stability:

- **Inflation and Fiscal Deficit Concerns:** Trump's economic plans could create inflationary pressures in the U.S., driven by tariffs and tax cuts. As U.S. deficits increase, foreign lenders may view U.S. Treasury debt less favorably, which could impact global investor confidence.

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- **Impact on India's Monetary Policy:** If U.S. inflation rises, the Federal Reserve may halt rate cuts. This change could prompt India's Reserve Bank (RBI) to adopt a more conservative stance on rate cuts, potentially affecting India's economic growth.
- **Potential for a Weaker Dollar:** While a weaker dollar could help reduce India's import costs, especially for energy, it may also make U.S. markets less attractive to foreign investors, leading to fluctuations in foreign direct investment and forex reserves in emerging markets like India.

4. Elon Musk's Potential Influence:

- **Pressure on Electric Vehicle Policies:** If Elon Musk joins Trump's administration, India may face added pressure to lower import duties on Tesla vehicles and make policy concessions for electric vehicles. This could stimulate the EV market in India but may require balancing local production incentives with foreign investment interests.
- **Satellite and Space Technology Policy:** Musk's potential role could influence India's space and satellite policies, especially concerning SpaceX's interests in satellite spectrum allocation and space launch agreements.

5. Geopolitical and Strategic Considerations:

- **India's Trade Diversification:** Given the risks of trade restrictions, India may need to further diversify its trade partnerships to reduce dependency on the U.S. This could align with India's "Act East" policy, aimed at strengthening trade and investment ties within Asia.
- **China's Stimulus and Impact on India:** China's anticipated stimulus package to counteract U.S. tariffs could lead to increased portfolio flows into its economy, potentially diverting investments from India. This shift may prompt India to enhance its investment environment to stay competitive in the region.

Conclusion: Trumponomics presents a mixed picture for India. On one hand, corporate tax cuts and green card reforms could offer opportunities for India's IT sector and students. On the other, heightened tariffs, immigration restrictions, and fiscal uncertainties pose risks. India may need to adopt adaptive trade policies, leverage its expanding digital and tech economy, and pursue diversified trade relationships to mitigate potential challenges and capitalize on strategic opportunities in a changing global economy.

Anti-Terror Conference 2024

Context: The **Anti-Terror Conference 2024** in New Delhi, inaugurated by the Union Home Minister, brings together intelligence agencies and counter-terrorism squads to address evolving threats and devise strategies to counter terrorism. The event, hosted by the National Investigation Agency (NIA), focuses on critical topics including organized crime's role in terror funding, the impact of encrypted communication tools, and the intersection of social media with terrorism.



1. Organized Crime and Terror Funding:

- **Overview of Organized Crime:** In India, organized crime covers drug trafficking, arms smuggling, human trafficking, extortion, and more. These activities are highly coordinated and persistently conducted to generate profits.
- **Symbiosis with Terrorism:** Organized crime and terrorism often support each other. Terrorist organizations fund their operations through illegal activities managed by criminal gangs, who, in turn, benefit from protection and logistical support.
- **Case in Northeast India:** In Manipur, Nagaland, and Assam, groups like the ULFA and NSCN have used extortion, smuggling, and illegal taxation to finance insurgent activities. Increasing use of drones for arms and drug smuggling along the India-Myanmar border has raised security concerns.

2. Emerging Terrorist Group Formation and Criminal Linkages:

- **Preventing New Terrorist Groups:** The Union Home Minister emphasized a "ruthless" approach to prevent the rise of new terror groups. This includes tackling the financing channels that sustain these organizations, particularly in regions impacted by organized crime and cross-border smuggling.
- **Emerging Threats:** The rise of Hizb-ut-Tahrir (HuT) in southern states and transnational crime syndicates linked to terrorism are focal areas. Specific cases, such as the Rameshwaram cafe blast, underscore the significance of inter-state coordination in investigations.

3. Technological Challenges in Terrorism:

- **Encrypted Apps and Social Media:** Terrorist groups increasingly use encrypted applications, VPNs, and virtual numbers to evade detection. Discussions cover how these tools complicate tracking and surveillance efforts, emphasizing the need for policies to regulate social media and encrypted apps.
- **Narcotics Trafficking:** With national security implications, the NIA highlights narcotics trafficking as a substantial risk. This includes how drug profits fund terror operations and impact public safety.

4. Counter-Terrorism Coordination and Strategy:

- **Unified Anti-Terror Structure:** Emphasis is placed on the need for a cohesive anti-terror strategy, coordinating counter-terrorism squads with local law enforcement at district levels for faster response and intelligence sharing.
- **Addressing Left-Wing Extremism:** Strategies to combat terrorism in Left-Wing Extremist-affected areas are key, with a focus on disrupting financial ecosystems that support these groups.



5. National Databases for Counter-Terrorism: The NIA utilizes a national database containing records on terrorist cases, fingerprint data, and profiles of offenders related to narcotics and human trafficking. This database supports more effective investigations by providing quick access to relevant information across law enforcement agencies.

Conclusion: The **Anti-Terror Conference 2024** aims to enhance India's counter-terrorism capabilities through a comprehensive, coordinated approach, emphasizing the regulation of organized crime, advanced technology for surveillance, and a strengthened intelligence network to counter emerging threats.



Eco-sensitive Areas (ESA) in the Western Ghats

The recent **sixth draft notification** from the Union Government designates around 56,825.7 square kilometers of the **Western Ghats as an Ecologically Sensitive Area (ESA)**, impacting six states—Gujarat, Maharashtra, Goa, Karnataka, Kerala, and Tamil Nadu. The notification seeks to protect this unique biodiversity hotspot by restricting activities like mining, quarrying, and large-scale construction in ESA zones.



Key Points about the Western Ghats ESA Notification:

- **Objective:** The notification aims to protect the Western Ghats' rich biodiversity by limiting potentially damaging activities.
- **State Feedback:** States have a 60-day window to raise concerns or suggest changes regarding the villages designated as ESA.



Background on Eco-Sensitive Zones (ESZ):

- **Concept of ESZ:** Established in 2002, ESZs were created around protected areas to act as buffers or "shock absorbers," preserving the ecosystem around protected regions.
- **Purpose of ESAs:** Declared under the Environment (Protection) Act, 1986, ESAs are vital for conserving unique biological resources, rare species, critical habitats, and essential natural resources.

Need to Declare Western Ghats as an ESA:

- **Geological Sensitivity:** The Western Ghats are India's second most landslide-prone area after the Himalayas. The lack of ESA status has allowed deforestation and development to weaken soil stability, leading to environmental degradation.
- **Biodiversity:** Recognized as one of the world's eight "hottest hotspots" for biodiversity, the Western Ghats are home to a significant proportion of India's species, with many endemics like the Nilgiri tahr and lion-tailed macaque.
- **Hydrological Importance:** Rivers originating from the Western Ghats are a primary water source for around 245 million people in peninsular India.



- **Conservation Significance:** With areas designated as UNESCO World Heritage Sites, the Western Ghats contain multiple national parks and wildlife sanctuaries, which underscore their ecological value.

States' Concerns:

- **Development Restrictions:** Some state governments, including Maharashtra and Goa, have requested a reduction in ESA zones, viewing the ESA designation as a barrier to development projects.
- **Impact on Livelihoods:** Karnataka argued that the ESA restrictions would negatively impact local livelihoods, with strong opposition from industries like mining and tourism.

Key Recommendations from Committees on the Western Ghats:

1. Gadgil Report (2011):

- **Scope:** Recommended ESA status for the entire Western Ghats.
- **Categorization:** Proposed a three-tier system with differing conservation levels based on ecological richness and land use.
- **Western Ghats Ecological Authority:** Suggested creating an authority to enforce conservation.
- **Reception:** Environmentalists supported it, but states and industries opposed it for being restrictive.

2. Kasturirangan Report (2013):

- **Scope:** Recommended ESA status for only 37% of the Western Ghats.
- **Balanced Development:** Aimed to balance ecological sensitivity with development flexibility, focusing primarily on core sensitive areas.
- **Monitoring Framework:** Emphasized improving environmental clearances and setting up a monitoring agency.
- **Reception:** States found it more practical than the Gadgil Report, but some environmentalists considered it too lenient.

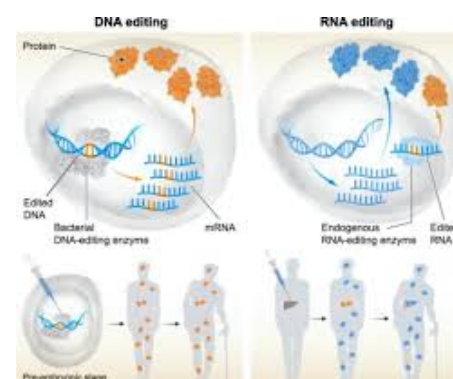
Conclusion: The Western Ghats cannot be treated purely as a wilderness zone due to their inhabited nature and cultural significance. Sustainable development that respects both ecological and human needs is essential. Policymakers must carefully balance conservation with development to create a sustainable future for this critical landscape.

What is RNA Editing?

Context: The recent success of **Wave Life Sciences** in conducting the first clinical RNA editing in humans marks a significant milestone in treating genetic disorders. This pioneering work in **RNA editing** was performed on two patients with **alpha-1 antitrypsin deficiency (AATD)**, an inherited disorder that primarily affects the liver and lungs.

What is RNA Editing?

RNA editing allows scientists to correct errors in messenger RNA (mRNA) after it has been synthesized but before it is translated into proteins. Unlike DNA editing, which makes permanent changes to a person's genome, RNA editing offers **temporary, reversible modifications**. This capability prevents the production of faulty proteins that can cause diseases, providing a safer and more adaptable alternative to DNA-based gene editing.



How RNA Editing Works:

The **ADAR (Adenosine Deaminase Acting on RNA)** enzyme plays a key role in RNA editing. ADAR alters specific mRNA sequences by changing **adenosine into inosine**, which mimics guanosine in the genetic code. By using **guide RNA (gRNA)** to direct ADAR to the specific mRNA segment that needs correction, scientists can precisely target and rectify these errors, allowing cells to produce normal proteins.

The Significance of RNA Editing for AATD:

Alpha-1 antitrypsin deficiency (AATD) is an inherited disorder that can damage the liver and lungs due to the buildup of misfolded α -1 antitrypsin protein. Currently, AATD treatment is limited: patients with lung complications require weekly intravenous therapy, while those with liver damage may need liver transplants. RNA editing offers a promising therapeutic approach by potentially correcting the mRNA errors that produce dysfunctional α -1 antitrypsin, reducing the need for such invasive treatments.

RNA vs. DNA Editing:

- Safety and Flexibility:** RNA editing is non-permanent, with effects that fade over time, making it a safer choice than DNA editing, which creates permanent genomic changes. DNA editing tools like CRISPR-Cas9 can introduce irreversible errors and may trigger immune reactions.
- Lower Risk of Immune Reactions:** RNA editing relies on naturally occurring ADAR enzymes, reducing the risk of allergic reactions compared to DNA editing tools derived from bacteria.

Challenges in RNA Editing :

- Specificity:** ADAR enzymes can cause unintended changes in non-targeted regions, leading to potential side effects.
- Transient Nature:** Since RNA editing effects are temporary, patients will likely need repeated treatments.
- Delivery Limitations:** Current methods, such as lipid nanoparticles, have limited capacity, restricting the delivery of larger molecules required for RNA editing.

Future Prospects:

Although still in its early stages, RNA editing holds enormous potential to become a core component of gene therapy. As research and clinical trials progress, RNA editing is poised to transform the gene-editing landscape, especially for treating genetic disorders where precision and reversibility are crucial.

Equity Infusion For Food Corporation of India

Context: The **Cabinet Committee on Economic Affairs (CCEA)** recently approved a **Rs. 10,700 crore Equity infusion** into the **Food Corporation of India (FCI)** for FY 2024-25. This funding aims to strengthen FCI's working capital by converting its **Ways and Means Advance (WMA)**, a short-term government loan to manage cash flow mismatches, into equity.

Overview of Food Corporation of India (FCI):

Established under the **Food Corporations Act, 1964**, FCI's mission is to ensure food security and stabilize food grain prices in India. Its key objectives are:

1. **Price Support for Farmers:** FCI conducts price support operations, safeguarding farmers' interests.
2. **Public Distribution:** FCI distributes food grains across India through the Public Distribution System (PDS).
3. **Food Stock Management:** It maintains buffer and operational stock to ensure a steady food supply in times of need.

Challenges Faced by FCI :

- **Storage Issues:** Limited facilities lead to food grain wastage.
- **High Costs:** High expenses in procurement, storage, and distribution strain finances.
- **Inefficiencies:** Delays, corruption, and leakage affect the supply chain.
- **Limited Crop Diversity:** FCI's focus on rice and wheat impacts crop diversity.
- **Financial Burden:** Heavy subsidies create fiscal pressure on government resources.

Recommendations to Enhance FCI's Effectiveness: To address these issues, the **Standing Committee on Food, Consumer Affairs, and Public Distribution** has suggested the following measures:

1. **Decentralized Procurement Scheme:** Encourage states to adopt decentralized procurement to lower transportation costs and improve local distribution.
2. **Infrastructure Development:** Aid states in building infrastructure for better storage and procurement.
3. **Storage Utilization:** Prioritize FCI-owned storage facilities to minimize hiring costs.
4. **Godown Construction:** Expedite godown construction in remote and underserved areas, such as the Northeast, Jammu and Kashmir, Andaman and Nicobar Islands, and Lakshadweep.
5. **Performance Evaluation:** Regularly assess the Decentralized Procurement Scheme to address any operational issues.

Equity Infusion through WMA Conversion:

The recent **Rs. 10,700 crore equity infusion** through WMA conversion aims to address FCI's working capital needs, reduce its dependency on external loans, and enhance its capacity to manage operations effectively. This financial restructuring reflects a strategic effort by the government to stabilize FCI's finances and boost its operational efficiency.

Conclusion: The equity infusion and recommended reforms could significantly improve FCI's performance, helping it address challenges in storage, distribution, and cost management.



PM-Vidyalaxmi Scheme

Context: The **PM-Vidyalaxmi Scheme** has been launched by the Union Cabinet to support meritorious students in India pursuing higher education. This **Central Sector Scheme** provides accessible financial aid to students aiming to study at top institutions, enabling them to secure education loans easily and affordably.



PM-Vidyalaxmi

Key Features of the PM-Vidyalaxmi Scheme:

1. **Collateral-Free Loans:** Students admitted to **Quality Higher Education Institutions (QHEIs)** will be eligible for **collateral-free, guarantor-free loans** to cover full tuition and related expenses. This funding will be available through banks and financial institutions.
2. **Digital, Student-Friendly System:** The scheme will operate through a **simple, transparent, digital, and interoperable platform** for students to apply for loans easily. The unified portal, "PM-Vidyalaxmi," will enable students to apply for both loans and interest subvention.
3. **Eligibility Based on NIRF Rankings:**
 - Applicable to all **Higher Educational Institutions (HEIs)** ranked in the top 100 in the National Institutional Ranking Framework (NIRF) in overall, category-specific, and domain-specific rankings.
 - Also includes **state government HEIs ranked within 101-200** in NIRF and **all central government institutions**.
 - The list of eligible institutions will be updated annually with the latest NIRF rankings.
4. **Loan Provisions:**
 - For loans up to **₹7.5 lakhs**, students receive a **credit guarantee of 75% on outstanding defaults**, which encourages banks to lend under the scheme.
 - Students with an **annual family income of up to ₹8 lakhs** who don't qualify for other government scholarships or interest subvention schemes will receive a **3% interest subvention on loans up to ₹10 lakhs** during the moratorium period (usually the study period plus some months post-study).
5. **Interest Subvention for 1 Lakh Students Annually:**
 - The scheme will support **1 lakh students each year**, focusing on those from government institutions enrolled in technical or professional courses.
 - The **interest subvention payments** will be processed via **E-vouchers and Central Bank Digital Currency (CBDC) wallets** for seamless transactions.

Financial Outlay: An allocation of **₹3,600 crore** has been made for the scheme, covering the period from **2024-25 to 2030-31**.

PM-Vidyalaxmi Portal:

The **Department of Higher Education** will maintain a centralized "PM-Vidyalaxmi" portal, offering a **simplified application process** for all participating banks, where students can apply for loans and interest subvention.

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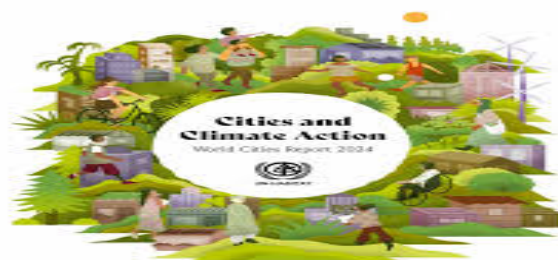
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World Cities Report 2024

Context: The UN-Habitat's "World Cities Report 2024: Cities and Climate Action" highlights the dual role of cities as both **victims** of climate change and major contributors to **greenhouse gas emissions**, though they are disproportionately affected by climate-related impacts. The report emphasizes the urgent need for cities to adopt climate-resilient strategies and tackle the gap in funding for climate action.

**Key Findings:**

- Exposure to Climate Change:** Over **2 billion people** living in cities are projected to face an additional **temperature increase of at least 0.5°C by 2040**, exacerbating the impacts of climate change on urban areas.
- Funding Gap:** Cities require an estimated **\$4.5-5.4 trillion annually** to develop and maintain climate-resilient systems. However, current funding stands at only **\$831 billion**, underscoring a significant shortfall in climate investment.
- Shrinking Green Spaces:** The proportion of **urban green space** has dropped globally, with the average share falling from **20% in 1990 to 14% in 2020**. This decline is detrimental to the environmental and social quality of cities.
- Impact on Vulnerable Communities:** Some climate interventions, while well-meaning, have had unintended negative consequences, such as **"green gentrification"**, where the creation of parks and green spaces drives up property values and displaces low-income households.

Recommendations:

- Revenue Generation and Climate Finance:** Cities should raise revenue through **debt, Public-Private Partnerships (PPPs)**, and innovative financial instruments to mobilize **climate finance** and bridge the funding gap.
- Integrating Climate Action into Urban Planning:** **Climate action** must be integrated into urban planning processes, prioritizing **locally-led climate adaptation efforts** to build resilience and sustainability.
- Strengthening Social Protection:** Strengthening **social protection programs** and **adopting nature-based solutions** (such as green infrastructure) can help mitigate the effects of climate shocks and improve overall urban resilience.

About UN-Habitat:

- Genesis:** UN-Habitat was established following **Habitat I** in **1978**, which laid the foundation for the **United Nations Human Settlements Program**.
- Headquarters:** **Nairobi, Kenya**.
- Mandate:** UN-Habitat is tasked with promoting socially and environmentally sustainable cities and towns, as mandated by the **UN General Assembly**.
- Partnerships:** Works with **governments, UN agencies, civil society organizations, academic institutions**, and the **private sector** to foster urban development that balances social inclusion and environmental sustainability.
- Flagship Publications:** Key publications include the **State of the World's Cities** and **World Cities Report**, which provide insights and recommendations for addressing urban challenges globally.

Conclusion: The **World Cities Report 2024** underscores the urgency for cities to integrate climate action into urban planning, adopt sustainable financial models, and prioritize social equity to ensure a resilient and sustainable urban future.

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Spinal Muscular Atrophy

Context: A 16-month-old child with SMA was recently administered gene therapy at a private hospital, showcasing the advancements in personalized treatment for this debilitating condition.

About Spinal Muscular Atrophy (SMA):

Spinal Muscular Atrophy (SMA) is a genetic disorder that primarily affects the central nervous system (CNS), peripheral nervous system (PNS), and voluntary muscles responsible for movement. It is a form of **motor neuron disease**, leading to the loss of motor neurons in the spinal cord, which impairs muscle function.

Types of SMA:

SMA is classified into **five subtypes** based on the age of onset, severity, and life expectancy:



1. **SMA Type 0:** The most severe form, diagnosed before birth, leading to severe disability or death in infancy.
2. **SMA Type 1:** Also called **Werdnig-Hoffmann disease**, this form typically appears before 6 months of age and results in severe muscle weakness and difficulty breathing.
3. **SMA Type 2:** Occurs between 6-18 months of age. Affected children may be able to sit but often cannot walk.
4. **SMA Type 3:** Also known as **Kugelberg-Welander disease**, this subtype emerges after 18 months and allows individuals to walk, though they may lose this ability over time.
5. **SMA Type 4:** The adult-onset form, usually presenting after 18 years of age, with mild symptoms that progress slowly.

Symptoms of SMA:

- Muscle weakness, especially in the **proximal muscles** (closer to the center of the body, such as the hips, thighs, and shoulders).
- Difficulty with movements such as sitting, standing, walking, and breathing.
- Involuntary muscles, such as those controlling the heart, blood vessels, and digestive tract, are unaffected.
- **Speech and swallowing difficulties** may occur, depending on the severity.

The **severity** of the symptoms depends on the subtype of SMA, with more severe forms affecting essential functions like breathing and swallowing.

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Treatment for SMA:

While there is no cure for SMA, several treatments focus on symptom management and improving quality of life:

1. **Physical Therapy:** Aimed at improving posture, preventing joint immobility, and slowing muscle weakness.
2. **Occupational Therapy:** Helps improve daily living skills and independence.
3. **Assistive Devices:** Tools like orthopedic braces, crutches, walkers, and wheelchairs can help with mobility.
4. **Speech and Swallowing Therapy:** Addresses difficulties with speech and swallowing, potentially preventing choking.
5. **Feeding Tubes:** In cases of swallowing difficulties, feeding tubes can be used to ensure proper nutrition.
6. **Ventilation Support:** Assisted ventilation, such as non-invasive ventilation or mechanical ventilation, may be required for breathing support in severe cases.

Medications for SMA:

Recent advancements in **gene therapy** have revolutionized the treatment landscape for SMA:

1. **Disease-modifying Therapy:** Medications that aim to slow the progression of the disease by modifying the underlying genetic causes of SMA.
2. **Gene Replacement Therapy:** The U.S. Food and Drug Administration (FDA) approved **gene therapy** drugs between 2016 and 2020, which replace the defective gene causing SMA. These therapies have shown promise in improving motor function and slowing the disease's progression.

One of the most groundbreaking treatments is **Zolgensma**, a gene replacement therapy that offers the potential to replace the missing or defective **SMN1 gene**, which is responsible for producing the SMN protein essential for motor neuron survival.

Conclusion: Though SMA is a serious and progressive disease, advancements in gene therapy and symptom management have provided hope for improving the lives of those affected. Early diagnosis and intervention are crucial to achieving the best possible outcomes for individuals with SMA.

Bidar Fort

Context: In a recent development, the **Waqf Board** has recognized **17 monuments** within **Bidar Fort** as its property, highlighting the importance of preserving the fort's heritage. The identification of these monuments reflects ongoing efforts to protect and conserve the historical and architectural legacy of the fort and its surrounding structures.

About Bidar Fort:

Bidar Fort is a historic fortress located in **Bidar city**, in the northern plateau of **Karnataka, India**. The fort has a rich history, dating back over 500 years, with significant contributions from various dynasties, particularly the **Bahmani dynasty**.



Historical Background:

The history of Bidar Fort is intertwined with the rise of the **Bahmani Kingdom**, which was established in **1347** by **Ala-ud-din Hassan Bahman Shah** after his revolt against the Sultan of Delhi, **Muhammad Bin Tughlaq**. The Bahmani Kingdom was the first independent **Islamic kingdom** in **South India** and spanned parts of present-day **Karnataka, Maharashtra, and Andhra Pradesh**. The kingdom initially had its capital at **Gulbarga** (then known as **Ahsanabad**) but moved to Bidar in **1430**, during the reign of **Sultan Ahmed Shah Wali**. Under his rule, Bidar was transformed into a grand citadel, with the fort being significantly renovated and expanded.

Architecture of Bidar Fort:

Bidar Fort is an impressive structure, showcasing a blend of **Islamic** and **Persian** architectural styles. The fort was primarily constructed using **trap rock**, along with stone and mortar for the fort walls. Some notable features of the fort include:

- **Seven main entrances** that provide access to different parts of the fort.
- **37 bastions** of octagonal shape, which are balcony-like structures extending from the fort walls and are equipped with **metal-shielded cannons**.
- A **lofty dome** at the entrance gate, with brightly painted interiors.
- The fort also houses numerous **mosques, palaces (mahals), and Islamic monuments**, with **over 30 significant structures** within the fort complex.



Significance and Monuments:

The fort is home to several **Islamic monuments**, many of which reflect the grandeur of the **Bahmani Sultanate**. Some of the key structures include:

- **The Jami Masjid:** A mosque built in Persian style with intricate calligraphy and decorative elements.
- **Mahmud Gawan's Madarsa:** A madrasa (Islamic school) named after **Mahmud Gawan**, the prominent **Prime Minister** of the Bahmani Kingdom, known for his contributions to both the administration and the military.
- **The Rangin Mahal:** A palace known for its ornate architecture and colorful decorations.

Role of the Bahmani Kingdom:

The **Bahmani Kingdom** played a significant role in the history of South India. After establishing the kingdom in **1347**, it ruled over a substantial part of the Deccan plateau. The kingdom was known for its administrative innovations, military campaigns, and cultural contributions.

- **Peak under Mahmud Gawan:** The Bahmani Kingdom reached its zenith under the leadership of **Mahmud Gawan** (Prime Minister from **1458 to 1481**), who was instrumental in expanding the empire and reconquering **Goa**, which had been under the control of the **Vijayanagar Empire**.
- **Decline:** The Bahmani Kingdom began to weaken after the death of Mahmud Gawan and was eventually defeated by the forces of **Krishnadeva Raya** of the **Vijayanagar Empire** around **1518**, marking the end of Bahmani rule.

Conclusion: **Bidar Fort** stands as a monumental reminder of the region's rich history, showcasing the cultural and architectural legacy of the **Bahmani Sultanate**. It remains an important historical site in Karnataka and continues to be a key part of India's heritage. The recognition of monuments within the fort by the Waqf Board underscores the importance of preserving such cultural treasures for future generations.

Australia is set to introduce a legislative ban on social media for children under 16

Context: Australia is set to introduce a legislative ban on social media for children under 16, targeting the reduction of risks associated with social media. This measure aims to address rising concerns over mental health, sleep disruption, social skills, academic impact, privacy, and body image issues linked to online platforms.

Harmful Effects of Social Media on Children:

- 1. Mental Health Issues:** Social media exposure has been linked to anxiety, depression, and cyberbullying.
- 2. Sleep Disturbance:** Excessive screen time impacts sleep quality, contributing to digital addiction.
- 3. Academic Impact:** Reduced focus and increased procrastination, often lowering academic performance.
- 4. Decline in Social Skills:** Online interaction limits in-person communication skills.
- 5. Body Image Concerns:** Unrealistic portrayals cause body dissatisfaction and self-esteem challenges.
- 6. Privacy Risks:** Children are vulnerable to inappropriate content and data privacy threats.
- 7. Materialism:** Influencer culture often promotes unrealistic standards, fostering self-doubt.

**Social Media Regulation in India:**

In India, the **Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021** and **Digital Personal Data Protection Act (DPDPA) 2023** govern social media use:

- IT Rules 2021:** Introduce a grievance redressal system, mandate disclosure of message originators, require a Chief Compliance Officer, and enable voluntary user verification.
- DPDPA 2023:** Enforces regulations on children's data processing, requiring parental consent, child well-being prioritization, and prohibiting targeted ads for minors.

Global Social Media Regulations for Children:

- China:** Limits daily internet use based on age and restricts internet access for minors from 10 PM to 6 AM.

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- **European Union:** Proposes parental consent for children under 16, with strong data privacy protections.
- **South Korea:** Formerly had the “Cinderella Law” banning online gaming for under-16s at night (repealed in 2021).
- **France:** Requires parental consent for children under 15 to access social media; protects influencer earnings for those under 16.

Issues with Banning Social Media for Children:

- **Enforcement Challenges:** Digital restrictions can be bypassed, making strict enforcement difficult.
- **Parental Burden:** Requires parents to closely monitor online activities, which can be challenging.
- **Freedom of Expression:** Social media restrictions limit children’s right to self-expression and information access.
- **Benefits of Social Media:** Social platforms can provide community support, educational resources, and awareness of global issues.

Way Ahead:

1. **Enhanced Age Verification:** Implement reliable age-verification technologies to regulate access effectively.
2. **Digital Literacy for Parents:** Digital literacy initiatives for parents can strengthen awareness and control over children’s online activities.
3. **Data Privacy and Content Moderation:** Update policies to enhance minors’ data privacy.
4. **Digital Literacy in Schools:** Introduce digital literacy as a core component of the curriculum to help children understand safe and responsible social media use.
5. **Mental Health Support:** Develop community-based mental health programs to address the impacts of social media on children’s well-being.

Through these measures, countries aim to balance protection with empowerment, promoting safe and positive digital experiences for children.

Centres of Excellence (CoEs) for Research and Development on Green Hydrogen

Context: The Ministry of New and Renewable Energy (MNRE) recently initiated plans to establish **Centres of Excellence (CoEs) for Research and Development on Green Hydrogen** under the **National Green Hydrogen Mission**. This move aims to accelerate India's transition to a low-carbon economy, support clean energy independence, and position India as a leader in the global green hydrogen market.

**About the Centres of Excellence (CoEs):**

These CoEs will serve as cutting-edge research hubs for green hydrogen technology, focusing on:

- **Research:** Developing and refining technologies for the production, storage, and utilization of green hydrogen.
- **Skill Development:** Providing training and expertise in green hydrogen to build a skilled workforce.
- **Knowledge Dissemination:** Promoting the widespread sharing of research insights and technological advancements.

Green Hydrogen Overview:

Green hydrogen is produced through **electrolysis of water** using renewable energy sources like wind, solar, or hydropower, which ensures zero carbon emissions:

- **Green Hydrogen:** Clean hydrogen produced with renewable energy, unlike **grey hydrogen** (from natural gas without carbon capture) or **blue hydrogen** (from natural gas with carbon capture and storage).

Key Features of the Initiative:

1. **Integrated Research:** CoEs will address various aspects of the green hydrogen value chain, including:
 - Innovations in production, such as more efficient electrolyzers.
 - Advanced storage solutions.
 - Utilization technologies for applications across industries.

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2. **Collaboration and Partnerships:** The initiative promotes partnerships among:

- Industry, academia, and government bodies.
- Public and private entities, research institutions, and universities.
- These stakeholders will collaborate on research proposals and knowledge sharing.

3. **Funding and Support:**

- **Rs 100 crores** have been allocated to establish and operationalize the CoEs.
- Funding is part of the **National Green Hydrogen Mission's** broader financial outlay of **Rs 19,744 crores**, aimed at decarbonizing the economy and promoting energy independence until FY 2029-30.

4. **Long-term Goals:** The mission seeks to:

- Reduce fossil fuel imports.
- Position India as a leader in green hydrogen technology.
- Enable India's progress toward Aatma Nirbhar Bharat (self-reliant India) in clean energy.

Expected Outcomes

- **Innovation:** Collaboration in the CoEs will lead to technological advancements that improve process efficiency and foster new product development.
- **Sustainability:** Enhanced green hydrogen technologies will significantly reduce carbon emissions, supporting global climate change mitigation efforts.
- **Economic Growth:** The mission will create opportunities in research, job creation, and stimulate economic growth in the clean energy sector.

Conclusion: India's push to establish CoEs for Green Hydrogen R&D is a landmark step toward a sustainable, energy-independent future. By combining expertise from diverse stakeholders, these CoEs will be instrumental in advancing green hydrogen technologies, contributing to global climate goals, and cementing India's position in the clean energy sector.

Corporate Social Responsibility (CSR)

Context: The recent report on Corporate Social Responsibility (CSR) in India highlights significant contributions across sectors, including agriculture. Since the **2013 mandate under Section 135 of the Companies Act**, Indian companies have actively invested in social welfare and sustainable development. With **₹1.84 lakh crore disbursed** from 2014 to 2023, CSR efforts have primarily focused on education, health, employment, skill development, sports, livelihood, and environmental sustainability. However, with agriculture being a vital part of India's economy and employing nearly 47% of the workforce, there is a growing need for targeted CSR contributions in this sector.



CSR in Agriculture: Current Efforts and Focus Areas

Many companies are channeling CSR funds toward **sustainable agriculture practices** as part of their climate action and environmental responsibility agendas. According to an outlook report, **23% of surveyed companies prioritize "environment and sustainability"** for CSR initiatives, often benefiting agriculture indirectly. Key contributions in this area include:

- **Grain Banks:** Supporting food security by creating local storage solutions for essential grains.
- **Farmer Schools:** Offering education on sustainable and profitable farming techniques.
- **Livelihood Projects:** Providing income-generating activities and resources for small-scale farmers.
- **Water Conservation:** Implementing rainwater harvesting, watershed management, and improved irrigation systems.
- **Energy-efficient Irrigation:** Promoting low-energy irrigation methods to reduce resource consumption.

Challenges in Tracking CSR for Agriculture:

The broad categorization of CSR activities under the **11 sectors in Schedule VII of the Companies Act** makes it difficult to track funds explicitly allocated to agriculture. These general categories, such as environmental sustainability, rural development, and poverty alleviation, often encompass agriculture-related initiatives but lack specific identification. As a result:

- There is limited visibility and tracking of funds solely dedicated to agricultural projects.
- The current CSR reporting mechanism does not offer clarity on agriculture-specific impacts, reducing transparency and assessment accuracy.

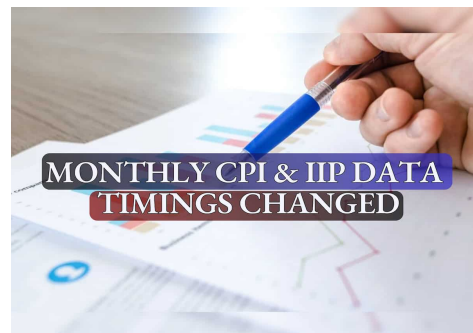
Recommendations for the Future:

1. **Sector-specific CSR Reporting Framework:** Developing a unique category for agriculture in CSR reporting would allow companies to allocate funds more effectively and increase transparency.
2. **Agriculture as a Distinct Sector in CSR Reporting:** This would facilitate tracking of funds and assessment of CSR contributions to agriculture-specific outcomes, aligning with India's sustainable growth goals.
3. **Focused CSR Initiatives for Sustainable Agriculture:** Encouraging initiatives directly addressing challenges like resource degradation, climate resilience, and income stagnation in agriculture will support India's goal of a just transition to a sustainable economy.

By prioritizing and clearly categorizing CSR investments in agriculture, India can better leverage private sector contributions to support its agricultural sustainability and climate resilience goals.

Consumer Price Index (CPI) and Index of Industrial Production (IIP)

Context: The recent decision by the **Ministry of Statistics and Programme Implementation (MoSPI)** to release **Consumer Price Index (CPI)** and **Index of Industrial Production (IIP)** data at **4 pm** aligns with the close of major financial markets in India. This shift aims to provide timely data access, allowing market participants and analysts more time to assess and respond to this critical economic information.

Key Points on CPI and IIP Data:1. **Consumer Price Index (CPI):**

- Measures **retail inflation** by tracking the prices of goods and services consumed by households.
- Released by the **National Statistical Office (NSO)** under MoSPI.
- Calculated using **2012 as the base year** and covers various categories like **food, housing, fuel, and recreation**.
- An important indicator for **inflation targeting** and **policy decisions**.

2. **Index of Industrial Production (IIP):**

- Gauges **industrial production** across Mining, Manufacturing, and Electricity, with Manufacturing holding the largest weight.
- Also includes use-based categories like **basic goods, capital goods, and consumer durables**.
- Uses **2011-12 as the base year** and is released with a six-week lag after the reference month.
- Acts as a short-term indicator of **industrial growth** and economic activity.

Rationale for the Change:

- Enhanced Transparency:** Releasing data at 4 pm provides transparency and aligns with the closing of India's stock market, though government bond and forex markets close at 5 pm.
- Extended Analysis Time:** Analysts and investors gain more time on the release day for data assessment, aiding in market response and economic planning.
- Historical Context:** The data release timing had previously been moved to **5:30 pm in 2013** to prevent intra-day trading disruptions after reports of data leaks when it was released around 11 am.

Concerns with the New Timing:

- Market Sensitivity:** While stock markets close at 3:30 pm, bond and forex markets remain open until 5 pm, meaning CPI and IIP data can influence these active trading sectors.
- Potential for Immediate Impact:** Sensitive data released during trading hours can lead to rapid market reactions, impacting investor behavior and potentially causing market volatility.

Implications and Significance:

- CPI:** As a primary indicator of inflation, CPI data is crucial for the Reserve Bank of India's monetary policy decisions and influences household spending and cost of living.
- IIP:** Reflects industrial performance and economic health, guiding fiscal policy and investment decisions.
- Enhanced Market Accessibility:** The new timing is in line with MoSPI's goal of **improving accessibility** to economic data and fostering a more informed market environment.

The move to shift the CPI and IIP data release time to 4 pm marks a proactive step towards synchronizing with market hours while balancing transparency and the potential impact on active trading.

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Supreme Court to Decide on Aligarh Muslim University's Minority Status

Context: The **Supreme Court of India** is set to decide on whether **Aligarh Muslim University (AMU)** qualifies as a minority institution under **Article 30** of the Indian Constitution, which grants religious and linguistic minorities the right to establish and administer educational institutions of their choice. This case has long been debated, with important implications for AMU's governance, admissions policies, and the interpretation of minority rights.



Background of the Controversy:

The dispute began in **1967** with the Supreme Court's **S. Azeez Basha vs. Union of India** ruling, which determined that AMU was not established by the Muslim community but by the **Aligarh Muslim University Act of 1920**, a parliamentary act. Key changes since the 1950s, including adding non-Muslims to the governing University Court and expanding the Executive Council's powers, fueled arguments about whether the Muslim community retained the right to manage AMU. The **1981 amendment** to the AMU Act, which sought to affirm AMU's minority status, was later struck down by the **Allahabad High Court in 2006**, citing the Azeez Basha decision.

The pending verdict will address whether to uphold or overturn this precedent, potentially reclassifying AMU as a minority institution.

Implications of Minority Status for AMU:

If the Supreme Court grants AMU minority status:

- **Exemption from Quotas:** Under **Article 15(5)**, minority institutions are not required to reserve seats for **Scheduled Castes (SCs), Scheduled Tribes (STs), Other Backward Classes (OBC),** or **Economically Weaker Sections (EWS)**. Instead, AMU would be permitted to reserve seats for **Muslims**, potentially up to 50% or more.
- **Autonomy in Governance:** AMU would gain greater autonomy over its governance structure, with a streamlined process for admissions favoring the Muslim community. This would shift the university's existing governance system, which currently includes diverse representation in the Executive Council.



Arguments from the Centre and AMU:

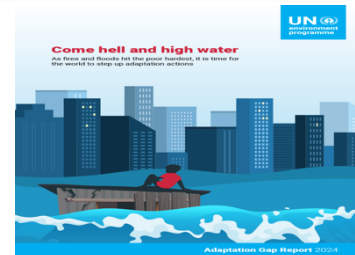
- **Government's Position:** The Centre argues that AMU differs from institutions like **St. Stephen's College**, which the Supreme Court recognized as a minority institution in **1992** due to its private foundation and management. The Centre contends that because AMU was created by a parliamentary act and receives continuous government funding, it should remain a national institution that upholds secular values rather than privileging any single community.
- **AMU's Position:** AMU's counsel argue that **Article 30** grants minorities special rights that ensure equality in a pluralistic society. Senior advocates such as **Kapil Sibal** and **Rajeev Dhavan** assert that exempting AMU from certain quotas does not infringe on public interest and is instead a reflection of minority rights contributing to social harmony. They cite examples like **Aliah University** in Kolkata, which retains minority status despite government support, to underscore AMU's right to similar treatment.

Significance of the Verdict:

The Supreme Court's decision will set a precedent for how **minority rights** are balanced with **state policies on social justice and equality**. Granting AMU minority status would not only impact its administrative structure but could also influence the framework within which other minority institutions operate, shaping the future of **education policy** and **minority rights** in India. The judgment is eagerly anticipated as a defining moment in India's approach to **secularism, autonomy in education, and constitutional rights of minorities**.

Adaptation Gap Report 2024

Context: The United Nations Environment Programme (UNEP) recently released the **Adaptation Gap Report 2024**, assessing global progress in **climate adaptation** planning, implementation, and finance. This annual report highlights the **adaptation gap**, or the shortfall between the adaptation actions taken and the level needed to meet societal goals, constrained by limited resources and competing priorities.

**Key Findings:**

1. **Adaptation Gap:** The financial shortfall for adaptation measures is estimated between **\$187-\$359 billion annually**.
2. **Progress in Adaptation Finance:** International adaptation finance flows to developing countries increased to **\$27.5 billion in 2022**, aligning with the **Glasgow Climate Pact's** aim to double adaptation finance to developing countries by 2025 from a 2019 baseline of \$19 billion.
3. **Significance of Adaptation:** Effective adaptation could significantly reduce global climate risks. For instance, investing **\$16 billion in agriculture annually** could prevent **78 million people** from facing climate-related hunger or starvation.

Recommendations for Closing the Adaptation Gap:

The report outlines critical steps to bridge the adaptation gap:

- **New Climate Finance Goals:** Set an ambitious **New Collective Quantified Goal** for climate finance at COP29.
- **Strengthen Enabling Factors:** Increase focus on new financial tools, capacity building, and **technology transfer** to foster adaptation.
- **Transformational Financing:** Shift from **reactive, incremental** financing to **anticipatory, strategic, and transformational adaptation** that addresses root vulnerabilities rather than isolated projects.

Key Global and Indian Initiatives for Adaptation**Global Initiatives:**

- **Paris Agreement:** Sets a global goal to enhance adaptive capacity and resilience.
- **UAE Framework for Global Climate Resilience:** Establishes **11 global adaptation targets**.
- **Adaptation Fund:** Provides finance for adaptation projects in developing nations party to the **Kyoto Protocol**.

India's Initiatives:

- **National Action Plan on Climate Change (NAPCC):** Encompasses **eight national missions** aimed at climate resilience.
- **National Adaptation Fund for Climate Change (NAFCC):** Finances adaptation actions in vulnerable states.
- **Sectoral Schemes:** Includes programs like **MISHTI** for mangrove restoration and **Amrit Dharohar** for wetland conservation, which strengthen local adaptation efforts.

Significance of the Report:

The UNEP Adaptation Gap Report 2024 underscores the critical need for scaled-up, strategic adaptation efforts to mitigate climate-related risks. Its recommendations provide a roadmap for sustainable and resilient adaptation financing, essential for addressing the climate vulnerabilities faced by developing nations.

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Agrivoltaic Farming

Context: Agrivoltaic Farming combines agriculture and solar energy production by installing solar panels over croplands, enabling both crop cultivation and electricity generation on the same land. This practice was recently highlighted at the **Seventh Session of the International Solar Alliance (ISA)** in New Delhi, where global delegates saw agrivoltaic systems in action.



Key Features of Agrivoltaic Farming:

- **Dual Land Use:** Solar panels, elevated 2-3 meters above the ground at a 30-degree angle, allow crops to grow beneath while generating solar energy. This setup is also known as **agrisolar, dual-use solar, or low-impact solar.**
- **Versatile Panel Installation:** Panels may be mounted on poles, suspended, or installed on greenhouse rooftops. In some systems, solar panels can rotate or adjust as a canopy to control sunlight and shade for the crops.
- **Weather Protection:** Positioned at an angle, solar panels provide **shade**, reducing heat stress on plants and preventing excessive water loss.

Advantages of Agrivoltaic Farming

1. **Improved Land-Use Efficiency:** Agrivoltaic systems allow for simultaneous farming and energy production, optimizing land use by **eliminating the need to choose between agriculture and solar farms.**
2. **Enhanced Crop Performance:** Studies indicate that certain crops thrive under partial shading from solar panels, as the shade **reduces heat stress** and **minimizes water requirements**, benefiting both crop health and yields.
3. **Climate Resilience:** Agrivoltaic systems shield crops from extreme weather, supporting more stable agricultural productivity in regions facing climate stress.

Agrivoltaic farming holds promise for **sustainable land management**, especially in regions where land resources are limited or under pressure from competing needs for food production and renewable energy expansion. This approach helps balance agricultural demands with renewable energy goals, making it an effective strategy for integrated land use and climate resilience.

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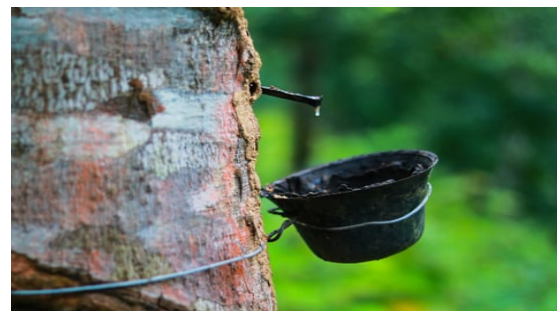
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Detrimental Effect of Rubber Plantations

Context: A recent study has revealed significant environmental consequences of converting rainforests into rubber plantations, particularly in terms of **Soil-Dissolved Organic Carbon (DOC)** and **carbon cycling**. This conversion not only disrupts the soil's carbon storage capacity but also contributes to climate change through greenhouse gas emissions.



Key Findings of the Study:

- Carbon Loss:** Rubber plantations cause a **50% reduction in soil-sequestered carbon**, releasing it into the atmosphere as greenhouse gases. This loss is particularly concerning given that soil stores approximately 1,500 Petagrams (Pg) of organic carbon, a stock greater than that in the atmosphere and vegetation combined.
- Increase in Soil DOC:** Conversion to rubber plantations significantly raises soil DOC levels by 150–200%. As a highly mobile form of organic matter, DOC plays a critical role in soil formation and global carbon cycling, making its increase due to monoculture plantations ecologically disruptive.

Other Environmental Impacts of Rubber Plantations:

- Biodiversity Loss:** Rubber monocultures lead to biodiversity reduction and weaken land resilience. In Thailand, rubber plantations have resulted in a **60% decline in biodiversity**.
- Deforestation:** Over the past three decades, **more than 4 million hectares** of tropical forests in Southeast Asia have been cleared for rubber plantations.
- Water Scarcity:** Rubber plantations require extensive water, increasing **evapotranspiration** and reducing both surface water runoff and available water resources.
- Pollution:** Rubber processing releases waste that pollutes both soil and water.

About Natural Rubber (*Hevea brasiliensis*):

- Origin:** Originally from the Amazon River basin, natural rubber was introduced to Asia and Africa by the British during the colonial period.
- Growth Requirements:** It grows well in various climates with **annual rainfall around 200 cm**.
- Production Distribution:** Southeast Asia produces 90% of the world's rubber, with Thailand as the top producer. India ranks as the third-largest producer, with **Kerala** as its primary production state.

This study underscores the urgent need for sustainable land-use practices to protect biodiversity, soil carbon storage, and the integrity of tropical ecosystems.

What is CARICOM?

Context: The **Caribbean Community (CARICOM)** is a regional organization aimed at fostering economic integration, cooperation, and coordinated foreign policy among Caribbean countries. Established in 1973 by the **Treaty of Chaguaramas**, it is the longest-standing integration movement among developing countries.



Key Objectives:

- Economic Integration and Cooperation:** CARICOM works to create a unified economic space, encouraging trade and investment among its members.
- Equitable Sharing of Benefits:** It ensures the benefits of integration reach all member nations fairly.
- Coordinated Foreign Policy:** Members collaborate on foreign policy to strengthen their collective influence internationally.

Membership:

CARICOM consists of **15 full members**:

- Full Members:** Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago.
- Associate Members:** Anguilla, Bermuda, British Virgin Islands, Cayman Islands, and Turks and Caicos Islands.
- Observers:** Aruba, Colombia, Dominican Republic, Mexico, Puerto Rico, and Venezuela.

Structure:

- Chairmanship:** The chair rotates every six months among heads of member states, providing shared leadership.
- Secretariat:** The **CARICOM Secretariat** is headquartered in **Georgetown, Guyana**, and led by a Secretary General who serves as the Chief Executive Officer of the Community.

Caribbean Court of Justice (CCJ):

Established in 2007, the **Caribbean Court of Justice** acts as the final appellate court for member states and adjudicates regional trade disputes.

India-CARICOM Relations:

The recent **India-CARICOM Joint Commission meeting** marked an important milestone in deepening ties, reviewing current engagements, and exploring avenues for future collaboration across various fields.

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Global Education Monitoring Report 2024

Context: The **Global Education Monitoring Report 2024** by UNESCO, released at the Global Education Meeting in Fortaleza, Brazil, highlights the importance of leadership, funding, and access in addressing global educational challenges. The report, developed in collaboration with UNESCO and hosted by Brazil as the current G20 President, evaluates progress and offers guidance for achieving inclusive, equitable, and quality education worldwide.



Key Observations:

- Role of Leadership in Education:** Effective leadership in education involves social influence to unite efforts toward shared goals. Education leaders must:
 - Define their purpose and strategize for impactful change.
 - Balance learning outcomes with broader goals of equity, quality, and inclusivity.
- Funding Deficits:** A significant gap in education funding exists, with **40% of countries spending less than 4% of their GDP on education.**
- Out-of-School Children:** Globally, **251 million children and youth remain out of school**, with only a 1% reduction in this number since 2015.
- Access to Education:** Central and Southern Asia has seen substantial progress in educational access, but countries like **Afghanistan, Bangladesh, India, and Pakistan** continue to have some of the highest out-of-school populations.

Key Recommendations:

- Leadership Development:** Principals should have the autonomy to manage schools effectively, and education officials should be empowered to lead system-wide improvements.
- Climate Change Education:** Introduce climate education earlier in curricula and integrate it across subjects beyond science to build environmental awareness.

India's Initiatives to Enhance School Leadership:

- National Education Policy (NEP) 2020:** NEP 2020 emphasizes the need for principals to engage in professional development to improve their leadership and management skills.
- National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA):** NISHTHA provides training in learning outcomes, school-based assessments, and learner-centered teaching practices to foster school leadership and effective education.

The report underscores that strong leadership, increased funding, and enhanced educational access are vital to achieving global education goals and supporting lifelong learning.

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