Current Affairs [Prelims] Lexicon - April, 2025

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Polity & Governance

1991 Water Accord

The **1991 Water Accord** is an inter-provincial agreement in Pakistan that allocates water from the Indus River system among its provinces – Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan. It was created to resolve disputes over water distribution and ensure equitable access for irrigation and drinking water. The accord specifies provincial shares and mechanisms for conflict resolution. Despite its intent, the agreement has been a source of tension, especially during droughts or reduced river flows. The accord's implementation challenges have contributed to political disputes and calls for revisions amid changing water availability and population growth.

Why in news?

Reduced river flows due to India's treaty suspension risk reviving inter-provincial water disputes in Pakistan under the 1991 Water Accord.

Aircraft Act of 1934

The **Aircraft Act of 1934** was enacted by British colonial rulers to regulate aviation in India primarily for military and administrative control, not commercial growth. It governed air traffic, licensing, and safety but was outdated by the late 20th century. The Act did not anticipate private sector participation or rapid technological advances. It lacked provisions for passenger rights and efficient air traffic management. Despite India's expanding aviation industry, the Act remained the legal backbone until 2024, causing bureaucratic delays and inefficiencies. It was finally replaced by the Bharatiya Vayuyan Adhiniyam in 2024 to modernize aviation law in India.

Why in news?

The Aircraft Act of 1934 was replaced by the Bharatiya Vayuyan Adhiniyam, 2024, marking reform in India's aviation regulatory framework after nearly a century.

Bharatiya Vayuyan Adhiniyam 2024

The **Bharatiya Vayuyan Adhiniyam 2024** is India's new aviation law that replaces the colonial-era Aircraft Act of 1934. It streamlines licensing, improves air traffic management, and enhances passenger compensation for delays and cancellations. The Act aims to support the growth of private and public airlines and position India as a global aviation leader. However, it does not address the need for specialised aviation arbitration, leaving a gap in dispute resolution. The law focuses on regulatory modernization but lacks provisions for handling international aviation disputes effectively within India's legal system.

Why in news?

The Bharatiya Vayuyan Adhiniyam 2024 was introduced to overhaul India's aviation laws but has been criticized for not reforming arbitration mechanisms for aviation disputes.

Bluecraft

Bluecraft is a research and analytics firm specializing in public policy evaluation and governance impact assessments in India. It uses data-driven methodologies to analyze

government schemes, focusing on fiscal efficiency, social equity, and technological integration. Bluecraft's recent report assessed the Direct Benefit Transfer (DBT) system's impact from 2009 to 2024, quantifying savings and improvements in welfare delivery. The firm collaborates with government bodies and think tanks to develop performance indices like the Welfare Efficiency Index. Bluecraft's insights influence policy reforms by identifying systemic bottlenecks and recommending data-backed solutions for inclusive governance.

WHY IN NEWS?

Bluecraft released a comprehensive report evaluating DBT's decade-long impact, providing data on savings, beneficiary growth, and systemic improvements in Indian welfare programs.

Business Advisory Committee

The Business Advisory Committee (BAC) is a parliamentary committee in India responsible for allocating time for various legislative business in the Lok Sabha. It comprises the Speaker and representatives from major political parties. The BAC decides the schedule for debates, discussions, and the duration of Question Hour and Zero Hour. It plays important role in managing the efficient functioning of the House. The committee meets regularly during sessions to adjust the agenda based on the urgency and importance of matters raised by members. Its decisions are influential but not binding on the Speaker.

WHY IN NEWS?

The Lok Sabha Speaker Om Birla assured the extension of Zero Hour during a BAC meeting, enabling more MPs to speak on public issues on April 3, 2025.

Chardham Mahamarg Project

The **Chardham Mahamarg Project** is an ambitious infrastructure initiative by the Government of India aimed at improving road connectivity to the four sacred Hindu pilgrimage sites of Uttarakhand – Yamunotri, Gangotri, Kedarnath, and Badrinath. It involves constructing tunnels, bridges, and highways to reduce travel time and enhance safety in the mountainous terrain. Initiated in the late 2010s, the project includes multiple tunnels like the Silkyara Tunnel. It is expected to boost tourism, local economy, and disaster resilience. The project integrates modern engineering with environmental and cultural considerations specific to the Himalayas.

WHY IN NEWS?

The Silkyara Tunnel breakthrough is a key milestone under the Chardham Mahamarg Project, improving access to pilgrimage sites and marking progress in the overall infrastructure development in Uttarakhand.

Ganatantra Mandap

The **Ganatantra Mandap** is a prominent ceremonial hall located within the Rashtrapati Bhawan complex in New Delhi. It is primarily used for official state functions, including investiture ceremonies and diplomatic gatherings. The hall is noted for its architectural blend of Indian and British colonial styles, designed by Sir Edwin Lutyens. It can

accommodate a large number of dignitaries and guests during high-profile events. The Ganatantra Mandap is equipped with advanced audio-visual systems to facilitate formal proceedings. Its name translates to "Republic Hall," symbolizing India's democratic ethos. It is less known compared to the main Rashtrapati Bhawan building but holds ceremonial importance.

WHY IN NEWS?

The Ganatantra Mandap hosted the Civil Investiture Ceremony-I on April 28, 2025, where the President of India presented prestigious Padma Awards.

Gram Manchitra

Gram Manchitra is a digital spatial planning application developed using high-resolution drone survey data. It supports the preparation of Gram Panchayat Development Plans (GPDP) by providing detailed maps and spatial analysis tools tailored for village-level governance. The application integrates geographic information system (GIS) technology to help local authorities plan land use, infrastructure, and resource management efficiently. Gram Manchitra enhances transparency and participatory planning by making spatial data accessible to Panchayats. It is a key component of the SVAMITVA Scheme, enabling data-driven decision-making and facilitating rural development through improved land management and planning.

WHY IN NEWS?

Gram Manchitra is brought into light as part of SVAMITVA's technological framework, aiding village planning and governance with drone survey-based spatial data in 2025.

Hampi World Heritage Area Management Authority (HWHAMA)

Established in 1999 after UNESCO placed Hampi on the World Heritage in Danger list, the **Hampi World Heritage Area Management Authority (HWHAMA)** oversees the protection and regulation of the Hampi site. It divides the area into a 40 sq km core zone, a 90 sq km buffer zone, and a peripheral zone, each with specific rules governing construction and commercial activity. The authority's policies led to the eviction of local residents and businesses deemed illegal encroachments, sparking debates over heritage conservation versus community livelihoods. HWHAMA also coordinates rehabilitation efforts for displaced inhabitants and implements integrated conservation plans to balance preservation with tourism.

WHY IN NEWS?

HWHAMA remains central to managing Hampi's conservation and development challenges, particularly after controversies over eviction and land use regulations within the World Heritage site.

Inter-ministerial Committee

An **inter-ministerial committee** is a government body comprising representatives from multiple ministries to coordinate policy and implementation on cross-sectoral issues. In India, such committees facilitate comprehensive planning by integrating diverse expertise and perspectives. They often include members from central ministries, state

governments, and stakeholders from industry or academia. These committees prepare reports, formulate strategies, and oversee execution of national missions. Their decisions influence policymaking by ensuring alignment across departments. The committee led by B V R Subrahmanyam is tasked with designing the framework for the new national manufacturing mission, aiming to boost the manufacturing sector comprehensively.

Why in news?

The inter-ministerial committee was formed in 2025 to design the main plan for India's new national manufacturing mission under the Make in India initiative.

Jan Bhagidari

Jan Bhagidari is a Hindi term meaning "public participation." It refers to a governance approach that actively involves citizens in decision-making, implementation, and monitoring of government programs. This concept encourages transparency, accountability, and inclusiveness in public administration. In health campaigns, Jan Bhagidari mobilizes communities, local leaders, and stakeholders to raise awareness and promote participation. It is often used in India's public health and development initiatives to ensure grassroots-level engagement and ownership. The approach helps in overcoming resistance and misinformation by involving trusted local figures and community networks.

Why in news?

Jan Bhagidari was emphasized by the Health Minister to ensure wide public awareness and participation in the 2025-26 Measles-Rubella vaccination campaign in India.

Kallapu-Sajipa Riverfront Road

The Kallapu-Sajipa riverfront road is a ₹160 crore infrastructure project along the Netravathi river in Karnataka. It aims to improve connectivity between Mangaluru and nearby areas like Harekala, Pavoor, Innoli, and Ranipura. The project is funded in phases, with ₹15 crore initially sanctioned and an additional ₹40 crore recently approved, covering 25% of the total cost. The road is designed to enhance local transportation and support regional development. It is part of broader efforts to develop riverfront infrastructure and improve urban-rural linkages in Dakshina Kannada district.

Why in news?

The government sanctioned an additional ₹40 crore for the ongoing Kallapu-Sajipa riverfront road project to improve connectivity and support regional development near Mangaluru.

Kishanganga Reservoir

The Kishanganga Reservoir is part of a hydroelectric project on the Kishanganga River, a tributary of the Jhelum River in Jammu and Kashmir. It is designed to divert water from the Kishanganga to a power plant downstream in the Jhelum basin. The project faced objections from Pakistan under the Indus Waters Treaty due to concerns over water flow reduction. The World Bank facilitated dispute resolution, and the project was allowed with operational restrictions, including reservoir flushing and filling during specific months.

The reservoir's flushing helps desilt but must be carefully timed to avoid downstream harm.

Why in news?

India may no longer follow treaty restrictions on Kishanganga reservoir flushing and filling after suspending the Indus Waters Treaty, potentially affecting water flow to Pakistan.

Land Customs Stations (LCSs)

Land Customs Stations (LCSs) are official border points where customs checks and clearance of goods occur. In this context, Indian LCSs served as transit points for Bangladeshi exports moving to ports and airports for onward shipment. LCSs play a critical role in cross-border trade, ensuring compliance with customs regulations and security protocols. They often handle documentation, inspections, and tariff collections. The use of LCSs for transshipment between Bangladesh and India was a unique arrangement facilitating smoother trade but also contributed to congestion at Indian border points and transport hubs during the agreement's tenure.

Why in news?

Indian Land Customs Stations were central to the now revoked transshipment facility, serving as transit points for Bangladeshi exports routed through India, which created logistical challenges and congestion leading to the agreement's termination.

Operation Chakra-V

Operation Chakra-V is a coordinated nationwide crackdown initiated by the Central Bureau of Investigation (CBI) targeting transnational organized cybercrime syndicates involved in Digital Arrest scams. It involved simultaneous raids at 12 locations across four state of Indias – Uttar Pradesh, Maharashtra, Rajasthan, and West Bengal. The operation utilized advanced data analytics and high-tech investigative techniques to identify and apprehend four key perpetrators. The focus was not only on arrests but also on dismantling the cybercrime infrastructure, including digital devices and financial instruments used in extortion. Operation Chakra-V represents a strategic evolution in CBI's approach to combating complex cyber threats.

Why in news?

Operation Chakra-V led to the arrest of four kingpins involved in Digital Arrest scams across multiple states, marking breakthrough in India's fight against organized cybercrime.

Outfield (Regulatory and Development) Amendment Bill

The Outfield (Regulatory and Development) Amendment Bill updates regulatory frameworks for hydrocarbon production outside designated fields, often called outfields. It streamlines approval processes and encourages private sector participation in marginal and small fields. The bill encourages better resource utilization and incentivizes investment by reducing regulatory hurdles. It includes provisions for transparent stakeholder engagement and public consultation. The amendments aim to increase production efficiency and attract foreign technical expertise. The bill's implementation

rules were recently released publicly to ensure clarity and encourage feedback from industry participants.

Why in news?

The Petroleum Minister announced the release of rules under the Outfield (Regulatory and Development) Amendment Bill, seeking stakeholder input to improve regulatory implementation.

Paris Principles

The Paris Principles are a set of international standards adopted by the UN General Assembly in 1993 to guide the establishment and functioning of National Human Rights Institutions. They emphasize the need for independence from government, pluralism in composition, a broad mandate based on universal human rights standards, and adequate resources to operate effectively. Compliance with these principles allows NHRIs to receive 'A' accreditation from GANHRI, granting them participatory rights in UN human rights bodies. The principles also require transparent appointment processes and mechanisms to ensure accountability and impartial investigations into human rights violations.

Why in news?

India's NHRC is at risk of losing its 'A' status accreditation from GANHRI due to failure to fully comply with the Paris Principles, affecting its international legitimacy and rights at the UN.

Supreme Court Ruling on Land Transfer

The Supreme Court of India ruled that **no land can be ceded to a foreign country without the approval of both Lok Sabha and Rajya Sabha**, India's two parliamentary houses. This ruling stems from constitutional provisions requiring parliamentary consent for territorial changes. The ruling has been cited in disputes like the Katchatheevu transfer, where critics argue the 1974 agreement lacked proper parliamentary approval. The judgment reinforces the legal framework governing India's territorial sovereignty and mandates parliamentary oversight in international land agreements. The case remains pending, with political parties invoking the ruling to challenge the legitimacy of the island's transfer.

Why in news?

The Supreme Court ruling was cited by the Tamil Nadu opposition to question the legality of Katchatheevu's cession to Sri Lanka and to support ongoing legal challenges.

Three-language Formula

The **three-language formula** was introduced by the Government of India in the 1960s to promote multilingualism and national integration. It mandates that students learn three languages – typically the regional language, Hindi, and English. The National Education Policy (NEP) 2020 continues to recommend this formula from Class VII onwards, allowing one language to be chosen from a list of 22 scheduled languages. Tamil Nadu has historically resisted this, favoring a two-language policy (Tamil and English), viewing the imposition of Hindi as cultural domination. The formula remains a flashpoint in language

politics and education policy debates.

Why in news?

Tamil Nadu opposes the NEP's three-language formula, accusing the central government of imposing Hindi, which has escalated tensions over education and language policy.

Vokkaliga and Lingayat Communities

The **Vokkaliga** and **Lingayat** communities are prominent socio-political groups in Karnataka, each with influence on state politics and policies. Vokkaligas are primarily an agrarian community concentrated in southern Karnataka, while Lingayats follow a distinct Shaivite religious tradition and have a strong presence statewide. Both communities have historically sought political representation and reservation benefits. Their pressure has delayed the release and discussion of the Karnataka caste census report, due to concerns over caste-based data affecting their political and social status.

Why in news?

Discussions on the Karnataka caste census report have been stalled due to pressure from Vokkaliga and Lingayat communities, influencing the timing of the report's presentation to the state cabinet.

Yimkhiung Tribal Council

The **Yimkhiung Tribal Council (YTC)** is the apex governing body of the Yimkhiung Naga community in Nagaland. It functions as a traditional institution overseeing social, cultural, and political affairs of the Yimkhiung tribe. The council plays important role in preserving customary laws and protecting the community's rights. It often engages in advocacy related to land, cultural identity, and cross-border issues, especially given the tribe's presence on both sides of the Indo-Myanmar border. The YTC also mediates disputes and coordinates community activities, maintaining the tribe's unity across geographical divisions.

Why in news?

The Yimkhiung Tribal Council organized a protest in Pungro Town opposing the Government of India's border fencing and the abolition of the Free Movement Regime affecting the Yimkhiung community.

Zero Hour

Zero Hour is an informal parliamentary device used in the Lok Sabha of India to raise urgent matters without prior notice. It begins immediately after the Question Hour and has no fixed time limit. The term originated in the 1960s and allows members to bring up issues of public importance. Unlike Question Hour, Zero Hour is not mentioned in the parliamentary rules but is widely practiced. It is considered an important platform for MPs to show immediate concerns. The duration and number of speakers during Zero Hour can vary depending on the Speaker's discretion.

Why in news?

The Lok Sabha's Zero Hour on April 3, 2025, lasted over five hours, with 202 MPs speaking, setting a new record for participation.

Economy & Banking/Finance

Alfalfa Seed Import Duty in India

India imposes import duties on alfalfa seeds, which makes imported seeds more expensive than domestic varieties. Domestic alfalfa seed prices range from ₹500 to ₹800 per kilogram, while imported seeds cost more due to tariffs. Import duties are used to protect local farmers and seed producers. The duty structure can influence the availability and cost of quality seeds for fodder production. India's agriculture policies often balance between protecting domestic markets and meeting demand through imports. Changes in import duty rates can affect trade relations, especially with countries like the US that export alfalfa seed.

Why in news?

The US is pressing India to reduce import duties on alfalfa seed to facilitate trade, while India weighs the impact of GM crop imports and domestic seed market protection.

Antimony

Antimony (Sb) is a brittle, silvery-white metalloid element primarily extracted from the mineral stibnite. It is used to harden lead in batteries and alloys, enhancing strength and durability. Antimony compounds serve as flame retardants in textiles, plastics, and electronics. It has applications in semiconductors, military equipment like armor-piercing ammunition, night vision goggles, and infrared sensors. Major producers include China, Russia, and Bolivia. Antimony's demand is driven by industrial and defense sectors. The metal's toxicity requires careful handling during mining and processing. It is relatively rare and classified as a critical raw material by several countries due to its strategic uses.

Why in news?

Antimony is in the news following Pakistan's discovery of a massive antimony reserve in Balochistan, which could impact the country's economy and industrial capabilities.

Atmanirbhar Bharat Abhiyan

The **Atmanirbhar Bharat Abhiyan** (Self-Reliant India Campaign) was launched in 2020 to make India economically self-sufficient. It includes reforms in manufacturing, agriculture, infrastructure, and technology sectors. The campaign promotes local production, reduces import dependence, and enhances supply chain resilience. It offers policy support, financial packages, and regulatory changes to encourage domestic industries. The program emphasizes innovation, skill development, and MSME strengthening. It complements Make in India by focusing on self-reliance and sustainability. The campaign has led to increased local manufacturing capabilities in sectors like electronics, pharmaceuticals, and defense production.

Why in news?

Atmanirbhar Bharat Abhiyan is brought into light as a complementary initiative supporting the Make in India mission and new manufacturing policies announced in 2025.

Bharatiya Reserve Bank Note Mudran (BRBNM)

The **Bharatiya Reserve Bank Note Mudran (BRBNM)** is a wholly owned subsidiary of the

Reserve Bank of India, responsible for printing Indian currency notes. It operates two presses located in Mysore, Karnataka, and Salboni, West Bengal. Established in 1995, BRBNM uses advanced security features including intaglio printing and optically variable ink to prevent counterfeiting. The presses produce billions of banknotes annually, catering to the demand of India's growing economy. BRBNM also prints notes for some foreign central banks under bilateral agreements. It functions under strict confidentiality and security protocols mandated by the RBI.

Why in news?

BRBNM was mentioned as the specialized division of RBI responsible for printing Indian currency notes amid the RBI Deputy Governor appointment news.

BIO-E3 Policy

The BIO-E3 Policy is a recent Government of India initiative to promote biotechnology's role in boosting the economy, employment, and environmental sustainability. It supports scaling up biotech startups, which have grown from 50 to over 10,000 in a decade. The policy encourages innovation in health, agriculture, and environmental sectors, aiming to expand the biotech industry to $300 billion by 2030. It integrates economic growth with ecological concerns, promoting sustainable biotechnological solutions. The policy also emphasizes public-private partnerships, research infrastructure development, and skill enhancement programs to build a robust bioeconomy aligned with India's national priorities.

Why in news?

The Minister credited the BIO-E3 Policy for driving the 16-fold growth of India's biotechnology sector and its emerging role in nation-building during his visit to BRIC-inStem.

BSE 150th Anniversary

The Bombay Stock Exchange (BSE), established in 1875, is Asia's oldest stock exchange. It was initially called "The Native Share & Stock Brokers' Association." The BSE introduced electronic trading in 1995, revolutionizing Indian financial markets. It operates the SENSEX, a benchmark index of 30 well-established companies. The BSE has over 5,000 listed companies, making it one of the world's largest exchanges by number of listings. It played a key role in India's economic liberalization in the 1990s. The 150th anniversary in 2025 marked a century and a half of continuous operation, reflecting India's financial evolution.

Why in news?

The 150th anniversary celebration of the BSE was the occasion for Finance Minister Nirmala Sitharaman's speech addressing global economic challenges and India's economic resilience.

Duty Drawback Scheme

The **Duty Drawback Scheme** is an Government of India mechanism that refunds import duties paid on raw materials used in the manufacture of export goods. It is administered

by the Finance Ministry's Revenue Department. The scheme aims to make Indian exports more competitive by reducing the cost burden of taxes on exporters. Rates are product-specific and periodically revised. For example, the duty drawback rate for gold jewellery increased from ~335.5 to ~405.4 per gram of net gold content in 2025. The scheme covers both direct and indirect exports and is a key component of India's export promotion strategy.

Why in news?

The government raised duty drawback rates for gold and silver jewellery to support exporters amid global trade uncertainties and tariff hikes by the United States.

Equated Monthly Instalments (EMIs)

Equated Monthly Instalments (EMIs) are fixed payments made by a borrower to a lender at regular intervals, typically monthly, to repay a loan over a specified tenure. EMIs include both principal and interest components, calculated using amortization formulas. The EMI amount remains constant throughout the loan tenure, providing predictable repayment schedules. Changes in interest rates directly affect EMI values; a reduction in interest rates lowers EMIs, easing the borrower's monthly financial burden. EMIs are widely used for housing, vehicle, and personal loans in India and other countries with formal lending systems.

Why in news?

Indian Bank aims to reduce borrowers' EMIs by lowering home and vehicle loan interest rates following RBI's repo rate cut.

Equity Commitments in FDI

Equity commitments represent the portion of outward FDI where Indian investors acquire ownership stakes in foreign companies or projects. This involves direct purchase of shares or capital infusion, reflecting long-term investment interests. Recently, equity commitments stood at **$2.49 billion**, down from $2.55 billion a year prior and $3.11 billion in February 2025. Equity is the largest component of outward FDI quarterly totals, with $6.78 billion reported in the quarter ending March 2025. Changes in equity commitments indicate shifts in investor confidence and strategic priorities abroad.

Why in news?

Equity commitments in India's outward FDI decreased marginally in March 2025, influencing the overall investment pattern reported by RBI.

Equity-linked Instruments

Equity-linked instruments are financial securities that combine features of equity and debt, such as convertible debentures or warrants. They provide funding to startups by offering an option to convert debt into equity shares at a later date, aligning investor and company interests. This funding mechanism reduces immediate cash outflow for startups and incentivizes long-term growth. In government grant schemes like Project EVolutionS, equity-linked instruments form part of the ₹50 lakh grant, with ₹30 lakh offered in this form to support electric vehicle startups in scaling up production and innovation while

maintaining financial flexibility.

Why in news?

Equity-linked instruments are part of the financial support structure announced under Project EVolutionS to aid startups in the electric vehicle sector.

Ethanol Supply Year

The ethanol supply year in India runs from November 1 to October 31. This period is used for tracking ethanol production, blending, and supply for fuel blending targets. The supply year 2023-24 saw ethanol blending at 14.6%, up from 12.06% in 2022-23. The government accelerated the 20% blending target, originally set for 2030, to 2024-25. Ethanol blending statistics, foreign exchange savings, and crude oil substitution are reported on a supply year basis. This system aligns ethanol production with the agricultural and sugarcane harvesting cycles.

Why in news?

India's ethanol blending achievements and targets are reported based on the ethanol supply year, with 2024-25 expected to reach 20% blending ahead of schedule.

Financial Intelligence Unit-India (FIU-IND)

The **Financial Intelligence Unit-India (FIU-IND)** was established in 2004 as the central national agency responsible for receiving, processing, analyzing, and disseminating information related to suspicious financial transactions. It operates under the Ministry of Finance and plays a key role in combating money laundering and terrorism financing. FIU-IND collects data from banks, financial institutions, and intermediaries and shares intelligence with law enforcement agencies. It also coordinates with international financial intelligence units. FIU-IND uses advanced data analytics tools and regularly updates its protocols to align with global anti-money laundering standards set by the Financial Action Task Force (FATF).

Why in news?

FIU-IND signed a Memorandum of About (MoU) with the Reserve Bank of India to improve cooperation and information sharing for better implementation of anti-money laundering regulations.

Financial Literacy Campaigns in India

Financial literacy campaigns in India are government and private sector initiatives aimed at educating citizens about banking, investments, fraud prevention, and financial planning. These campaigns utilize digital media, workshops, and partnerships with banks to reach rural and urban populations. The Ministry of Corporate Affairs supports investor education through IEPFA, which collaborates with banks like Kotak Mahindra. Campaigns focus on responsible investing, understanding financial products, and recognizing scams. They have increased awareness but still face challenges in reaching underbanked communities. These efforts are critical in India's growing economy to empower investors and reduce financial fraud.

Why in news?

The recent collaboration between IEPFA and Kotak Mahindra Bank is part of ongoing

efforts to scale up financial literacy and investor protection programs nationwide in 2025.

Foot and Mouth Disease

Foot and Mouth Disease (FMD) is a highly contagious viral disease affecting cloven-hoofed animals like cattle, pigs, and sheep. It causes fever, blisters, and lameness, leading to severe economic losses in agriculture. FMD is endemic in many countries, including India, and strict controls are applied internationally to prevent its spread. Export consignments from countries with FMD outbreaks face mandatory inspections and often rejection due to contamination risks. The virus can survive in animal products like meat and dairy, prompting stringent import restrictions. Vaccination and biosecurity measures are primary tools for controlling FMD outbreaks.

Why in news?

Indian agricultural exports face non-tariff barriers due to concerns over FMD contamination, affecting trade with countries imposing strict sanitary regulations.

Foreign Exchange Management Act (FEMA), 1999

The **Foreign Exchange Management Act (FEMA), 1999** is an Indian law regulating foreign exchange transactions to facilitate external trade and payments and promote orderly development of the foreign exchange market. FEMA replaced the Foreign Exchange Regulation Act (FERA), 1973. It classifies transactions into current account and capital account, with the current account being largely free and capital account regulated. FEMA is administered by the Reserve Bank of India (RBI) and the Directorate of Enforcement. The Act emphasizes facilitating external trade while ensuring compliance with foreign exchange controls. It allows the RBI to issue directions to authorized dealers and regulate foreign exchange dealings.

Why in news?

RBI released revised draft regulations under FEMA to streamline export-import transactions and enhance ease of doing business, incorporating previous instructions into a single document and seeking public feedback by April 30, 2025.

Gallium Export Controls

Gallium is a rare metal used primarily in semiconductors, LEDs, and military applications. In late 2024, China tightened export controls on gallium as part of its strategic response to US tariffs. This move restricts the global supply chain of high-tech components since China is a major supplier. Gallium's importance lies in its use for integrated circuits and solar panels. Export controls also apply to germanium and antimony, similarly critical for technology and defense. These restrictions aim to leverage China's dominance in rare materials to counterbalance US trade policies and protect its technological edge.

Why in news?

China recently tightened export controls on gallium to counter US tariffs and protect its tech and military supply chains amid escalating trade tensions.

Gig Economy in India

The **gig economy** in India comprises temporary, flexible jobs often facilitated by digital

platforms. As of 2021-22, approximately 7.1 million Indians were part of this economy, expected to rise to 230 million by 2030. The sector includes ride-sharing, delivery services, freelance work, and other short-term engagements. It contributes to employment but less so to GDP compared to traditional manufacturing or services. The gig economy is characterized by informal contracts, lack of social security, and income volatility. Its rapid growth reflects changes in labor markets and technology adoption, influencing India's overall employment landscape.

Why in news?

Sitharaman contrasted the gig economy's rapid growth with manufacturing's slower expansion during her 2025 address, denoting employment trends in India's evolving economy.

Gini Coefficient

The Gini coefficient is a statistical measure of distribution often used to gauge economic inequality within a population. It ranges from 0, indicating perfect equality, to 1, indicating maximum inequality. Developed by Italian statistician Corrado Gini in 1912, it is widely applied in economics, sociology, and archaeology to compare wealth or income disparities. The coefficient can be calculated from income, wealth, or other resources and is sensitive to changes in different parts of the distribution. Its use in archaeology, particularly through house size differentials, allows quantification of economic inequality in ancient societies.

Why in news?

The Gini coefficient was used in the recent archaeological study to quantify and compare economic inequality across nearly 3,000 ancient settlements worldwide.

Global Capability Centres (GCCs)

Global Capability Centres are offshore units set up by multinational corporations in India to handle specialized business functions like IT, analytics, finance, and R&D. India hosts over 1,500 GCCs, with 250 added in the last three to five years. These centers leverage India's skilled workforce, particularly in STEM fields, and contribute to the country's export services revenue. GCCs focus on innovation, process optimization, and digital transformation for parent companies. They are distinct from traditional outsourcing centers due to their strategic, higher-value functions. GCCs also play a role in India's positioning as a global business hub.

Why in news?

The number of GCCs in India has surged, reflecting increased foreign investment and India's growing importance in global digital commerce and technology services.

Global Financial Stability Report

The **Global Financial Stability Report (GFSR)** is a semiannual publication by the International Monetary Fund (IMF) that assesses global financial markets and emerging risks. It provides analysis on vulnerabilities in financial systems, including banking, capital markets, and sovereign debt. The report marks trends such as geopolitical risks, market

volatility, and systemic threats. It uses data from multiple economies and financial institutions to forecast stability and guide policy recommendations. The GFSR influences global economic policy and investor strategies. It has become a key reference for understanding how political and economic factors impact financial stability worldwide.

Why in news?

The IMF's latest GFSR marks unprecedented geopolitical risks disrupting markets, with wars and sanctions causing asset price drops and higher borrowing costs, especially in emerging economies.

Hindu Undivided Family (HUF)

A Hindu Undivided Family (HUF) is a unique legal and tax entity recognized under Indian law, comprising all persons lineally descended from a common ancestor, including their wives and unmarried daughters. It is governed by Hindu law and can own property, run businesses, and file tax returns as a separate entity. HUFs benefit from specific tax exemptions and deductions under Indian income tax laws. The concept dates back centuries and is primarily used to maintain family assets collectively. HUFs are distinct from partnerships and corporations, and their income is taxed separately from individual members' income.

Why in news?

HUFs are mentioned as part of the non-corporate tax category, which grew 17% to ~11.8 trillion in India's provisional direct tax collections for FY25.

IMF World Economic Outlook (April 2025)

The International Monetary Fund's April 2025 World Economic Outlook (WEO) projects India's GDP growth at 6.2% in 2025 and 6.3% in 2026, maintaining its position as the fastest-growing major economy. The report marks global economic challenges such as rising tariffs, policy uncertainty, and volatile markets, which have led to downward revisions in growth forecasts for China (4.0%) and the US (1.8%). Despite global moderation, India's growth is supported by strong rural consumption and robust macroeconomic fundamentals. The WEO is published biannually and guides economic policy discussions among IMF member countries.

Why in news?

The April 2025 WEO report reaffirmed India's leading growth trajectory amid global economic uncertainties, underscoring its role as a key driver of global economic activity.

Immediate Payment Service (IMPS)

The **Immediate Payment Service (IMPS)** is an instant interbank electronic fund transfer service in India, launched in 2010. It enables 24/7 real-time money transfers using mobile phones, internet banking, and ATMs. IMPS transactions are faster than traditional NEFT transfers and provide immediate confirmation of payment. IMPS supports transfer through mobile numbers, account numbers, and MMID codes. It was the first interbank electronic funds transfer system in India to operate round the clock. Despite UPI's rise, IMPS remains important backbone for many banking transactions and continues to

handle transaction volumes and values.

Why in news?

Recently, IMPS monthly transaction volumes fell by 20% year-on-year, although transaction values increased by 5%, denoting shifts in digital payment preferences.

Index of Industrial Production (IIP)

The **Index of Industrial Production (IIP)** measures the short-term changes in the volume of production of a basket of industrial products during a given period with respect to a base period. It covers three broad sectors – mining, manufacturing, and electricity. The base year is periodically revised to reflect structural changes in the economy, with the latest base year being 2011-12 in India. IIP is released monthly by the Ministry of Statistics and Programme Implementation (MoSPI). It is a key indicator of industrial activity and economic health, influencing policy decisions and market expectations.

Why in news?

The IIP growth rate slowed to 2.9% in March 2025, the lowest in six months, impacted by declining growth in mining, manufacturing, and electricity sectors, as per MoSPI data.

India-U.S. Trade Composition

India's exports to the U.S. in 2024-25 totaled **$86.51 billion**, with major items including drug formulations and biologicals ($8.1 billion), telecom instruments ($6.5 billion), precious stones ($5.3 billion), and petroleum products ($4.1 billion). Imports from the U.S. reached $45.33 billion, including crude oil ($4.5 billion), coal and coke ($3.4 billion), aircraft and spacecraft parts ($1.3 billion), and electric machinery ($1.4 billion). The bilateral trade surplus for India was $41.18 billion, up from $35.32 billion the previous year. Both countries aim to increase trade to $500 billion by 2030 through ongoing trade agreement negotiations.

Why in news?

India's trade surplus with the U.S. expanded to $41.18 billion in 2024-25 amid ongoing negotiations to boost bilateral trade to $500 billion by 2030.

India-UAE Trade Relations

India and the UAE have maintained strong trade relations, with the UAE being India's third largest trading partner in 2024-25, accounting for $100.5 billion in bilateral trade. Historically, the UAE was India's largest trading partner before China took the lead. The UAE is source of crude oil imports and a major market for Indian exports, including textiles and gems. The trade relationship is supported by a large Indian diaspora in the UAE, facilitating business and investment ties. The UAE also serves as a strategic re-export hub for Indian goods to other Middle Eastern and African markets.

Why in news?

The UAE retained its position as India's third largest trading partner in 2024-25, with bilateral trade valued at $100.5 billion, reflecting ongoing strong economic ties.

India-US Bilateral Trade Agreement (BTA)

The India-US Bilateral Trade Agreement (BTA) is a proposed framework aimed at reducing trade barriers and addressing bilateral trade imbalances. Negotiations began in early

2025, focusing on tariff cuts, especially in agricultural and manufactured goods. The BTA seeks to create a mutually beneficial trade environment, allowing carve-outs and exemptions for sensitive sectors. It is designed to complement existing World Trade Organization rules while allowing flexibility in tariff adjustments. The agreement is expected to be concluded in tranches, with the first tranche targeted by Fall 2025. It is a key mechanism for India to mitigate potential US reciprocal tariffs.

Why in news?

India and the US are negotiating the BTA to manage the impact of potential US reciprocal tariffs and to expedite tariff reductions on selected Indian exports.

India-US Trade Surplus

India's trade surplus with the US occurs when India's exports to the US exceed its imports from there. Key export items include pharmaceuticals, textiles, IT services, and engineering goods. The surplus has grown due to India's competitive manufacturing and service sectors. The US remains one of India's largest trading partners. Trade surpluses can influence bilateral trade negotiations and policy decisions. Despite the surplus, both countries face trade concerns such as market access and tariff barriers. The surplus supports India's economic growth and foreign exchange reserves.

Why in news?

The article discusses India's trade surplus with the US in the context of ongoing trade agreements and the government's efforts to regulate trade documentation to sustain mutually beneficial economic relations.

Indian Renewable Energy Development Agency Limited (IREDA)

IREDA is a government-owned non-banking financial institution established in 1987 to promote renewable energy and energy efficiency projects in India. It provides financial assistance through loans and credit facilities to renewable energy ventures including solar, wind, biomass, and small hydro projects. IREDA operates under the administrative control of the Ministry of New and Renewable Energy (MNRE). It supports India's clean energy goals by facilitating affordable financing. IREDA's loan book grew to ₹76,250 crore by March 2025, reflecting increased renewable energy investments. It also emphasizes corporate governance and transparency in its operations.

Why in news?

IREDA reported growth in loan sanctions, disbursements, and outstanding loans for FY25, reflecting strong renewable energy financing.

Indo-Pacific Economic Framework (IPEF)

The **Indo-Pacific Economic Framework (IPEF)** was launched in May 2022 by the US and 13 partner countries, including India, Australia, Japan, and South Korea. It aims to enhance economic cooperation in trade, supply chains, clean energy, and anti-corruption measures. IPEF focuses on harmonizing food safety standards and reducing agricultural trade barriers among member countries. It does not establish a traditional free trade agreement but emphasizes regulatory alignment, digital trade, and infrastructure

investment. India's participation in IPEF is for its agricultural export potential, but the exact impact on India-US bilateral agri-trade remains uncertain.

Why in news?

IPEF is relevant as it influences agricultural trade policies between India and the US, potentially affecting tariffs, standards, and competitive dynamics in bilateral agri-exports.

ISAR

The **International Standards of Accounting and Reporting (ISAR)** is a United Nations Intergovernmental Working Group under UNCTAD, established to improve global accounting and corporate disclosure standards. It promotes transparency, accountability, and uniformity in financial reporting across nations. ISAR develops guidelines and best practices that help countries strengthen their financial systems and attract investment. It also supports sustainable development by integrating environmental, social, and governance (ESG) factors into accounting frameworks. Membership includes governments, international organizations, and experts, who collaborate to harmonize accounting practices worldwide. ISAR's work influences global financial stability and corporate responsibility.

Why in news?

India secured an uncontested position in ISAR for the 2025–2027 period, enabling it to influence global accounting and financial reporting standards.

Isolated Network Operators

Isolated Network Operators manage natural gas pipelines that are not connected to the main national gas grid, often serving remote or less accessible regions. PNGRB's tariff reforms propose **incentives for these operators** to encourage infrastructure development in isolated areas. These incentives include tariff benefits and better allocation of volume-related gains, aimed at increasing gas availability and consumption where pipeline connectivity is limited. Supporting isolated networks is crucial for expanding Compressed Natural Gas (CNG) and Domestic Piped Natural Gas (D-PNG) access in underserved regions.

Why in news?

PNGRB's recent tariff reform proposals include incentives for isolated network operators to promote gas infrastructure growth and consumption in remote and underserved areas.

Japan International Cooperation Agency (JICA) Loans

The **Japan International Cooperation Agency (JICA)** provides development assistance through loans and grants, often with low-interest rates and long repayment periods. For the Mumbai-Ahmedabad bullet train, JICA is funding about 80% of the project cost through a yen loan at an interest rate of 0.1%, repayable over 50 years. This financial aid supports infrastructure projects globally, emphasizing technology transfer and capacity building. JICA loans typically include technical cooperation, enabling recipient countries to adopt Japanese technology and standards. The agency has been instrumental in Japan's international diplomacy and economic cooperation since its establishment in 1974.

Why in news?

JICA is financing the Mumbai-Ahmedabad bullet train project with a low-interest yen loan, covering most costs and facilitating technology transfer from Japan to India.

Labour Force Participation Rate (LFPR)

The **Labour Force Participation Rate (LFPR)** measures the proportion of the working-age population (usually aged 15 and above) engaged in or actively seeking employment. In India, the LFPR for women rose from **49.8% in 2017-18** to **60.1% in 2023-24**, indicating increased female engagement in economic activities. LFPR is categorized into 'usual status' and 'current weekly status' based on employment duration. It reflects socio-economic factors, education, and cultural norms. Tracking LFPR helps assess economic participation disparities between genders and regions. It is a critical indicator for policy formulation targeting employment generation and gender equality in the workforce.

Why in news?

The 2024 edition of Women and Men in India reports rise in women's LFPR, denoting progress in female economic participation across the country.

Lakshadweep Economy

Lakshadweep is a group of 36 small islands in the Arabian Sea, known for its unique economy based primarily on fishing, coconut cultivation, and limited tourism. It has a small population under 70,000 and limited industrial activity. The region's GST collections have shown notable growth, reflecting increased economic activity despite geographic isolation. The administration is directly under the Indian central government, and economic development efforts focus on sustainable practices due to fragile ecosystems. Lakshadweep's connectivity challenges have historically limited trade, but improved digital infrastructure and government schemes have enhanced compliance and tax collection in recent years.

Why in news?

Lakshadweep was mentioned as one of the states showing widespread GST collection growth in March 2025, indicating balanced economic expansion across India.

National Monetisation Pipeline (NMP)

The **National Monetisation Pipeline (NMP)** is a government initiative launched in 2021 to unlock value in public infrastructure assets by transferring operating rights to private entities. It targets monetisation of assets worth ₹10 trillion by 2030 across sectors including roads, railways, power, and airports. The NMP aims to boost infrastructure funding without increasing public debt. Ministries and departments identify assets for monetisation through models like TOT, InvITs, and securitisation. The pipeline encourages private sector participation and aims to improve asset utilisation and operational efficiency.

Why in news?

NHAI is responsible for 35% of the ₹10 trillion NMP target and raised proceeds in FY25 through various monetisation modes.

New Development Bank (NDB)

The **New Development Bank (NDB)**, also known as the BRICS Bank, was established in 2014 by Brazil, Russia, China, and South Africa to finance infrastructure and sustainable development projects in emerging markets. It focuses on mobilizing resources for projects that promote economic growth and environmental sustainability. The bank supports collaborative projects among member countries and beyond, emphasizing clean energy, water management, and transportation. NDB operates through thematic-level collaborations and capacity-building initiatives such as seminars and workshops, aiming to enhance institutional capabilities and knowledge sharing among developing nations.

Why in news?

NDB signed an MoU with NaBFID to jointly finance infrastructure projects and promote sustainable development in emerging markets, especially in clean energy and social sectors.

New Exploration Licensing Policy (NELP)

NELP was India's hydrocarbon exploration policy from 1999 to 2016, awarding blocks to companies based on maximum exploration commitments. It attracted over **$36 billion** investment and led to 177 oil and gas discoveries. The policy allowed contractors to recover costs from production before sharing profits with the government under Production Sharing Contracts (PSC). NELP rounds awarded **254 blocks**, with **67 oil** and **110 gas discoveries**. Challenges included delays in environmental clearances and disputes over cost recovery. NELP was replaced by the Hydrocarbon Exploration and Licensing Policy (HELP) in 2016 to improve ease of doing business.

Why in news?

NELP is discussed as a foundational policy in India's upstream oil and gas sector, with recent reports analyzing its impact and transition to newer policies like HELP and OALP.

OPEC+ Supply Hike

OPEC+ is an alliance of the Organization of the Petroleum Exporting Countries (OPEC) and other major oil producers, including Russia. The group coordinates oil production policies to influence global supply and prices. Recently, OPEC+ decided to accelerate an increase in oil supply for May, aiming to balance market conditions amid slower demand growth. This supply hike affects global oil prices by increasing crude availability and has implications for competing producers like U.S. shale. The decision reflects OPEC+'s strategic response to economic uncertainties and evolving energy consumption patterns worldwide.

Why in news?

OPEC+'s accelerated supply increase in May 2025 contributed to a 13% drop in global oil prices and influenced forecasts on oil demand and supply growth.

Policy Repo Rate

The **policy repo rate** is the interest rate at which the Reserve Bank of India (RBI) lends money to commercial banks. It is a key monetary policy tool used to control inflation and liquidity in the economy. Changes in the repo rate influence lending rates across the

banking system, affecting borrowing costs for consumers and businesses. The repo rate is reviewed periodically by the RBI's Monetary Policy Committee. A reduction in the repo rate typically encourages borrowing and investment by lowering interest costs. The repo rate is distinct from the reverse repo rate, which is the rate banks earn on deposits with the RBI.

Why in news?

RBI reduced the policy repo rate by 25 basis points to 6 percent in October 2025, prompting Indian Bank to lower its home and vehicle loan interest rates.

Priority Sector Lending (PSL)

Priority Sector Lending (PSL) is a mandate by the Reserve Bank of India requiring banks to allocate at least **40% of their total loans** to specific sectors like agriculture, micro, small and medium enterprises (MSMEs), export credit, education, and housing. These sectors are considered vital for inclusive growth and economic development. PSL aims to ensure affordable credit access to underserved and vulnerable segments. Banks failing to meet PSL targets must purchase shortfall amounts in the form of PSL certificates from other banks. The scheme has evolved since 1974 and plays important role in financial inclusion in India.

Why in news?

The RBI has expanded co-lending arrangements beyond PSL loans, allowing banks and NBFCs to collaborate in financing non-PSL segments, boosting credit flow to smaller businesses and under-banked areas.

Prompt Corrective Action (PCA) Framework

The Prompt Corrective Action framework is a regulatory tool used by RBI to monitor and take pre-emptive measures against banks showing signs of financial stress. It mandates restrictions on dividend payments, capital raising, and business expansion based on parameters like capital adequacy, asset quality, leverage (for commercial banks), and profitability (for UCBs). PCA aims to restore bank health through timely intervention and remedial actions. It allows RBI to impose corrective actions without waiting for severe deterioration, and it can be supplemented by other RBI measures as deemed necessary. PCA was earlier applied mainly to scheduled commercial banks before extending to UCBs.

Why in news?

From April 2025, RBI will apply the PCA framework to around 500 weak UCBs to ensure earlier and stricter corrective measures compared to the previous SAF system.

Qualified Stock Brokers (QSBs)

Qualified Stock Brokers (QSBs) are a specific category of brokers in the Indian equity market who meet criteria such as a minimum number of active clients and operational capabilities. They are mandated to implement advanced trading infrastructure like the optional T+0 settlement cycle. QSBs play important role in market innovation and liquidity provision. The classification ensures that only brokers with adequate resources and client base manage faster settlement processes, reducing risks. QSBs are subject to additional

regulatory scrutiny and must maintain robust systems to support real-time trade settlements and investor protection.

Why in news?

Sebi extended the deadline for QSBs to implement the optional T+0 settlement cycle from May 1 to November 1, 2025, to ensure smoother transition and operational readiness.

Reserve Bank of India Monetary Policy Committee (MPC)

The **Monetary Policy Committee (MPC)** of the Reserve Bank of India was constituted in 2016 to decide the benchmark interest rates to control inflation and stabilize the economy. It consists of six members – three from the RBI, including the Governor as chair, and three external members appointed by the government. The MPC meets at least four times a year and follows a transparent voting system. Decisions are made based on inflation targeting, with a current target of 4% ± 2%. The committee's meetings and minutes are publicly disclosed to ensure accountability and transparency in monetary policy.

Why in news?

The MPC meeting was scheduled for April 7-9, 2025, shortly before the appointment of Dr Poonam Gupta as RBI Deputy Governor and MPC member.

Reserve Bank of India Repo Rate

The **repo rate** is the interest rate at which the Reserve Bank of India (RBI) lends short-term funds to commercial banks. It is a key monetary policy tool used to control inflation and liquidity in the economy. Changes in the repo rate influence borrowing costs and overall economic activity. The RBI typically reviews the repo rate every two months during its Monetary Policy Committee meetings. A 25 basis points cut means the rate was reduced by 0.25%. The repo rate directly affects lending rates like the EBLR, influencing loan interest rates for consumers and businesses.

Why in news?

The RBI reduced the repo rate by 25 basis points to 6%, prompting several banks, including Indian Overseas Bank, to lower their lending rates in April 2025.

SAMARTH Centres

The **SAMARTH Centres** are specialized hubs established under the Scheme for Enhancement of Competitiveness in the Indian Capital Goods Sector. They focus on smart manufacturing and Industry 4.0 adoption for Micro, Small and Medium Enterprises (MSMEs). These centres operate on a pan-India demand-driven model, providing technology development, digital maturity assessments, training, and demonstrations. Key locations include Bengaluru, Pune, Ahmedabad, and Anand. They facilitate collaboration between start-ups and MSMEs, accelerating digital transformation in manufacturing. The centres develop tailored solutions, such as advanced smart machines and Industry 4.0 implementation roadmaps, to improve competitiveness and productivity in the capital goods sector.

Why in news?

Four SAMARTH Centres have been set up across India, with activities in Gujarat and

Karnataka, to boost smart manufacturing and Industry 4.0 adoption among MSMEs under a government scheme.

Sattur Samba Chilli

Sattur Samba Chilli, also known as **Sannam or Slender**, is a chilli variety cultivated in Sattur, Rajapalayam, and Virudhunagar areas. It has been documented in the **Gazetteer of India (1972)** for its significance in the region. This chilli is traditionally exported to **Ceylon (Sri Lanka)** via the port of Thoothukudi. It is valued for its slender shape and moderate pungency. The cultivation employs traditional methods that preserve its flavor. Sattur Samba is an important part of local agriculture and trade, linking Tamil Nadu's spice economy with international markets.

Why in news?

Sattur Samba Chilli's historical and economic significance is noted in the context of the Virudhunagar Samba Chilli GI tag announcement, linking regional chilli varieties and trade heritage.

South-South Trade

South-South trade refers to economic exchange between developing countries, bypassing traditional North-South trade routes. It has grown since the early 2000s, now accounting for about **one-third of global trade**. This trade involves commodities, manufactured goods, and increasingly services and technology. Key regions involved include Asia, Africa, and Latin America. South-South trade promotes regional integration, economic diversification, and resilience against global market shocks. It is often facilitated by regional trade agreements like ASEAN, Mercosur, and the African Continental Free Trade Area (AfCFTA). Despite growth, infrastructure and regulatory challenges still limit its potential in many developing regions.

Why in news?

The 2025 UNCTAD report brought into light South-South trade as a critical source of resilience amid global economic uncertainty and rising trade tensions.

Sovereign Gold Bonds (SGBs)

Sovereign Gold Bonds (SGBs) were introduced by the Government of India in November 2015 to reduce physical gold imports. Each bond is denominated in grams of gold with a fixed maturity of 8 years. The bonds pay an annual coupon interest, initially 2.75%, later revised to 2.5%, and capital gains at maturity are tax-free. Premature redemption is allowed after 5 years but gains are taxable if redeemed early. SGBs are part of government borrowing instruments and serve as an alternative saving tool to physical gold, backed by a Gold Reserve Fund (GRF) maintained in the Public Account.

Why in news?

The Finance Ministry announced the redemption of 130 tonnes of gold via SGBs in the current fiscal and stated no new tranches will be issued going forward due to cost and market conditions.

Special Purpose Vehicles (SPVs)

Special Purpose Vehicles (SPVs) are legal entities created for specific infrastructure projects or financial arrangements, often isolated from the parent company's liabilities. In the context of the CAPEX survey, many SPVs were excluded as they reported no turnover despite high capital expenditure, reflecting project-specific financial structuring. Some SPVs had no future investment plans due to project completion. SPVs enable risk isolation and facilitate project financing, commonly used in infrastructure, real estate, and securitization. They do not appear as operational enterprises in turnover-based surveys but can have CAPEX activity during project lifecycles.

Why in news?

SPVs were excluded from the CAPEX survey frame due to zero turnover despite high capital expenditure, impacting the survey's representation of infrastructure investment activities.

Sugarcane (Control) Order, 1966

The **Sugarcane (Control) Order, 1966** is a central government regulation governing sugarcane pricing and supply in India. It mandates sugar mills to pay farmers the Fair and Remunerative Price (FRP) within 14 days of cane delivery. The order is issued under the Essential Commodities Act, 1955, to regulate production, supply, and distribution of sugarcane. It empowers the cane commissioner to act against mills delaying payments, including property attachment. The order aims to protect farmers from payment delays and ensure timely remuneration. Despite being over five decades old, it remains a key legal instrument in sugarcane price regulation.

Why in news?

The Maharashtra High Court cited this order in quashing the 2022 state government order allowing staggered payments to sugarcane farmers.

Sunrise Sectors

India's **sunrise sectors** refer to 14 emerging industries identified for focused development to drive economic growth. These include semiconductors, renewable energy components, medical devices, hydrogen mission, batteries, leather, and textiles. These sectors are selected for their high growth potential, employment generation, and strategic importance in reducing import dependency. The government promotes these sectors through incentives like the PLI scheme. Many sunrise sectors are aligned with global industrial trends such as Industry 4.0 and sustainability. They represent a shift from traditional industries to technology-driven and green manufacturing, aiming to increase manufacturing's share in GDP and absorb the youthful workforce.

Why in news?

Finance Minister Sitharaman emphasized sunrise sectors in her 2025 Stanford speech as key drivers for India's manufacturing expansion and economic transformation.

Vadhavan Port

The **Vadhavan Port** is a major upcoming maritime facility in Maharashtra's Palghar

district, planned to become India's 13th largest container port. It is being developed with an estimated investment of Rs **76,000 crore** and will feature nine terminals, including two dedicated to liquid cargo. The port is constructed under a **landlord model** via Public-Private Partnerships (PPP) and managed by Vadhavan Port Private Limited (VPPL), a special-purpose vehicle of the Jawaharlal Nehru Port Authority (JNPA). It aims to increase India's cargo handling capacity and strengthen maritime logistics on the western coast.

WHY IN NEWS?

Vadhavan Port signed Rs 5,700 crore worth of pacts for terminals handling chemical and liquid cargo, marking key progress in its development to become a top global port by 2047.

Viability Gap Funding for EV Charging

Viability Gap Funding (VGF) is a financial support mechanism used by governments to make infrastructure projects economically viable. In Maharashtra's EV Policy 2025, VGF of up to ₹10 lakh is provided to public charging station operators to encourage the establishment of new EV charging infrastructure. This subsidy helps reduce initial capital expenditure and operational risks for charging station developers. VGF is typically a one-time grant covering a portion of the project cost. It aims to accelerate EV adoption by overcoming barriers related to charging infrastructure availability, especially in less commercially attractive locations.

WHY IN NEWS?

Maharashtra's EV Policy 2025 includes VGF support for public EV charging operators to expand the state's charging infrastructure, a key pillar of the policy.

Wholesale Price Index (WPI)

The **Wholesale Price Index (WPI)** measures the average change in prices of goods sold in bulk by wholesalers to retailers or other businesses. It includes three major categories – Primary Articles, Fuel & Power, and Manufactured Products. The WPI does not account for services or direct consumer purchases, differing from the Consumer Price Index (CPI). It is widely used in India for economic analysis and policy-making. The base year for India's WPI is currently 2011-12. WPI data is released monthly by the Ministry of Commerce and Industry and is crucial for understanding inflation at the wholesale level.

WHY IN NEWS?

India's WPI-based inflation eased to 2.05% in March 2025, showing a decline from February, reflecting changes in wholesale prices across various sectors.

Yield Curve

The yield curve is a graphical representation showing the relationship between interest rates and bond maturities. It reflects market expectations about future interest rates and economic activity. A normal upward-sloping yield curve indicates higher yields for longer maturities, signaling growth expectations. An inverted yield curve, where short-term rates exceed long-term rates, often predicts economic slowdown. Central banks monitor the yield curve to gauge market sentiment and adjust monetary policy accordingly. In India,

the RBI's bond purchases and interest rate changes directly influence the yield curve's shape and slope.

Why in news?

The RBI's bond purchase operations and repo rate changes in April-May 2025 aim to influence the yield curve and support liquidity and economic growth.

Geography (Indian & Physical)

1944 Water Treaty

The 1944 treaty between the U.S. and Mexico governs the allocation of water from the Rio Grande and Colorado River basins. It requires Mexico to deliver **1,750,000 acre-feet** of water every five years to the U.S. from six tributaries. The treaty allows Mexico to delay deliveries during the first four years of the cycle but requires full repayment in the fifth year. It also establishes binational commissions for dispute resolution and water management. The treaty has been repeatedly reaffirmed despite changing climate and political conditions, reflecting its continued importance in bilateral water relations.

Why in news?

Both countries reaffirmed the treaty's relevance and agreed not to renegotiate it amid tensions over Mexico's water deliveries in 2025.

Asthenospheric Mantle

The **asthenospheric mantle** is a semi-fluid layer of the Earth's mantle located approximately 100 to 400 km below the surface. It is composed of hot, ductile rock that flows slowly, allowing tectonic plates above it to move. This layer's plasticity results from partial melting and high temperatures. The asthenosphere plays important role in plate tectonics by enabling lithospheric plates to drift, collide, and subduct. Its properties vary with depth and temperature, influencing mantle convection patterns. The asthenosphere is distinct from the more rigid lithosphere above and the deeper, more solid mesosphere below.

Why in news?

The asthenospheric mantle is mentioned as the medium beneath the early Earth's protocrust, facilitating the movement of the first continental plates during the Hadean eon.

Baisaran Meadow

Baisaran is a **meadow located 6 km from Pahalgam** in Jammu & Kashmir, situated within the Pir Panjal mountain range. It is accessible only on foot or by pony due to its rugged terrain. The meadow is surrounded by dense forests that extend towards Kokernag, Kishtwar, Balatal, and Sonamarg. Its difficult-to-navigate landscape and dense jungle create poor visibility, often less than 100 meters, making it a challenging area for security operations. Baisaran is known for its scenic beauty and is a popular tourist destination, but its remote location also makes it vulnerable to infiltration and terrorist hideouts.

Why in news?

Baisaran was the site of a terrorist attack killing 26 tourists, after which the attackers fled into the surrounding dense forests, complicating security efforts in the region.

Border Villages in India

Border villages in India are settlements located close to the country's international boundaries. These villages often face challenges such as limited connectivity, inadequate healthcare, and economic underdevelopment. Many are strategically important due to their proximity to sensitive borders with countries like China and Pakistan. The government has initiated multiple programmes, including the Vibrant Villages Programme, to improve living conditions and prevent migration from these areas. Some border villages have unique cultural practices influenced by cross-border interactions. Development efforts aim to maintain national security by ensuring these villages remain inhabited and prosperous, thus strengthening India's territorial integrity.

Why in news?

Border villages are the focus of government development schemes like the Vibrant Villages Programme to enhance security and economic prosperity amid strategic concerns about depopulation.

Brahmaputra River Bridge

The **19.28 km bridge** across the Brahmaputra River will be India's longest river bridge upon completion. It connects **Phulbari in Meghalaya** with **Dhubri in Assam**. The bridge has **six lanes**, with four lanes for public use and **two lanes reserved for emergency and defence**. It is supported by 100 pillars on the Meghalaya side. The project is funded by the **Japan International Cooperation Agency (JICA)** and costs Rs 3,166 crore. Construction began in 2022, with a target completion in September 2028 and employs over 3,500 workers.

Why in news?

The bridge is under construction and expected to be completed by 2028, reducing travel time between Meghalaya and Assam from seven hours to 20 minutes.

Burma Plate (Burma Sliver)

The Burma plate, also known as the Burma sliver, is an elongated micro-tectonic block located between the Indian plate and the Sagaing fault. It formed due to strain partitioning from the oblique convergence of the Indian and Eurasian plates. This microplate moves northeastward, accommodating part of the tectonic deformation in the region. The Burma plate's motion influences the seismicity and tectonic evolution of Myanmar and adjacent areas. It plays important role in the complex geodynamics of the eastern Indian Ocean margin and the Indo-Burman Ranges.

Why in news?

The 2025 Mandalay earthquake occurred within the complex tectonic setting involving the Burma plate, contributing to the seismic activity in central Myanmar.

Elephas Namadicus

Elephas Namadicus is an extinct elephant species that lived during the Pleistocene period in the Indian subcontinent. It is closely related to the modern Asian elephant but is distinguished by its larger size and more primitive molar teeth. Fossils of Elephas

Namadicus have been found mainly in the Narmada valley and surrounding regions, including parts of central India. This species is believed to have coexisted with early humans and other megafauna. Its extinction is linked to environmental changes at the end of the Ice Age and possibly human activities. Elephas Namadicus fossils help reconstruct Pleistocene ecosystems and human-megafauna interactions.

WHY IN NEWS?

Elephantine remains resembling Elephas Namadicus were recovered alongside Stegodon Ganesa fossils in Chandrapur, Maharashtra, during recent palaeontological surveys, expanding knowledge of extinct elephant species in the region.

Gale Crater

Gale Crater is a 154-kilometer-wide impact crater on Mars, located near the planet's equator. It features a central mountain called Aeolis Mons (Mount Sharp) rising about 5.5 kilometers above the crater floor. Gale Crater was chosen as Curiosity rover's landing site due to evidence of ancient water and diverse geology. Sedimentary layers in Mount Sharp preserve a record of environmental changes over billions of years. Gale Crater contains clay minerals, sulfates, and carbonates, indicating past aqueous environments. It is a key site for studying Mars' habitability and climate history. Gale Crater formed approximately 3.5 billion years ago during the Hesperian period.

WHY IN NEWS?

Curiosity's discovery of siderite in Gale Crater's sulfate-rich layers offers new vital information about Mars' atmospheric and geological evolution, potentially altering theories about its ancient climate.

Gangotri-Gomukh Trek

The Gangotri-Gomukh trek connects Gangotri to Gomukh, the source of the Bhagirathi River. It is a **high-altitude trek** known for challenging terrain including glaciers and landslide-prone areas. Gomukh is considered sacred in Hinduism as the origin of the Ganges. The trek is approximately 18 kilometers one way and usually takes 2-3 days. It offers views of the Gangotri Glacier and surrounding peaks. Trekking is restricted during winter and monsoon due to weather hazards. Repair and maintenance are necessary each year due to natural wear from glacial movement and landslides.

WHY IN NEWS?

The trek is under repair due to landslides and glacier activity, with efforts to reopen it soon for tourists.

GI Tag (Geographical Indication)

A **Geographical Indication (GI) tag** is a legal recognition granted to products that have a specific geographical origin and possess qualities or reputation due to that origin. It protects the product's name from misuse or imitation in commerce. In India, GI tags are issued by the Controller General of Patents, Designs and Trademarks. Tamil Nadu has 62 GI-tagged products, including agricultural produce, handicrafts, and textiles. The GI tag helps preserve traditional knowledge, supports local economies, and promotes exports by

authenticating the unique characteristics linked to the region.

Why in news?

The GI tags for Kumbakonam betel leaf and Thovalai flower garland were officially announced in 2025, increasing Tamil Nadu's total GI products to 62.

Gir Somnath

Gir Somnath is a district in Gujarat, known for the **Gir National Park and Wildlife Sanctuary**, the only natural habitat of Asiatic lions. It is a major religious and tourist destination, housing the ancient Somnath Temple, one of the twelve Jyotirlinga shrines of Shiva. The district was created in 2013 by carving out parts of Junagadh district. Gir Somnath's economy relies heavily on tourism, agriculture, and wildlife conservation. The sanctuary covers approximately 1412 sq km and supports diverse flora and fauna alongside the Asiatic lions.

Why in news?

Gir Somnath was included in the Phase 1 rollout of the SMILE scheme aimed at making religious and tourist cities free from beggary.

Greenfield and Brownfield Corridors

Greenfield corridors are newly constructed roads built on undeveloped land, often bypassing congested areas to create fresh routes. Brownfield corridors involve upgrading existing roads by widening or strengthening them to meet modern standards. The Patna-Arrah-Sasaram corridor includes a **109.5 km greenfield stretch** and a **10.6 km brownfield upgrade**. Greenfield projects often require more land acquisition but offer optimized alignment, while brownfield projects are faster and cheaper but constrained by existing infrastructure. These terms are key in highway development and planning strategies.

Why in news?

The Patna-Arrah-Sasaram corridor highway project combines greenfield and brownfield stretches to improve connectivity and reduce travel time in Bihar.

India-Myanmar-Thailand Trilateral Highway

The **India-Myanmar-Thailand Trilateral Highway** is a 1,360 km road project connecting India's Northeast with Thailand through Myanmar. It aims to enhance trade, tourism, and people-to-people connectivity between the three countries and beyond to the ASEAN region. The highway starts from Moreh in India's Manipur state and ends at Mae Sot in Thailand. The project is part of BIMSTEC's infrastructure agenda and is seen as a strategic corridor to the Pacific Ocean. Challenges include terrain difficulties, security concerns, and political instability in Myanmar. Completion is expected to boost regional economic integration and reduce transit times.

Why in news?

The Trilateral Highway was a key agenda item at the BIMSTEC summit, denoting its role as a critical infrastructure project linking India's Northeast to Southeast Asia and the Pacific.

Indo-Gangetic Plain

The Indo-Gangetic Plain is a vast and fertile alluvial plain encompassing parts of northern

India, Pakistan, Nepal, and Bangladesh. It is formed by the sediment deposits of the Indus, Ganges, and Brahmaputra river systems. This region supports over 400 million people and is one of the world's most intensively farmed areas, producing major crops like wheat, rice, and maize. It faces severe environmental challenges including air pollution, groundwater depletion, and soil degradation. The plain's climate varies from subtropical to semi-arid, influencing agricultural productivity and vulnerability to pollutants like surface ozone.

Why in news?

The Indo-Gangetic Plain is identified as one of the most vulnerable regions to surface ozone pollution in India, threatening staple crop yields and food security according to the IIT Kharagpur study.

Isoscapes

Isoscapes are geographic maps showing the distribution of stable isotopes like hydrogen and strontium in the environment. These isotopes enter organisms through food and water and are preserved in metabolically inactive tissues such as butterfly wings. By analyzing isotope ratios in wings, researchers can trace the geographic origin of individual butterflies. Different isotopes degrade at varying rates, creating unique isotopic signatures tied to specific locations. European and North African isoscapes were used to estimate the migration distances of painted lady butterflies by matching isotopic signatures with geographic isotope distributions.

Why in news?

Scientists used isoscapes to determine the natal origins and migration distances of painted lady butterflies, revealing migration patterns without genetic differentiation between short- and long-distance migrants.

Isostatic Rebound

Isostatic rebound is the geological process where land rises after the removal of the heavy weight of ice sheets. In Greenland, the ice sheet's melting causes the bedrock to lift at rates exceeding 6 feet per century. This uplift affects local sea levels, causing them to fall near the coast even as global sea levels rise. The rebound can alter harbors, making them shallower and complicating marine navigation and infrastructure. It also influences the stability of slopes and fjords, potentially increasing geological hazards such as landslides and tsunamis.

Why in news?

Isostatic rebound in Greenland impacts coastal infrastructure and shipping, critical issues as climate change accelerates ice melt and geopolitical interest in the island grows.

Jalgaon

Jalgaon is a city in Maharashtra, known as the "Banana City" due to its extensive banana cultivation. It lies in the Khandesh region and is situated near the Tapi River. Jalgaon is agricultural and industrial hub, producing cotton, pulses, and fruits. The city is also noted for its ancient temples and educational institutions. It experiences a tropical climate with

hot summers, making it susceptible to heatwaves. The region's soil and climate are conducive to horticulture, especially banana farming, which dominates the local economy. Jalgaon is also a railway junction connecting major cities in western India.

Why in news?

A western disturbance moved southward into Jalgaon, Maharashtra, bringing rainfall and thunderstorms that helped reduce the severe heatwave affecting Central India in April 2025.

Kimberlite Pipe

A **kimberlite pipe** is a volcanic rock formation that originates deep within the Earth's mantle, often over 150 kilometers below the surface. These pipes act as natural conduits, transporting diamonds and other mantle-derived minerals to the surface during volcanic eruptions. Kimberlite is named after Kimberley, South Africa, where the first such pipe was discovered. These formations are typically carrot-shaped and can range from a few hundred meters to over a kilometer in diameter. Diamonds found in kimberlite pipes are usually 1-3 billion years old. The presence of kimberlite pipes is a primary indicator for diamond exploration globally.

Why in news?

Jwaneng Diamond Mine sits atop a kimberlite pipe, which is the geological feature responsible for bringing diamonds to the surface and making the mine the richest in the world.

Koyana Reservoir

The Koyana reservoir, built on the Koyana River in Maharashtra, is a major hydroelectric and irrigation project completed in 1964. It has a storage capacity of approximately **2.8 billion cubic meters** and supports the Koyana Hydroelectric Project, one of India's largest power stations. The reservoir plays important role in supplying water to the Krishna river basin downstream, especially during dry months. It also helps regulate river flow to prevent floods. The reservoir is part of a larger network including the Varana reservoir, which together manage water sharing between Maharashtra and Karnataka.

Why in news?

Maharashtra's delay in releasing water from Koyana reservoir to Krishna river is worsening drought and water scarcity in northern Karnataka.

Kumbakonam Betel Leaf

The **Kumbakonam betel leaf** is cultivated primarily in the fertile Cauvery river basin in Tamil Nadu, especially in Thiruvaiyaru, Papanasam, Thiruvidaimarudur, Kumbakonam, and Rajagiri. It is known for its **unique taste and pleasant aroma**, attributed to the specific soil and water conditions of the region. Betel leaves are traditionally used in Indian cultural ceremonies and as a chewable stimulant. The GI (Geographical Indication) tag protects its name and ensures authenticity, preventing misuse by other producers. The region is expected to become **betel leaf export hub** following this recognition.

Why in news?

The Kumbakonam betel leaf received a GI tag from the Government of India in 2025,

recognizing its unique qualities and protecting its commercial identity.

Kurma Dera Beach

Kurma Dera Beach is located on South Andaman Island near Port Blair and serves as a launch point for boats heading towards nearby islands, including North Sentinel Island. It is named after the Kurma turtle (a species of sea turtle), which is native to the region. The beach is often used by local fishermen and tourists for access to the surrounding waters. Due to its proximity to restricted tribal reserves, activities from Kurma Dera Beach are monitored by authorities to prevent unauthorized travel to protected islands. It is important point for maritime navigation in the Andaman archipelago.

Why in news?

The arrested U.S. national launched his boat from Kurma Dera Beach in a midnight attempt to reach North Sentinel Island without authorization.

Lipulekh Pass

The **Lipulekh Pass** is a high-altitude mountain pass located at approximately 5,200 meters above sea level on the India-China-Nepal tri-junction in Uttarakhand. It serves as one of the two official routes for the Kailash Mansarovar Yatra since 1981. The pass is strategically for both India and China due to its proximity to the disputed border areas. It is used for pilgrimage, trade, and military logistics. The route from Dharchula to Lipulekh reduces the trek distance by 80-100 kilometers, easing access to the pilgrimage site.

Why in news?

Special transport arrangements from Dharchula to Lipulekh Pass are being made to facilitate the Kailash Mansarovar Yatra in 2025, reducing the traditional trekking distance for pilgrims.

North Sentinel Island

North Sentinel Island is part of the Andaman and Nicobar Islands in the Bay of Bengal. It is inhabited by the Sentinelese, an indigenous tribe that has resisted contact with the outside world. The island is legally protected under Indian law, prohibiting any unauthorized entry to preserve the tribe's isolation and prevent disease transmission. The Sentinelese use bows and arrows for defense and subsistence. The island remains one of the few places on Earth where humans live without modern contact. Attempts to approach the island have often been met with hostility, leading to strict enforcement of the protection laws.

Why in news?

A U.S. national was arrested for illegally entering North Sentinel Island, violating the protected status of the area and attempting contact with the isolated Sentinelese tribe in April 2025.

Pungro Town

Pungro is a town located in the Kiphire district of Nagaland, near the Indo-Myanmar border. It serves as cultural and administrative center for the Yimkhiung Naga tribe. The town is known for its diverse tribal population and acts as a hub for local trade and

community gatherings. Due to its proximity to the international border, Pungro is strategically important in border management and socio-political activities related to cross-border indigenous populations. The area has witnessed various protests and movements concerning border policies impacting the local tribes.

Why in news?

Pungro Town was the site of a large protest rally organized by the Yimkhiung Tribal Council against border fencing and the abolition of the Free Movement Regime.

Shivalik Hills

The Shivalik Hills are the outermost range of the Himalayas, stretching across northern India, Nepal, and Bhutan. They are characterized by low hills and rich biodiversity, including forests that support tiger habitats. The region is geologically young, formed during the Miocene and Pliocene epochs. The hills act as a natural barrier between the Indo-Gangetic plains and the higher Himalayas. The Shivalik range supports diverse flora and fauna, including endangered species, and plays a critical role in watershed management. It is also culturally with many ancient archaeological sites found in the region.

Why in news?

The Shivalik Hills are one of the key landscapes where tiger populations are distributed, relevant to the new monitoring project for tigers outside notified reserves.

Stegodon Ganesa

Stegodon Ganesa is an extinct species of ancient elephant that lived during the late Pleistocene epoch, approximately 23,000 to 26,000 years ago. It is considered a probable ancestor of the modern Asiatic elephant. The species featured large, robust molar teeth adapted for grinding tough vegetation and possessed long, curved tusks, although complete tusks are rarely found fossilized. Fossils have been predominantly discovered in South and Southeast Asia. Stegodon Ganesa belongs to the genus Stegodon, which is characterized by its distinctive dental and skeletal morphology differing from mammoths and modern elephants. Its extinction coincides with climatic changes and possible human hunting pressures.

Why in news?

Rare fossils of Stegodon Ganesa were found in Maharashtra's Chandrapur district, marking the first discovery of this species in the state and providing new vital information about prehistoric megafauna in India.

Sudarshan Setu Bridge

Sudarshan Setu is a four-lane cable-stayed bridge connecting Okha on the mainland to Beyt Dwarka island in Gujarat. It was constructed to improve transportation and facilitate easier access for pilgrims and tourists visiting the Dwarkadhish Temple. The bridge spans over the Gomati Creek and is designed to withstand marine environmental conditions. It represents infrastructure development in the region, supporting local economy and religious tourism. The bridge's design incorporates modern engineering techniques to

ensure durability and safety. It has reduced travel time and increased connectivity for the Okhamandal region.

Why in news?

Prime Minister Narendra Modi inaugurated the Sudarshan Setu bridge in October 2025, coinciding with efforts to boost pilgrimage tourism and underwater archaeological research in the Dwarka area.

Sugaru Channel

The **Sugaru Channel** (also spelled Tsugaru Channel) is a strait in northern Japan separating the islands of Honshu and Hokkaido. It connects the Sea of Japan with the Pacific Ocean. The channel is approximately 19.5 km wide and is known for strong currents and cold water temperatures, especially outside summer months. It is a popular but challenging route for marathon swimmers due to tidal shifts and frequent fog. The channel plays a vital role in Japanese maritime transport and fisheries. It is one of the seven channels in the Ocean's Seven swimming challenge.

Why in news?

Sayoni Das announced her goal to swim across the Sugaru Channel in Japan by 2027 as part of her mission to conquer the seven seas marathon swims.

Svalbard Archipelago

Svalbard is a Norwegian archipelago located between the Arctic Ocean, Barents Sea, Greenland Sea, and Norwegian Sea. It is known for its polar climate and unique biodiversity. The islands are home to the Svalbard Global Seed Vault, which stores seeds from around the world. Svalbard experiences polar night from late October to mid-February and midnight sun from late April to late August. In 2024, Svalbard recorded its third consecutive warmest summer, with temperatures over **2.5°C above average**. The archipelago's glaciers suffered record-high mass loss in 2024, contributing to global sea-level rise.

Why in news?

Svalbard's summer temperatures in 2024 surpassed previous records by about 1°C, marking the third consecutive record-breaking warm summer, denoting rapid Arctic warming and glacier mass loss.

Syama Prasad Mookherjee Port

Syama Prasad Mookherjee Port, formerly Kolkata Port, is located on the Hooghly River in West Bengal. It comprises two dock complexes – Kolkata Dock System and Haldia Dock Complex. Established in 1870, it is India's oldest port and the only major riverine port. It primarily handles bulk cargo such as coal, iron ore, and petroleum products. The port faces challenges like siltation and draft limitations, which restrict larger vessels. It is named after Syama Prasad Mookherjee, an Indian politician and founder of Bharatiya Jana Sangh. The port plays a critical role in serving eastern India and neighboring landlocked countries.

Why in news?

The Syama Prasad Mookherjee Port saw a 4% decline in cargo traffic in FY25, dropping to

64 million tonnes from 66.5 million tonnes in FY24.

Terai and Dooars

The **Terai and Dooars** are two distinct but adjacent geographical regions in the foothills of the Himalayas in northern West Bengal and neighboring states. The Terai is a marshy grassland area south of the outer Himalayas, known for its fertile soil and biodiversity. The Dooars, meaning "doors," refers to the floodplains and foothills region acting as gateways to Bhutan and northeastern India. Both regions have Gorkha populations and are important for tea cultivation, forests, and wildlife. They have unique cultural identities and have been central to regional political and developmental discussions.

Why in news?

The Ministry of Home Affairs meeting in October 2025 specifically addressed issues in the Terai and Dooars alongside Darjeeling, focusing on development and security concerns for the Gorkha community.

Terai Region

The Terai is a lowland region in northern India and southern Nepal, lying south of the Himalayan foothills. It is known for its fertile soil and dense forests, making it an important agricultural zone. The region has a diverse population including various ethnic groups such as Tharu, Rajbanshi, and Gorkhas. The Terai has historically experienced socio-political tensions related to land rights, migration, and ethnic identity. It serves as a cultural and economic bridge between the hills and the plains. The Terai is also vulnerable to flooding during monsoon seasons due to its flat terrain and proximity to rivers.

Why in news?

The Terai region was mentioned in the April 2025 meeting between the Union Home Ministry and Gorkha representatives regarding regional issues affecting the Gorkha community.

Thangjing Hill

Thangjing Hill is located in the southwestern part of Manipur, and holds religious significance for both the Meitei and Kuki communities. It is named after **God Thangjing**, a principal deity in the traditional Meitei religion, Sanamahism. The hill is a pilgrimage site where annual rituals and festivals are conducted, especially by the Meitei community. The area around the hill includes buffer zones claimed by the Kuki tribes, leading to territorial and cultural disputes. The hill's ecosystem supports diverse flora and fauna, and it is considered sacred, restricting certain types of development and access.

Why in news?

Thangjing Hill is in the news due to protests by Kuki organizations against the Meitei community's annual pilgrimage to the hill, citing unresolved political issues and territorial claims.

Zero Shadow Day

Zero Shadow Day (ZSD) occurs when the sun is exactly at the zenith, causing vertical objects to cast no shadow. This phenomenon happens only between the Tropic of Cancer

(23.5° N) and the Tropic of Capricorn (23.5° S) due to Earth's axial tilt of approximately 23.5 degrees. Each location between these latitudes experiences ZSD twice a year, during the sun's apparent northward and southward movements. The exact date varies by location. The sun's declination equals the latitude of the observer on ZSD, making it possible to find true north and calculate solar declination using shadow observations.

Why in news?

COSMOS, Mysuru, observed Zero Shadow Day with educational activities, experiments, and demonstrations, denoting the scientific principles behind the phenomenon and engaging participants in practical astronomical measurements.

Environment & Ecology

14th National Electricity Plan

The 14th National Electricity Plan is India's official roadmap for electricity generation and capacity expansion through 2030. It integrates national policies and climate commitments, including renewable energy targets. The plan emphasizes achieving **500 GW of non-fossil fuel capacity by 2030**, though this target is not formally in the updated NDCs. It guides investments, infrastructure development, and regulatory frameworks to balance electricity demand growth with sustainability. The plan also addresses challenges of grid integration, storage, and energy security to support India's clean energy transition and economic growth.

Why in news?

The plan's targets and challenges were cited in the Ember report, which warned India risks missing its 500 GW renewable capacity goal without increased funding.

Aerosols and Climate

are tiny solid or liquid particles suspended in the atmosphere, originating from natural sources and human activities such as industrial emissions and biomass burning. They scatter and absorb sunlight, influencing Earth's energy balance. Aerosols contribute to cloud formation by acting as cloud condensation nuclei, affecting cloud reflectivity and lifetime. Reduction in aerosols, often linked to improved air quality, decreases sunlight scattering, leading to greater solar radiation absorption by the surface and enhanced warming. Europe's cleaner air and lower aerosol emissions have inadvertently contributed to its faster warming compared to regions with higher aerosol concentrations.

Why in news?

Europe's faster warming rate is partly due to reduced aerosol emissions, which decrease sunlight scattering and increase surface warming, as reported in the 2024 European State of the Climate Report.

Albedo Effect

The **albedo effect** refers to the reflectivity of a surface, measured as the fraction of solar energy reflected back into space. Ice and snow have high albedo, reflecting most sunlight, while darker surfaces like water and land absorb more heat. Melting Arctic ice reduces the Earth's overall albedo, causing more solar absorption and accelerated warming in polar

regions. This feedback loop intensifies climate change, especially in the Arctic, which warms three to four times faster than the global average. The Antarctic experiences less albedo-driven warming due to slower ice melt and different geographic factors.

Why in news?

The albedo effect is a major reason for Europe's accelerated warming, as Arctic ice melt exposes more heat-absorbing surfaces, driving higher regional temperature increases.

Anopheles Mosquito

The **Anopheles mosquito** is the primary vector for malaria transmission, specifically the female mosquito. There are over 400 species of Anopheles, but only about 30–40 transmit malaria. They breed in clean, stagnant water and are most active between dusk and dawn. The mosquito injects **Plasmodium parasites** into humans during blood meals. Anopheles mosquitoes have a unique resting position with their abdomen sticking up. Control methods include insecticide-treated nets, indoor spraying, and environmental management. Resistance to insecticides in Anopheles populations is a growing challenge for malaria control programs.

Why in news?

Anopheles mosquitoes continue to be the focus of malaria prevention strategies brought into light during World Malaria Day 2025, emphasizing the need for innovative vector control methods.

Anti-Smog Guns

Anti-smog guns are large, industrial-scale water misting devices designed to suppress dust and particulate matter in the air. They spray fine water droplets over construction sites and dusty areas to reduce airborne dust pollution. These devices are increasingly used in urban areas with high dust pollution, such as Delhi, where construction activities contribute nearly 30% of total particulate pollution. Anti-smog guns are mobile or fixed and can cover large areas, helping to improve air quality by preventing dust from becoming airborne. They are part of multi-pronged pollution control strategies in many Indian cities.

Why in news?

Delhi's Environment Minister reviewed the implementation of a 14-point plan to curb dust pollution, which includes mandatory use of anti-smog guns on construction sites to reduce particulate matter during the pollution season.

Asola Bhatti Wildlife Sanctuary

Asola Bhatti Wildlife Sanctuary is located in the southern part of Delhi, spanning approximately 32 square kilometers. It was declared a sanctuary in 1986 to protect the area's dry deciduous forest and wildlife. The sanctuary is part of the Northern Aravalli leopard wildlife corridor, connecting Delhi to Rajasthan. It hosts diverse fauna including leopards, striped hyenas, nilgai, and various bird species. The sanctuary has over 200 artificial watering holes created to support wildlife during dry seasons. It also serves as an important green lung for Delhi, contributing to biodiversity conservation and

environmental balance in the urban region.

Why in news?

The Delhi forest department plans to install 45 new motion-based camera traps in Asola Bhatti Wildlife Sanctuary to enhance wildlife monitoring, especially focusing on leopards and their habitat use around watering holes.

Atmospheric River

Atmospheric rivers are long, narrow corridors of concentrated moisture in the atmosphere, typically 402 to 606 km wide and over 1600 km long. They transport large amounts of water vapor from tropical oceans toward land, often ahead of cold fronts of extratropical cyclones. These phenomena can cause heavy rainfall, flooding, mudslides, and property damage. They occur mostly in mid-latitudes and are guided by low-level jet streams. Atmospheric rivers can produce hurricane-like conditions with intense rainfall and strong winds. The moisture they carry increases by about 7% for every 1°C rise in temperature, intensifying storms due to climate change.

Why in news?

A recent atmospheric river originating from the Caribbean caused severe storms in the United States in October 2025, differing from the well-known Pineapple Express pattern.

Atmospheric Trough

An **atmospheric trough** is an elongated region of relatively low atmospheric pressure, often associated with weather disturbances such as rain and storms. Troughs can extend for hundreds of kilometers and influence wind patterns and moisture convergence. They are classified as north-south or east-west oriented depending on their alignment. Troughs play a key role in weather systems by enhancing cloud formation and precipitation. Multiple troughs can coexist, creating complex weather patterns. The trough from north-west Rajasthan to east Bangladesh and another from north Chhattisgarh to the Gulf of Mannar illustrate how such features can affect large areas simultaneously.

Why in news?

Several atmospheric troughs formed across India in April 2025, contributing to widespread rainfall, thunderstorms, and gusty winds across multiple regions.

Balukhand-Konark Wildlife Sanctuary

Balukhand-Konark Wildlife Sanctuary is located between Puri and Konark in Odisha, spanning coastal and marine ecosystems. It hosts endangered Olive Ridley turtle nesting grounds and supports species like spotted deer and blackbucks. The sanctuary's vegetation has declined from **41.8% dense cover in 1993 to 37.1% in 2023**, with sparse vegetation now dominating over 50%. Cyclones, especially Fani in 2019, have caused damage to the forest canopy. The sanctuary experiences dynamic shoreline changes, with northern erosion and southern sediment deposition. It is a critical habitat for migratory birds and marine species.

Why in news?

A recent study using satellite data and machine learning revealed vegetation loss and shoreline changes in the sanctuary from 1993 to 2023, denoting the impact of cyclones

and climate change on this ecological area.

Banni Grasslands

Banni Grasslands is a unique ecosystem located in the Kutch district of Gujarat, covering around 3,847 square kilometers. It is one of the largest tropical grasslands in Asia and supports a rich biodiversity, including migratory birds, reptiles, and mammals. The grasslands are characterized by saline soil and thorny shrubs, with a traditional pastoral lifestyle practiced by the Maldhari community. Banni is ecologically for its role in maintaining local hydrology and serving as a habitat corridor. It is now considered for future introduction of cheetahs as part of India's wildlife restoration projects.

Why in news?

Banni Grasslands is being planned as a future site for cheetah introduction to expand the species' range beyond Madhya Pradesh into Gujarat.

Basel, Rotterdam and Stockholm Conventions (BRS)

The BRS Conventions are three distinct but interlinked multilateral environmental agreements aimed at controlling hazardous chemicals and wastes. The Basel Convention (adopted 1989) regulates the transboundary movements of hazardous wastes and their disposal. The Rotterdam Convention (adopted 1998) promotes shared responsibilities in the international trade of hazardous chemicals through a Prior Informed Consent (PIC) procedure. The Stockholm Convention (adopted 2001) targets the elimination or restriction of persistent organic pollutants (POPs) that bioaccumulate and cause long-term ecological harm. These conventions hold regular Conferences of the Parties (COPs) to review and update their mandates and chemical listings.

Why in news?

The 2025 Conferences of the Parties to the BRS Conventions are scheduled in Geneva, focusing on banning hazardous pesticides like chlorpyrifos and strengthening chemical safety governance globally.

BBNJ Agreement

The **Agreement on Marine Biodiversity of Areas beyond National Jurisdiction (BBNJ)** is a treaty under the UN Convention on the Law of the Sea aimed at conserving marine biodiversity in the high seas, which cover over 60% of the ocean and are currently outside national jurisdiction. It addresses issues like illegal fishing, pollution, and protection of endangered species. The agreement requires ratification by at least 60 countries to enter into force. It fills a legal vacuum by establishing governance, surveillance, and sustainable use protocols for international waters beyond national control.

Why in news?

The BBNJ Agreement is a key topic at the third United Nations Ocean Conference (UNOC3) held in June 2025, seeking ratification and implementation to improve ocean governance.

Biostimulants in Farming

Biostimulants are natural substances or microorganisms that enhance plant growth by improving nutrient absorption and stress resistance without directly supplying nutrients.

Seaweed extracts are among the eight recognized types of biostimulants regulated under India's Fertilizer (Control) Order, 1985. They improve soil health, increase crop yields, and strengthen plants against drought, diseases, and environmental stress. Unlike fertilizers or pesticides, biostimulants activate plants' natural growth processes. Seaweed-based biostimulants have gained importance in organic farming schemes like PKVY and MOVCDNER, promoting sustainable agriculture and reducing chemical input dependency.

Why in news?

Biostimulants, particularly seaweed-based ones, are featured due to their increasing use in India's organic farming initiatives and government promotion of sustainable agricultural practices linked to seaweed cultivation.

Blue Carbon Projects

Blue carbon projects focus on conserving and restoring coastal and marine ecosystems like mangroves, salt marshes, and seagrasses to sequester atmospheric carbon dioxide. These ecosystems store large amounts of carbon in biomass and sediments. Blue carbon initiatives aim to reduce greenhouse gases by protecting these habitats, often generating carbon credits for climate mitigation funding. Mangroves are particularly valuable in blue carbon due to their high carbon storage capacity. However, these projects face risks from climate change impacts such as storms and sea-level rise, which threaten ecosystem stability and carbon storage potential.

Why in news?

The study warns that climate threats endanger blue carbon projects by damaging mangroves, potentially undermining carbon sequestration and climate mitigation efforts.

Blue Economy Vision 2030

India's **Vision 2030** recognizes the blue economy as one of its ten core growth dimensions. The blue economy includes sustainable use of ocean resources for economic growth, improved livelihoods, and ocean ecosystem health. It covers sectors like fisheries, shipping, tourism, renewable ocean energy, and marine biotechnology. India's 7,517 km coastline supports about a third of its population, making coastal development and ocean protection critical. The vision emphasizes balancing economic benefits with marine conservation and climate resilience to ensure long-term sustainability of ocean resources.

Why in news?

India's Vision 2030 and the blue economy are brought into light at UNOC3 to promote sustainable ocean development and financing commitments.

Blue Sheep (Bharal)

The Blue Sheep, or Bharal (**Pseudois nayaur**), is a mountain ungulate native to the Himalayas. It inhabits rocky slopes at altitudes between 3,000 and 5,500 meters. Bharal are well-adapted to steep terrain and have excellent camouflage with their bluish-gray coat. They are a primary prey species for snow leopards. Males have large, curved horns used in mating battles. Blue Sheep graze on grasses and shrubs and are mostly active during dawn and dusk. Their population is stable but vulnerable to habitat disruption from

human activities.

Why in news?

Blue Sheep are among the notable wildlife species protected within Gangotri National Park, recently opened to tourists.

Blue Zones

Blue Zones are geographic areas where people live longer than average, often reaching 90s or 100s. Notable Blue Zones include **Sardinia (Italy), Okinawa (Japan), Nicoya Peninsula (Costa Rica), Ikaria (Greece), and Loma Linda (California, USA)**. Their longevity is linked to lifestyle factors like plant-based diets, regular physical activity, strong social ties, and low stress. Diets here are rich in legumes, whole grains, nuts, and vegetables, with minimal processed foods. Blue Zones research has influenced global health initiatives promoting diet and lifestyle changes for increased lifespan and well-being.

Why in news?

The study references Blue Zones to illustrate that diet, particularly patterns similar to the Planetary Health and Mediterranean diets, can contribute to extended lifespan without relocating to these regions.

Bottom Trawling

Bottom trawling is a destructive fishing technique that involves dragging heavy nets across the sea floor. It damages marine habitats by destroying benthic ecosystems and stirring up stored carbon in ocean sediments. The practice causes an estimated **€11 billion annual economic loss in Europe** alone due to environmental degradation and reduced fish stocks. Bottom trawling is a major target for elimination by marine conservation initiatives because of its ecological harm and contribution to carbon release, which exacerbates climate change. It remains legal in many regions but faces increasing restrictions.

Why in news?

Ending bottom trawling is a key goal of the 'Revive Our Ocean' initiative, aiming to reduce harmful fishing practices and promote sustainable marine management.

Brown Carbon

Brown carbon is a type of organic carbon aerosol produced primarily by incomplete combustion of biomass and fossil fuels. It absorbs sunlight in the ultraviolet and visible spectrum, contributing to atmospheric warming and air pollution. Unlike black carbon, brown carbon scatters light, causing a cooling effect known as "global dimming." It plays role in cloud formation and atmospheric chemistry. Brown carbon particles can travel long distances, affecting air quality far from their source. These particles degrade slowly in the atmosphere, influencing climate and human health by increasing particulate matter concentrations and respiratory risks.

Why in news?

Brown carbon from Canadian wildfires caused cooling and trapped pollutants over NYC in 2023, intensifying air pollution and health problems.

Brownfield Projects

Brownfield projects involve redeveloping previously developed land that is underutilised, abandoned, or contaminated. These sites often require extensive remediation to remove pollutants left by past industrial or commercial activities. Brownfield redevelopment leverages existing infrastructure like roads, power grids, and wastewater systems, reducing costs compared to greenfield projects. Challenges include land contamination, ageing infrastructure, zoning restrictions, and community resistance. Technologies such as geographic information systems (GIS) and building information modelling (BIM) are used to assess and optimise these projects. Brownfield redevelopment supports urban renewal, sustainability, and economic growth by repurposing neglected urban areas.

Why in news?

Brownfield redevelopment is gaining prominence in Indian cities facing land scarcity, with projects in areas like Worli, Parel, and Kandivali transforming former industrial sites into modern urban spaces.

BS VI Emission Standard

Bharat Stage VI (BS VI) is the latest emission standard implemented in India from April 2020, aimed at reducing vehicular pollution. It aligns closely with Euro VI norms and mandates reductions in nitrogen oxides (NOx), particulate matter (PM), and sulfur content in fuels. BS VI fuels have sulfur content capped at 10 ppm, down from 50 ppm in BS IV. Vehicles must be equipped with advanced emission control technologies such as Diesel Particulate Filters (DPF) and Selective Catalytic Reduction (SCR). The standard applies to all new petrol and diesel vehicles, including inter-state buses, and is a major step toward cleaner air in Indian cities.

Why in news?

The draft EV Policy 2.0 requires inter-state buses to meet BS VI standards, while intra-city buses transition to electric, reflecting the policy's dual approach to emissions control.

Buffer Zones in Tiger Reserves

Buffer zones are designated areas surrounding core tiger habitats to reduce human-wildlife conflict and support conservation. They serve as transitional regions where sustainable activities occur without disturbing wildlife. In Madhya Pradesh, these zones include ecological measures such as chain-link fencing, grassland restoration, and water resource development. Buffer zones help maintain biodiversity by providing corridors for animal movement and reducing poaching. They also involve community engagement through skill development programs. The concept gained prominence in India post-Project Tiger (initiated in 1973) to enhance protection beyond core areas, balancing conservation with local livelihoods.

Why in news?

Madhya Pradesh Cabinet approved a ₹145 crore scheme for buffer zone development around nine tiger reserves, including fencing, habitat restoration, and community programs, aiming to strengthen tiger conservation.

Central Asian Flyway

The **Central Asian Flyway** is a major migratory bird route extending from Siberia and Central Asia to the Indian subcontinent and surrounding regions. It covers over 30 countries and supports more than 280 migratory bird species, including many endangered and vulnerable species. This flyway is crucial for the survival of waterbirds and shorebirds that breed in northern latitudes and winter in South Asia. It passes through diverse ecosystems such as wetlands, lakes, and sanctuaries. The flyway's ecological importance also poses risks for zoonotic spillovers due to close interactions between migratory birds and humans at stopover sites.

Why in news?

The flyway's role as a migratory corridor increases zoonotic spillover risks at Indian bird sanctuaries, making it a focus area for the new surveillance project.

Cetraria aculeata

Cetraria aculeata is a foliose lichen species characterized by its spiny, branched thallus. It thrives in cold, arid environments such as tundras and alpine regions. This lichen forms symbiosis between fungi and green algae, enabling it to photosynthesize and survive in nutrient-poor habitats. Cetraria aculeata is sensitive to environmental changes and is used as a bioindicator for air quality. It has been studied for its secondary metabolites with potential antimicrobial properties. In astrobiology research, it was tested alongside Diploschistes muscorum for survival under simulated Martian conditions but showed differing resilience traits.

Why in news?

Cetraria aculeata was tested in a Mars simulation chamber to assess its survival and metabolic activity under harsh Martian-like conditions, contributing to research on life's adaptability beyond Earth.

Defeating Meningitis by 2030

The **Defeating Meningitis by 2030** Global Roadmap is a WHO-led initiative adopted in 2020 aiming to eliminate bacterial meningitis epidemics, reduce vaccine-preventable meningitis cases by 50%, and deaths by 70% by 2030. It focuses on five pillars – faster diagnosis and treatment, vaccine development and coverage, strengthened disease surveillance, improved care and support for survivors, and enhanced advocacy and political commitment. The roadmap encourages multisectoral collaboration and prioritizes low- and middle-income countries. It integrates research, health system strengthening, and community engagement to achieve sustainable meningitis control globally.

Why in news?

The WHO's new global meningitis guidelines support the roadmap's goals by improving clinical management and care, contributing to the 2030 targets.

Diu Island

Diu Island is part of the Union Territory of Dadra and Nagar Haveli and Daman and Diu, located off the coast of Gujarat. It is separated from the mainland by a tidal creek,

allowing wildlife like Asiatic lions to swim across during low tide. The island features dense vegetation dominated by invasive species such as **Prosopis juliflora** and **Acacia senegal**, providing ideal refuge for lions. Diu hosts abundant prey species like Nilgai and wild pigs, making it attractive for large carnivores. It has witnessed multiple lion sightings and occasional human-wildlife conflicts, prompting translocation efforts by forest officials.

WHY IN NEWS?

A lion was recently spotted near Diu airport, indicating Asiatic lions are expanding beyond Gujarat's Gir forests into Diu Island, raising conservation and management concerns.

Dudhwa Tiger Reserve

Dudhwa Tiger Reserve, located in Lakhimpur Kheri district, Uttar Pradesh, covers over 490 square kilometers of Terai ecosystem. It was established in 1977 and is part of the Terai Arc Landscape, known for its rich biodiversity including tigers, rhinos, and swamp deer. The reserve features grasslands, marshes, and dense forests. It plays a vital role in rhino conservation, hosting a rhino reintroduction program since the early 2000s. Dudhwa is also a birdwatcher's haven with over 450 recorded bird species. The reserve's ecosystem relies heavily on termite mounds, which provide microhabitats for various species.

WHY IN NEWS?

Dudhwa Tiger Reserve was the site of the rediscovery of the rare long-snouted vine snake during a rhino release operation, emphasizing its ecological significance.

Earth Explorer Programme

The **Earth Explorer Programme** is an initiative by the European Space Agency to develop and launch satellites focused on understanding Earth's environment and climate. Launched in 1997, it aims to provide detailed data on various Earth system components such as atmosphere, oceans, land, and ice. The programme prioritizes scientific missions addressing key environmental questions and technological innovation. To date, it has launched six missions before Biomass, including CryoSat, SMOS, and Swarm. These satellites provide critical data for climate research, environmental monitoring, and natural hazard management.

WHY IN NEWS?

Biomass is ESA's seventh Earth Explorer mission, focusing on mapping global forest biomass to improve understanding of carbon cycles and climate change.

Ecological Release

Ecological release occurs when the removal or extinction of predators or competitors allows surviving species to expand their populations and geographic ranges unchecked. This process can lead to rapid increases in abundance and distribution of certain species, often contributing to taxonomic homogenisation. Ecological release can alter community structures and promote dominance by a few adaptable species. It has been observed following mass extinction events, where predator-prey dynamics are disrupted. The concept is important for understanding how ecosystems reorganize after dramatic disturbances and how species interactions influence biodiversity patterns.

Why in news?

Ecological release is proposed as one of the drivers behind species expansion and homogenisation after the Permian-Triassic extinction, as discussed in a recent scientific study.

Energy Paradox of AI

Artificial Intelligence (AI) drives increase in global electricity demand, especially in data centres, with consumption growing at **12% annually**. AI's energy use could reach **945 terawatt-hours (TWh)** by 2030, surpassing Japan's total electricity consumption. However, AI also enables emission reductions by optimizing electricity grid operations and accelerating innovation in energy technologies like batteries and solar power. This dual role creates an energy paradox – AI both increases energy demand and offers tools to improve energy efficiency and reduce emissions, depending on how widely and effectively it is adopted.

Why in news?

The IEA report marks AI's dual impact on energy demand and emissions, emphasizing the need to balance AI growth with environmental sustainability.

Energy-Controlled Evaporation Regimes

Energy-controlled evaporation regimes occur in regions where evaporation rates are primarily limited by available energy rather than moisture supply. In such areas, like the Western Ghats and northeast India, evaporation fluctuates with solar radiation and temperature changes. This contrasts with moisture-controlled regimes, where soil moisture availability limits evaporation. Energy-controlled regimes influence local climate by modulating surface energy fluxes and temperature patterns. They affect hydrological cycles, crop water requirements, and drought susceptibility. These regimes are identified through land-atmosphere interaction models and play a critical role in regional climate variability and agricultural planning.

Why in news?

The concept helps explain differing soil moisture impacts on evaporation and temperature variations across India, as brought into light in the 2025 soil moisture study.

ENSO-neutral Conditions

ENSO-neutral refers to a state in the El Niño-Southern Oscillation cycle where neither El Niño nor La Niña conditions prevail. This means sea surface temperatures in the central and eastern equatorial Pacific Ocean are close to average, typically within ±0.5°C of the long-term mean. ENSO-neutral phases usually result in stable and predictable weather patterns globally, without extreme anomalies in rainfall or temperature. These conditions can benefit regions like India by supporting normal monsoon rainfall and agricultural productivity. ENSO-neutral periods often follow or precede El Niño or La Niña events, acting as transitional phases.

Why in news?

The India Meteorological Department forecasted ENSO-neutral conditions for the 2025 southwest monsoon, expected to bring normal rainfall and ease food inflation pressures.

ENTSOE (European Network of Transmission System Operators for Electricity)

ENTSOE is an association of European electricity transmission system operators (TSOs) that coordinates grid management across Europe. It facilitates information exchange, grid planning, and market integration to ensure cross-border electricity flow and security. ENTSOE issued a warning on April 18, 2025, about risks of solar overproduction as spring weather improved, which can lead to grid instability without sufficient balancing resources. ENTSOE supports development of interconnectors, storage, and flexible generation to maintain frequency and voltage stability in increasingly renewable-heavy grids.

Why in news?

ENTSOE's warning about solar overproduction risks preceded the Iberian blackout, emphasizing the growing challenges of integrating renewables into European grids.

Environment (Protection) Act, 1986

The Environment (Protection) Act, 1986, is an umbrella legislation enacted by the Government of India to provide a framework for environmental protection and regulation. It empowers the central government to take measures to protect and improve the environment, including setting standards, prohibiting pollutants, and regulating hazardous substances. The Act allows for the constitution of authorities and bodies to implement environmental policies. It is a key legal basis for establishing bodies like the National Mission for Clean Ganga (NMCG) to address environmental issues through statutory powers.

Why in news?

NMCG was upgraded to an authority under this Act in 2016, enabling it to implement the Namami Gange scheme and now qualify for tax exemptions notified by the CBDT.

Environment Impact Assessment Notification, 2006

The **Environment Impact Assessment (EIA) Notification, 2006** is a regulatory framework issued by the Ministry of Environment, Forest and Climate Change. It mandates prior environmental clearance for specified developmental projects to assess potential environmental impacts before approval. The notification lists project categories requiring clearance and outlines procedures for public consultation and expert evaluation. It aims to integrate environmental considerations into the planning process. Amendments to the notification have sparked debate over transparency and environmental safeguards. The EIA process is legally enforceable under the Environment (Protection) Act, 1986, and non-compliance can lead to penalties including stop-work orders and fines.

Why in news?

The construction project near Panaji was found to be proceeding without obtaining mandatory clearance as per the EIA Notification, 2006, leading to a stop-work order.

Environmental Damage Compensation Deposit

The Environmental Damage Compensation Deposit is a financial bond posted by industries before participating in the Surat ETS. It serves as a security against non-

compliance with emissions permits. Plants failing to hold enough permits for their emissions face fines double the ceiling permit price, deducted from this deposit. This mechanism ensures industries have a financial stake in compliance and provides immediate funds for regulatory penalties without lengthy legal processes. The deposit acts as a deterrent against over-pollution and supports enforcement efficiency in the emissions trading market.

Why in news?

The study on Surat ETS brought into light the role of the Environmental Damage Compensation Deposit in enforcing compliance and penalizing industries exceeding particulate emission limits.

Environmental Impact Assessment (EIA) Certificate

The **Environmental Impact Assessment (EIA) certificate** is a mandatory document issued by environmental authorities in India to permit developmental projects. It assesses the potential ecological, social, and economic impacts of proposed activities. The EIA process involves public consultation, expert analysis, and environmental clearance. Projects without a valid EIA certificate are considered illegal and can be halted by courts. The certificate aims to balance development with environmental conservation. It is governed by the Ministry of Environment, Forest and Climate Change under the EIA Notification 2006, which has undergone several amendments to strengthen environmental safeguards.

Why in news?

The Supreme Court questioned the Telangana government on whether it obtained the Environmental Impact Assessment certificate before starting deforestation near the University of Hyderabad.

Environmental Surveillance

Environmental surveillance involves testing sewage and wastewater samples for poliovirus presence. It helps identify virus circulation in communities even without reported clinical cases. This method complements AFP surveillance by detecting silent virus transmission, which is crucial for polio eradication. The technique requires sophisticated laboratory facilities and trained personnel to process and analyze large volumes of environmental samples. Environmental surveillance can potentially be adapted to monitor other pathogens in the environment, offering an early warning system for emerging infectious diseases.

Why in news?

India plans to expand environmental surveillance from polio to broader infectious disease monitoring amid threats of new disease outbreaks.

Eravikulam National Park

Established in 1975, **Eravikulam National Park** in Kerala spans approximately 97 square kilometers. It is located in the Western Ghats and is the largest protected area for the Nilgiri Tahr. The park features high-altitude grasslands and shola forests, supporting

diverse flora and fauna. It is part of the Anamalai sub-cluster of the Western Ghats, a UNESCO World Heritage Site. The park's highest peak is Anamudi, the tallest mountain in South India at 2,695 meters. Eravikulam is a major ecotourism destination, attracting visitors for trekking and wildlife viewing, especially of the Nilgiri Tahr.

Why in news?

The upcoming Nilgiri Tahr census commemorates the 50th anniversary of Eravikulam National Park, denoting its role as the species' primary habitat and conservation site.

Fine Particulate Matter (PM2.5)

Fine particulate matter (PM2.5) consists of airborne particles with diameters less than 2.5 micrometers. These particles penetrate deep into the lungs and bloodstream, causing respiratory and cardiovascular diseases. PM2.5 originates from combustion sources such as wildfires, vehicles, and industry. Exposure increases risks of asthma, lung infections, and premature death. Regulatory agencies like the EPA set safety limits for PM2.5 concentrations to protect public health. PM2.5 also affects visibility and contributes to haze. Its chemical composition varies depending on sources and atmospheric conditions, influencing toxicity and environmental impact.

Why in news?

NYC's PM2.5 levels tripled EPA limits during the 2023 wildfire smoke event, causing a surge in respiratory emergencies.

Flue Gas Desulphurisation (FGD)

Flue Gas Desulphurisation (FGD) is a pollution control technology used in coal-fired power plants to remove sulfur dioxide (SO2) from exhaust flue gases. It typically uses a wet scrubber system involving a limestone slurry that reacts with SO2 to form gypsum. FGD installation costs approximately **₹1.2 crore per MW** in India. The technology reduces SO2 emissions but increases power and freshwater consumption. Indian coal generally contains **low sulfur content (0.3%-0.5%)**, making FGD less critical. FGD can reduce SO2 emissions by about **17 million tonnes** but may increase CO2 emissions by **69 million tonnes** (2025-30).

Why in news?

A study by NIAS and the Office of the Principal Scientific Adviser suggests rolling back the 2015 policy mandating FGD installation in all Indian coal plants due to low sulfur content and environmental trade-offs.

Foraminifera Fossils

Foraminifera are single-celled marine plankton that produce calcium carbonate shells called tests. These shells accumulate on ocean floors, creating sediment records that preserve **chemical and biological information** about past ocean conditions. Scientists analyze foraminifera species abundance and isotopic ratios to reconstruct historical ocean temperatures, salinity, and nutrient levels. Different species thrive under varying productivity levels, allowing detailed vital information about ancient marine ecosystems. Foraminifera fossils date back to the Cambrian period and are crucial in paleoclimatology

and biostratigraphy. Their shells' chemical composition reflects the seawater chemistry at the time of formation, making them valuable climate proxies.

Why in news?

Foraminifera fossils were analyzed to reconstruct 22,000 years of monsoon and marine productivity history in the Bay of Bengal, informing climate impact studies.

Gahirmatha Marine Wildlife Sanctuary

The **Gahirmatha Marine Wildlife Sanctuary** in Odisha is the world's largest known nesting beach for Olive Ridley turtles. Established in 1997, it spans approximately 1,435 square kilometers, including both land and sea areas. It hosts one of the largest mass arribada nesting events, where thousands of female turtles come ashore simultaneously to lay eggs. The sanctuary plays a vital role in protecting the turtles from poaching and fishing-related threats. It is also a critical habitat for other marine species and supports local fisheries by maintaining ecological balance. The sanctuary is monitored by the Zoological Survey of India and local forest departments.

Why in news?

The sanctuary was the original tagging site of the Olive Ridley turtle that migrated 4,500 km to Maharashtra's Ratnagiri coast, denoting new vital information about turtle migration and nesting patterns.

Gangetic Dolphin Habitat

The Gangetic dolphin (Platanista gangetica) is an endangered freshwater dolphin species native to the Ganga River and its tributaries. Its habitat includes floodplains and deep river sections, which are sensitive to pollution and habitat disruption. The dolphins are indicators of river health and require clean, free-flowing water. Encroachments and constructions in floodplains threaten their habitat by altering river flow and increasing pollution. The species is protected under the Indian Wildlife Protection Act, 1972, and is listed as Endangered on the IUCN Red List. Conservation efforts focus on habitat preservation and pollution control.

Why in news?

The petitioner argued that illegal constructions in Bihar's Ganga floodplains threaten the endangered Gangetic dolphin's habitat, prompting Supreme Court intervention.

Gangotri National Park

Gangotri National Park spans **approximately 2,390 square kilometers** in Uttarkashi district, Uttarakhand. It is a critical habitat for the snow leopard and hosts species like the **black bear, brown bear, musk deer, blue sheep (Bharal), and Himalayan Monal**. The park's terrain includes glaciers, alpine meadows, and rugged mountains. It was established to conserve the unique biodiversity of the western Himalayas and supports fragile ecosystems. The park is part of the larger Gangotri Biosphere Reserve and plays a vital role in preserving endangered species and maintaining ecological balance in the region.

Why in news?

The park gates were opened to tourists in October 2025, with new trekking routes

inaugurated, enhancing eco-tourism and conservation awareness.

Garbhanga Reserve Forest

Garbhanga Reserve Forest is a biodiversity hotspot located on Guwahati's southwestern border with Meghalaya. It plays a critical role in **regulating the local climate and water systems**. The forest hosts diverse wildlife including **elephants, butterflies, rare birds, reptiles, and amphibians**. It faces threats from **urban sprawl and habitat destruction**, which endanger its ecological balance. The forest's fauna includes newly discovered species like Leptobrachium aryatium. Garbhanga acts as a green lung for Guwahati, helping mitigate environmental stress caused by rapid urbanization.

Why in news?

The discovery of Leptobrachium aryatium in Garbhanga Reserve Forest has brought attention to the ecological significance and conservation needs of this urban-adjacent forest.

Global Dimming

Global dimming refers to the reduction in solar radiation reaching Earth's surface due to atmospheric aerosols like smoke and pollution. It can temporarily cool local or regional climates by scattering or absorbing sunlight. This phenomenon was first noted in the mid-20th century and has been linked to increased particulate emissions from industrial activities and wildfires. Global dimming can disrupt weather patterns, reduce evaporation, and impact crop yields. It also complicates climate change models by masking some warming effects. The effect is often short-lived, reversing when aerosol emissions decrease or weather conditions change.

Why in news?

The 2023 Canadian wildfire smoke caused global dimming over NYC, cooling the region by 3°C but trapping hazardous pollutants.

Global Forest Coalition (GFC)

The Global Forest Coalition (GFC) is an international coalition of non-profits and indigenous peoples' organizations advocating for forest peoples' rights and social justice in forest policies. It critiques market-based forest conservation mechanisms like TFFF, arguing they commodify ecosystem services and fail to protect indigenous rights. GFC promotes recognizing forest peoples' rights over financial incentives and suggests alternative funding through reallocating national defense budgets and taxing fossil fuels. The coalition emphasizes the intangible values of forests, such as carbon storage and biodiversity, over commercial valuation.

Why in news?

GFC has voiced serious concerns about TFFF's design and impact, denoting risks to indigenous communities and questioning the financial model's sustainability.

Green Hydrogen Clusters

Green Hydrogen Clusters are geographic concentrations of **MSMEs, technology providers, and research institutions** collaborating to develop and scale green hydrogen

technologies. These clusters facilitate **shared innovation platforms, standardized protocols, and economies of scale** by pooling resources and expertise. They enable joint manufacturing, testing, and commercialization of components like electrolysers and fuel cells. Clusters also attract investment by creating demand signals and reducing risks for stakeholders. This collaborative approach accelerates technology adoption and market penetration, supporting India's goal to become a global manufacturing hub for green hydrogen technologies.

Why in news?

The formation of Green Hydrogen Clusters was emphasized at the workshop as a strategy to empower MSMEs and enhance competitiveness in India's green hydrogen supply chain.

Green Steel

Green steel is defined in India as steel produced with carbon dioxide emissions less than **2.2 tonnes per tonne** of steel produced. It involves using renewable energy sources and innovative technologies like hydrogen-based reduction and electric arc furnaces to reduce reliance on coal. Green steel production aims to lower greenhouse gas emissions compared to traditional blast furnace methods. India is developing policies to incentivize green steel manufacturing and mandate its use in state-funded projects. This concept is central to India's strategy for reducing the carbon footprint of its construction and manufacturing sectors.

Why in news?

India is introducing incentives and mandates to increase green steel production as part of its commitment to reduce emissions and achieve net zero by 2070.

Hantavirus

Hantavirus is a group of viruses transmitted primarily by rodents, causing hantavirus pulmonary syndrome (HPS) and hemorrhagic fever with renal syndrome (HFRS) in humans. The virus spreads mainly through inhalation of aerosolized rodent excreta like urine, droppings, or saliva. Different hantavirus strains are associated with specific rodent hosts worldwide. Symptoms range from mild flu-like to severe respiratory distress. There is no specific cure, but early medical intervention improves survival. The virus does not spread between humans under normal conditions. It is considered a zoonotic pathogen with public health concerns in rural and agricultural settings.

Why in news?

Hantavirus was identified exclusively in black rats in rural Madagascar, denoting the virus's localized transmission linked to agricultural land use and deforestation.

Hindu Kush Himalayas (HKH)

The Hindu Kush Himalayas is a vast mountain system spanning eight countries in South and Central Asia. It includes the Himalayas, Karakoram, and Hindu Kush ranges, covering over 4.2 million square kilometers. The region is the source of 12 major river basins supporting nearly two billion people. It contains the third-largest ice mass on Earth after Antarctica and the Arctic. The HKH is a climate change hotspot, experiencing rapid glacial

retreat, snow cover decline, and biodiversity shifts. Its water resources are vital for agriculture, hydropower, and ecosystems across South and Southeast Asia.

Why in news?

The 2025 report by ICIMOD marks declining snow persistence in the HKH, signaling a regional water crisis that threatens the livelihoods and food security of billions dependent on its river basins.

Immunization for All

Immunization for All is a global health concept advocating equitable access to vaccines regardless of geographic, economic, or social barriers. It aims to eliminate disparities in vaccine availability between urban and rural areas, and among different age groups. The approach supports universal health coverage and the Sustainable Development Goals (SDGs). It includes strategies like outreach programs, mobile clinics, and education campaigns to reach underserved populations. This concept is vital for controlling outbreaks and achieving global herd immunity. It also addresses vaccine hesitancy by promoting public trust and awareness.

Why in news?

The 2025 World Immunization Week theme Immunization for All is Humanly Possible promotes equitable vaccine access worldwide.

India Cooling Action Plan (ICAP)

The **India Cooling Action Plan (ICAP)** was launched in 2019 by the Ministry of Environment, Forest and Climate Change. It aims to reduce cooling energy demand by up to 40% by 2038 and improve access to cooling while minimizing environmental impacts. ICAP covers sectors like buildings, refrigeration, and transport. It promotes energy-efficient appliances, refrigerant transition, and sustainable cooling technologies. The plan supports India's climate goals by addressing cooling demand, which is projected to account for nearly **30% of total electricity consumption by 2050**. ICAP also emphasizes refrigerant management to reduce greenhouse gas emissions.

Why in news?

ICAP is central to the government's new financial incentive scheme encouraging replacement of old ACs with five-star models to reduce energy use and peak electricity demand.

India's Green Steel Policy

India's Green Steel Policy is an emerging framework designed to promote low-carbon steel production. It includes financial incentives for producers using renewable energy and cleaner technologies and mandates a minimum percentage of green steel usage in government-funded infrastructure projects. The policy aims to align the steel industry with India's climate goals, encouraging innovation and investment in decarbonisation. It also supports energy transition by encouraging renewable power integration and reducing coal dependency. Approval of this policy is anticipated soon, marking step in India's industrial and environmental planning.

Why in news?

The government is expected to approve the Green Steel Policy soon, which will incentivize decarbonisation and mandate green steel use in public projects.

Indian Giant Flying Squirrel

The **Indian giant flying squirrel** (Petaurista philippensis) is a nocturnal mammal native to the forests of India and Southeast Asia. It has a **gliding membrane** extending from neck to tail, enabling it to glide distances up to 100 meters between trees. Its body length ranges from **30 to 45 cm**, with a tail length of **40 to 50 cm**, weighing between 1.5 and 2 kg. It reproduces once a year, birthing 1-3 young. The species plays a vital ecological role by dispersing seeds and controlling insect populations. It is listed under **Schedule II of the Wildlife Protection Act, 1972** in India.

Why in news?

A rare sighting of the Indian giant flying squirrel was reported in Ranikhet, Uttarakhand, marking the first recorded appearance in this region and prompting local conservation efforts.

Indian Gray Wolf

The Indian gray wolf (Canis lupus pallipes) is a subspecies of the gray wolf found primarily in the Indian subcontinent's arid and semi-arid regions. Smaller and more slender than other gray wolves, it plays important ecological role as a top predator controlling herbivore populations. The species faces threats from habitat loss, human-wildlife conflict, and poaching. Unlike many large carnivores, it is often culturally respected in certain tribal areas, where spiritual beliefs afford it protection. Its survival increasingly depends on integrating scientific conservation with local traditions, especially in densely populated, culturally complex landscapes like Mahuadanr.

Why in news?

The Indian gray wolf is central to recent studies showing how cultural respect and traditional practices in Mahuadanr help conserve this threatened carnivore without conventional protected areas.

Indoor Air Quality (IAQ)

Indoor Air Quality (IAQ) refers to the air quality within and around buildings, focusing on the health and comfort of occupants. It includes pollutants from indoor sources like cooking, smoking, chemical cleaners, building materials, and biological contaminants such as mould. Outdoor air pollution also infiltrates indoor spaces, especially in poorly insulated buildings common in India. IAQ affects health through short-term symptoms like irritation and headaches, and long-term risks including respiratory diseases and cancer. The U.S. EPA classifies outdoor air pollution as a class 1 carcinogen. IAQ management includes ventilation, use of HEPA filters, and reducing volatile organic compounds in building materials.

Why in news?

The article marks the growing concern over indoor air pollution in India, emphasizing the need for better IAQ management in urban buildings.

InSAR Satellite Technology

InSAR (Interferometric Synthetic Aperture Radar) is a remote sensing technique used to measure ground deformation with millimeter precision by comparing radar images taken at different times. It detects subtle changes in Earth's surface elevation caused by natural or human-induced processes such as earthquakes, volcanic activity, or land subsidence. InSAR works by analyzing phase differences in radar waves reflected from the ground. It can cover large areas, making it valuable for monitoring geophysical phenomena over hundreds of miles. The technology was first developed in the 1990s and has since become crucial in geoscience and environmental monitoring.

Why in news?

InSAR technology was used to monitor the gradual uplift of the Aral Sea basin's crust following the lake's desiccation, revealing a rise of about 1.6 inches between 2016 and 2020.

Inter-State Cheetah Conservation Complex

The **Inter-State Cheetah Conservation Complex** is a cooperative initiative between Madhya Pradesh and Rajasthan aimed at enhancing cheetah conservation across state borders. It facilitates the phased translocation of cheetahs to new habitats, including Gandhi Sagar Sanctuary. The complex supports sharing resources, expertise, and coordinated wildlife management strategies. It aims to increase genetic diversity and population stability by integrating cheetahs from South Africa, Botswana, and Kenya. The agreement with Kenya for cheetah translocation is under negotiation. This collaborative framework is designed to create a larger, connected habitat for cheetahs in the region.

Why in news?

Madhya Pradesh and Rajasthan have agreed to form this conservation complex to support the phased introduction and management of cheetahs, enhancing regional wildlife preservation efforts.

International Big Cat Alliance

The **International Big Cat Alliance** is a global coalition focused on the conservation of big cat species such as tigers, lions, leopards, and snow leopards. It promotes habitat protection, anti-poaching measures, and scientific research to preserve these apex predators. The alliance facilitates collaboration between governments, NGOs, and conservationists to share best practices and resources. It also addresses human-wildlife conflict and supports community-based conservation initiatives. The alliance was established to strengthen international efforts in reversing population declines and ensuring the survival of big cat species across their native ranges.

Why in news?

India reaffirmed its commitment to the International Big Cat Alliance during the BRICS Environment Ministers' Meeting, encouraging other BRICS nations to join global conservation efforts.

International Research Institute for Climate and Society

The **International Research Institute for Climate and Society (IRI)** is a research unit within Columbia University's Earth Institute. Founded in 1996, it focuses on improving climate prediction and its applications, especially for developing countries. IRI integrates climate science with social and economic data to support decision-making in agriculture, health, and disaster risk reduction. It collaborates with NOAA and other global agencies for ENSO monitoring and forecasting. IRI's products include seasonal outlooks, drought assessments, and capacity-building programs worldwide.

Why in news?

The IRI partnered with NOAA in issuing ENSO outlooks indicating a high likelihood of ENSO-neutral conditions through late 2025.

ISO 14001 Certification

ISO 14001 is an international standard for environmental management systems (EMS) published by the International Organization for Standardization (ISO). It provides a framework for organizations to manage environmental responsibilities systematically, reduce waste, and improve resource efficiency. Certification requires meeting strict criteria including compliance with environmental laws, continuous improvement, and pollution prevention. It is applicable across industries and helps companies demonstrate their commitment to sustainability. The standard was first published in 1996 and has been revised several times, with the latest version released in 2015. ISO 14001 certification can enhance corporate reputation and stakeholder trust.

Why in news?

Jwaneng Diamond Mine was the first mine in Botswana to receive ISO 14001 certification, denoting its commitment to eco-friendly mining practices.

Jatayu Conservation Breeding Centre

The **Jatayu Conservation Breeding Centre (JCBC)** is a specialized facility focused on breeding critically endangered vultures in India. Established by the Bombay Natural History Society, JCBC operates four centers located in Pinjore (Haryana), Bhopal (Madhya Pradesh), Rajabhatkhawa (West Bengal), and Rani (Assam). The centers use captive breeding techniques to increase vulture populations and prepare birds for reintroduction into the wild. JCBC emphasizes health screening, stress minimization during transport, and ecological balance at release sites. The name Jatayu is derived from a mythical bird in the Indian epic Ramayana, symbolizing protection and conservation.

Why in news?

JCBC facilitated the transfer of 34 critically endangered vultures from Pinjore to Maharashtra for release into tiger reserves, marking important step in vulture population revival.

Jhum Cultivation

Jhum cultivation, also known as slash-and-burn agriculture, is a traditional farming practice common in Northeast India, including Mizoram. Farmers clear forest patches by

cutting and burning vegetation to prepare land for crops. This method leads to nutrient-rich ash but also increases wildfire risks due to dry biomass accumulation. Jhum cycles vary from 5 to 20 years, allowing forests time to regenerate. It supports local subsistence but has environmental drawbacks like soil degradation, loss of biodiversity, and increased vulnerability to forest fires. Jhum farming is linked to cultural identity and traditional livelihoods of many indigenous communities.

Why in news?

A forest fire in Mizoram's Phawngpui National Park began from a jhum cultivation farm, denoting the recurring wildfire risks associated with this agricultural practice.

Kal Baisakhi

Kal Baisakhi, also called the **nor'wester season**, is a meteorological phenomenon occurring in eastern India and Bangladesh during pre-monsoon months (March to May). It is characterized by sudden, violent thunderstorms accompanied by heavy rain, lightning, and strong winds. These storms are crucial for cooling the region's rising temperatures and providing moisture before the monsoon onset. Kal Baisakhi storms originate due to the clash between warm, moist air from the Bay of Bengal and cooler air masses, often enhanced by western disturbances. The phenomenon is vital for agriculture, especially for crops like jute and rice.

Why in news?

Kal Baisakhi received a fresh boost from the western disturbance, leading to a week-long forecast of thunderstorms and rainfall over North-East India in April 2025.

Kanha National Park

Kanha National Park is a large protected area in Madhya Pradesh, known for its population of Bengal tigers and Indian wild dogs. It is part of the Kanha Tiger Reserve, one of the largest tiger reserves in the country. The park's dense forests, grasslands, and riverine ecosystems provide habitat for various endangered species. It also has cultural significance, with tribal communities living in and around the area. The park faces challenges from illegal poaching and insurgent activities, including Maoist presence, affecting conservation efforts. It was the inspiration for Rudyard Kipling's "Jungle Book."

Why in news?

Kanha National Park was the site of a police encounter resulting in the death of two Maoist operatives, denoting security challenges within the reserve.

Kaziranga National Park

Kaziranga National Park, a UNESCO World Heritage Site in Assam, covers **1,302 sq. km** and is renowned for its population of the one-horned rhinoceros. Over **50% of its landmass** consists of grasslands interspersed with beels (water bodies), supporting more than **500 bird species**. It serves as a critical wintering ground for migratory birds from the Central Asian and East-Asian Australasian Flyways. The park has recorded over 124 species of water and wetland birds in recent surveys, hosting over 112,000 individual birds. It is a key habitat for endangered species like the Pallas's fish eagle and plays a vital role in

biodiversity conservation in northeastern India.

Why in news?

Kaziranga is the breeding site for the endangered Pallas's fish eagle, with repeated annual nesting by a Mongolian-tagged individual, underscoring its ecological importance.

Khangchendzonga National Park

Declared a UNESCO World Heritage Site in 2016, Khangchendzonga National Park spans over 1,784 square kilometers in Sikkim. It is home to diverse flora and fauna, including endangered species like the snow leopard and red panda. The park encompasses the sacred Kangchenjunga massif, the third-highest mountain in the world. It features alpine and subalpine ecosystems, glaciers, and high-altitude lakes. The park is culturally for local communities, including the Lepcha people, who consider it sacred. It is also a site for scientific research on climate change impact in the Himalayas. Tourism is regulated to protect its fragile environment.

Why in news?

The park is mentioned as part of the Kangchenjunga expedition area, denoting its environmental and cultural importance during the 2025 mountaineering events.

Kharif and Rabi Crops

Kharif and Rabi are two major cropping seasons in India. Kharif crops are sown with the onset of the monsoon (June-August) and harvested in October-December. Rabi crops are sown in October-December and harvested in March-May. These seasons are crucial for Indian agriculture and food security. Kharif crops include rice, maize, and cotton, while Rabi crops mainly consist of wheat, barley, and mustard. The success of these crops depends heavily on monsoon rainfall and winter conditions. Poor performance of either season can affect food prices and inflation, as seen during the 2023-24 agricultural year.

Why in news?

The 2023-24 agricultural year saw subpar yields in both kharif and rabi crops due to El Niño-induced weather anomalies, leading to food inflation and economic impacts.

Kodaikanal Division

Kodaikanal Division is a forest administrative area in Tamil Nadu, known for its montane forests and grasslands within the Western Ghats. It lies at an altitude of around 2,000 meters and is home to diverse flora and fauna, including the Nilgiri Tahr. The division features protected areas and is part of the larger Palani Hills biodiversity hotspot. It serves as a critical habitat corridor connecting fragmented forest patches. Kodaikanal is also a popular hill station, which influences conservation efforts due to tourism pressures. The division was newly included in the 2025 Nilgiri Tahr population survey.

Why in news?

Kodaikanal Division was added as one of the 36 new forest blocks surveyed during the 2025 Nilgiri Tahr census, expanding the geographic coverage of the population study.

Kollidam River

The **Kollidam River** is a distributary of the Cauvery River in Tamil Nadu, flowing through the delta region. It is a key habitat for the mugger crocodile and supports diverse aquatic

life. The river plays important role in irrigation and local fisheries. Kollidam's banks, especially near Anaikarai, have recorded over 50 mugger crocodiles. The river's ecosystem is influenced by seasonal monsoons, and its water levels fluctuate accordingly. Kollidam is managed partly by the Public Works Department, and many crocodile habitats along it fall outside reserve forests, making them accessible to the public and increasing human-wildlife interactions.

Why in news?

The Kollidam River area has been identified as a critical habitat zone for mugger crocodiles, with frequent sightings and human-crocodile conflicts prompting conservation efforts.

Kuldiha Wildlife Sanctuary

Kuldiha Wildlife Sanctuary, located in Odisha, spans approximately **272.75 square kilometers**. It is part of the Mayurbhanj Elephant Reserve and is known for its mixed deciduous forests and diverse fauna including elephants, leopards, and deer. The sanctuary serves as important corridor between Similipal National Park and other forest areas. It was established in **1984** and plays a vital role in conserving regional biodiversity. The sanctuary faces threats from poaching and illegal logging, prompting increased forest patrols and conservation efforts. It is also recognized for its potential for eco-tourism and environmental education.

Why in news?

Kuldiha Wildlife Sanctuary was mentioned due to the arrest of a man caught with hunting equipment inside the sanctuary, denoting ongoing anti-poaching efforts.

Labeo chekida

Labeo chekida is a small, dark-bodied freshwater fish endemic to the Chalakudy river in the Western Ghats. Locally known as "kaka chekida," this species was identified through detailed morphological studies distinguishing it from other Labeo species. It exhibits unique physical traits adapted to its riverine environment. Labeo chekida's discovery contributes to understanding the biodiversity of the Western Ghats, a recognized global biodiversity hotspot. Its restricted habitat and sensitivity to ecological disturbances make it important for conservation efforts in river ecosystems affected by human activities such as dam construction and pollution.

Why in news?

Labeo chekida was identified alongside Labeo uru in a recent study resolving the taxonomic confusion of Labeo nigrescens, denoting new species in the Western Ghats freshwater ecosystems.

Labeo nigrescens

Labeo nigrescens was first described in 1870 but remained taxonomically ambiguous for over a century. It is now confirmed as a distinct species through morphological markers such as a kinked lateral line and **distinct scale patterns**. This species is part of the Labeo genus, important for freshwater biodiversity in South Asia. The clarification of Labeo

nigrescens' identity helps separate it from visually similar species, aiding in accurate ecological assessments. Its presence across multiple river systems underlines the complex biodiversity of the Western Ghats, which faces threats from habitat destruction and damming.

Why in news?

The true identity of Labeo nigrescens was confirmed in a recent taxonomic study, resolving longstanding confusion and emphasizing the biodiversity richness of the Western Ghats rivers.

Labeo uru

Labeo uru is a newly identified freshwater fish species endemic to the Chandragiri river in the Western Ghats. It is named after the traditional wooden dhow, "uru," due to its **elongated, sail-like fins**. This species was distinguished through morphological analysis comparing historical specimens and fresh samples. Labeo uru belongs to the genus Labeo, known for their importance in freshwater ecosystems. Its discovery helps clarify the taxonomy of related species, particularly resolving confusion surrounding Labeo nigrescens. The species' habitat is limited and vulnerable to environmental changes, emphasizing the ecological significance of the Chandragiri river system.

Why in news?

Labeo uru was discovered by researchers from the Centre for Peninsular Aquatic Genetic Resources, Kochi, as part of a study clarifying the taxonomy of freshwater fish in the Western Ghats.

LaCONES

The **Laboratory for the Conservation of Endangered Species (LaCONES)** is part of the CSIR-Centre for Cellular and Molecular Biology in Hyderabad. It focuses on wildlife conservation through molecular biology and genomics. LaCONES was established to apply advanced genetic tools for protecting endangered species and managing biodiversity. It houses one of the largest wildlife DNA banks in Asia. The lab actively researches species identification, population genetics, and evolutionary biology. It also supports conservation policies and forensic investigations related to wildlife crimes. LaCONES collaborates internationally to study genetic diversity and adaptability in threatened species.

Why in news?

LaCONES contributed to the global study on primate genomics, helping uncover genetic factors behind primate evolution and adaptation.

Mahadayi River Basin

The **Mahadayi River Basin** spans parts of Karnataka, Goa, and Maharashtra in India. It is an ecologically sensitive zone with rich biodiversity, including the Western Ghats' forests. The basin supports agriculture, drinking water, and livelihoods for local communities. The river is crucial for maintaining regional water security and groundwater recharge. The basin faces threats from water diversion projects and deforestation, which can lead to desertification and loss of rainfall. It is also home to several endemic species and

protected areas like the Bhimgad Wildlife Sanctuary. The basin's health directly impacts the Malaprabha River, a key tributary in Karnataka.

Why in news?

The Mahadayi River Basin is in focus due to protests against the Bandura Nala water diversion project, which threatens water security and forest ecosystems in the region.

Malabar Grey Hornbill

The **Malabar Grey Hornbill (Ocyceros griseus)** is an endemic bird species found exclusively in the Western Ghats of India. It prefers evergreen forests but also inhabits plantations and agricultural landscapes. The species relies on **secondary cavities** for nesting, which are hollows made by primary cavity nesters like woodpeckers. These birds often reuse the same nesting cavities across multiple breeding seasons. The availability of cavity-bearing trees is crucial for their reproductive success. The Malabar Grey Hornbill plays an important ecological role in seed dispersal, contributing to forest regeneration and biodiversity maintenance. It is currently classified as **vulnerable** due to habitat loss.

Why in news?

A Kerala-based team received the Future Conservationist Award for a project focused on conserving the Malabar Grey Hornbill in the Wayanad landscape, emphasizing community participation and habitat mapping beyond protected areas.

National Mission on Natural Farming (NMNF)

The National Mission on Natural Farming (NMNF) was launched by the Government of India on November 25, 2024, to promote chemical-free farming practices nationwide. It targets reducing dependency on synthetic fertilizers and pesticides by encouraging organic and natural farming methods. NMNF supports infrastructure development like BRCs and integrates with other schemes such as FPO promotion and edible oilseed production. The mission emphasizes local adaptability, affordability, and farmer participation. It also focuses on capacity building, input supply, and market support to ensure sustainable agriculture and improved farmer incomes.

Why in news?

NMNF was brought into light following the announcement of guidelines and financial aid for BRCs, key components of the mission to scale natural farming across India.

Neem-Coated Urea

Neem-coated urea is regular urea fertiliser coated with neem oil or extract to slow nitrogen release and reduce environmental losses. It improves nitrogen use efficiency and limits diversion of urea for non-agricultural uses. Introduced in India in 2012, neem-coating initially curbed excessive urea consumption and wastage. However, by 2024-25, the effects have diminished, as indicated by a surge in urea sales to nearly 390 lakh tonnes. Despite no retail price increase since 2012, urea consumption rose sharply, suggesting reduced efficacy of neem-coating in controlling overuse and diversion.

Why in news?

The resurgence of urea sales in 2024-25 marks the waning impact of neem-coating on nitrogen-use efficiency and fertiliser management in Indian farming.

Neglected Tropical Diseases (NTDs)

Neglected Tropical Diseases (NTDs) are a group of infectious diseases prevalent in tropical and subtropical regions, affecting over one billion people worldwide. They include diseases like schistosomiasis, lymphatic filariasis, and leishmaniasis. NTDs cause chronic disability and contribute to poverty. Control strategies involve mass drug administration, vector control, and improved sanitation. Funding for NTD programs largely depends on international aid and ODA. Disruptions in funding lead to interruptions in treatment campaigns and surveillance, increasing disease burden. NTDs often receive less attention compared to other diseases despite their high impact on vulnerable populations.

Why in news?

NTD programs are severely affected by recent health ODA reductions, causing interruptions in treatment and surveillance efforts in many developing countries.

Nicobar Swap

The **Nicobar Swap** refers to a compensatory afforestation initiative where forest land in one region is conserved or developed to offset forest diversion in another. In this case, **506.33 acres in Haryana's Aravalli region** were designated as protected forest land on June 20, 2023, to compensate for forest land diverted for a project in the **Great Nicobar Island**. This swap is part of India's forest conservation strategy under the Forest (Conservation) Act, aiming to balance developmental needs with ecological preservation by creating or protecting forests elsewhere when original forest land is used for non-forest purposes.

Why in news?

The Haryana government's auction of a quarter of the protected forest land under the Nicobar Swap for mining activities sparked legal action and intervention by the National Green Tribunal in 2025.

Nilgiri Tahr

The **Nilgiri Tahr** (Nilgiritragus hylocrius) is an endemic mountain ungulate of the Western Ghats in southern India. It is classified as **vulnerable** by the IUCN due to habitat loss and fragmentation. The species prefers **rocky, montane grasslands** above 1,200 meters elevation. Nilgiri Tahrs exhibit sexual dimorphism; males have large curved horns, females have smaller or no horns. They are herbivores, feeding mainly on grasses and shrubs. Their populations are fragmented across Kerala, Tamil Nadu, and Karnataka, with the largest numbers in Eravikulam National Park. Conservation efforts include habitat protection and periodic censuses using camera traps and pellet sampling.

Why in news?

Kerala and Tamil Nadu are conducting a joint Nilgiri Tahr census from April 24 to 27, covering 265 census blocks to estimate population and study genetic variation, marking the 50th anniversary of Eravikulam National Park.

Olive Ridley Sea Turtles

The **Olive Ridley sea turtle** (Lepidochelys olivacea) is a vulnerable marine species known

for its mass nesting behavior called arribada. The Rushikulya beach in Odisha is one of the world's key nesting sites, with nearly 700,000 turtles recorded during the 2025 nesting season. These turtles migrate thousands of kilometers to lay eggs on specific beaches. The species is threatened by habitat loss, pollution, and coastal development. Conservation efforts on Rushikulya beach involve local action committees to protect nests and reduce human disturbance. The dam and river pollution could impact the marine and coastal ecosystem supporting these turtles.

Why in news?

The Rushikulya beach recorded a record-breaking mass nesting event in early 2025, drawing attention amid ongoing environmental disputes over the river and dam project.

Olive Ridley Turtles

Olive Ridley turtles (Lepidochelys olivacea) are a vulnerable species found globally but notably nest in large numbers along Odisha's coast, including Balukhand-Konark Sanctuary. Their mass nesting, called arribada, involves thousands of females nesting simultaneously. These turtles prefer sandy beaches and are threatened by habitat loss, climate change, and human activity. Conservation efforts include protecting nesting sites and regulating fishing practices. Olive Ridleys have a unique temperature-dependent sex determination system, where incubation temperature influences hatchling sex ratios. Their migration spans thousands of kilometers across the Indian Ocean.

Why in news?

The sanctuary's nesting grounds for Olive Ridley turtles are threatened by vegetation loss and shoreline erosion, impacting their breeding success and population stability.

One Sun, One World, One Grid (OSOWOG)

One Sun, One World, One Grid (OSOWOG) is an international initiative launched in 2018 under the International Solar Alliance to create a globally interconnected renewable energy grid. It aims to enable continuous solar power availability worldwide by linking energy grids across different time zones. The project integrates solar, wind, and hydro resources to balance supply and demand, reduce fossil fuel dependence, and lower investment costs through shared reserves. India leads OSOWOG with plans to connect grids with Middle Eastern and Southeast Asian countries. The initiative supports energy sustainability by leveraging the principle that "the sun never sets" on the interconnected grid.

Why in news?

India and Saudi Arabia are collaborating on an undersea electricity grid interconnection as part of the OSOWOG vision to export green energy and enhance grid stability.

Pakke Wildlife Sanctuary

Pakke Wildlife Sanctuary, also known as Pakhui Sanctuary until 2001, is located in East Kameng district of Arunachal Pradesh. It was established on 1 July 1966 and declared a Game Sanctuary on 28 March 1977. It became a tiger reserve on 23 April 2002, the 26th tiger sanctuary in India. The sanctuary is characterized by the Pakke River, which is called

Bardikarai in Assam's Sonitpur district. It hosts diverse fauna including tigers, leopards, clouded leopards, Asiatic black bears, and Chinese pangolins. The sanctuary covers multiple ranges such as Seijosa, Tippi, and Rilloh, with active anti-poaching measures in place.

Why in news?

Camera traps installed in 2023-24 detected nine big cats, including tigers, in Pakke Wildlife Sanctuary, confirming an increase in tiger population and ongoing conservation efforts in the region.

Pamban Corridor

The **Pamban corridor** is a narrow strait between the Indian mainland (Tamil Nadu) and the island of Rameswaram, connecting the Palk Bay and the Gulf of Mannar. It serves as important marine passage for various species, including migratory turtles, fish, and marine mammals. The corridor is characterized by shallow waters, coral reefs, and seagrass beds, providing important foraging grounds. It also acts as a potential shorter migration route for Olive Ridley turtles traveling between the Bay of Bengal and the Arabian Sea. The corridor faces ecological threats from fishing, dredging, and coastal development.

Why in news?

Researchers speculate that the Olive Ridley turtle might have used the Pamban corridor as an alternative shorter route during its 4,500 km migration between India's east and west coasts.

Pardosa tuberosa

Pardosa tuberosa is a species of wolf spider found in Meghalaya. It is highly sensitive to environmental changes and habitat disturbances, making it a valuable bioindicator for ecosystem health. Wolf spiders like Pardosa tuberosa do not build webs but actively hunt prey using speed and agility. The species' population decline signals deteriorating habitat quality. It inhabits relatively undisturbed habitats, often in forested or grassland areas. Its presence or absence can provide early warnings about ecological shifts or degradation, aiding conservation efforts. The species' precise ecological role and distribution in India are still being researched.

Why in news?

Pardosa tuberosa was documented for the first time in Meghalaya during recent surveys denoting its role as an environmental bioindicator.

PM10 Particulate Matter

PM10 refers to airborne particles with diameters less than 10 micrometers, small enough to penetrate the respiratory system and cause health issues. The **National Ambient Air Quality Standard (NAAQS) in India sets a safety limit of 60 micrograms per cubic meter** for PM10. Chronic exposure to PM10 is linked to respiratory diseases, cardiovascular problems, and premature mortality. Major sources include vehicle emissions, industrial activity, construction dust, waste burning, and agricultural fires.

PM10 levels are typically higher in northern India due to meteorological conditions and regional pollution sources. Monitoring stations like Anand Vihar in Delhi provide critical data for regulatory actions.

Why in news?

PM10 pollution levels in Indian metropolitan cities consistently exceeded national safety standards between 2021 and 2024, with northern cities showing particularly hazardous concentrations.

Point Calimere Bird Sanctuary

Point Calimere Bird Sanctuary is located in Nagapattinam district, Tamil Nadu. It spans approximately **24.12 square kilometers** and is part of the Ramanathapuram district's coastal ecosystem. The sanctuary is a designated **Ramsar wetland site**, recognized for its importance in migratory bird conservation. It hosts species like the **greater flamingo, Indian pond heron, and black-winged stilt**. The area features unique habitats such as mangroves, salt pans, and dry evergreen forests. It is also home to the endangered Indian blackbuck. The sanctuary plays important role in the Central Asian migratory bird flyway, attracting birds from Central Asia and Siberia.

Why in news?

Point Calimere Bird Sanctuary is a key site for an ICMR-led zoonotic disease surveillance study, monitoring bird-human interactions to detect emerging pathogens in Tamil Nadu.

Pollution Index (PI)

The Pollution Index is a numerical scale from 0 to 100 used by the CPCB to classify industries based on their pollution load. It incorporates emissions of air pollutants, water effluents, hazardous waste generation, and resource consumption. Industries scoring 0-20 fall under the white category (least polluting), 21-40 green, 41-59 orange, and 60-100 red (most polluting). The PI helps regulate industry location, inspection frequency, and pollution control measures. It is a key tool in environmental governance in India, facilitating harmonized pollution norms and prioritizing regulatory attention based on pollution severity.

Why in news?

The Pollution Index was central to the reclassification of waste-to-energy incineration plants from red to blue category, sparking debate over pollution assessment accuracy.

Polyethylene Terephthalate (PET)

Polyethylene terephthalate (PET) is a common thermoplastic polymer used extensively in packaging, especially plastic bottles and food containers. It is one of the most prevalent types of microplastics found in the environment due to widespread use and slow degradation. PET microplastics can range in size from visible fragments to nanoscale particles. These particles are resistant to environmental breakdown and can accumulate in soil, water, and air. PET microplastics have been detected in various ecosystems and are known to enter food chains, posing ecological and potential health risks.

Why in news?

PET was one of the dominant microplastics identified in plant tissues in a 2025 study on

atmospheric microplastic pollution affecting crops and food safety.

Project Cheetah

Project Cheetah is an Government of India initiative launched in 2022 to reintroduce cheetahs, extinct in India since the 1950s. The project involved translocating **20 cheetahs from Namibia and South Africa** to Kuno National Park. It aims to establish a viable cheetah population and restore ecological balance. The National Tiger Conservation Authority designated a 17,000 sq km landscape from Kuno to Gandhi Sagar Sanctuary as the first phase area for the project. It focuses on habitat restoration, anti-poaching measures, and community engagement to ensure the survival of these big cats in India.

Why in news?

The project is at risk due to environmental concerns raised against a hydro power plant that threatens the cheetah corridor near Kuno.

Project FeederWatch

Project FeederWatch is a citizen science program run by the Cornell Lab of Ornithology that collects data on bird populations during the winter months. Participants count birds visiting feeders and submit observations online. The program has been active since 1987 and covers North America. It helps track long-term trends in bird distribution and abundance, providing valuable data for conservation. Project FeederWatch focuses on **non-breeding season bird populations**, complementing breeding season surveys. It relies on volunteer birdwatchers to gather data, making it one of the largest citizen science bird monitoring efforts in the world.

Why in news?

Data from Project FeederWatch was used by researchers to track the northward expansion of the Lesser Goldfinch populations in the United States.

Project Nilgiri Tahr

Project Nilgiri Tahr was launched by Tamil Nadu in October 2023 to conserve the endangered Nilgiri tahr, a mountain ungulate native to the Western Ghats. It involves **annual synchronized population surveys** across multiple forest divisions in Tamil Nadu and Kerala. The project uses modern scientific methods like the **bounded count method** and **double observer method** for accurate population estimation. It also includes collecting faecal samples to assess parasitic loads affecting the species. The project aims to generate vital data to understand population trends and habitat contiguity for better conservation planning.

Why in news?

The second annual synchronized Nilgiri tahr population survey is set to begin, expanding coverage by 36 new blocks, including Kodaikanal, to improve data on this endangered species.

Project Tiger

Project Tiger was launched in 1973 by the Government of India to protect Bengal tigers and their habitats. It initially started with nine tiger reserves and now includes 58 reserves

across the country. The project focuses on habitat management, anti-poaching measures, and scientific monitoring. It has contributed to the increase in tiger populations in India. Project Tiger also promotes community involvement and eco-tourism to support conservation efforts. The project operates under the National Tiger Conservation Authority (NTCA), which oversees policy and implementation. It is one of the most successful wildlife conservation programs globally.

Why in news?

The tigers outside tiger reserves project is designed to supplement existing funding and conservation efforts under Project Tiger, addressing tiger populations beyond notified reserves.

Rare Earth Metals

Rare earth metals consist of 17 chemical elements, including lanthanides plus scandium and yttrium, essential for modern electronics, renewable energy, and defense applications. These metals are not actually rare but are difficult to extract economically due to their dispersed deposits. China currently dominates global rare earth production, accounting for over 60% of supply. Elements like neodymium and yttrium are critical for manufacturing powerful magnets used in wind turbines and electric vehicles. Environmental concerns arise from mining and processing these metals, which produce toxic waste. Efforts to diversify supply chains have increased interest in new deposits worldwide.

Why in news?

Kazakhstan announced its largest rare earth metals deposit, containing cerium, lanthanum, neodymium, and yttrium, potentially boosting global supply and geopolitical influence in this strategic sector.

Rat-hole Miners

Rat-hole miners specialize in extracting minerals through narrow, horizontal tunnels, often in hazardous conditions. In the Silkyara Tunnel rescue of 2023, rat-hole miners played important role by manually excavating blocked sections when machinery failed. Their expertise includes navigating confined spaces and stabilizing weak rock formations, skills essential in emergency tunnel operations. Rat-hole mining is traditionally associated with coal extraction in Eastern India but is applied in other contexts requiring delicate manual tunneling. This method is labor-intensive and risky, demanding high physical endurance and precise knowledge of geology.

Why in news?

Rat-hole miners were instrumental in the 2023 rescue of 41 trapped workers during the Silkyara Tunnel collapse, providing manual excavation support when machines stalled.

REDD+ Safeguards Information Systems

REDD+ safeguards information systems are **mechanisms ensuring transparency and compliance with international environmental and social standards in REDD+ projects**. They provide communities access to data on forest use, carbon projects, and

their impacts. Out of 33 countries assessed, only 26 have fully operational systems meeting international standards. These systems help monitor environmental integrity, protect indigenous rights, and ensure free, prior, and informed consent. Lack of such systems raises concerns about community participation and risk of harm from climate initiatives. They are key to accountability and equitable benefit-sharing in forest carbon projects.

Why in news?

The report finds many countries lack operational safeguards information systems, limiting IPLCs' access to vital information on REDD+ activities and carbon rights enforcement.

Rusty Spotted Cat

The **Rusty Spotted Cat (Prionailurus rubiginosus)** is one of the smallest wild cat species, native to India and Sri Lanka. It weighs between 0.9 to 1.6 kg and is nocturnal and elusive. It is classified as **Near Threatened** by the IUCN due to habitat loss and fragmentation. The species inhabits dense forests and scrublands, including the Aravalli range. The Rusty Spotted Cat is rarely seen due to its secretive nature and small size, making it one of the least studied wild cats in India. It preys on small mammals, birds, and insects.

Why in news?

The Rusty Spotted Cat is among endangered species threatened by proposed mining in the protected forest area of Rajawas village, prompting conservation concerns and legal action.

Satellite Tagging of Whale Sharks

Satellite tagging has enabled tracking of whale shark migrations across vast ocean distances, including between the **Philippines and the Gulf of Mexico**. Tags transmit data on location, depth, and temperature, revealing migratory routes, feeding grounds, and behavior patterns. These devices help identify critical habitats and seasonal movements, aiding conservation efforts. Tagging data shows whale sharks prefer tropical and warm-temperate waters and undertake long-distance migrations. The technology faces challenges such as tag retention and battery life but remains vital for studying these elusive giants in their natural environment.

Why in news?

Advances in satellite tagging technology support ongoing research into whale shark migration and behavior, brought into light by tracking studies of individuals in the Pacific Ocean.

Similipal National Park

Similipal National Park, declared in 2025, covers **845.70 sq km** in Odisha, making it the state's largest national park. It is part of the larger Similipal Tiger Reserve, which spans **2,750 sq km**. The park includes 11 ranges, such as Pithabata, Jenabil, and Barehipani. It hosts **55 mammal species, 361 bird species, 62 reptiles, and 21 amphibians**. The national park status requires areas to be free of human habitation; thus, the village Bakua was excluded. Similipal is Odisha's second national park after Bhitarkanika, enhancing

tiger conservation and ecological protection in the region.

Why in news?

Similipal was officially notified as a national park by the Odisha government in October 2025, marking conservation milestone and expanding protected tiger habitat in the state.

Snow Leopard Range Countries

Snow leopards inhabit **12 range countries** across Central and South Asia, including Nepal, China, Mongolia, Bhutan, Pakistan, Afghanistan, Russia, Kazakhstan, Kyrgyzstan, Tajikistan, and Uzbekistan. These countries encompass high-altitude mountain ecosystems such as the Himalayas, Altai, and Pamir ranges. Snow leopard populations vary widely across these nations, with some areas facing greater threats from habitat loss and poaching. Conservation efforts often require international cooperation due to the species' transboundary habitat. Less than a quarter of their global range has been systematically studied, and only a small fraction has empirical population data.

Why in news?

The recent findings on Nepal's snow leopard population contribute to broader conservation knowledge across the 12 range countries where the species is found.

Solar Power Evacuation Challenges

Solar power evacuation refers to the process of transferring generated electricity from solar plants to the grid or end users. Challenges include limited grid capacity, regulatory hurdles, and transmission infrastructure constraints. In India, these issues often cause delays in integrating solar power into the main grid. Indian Railways faced difficulties with connectivity and power evacuation due to the dispersed locations of solar plants and varying state regulations. Resolving these required coordination with state governments and transmission utilities to upgrade infrastructure and streamline approvals, enabling efficient energy flow and maximizing solar power utilization.

Why in news?

Indian Railways encountered and addressed solar power evacuation and connectivity issues to expand its renewable energy installations across multiple states.

Solar X Accelerator Workshop

The **Solar X Accelerator** is a training program organized by ISA to nurture young entrepreneurs in the solar energy sector. It gathers participants worldwide to provide advanced skills and knowledge related to solar technologies, business models, and market strategies. The workshop encourages innovation and entrepreneurship to scale solar adoption, particularly in underserved regions. The program emphasizes practical training, networking, and mentorship to enable startups and small businesses to contribute effectively to solar energy deployment, addressing energy access challenges in Africa and beyond.

Why in news?

The Solar X Accelerator workshop is currently underway in Mauritius, hosting 35 young entrepreneurs from various countries to boost solar sector innovation and capacity building.

Solar-Powered GPS-GSM Trackers

Solar-powered GPS-GSM trackers are devices used in wildlife monitoring that combine solar energy harvesting with GPS location tracking and GSM communication for real-time data transmission. These trackers allow continuous monitoring of animal movement, behavior, and habitat use without frequent battery replacements. They are lightweight and designed to minimize impact on the animal's natural behavior. The GSM module sends location data to servers via mobile networks, enabling researchers to track animals remotely. These devices are increasingly used in conservation projects for endangered species like vultures, facilitating data-driven protection strategies and rapid response to threats.

Why in news?

The vultures released from the Kerwa center were equipped with solar-powered GPS-GSM trackers to enable continuous monitoring of their movement and safety in the wild near Halali Dam.

Southwest Monsoon

The **Southwest Monsoon** is a major seasonal wind system that brings the majority of India's annual rainfall, typically from June to September. It originates from the Indian Ocean and Arabian Sea, driven by differential heating between the landmass and ocean. The monsoon is critical for agriculture, especially for the kharif crop season. Its onset and intensity are influenced by factors like El Niño and La Niña phenomena. An above normal southwest monsoon forecast often signals increased agricultural productivity and better water reservoir levels, which can stabilize food prices and boost rural incomes. It also affects hydroelectric power generation and water resource management.

Why in news?

The 2025 forecast predicts an above normal southwest monsoon, expected to enhance farm incomes, support the agricultural sector, and help keep food inflation in check in India.

Star-Rating System for SEIAAs

The star-rating system was introduced by the Union environment ministry in January 2022 to assess State Environment Impact Assessment Authorities (SEIAAs) on their efficiency in granting environmental clearances. It rated SEIAAs on a scale of 0 to 7 based on timelines, adherence to processing schedules, and promptness in approvals. The system aimed to incentivize states and improve clearance processes. It was linked to the Parivesh 1.0 portal, a digital platform for environmental clearances. The system was discontinued in 2025, with the original office memorandum becoming inoperative, pending development of new criteria and alignment with Parivesh 2.0.

Why in news?

The Union environment ministry officially abandoned the star-rating system following a National Green Tribunal order, making the January 2022 memorandum inoperative and signaling a shift in environmental clearance evaluation policies.

Stubble-Based Products

Stubble-based products are goods made from agricultural residue, primarily crop stalks left after harvest, such as rice chaff and wheat straw. These include fodder for livestock, bioenergy pellets, packaging materials, and biodegradable products. Utilizing stubble for such products can reduce environmental pollution caused by open-field burning. Technologies for converting stubble into value-added products include pelletizing machines, bio-composites, and biogas digesters. Despite potential, the market for stubble-based products in India remains underdeveloped due to lack of infrastructure, policy support, and supply chain integration. Promoting these products can provide farmers additional income streams and help mitigate air pollution.

Why in news?

The article marks stubble-based products as a proposed solution to reduce stubble burning and improve farmer livelihoods in northern India.

Sukhatal Lake

Sukhatal Lake is a **major aquifer recharge zone** for Naini Lake, covering approximately **two hectares**. Its degradation through siltation and debris dumping has reduced its recharge capacity, causing shrinkage. Illegal construction and encroachments have further reduced its catchment area. Sukhatal's wetland stores water for about six months, supporting Naini Lake during lean periods. In 2021, concerns about the concretisation of Sukhatal's lake bed led to a Public Interest Litigation (PIL) filed in the Uttarakhand High Court. The court suspended construction in 2022 but later permitted beautification works to continue in 2024.

Why in news?

Sukhatal Lake's degradation and ongoing construction projects have drawn legal and environmental attention due to their impact on Naini Lake's water recharge and ecosystem.

Sulphate Aerosols

Sulphate aerosols form from the oxidation of sulphur dioxide (SO2), primarily emitted by burning coal in thermal power plants. In India, these aerosols constitute about **50-60% of total aerosol composition**. They are highly reflective, scattering sunlight and producing a cooling effect on the climate. Sulphate aerosols contribute to the regional masking of greenhouse gas warming. The **removal of SO2** from flue gases at power plants is a key pollution control strategy. Despite their cooling effect, sulphate aerosols also contribute to air pollution-related respiratory diseases. Their atmospheric lifetime ranges from a few days to weeks.

Why in news?

India's reliance on coal-fired thermal power plants makes sulphate aerosols a major factor in the country's air pollution and climate dynamics, with ongoing efforts to reduce SO2 emissions affecting both air quality and warming trends.

Surface Ozone Pollution

Surface ozone is a secondary pollutant formed by chemical reactions between nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the presence of sunlight. It is a strong oxidant that damages plant tissues, causing foliar injury and reducing photosynthesis, which leads to lower crop yields. Unlike stratospheric ozone, surface ozone is harmful to human health and vegetation. It accumulates more in rural and agricultural areas downwind of urban pollution sources. Surface ozone levels are influenced by temperature, sunlight, and precursor emissions, and are expected to rise under climate change scenarios without effective emission controls.

Why in news?

A 2025 IIT Kharagpur study marks surface ozone pollution's impact on India's major crops, warning it threatens food security and Sustainable Development Goals by reducing yields, especially in the Indo-Gangetic Plain and central India.

Sustainable Maritime Transport Centre

The **Sustainable Maritime Transport Centre** is a proposed facility aimed at promoting research, innovation, and policy coordination in maritime transport within the BIMSTEC region. It focuses on sustainable practices, environmental protection, and enhancing connectivity through maritime routes. The Centre will support regional collaboration on shipping safety, port development, and green technologies. It aligns with BIMSTEC's goals of improving transport infrastructure and boosting economic integration by optimizing maritime logistics and reducing carbon footprints in the maritime sector.

Why in news?

PM Modi proposed establishing the Sustainable Maritime Transport Centre at the 6th BIMSTEC Summit to encourage innovation and sustainability in regional maritime transport.

Synergistic Effect of Temperature and CO2

Rising temperature and atmospheric carbon dioxide act synergistically to increase arsenic concentrations in rice grains beyond the effects of either factor alone. Higher temperatures accelerate soil chemical reactions, while elevated CO2 enhances plant growth and arsenic uptake. This combined effect leads to a projected **44% increase** in arsenic-related cancer risk by 2050 in affected Asian populations. The synergy complicates risk assessments and puts stress on the need for integrated climate and agricultural management strategies to address food safety challenges.

Why in news?

The 2025 research revealed that combined climate factors exacerbate arsenic accumulation in rice, raising public health concerns.

T□□ Temperature Parameter

The **T□□** parameter represents the temperature at which a leaf's photosynthetic efficiency declines by 50%. It is widely used in plant physiology to assess heat tolerance. Exposure beyond T_{50} often causes **irreversible cellular damage** leading to leaf death. Laboratory

tests for T_{50} typically involve maintaining leaves at extreme temperatures for at least 30 minutes to evaluate heat stress effects. This parameter helps quantify thermal safety margins by comparing leaf temperature to T_{50}, indicating vulnerability to heat. It is critical for understanding plant responses to climate change, especially in tropical agroforestry species.

Why in news?

The T_{50} parameter was used in a 2023 study near Sirsi, Karnataka, to measure leaf heat tolerance in tropical forest and agroforestry species under rising temperatures.

Taj Trapezium Zone (TTZ)

The **Taj Trapezium Zone (TTZ)** is a 10,400 square kilometer area around the Taj Mahal designated for environmental protection. Established in 1996 by the Government of India, TTZ restricts certain industrial activities to reduce air pollution threatening the monument. The zone includes parts of Uttar Pradesh, Haryana, and Rajasthan. TTZ regulations limit emissions from factories, vehicles, and power plants. It is managed by a dedicated authority responsible for monitoring and enforcing pollution control measures. Despite efforts, the TTZ has faced criticism for inadequate enforcement and rising pollution levels impacting the Taj Mahal's marble.

Why in news?

The Supreme Court criticized the TTZ authority for ineffective protection of the Taj Mahal and questioned whether its preservation efforts were merely a tamasha or farce.

Talle Valley Wildlife Sanctuary

Talle Valley Wildlife Sanctuary is located in Arunachal Pradesh, covering approximately 337 square kilometers. It is a biodiversity hotspot with a variety of endemic flora and fauna. The sanctuary is part of the Eastern Himalayan region, known for its subtropical and temperate forests. It supports species like red pandas, clouded leopards, and numerous bird species. The sanctuary plays important role in preserving the ecological balance of the region and acts as a corridor for wildlife movement. It also supports many rare and endangered species, making it for conservation biology.

Why in news?

The sanctuary gained attention as the site of discovery for the new beetle species Clinidium lalitae, underscoring its role as a reservoir of unique biodiversity.

Temperature Flips

Temperature flips are sudden and extreme shifts in temperature from warm to cold or vice versa within a short time frame, often days or hours. These events disrupt ecosystems, agriculture, human health, and infrastructure due to limited adaptation time. They have been recorded globally for over six decades, predominantly affecting mid-latitude regions such as East Asia, eastern North America, South America, Africa, and Australia. Temperature flips are less frequent in tropical and polar regions. Their frequency, intensity, and rapid transition phases are projected to increase due to global warming, with impacts on vulnerable populations in low-income countries.

Why in news?

A 2025 study published in Nature Communications brought into light the growing frequency and severity of temperature flips worldwide, emphasizing their increasing threat due to climate change and the disproportionate impact on low-income populations.

Thane Creek Flamingo Sanctuary (TCFS)

Thane Creek Flamingo Sanctuary, located near Mumbai, is one of the few urban flamingo habitats worldwide. It is a **designated protected area** focused on conserving migratory flamingos and other wetland birds. The sanctuary comprises tidal mudflats, mangroves, and salt pans, creating a unique ecosystem that supports diverse flora and fauna. It acts as a major stopover for flamingos migrating along the western coast of India. TCFS faces threats from urbanization and industrial activity but remains vital for bird conservation. It is managed with cooperation from local NGOs and government agencies for habitat preservation.

Why in news?

The sanctuary is referenced as the primary habitat connected to the newly protected DPS Flamingo Lake, emphasizing the importance of satellite wetlands for flamingo conservation.

Transition Finance

Transition finance refers to funding mechanisms aimed at supporting companies and economies in shifting from high-carbon or unsustainable practices to greener, more sustainable alternatives. It bridges the gap between traditional financing and green finance, addressing sectors that cannot immediately adopt fully sustainable practices but are working toward environmental goals. Transition finance instruments include transition bonds, loans, and equity that finance activities aligned with net-zero targets. It is crucial for mobilising capital in emerging economies and industries reliant on fossil fuels. Transition finance frameworks often involve standards and reporting requirements to ensure transparency and accountability.

Why in news?

India and the UK recognised the importance of transition finance for mobilising capital to support sustainable development during their 13th Economic and Financial Dialogue.

Upwelling

Upwelling is an oceanographic process where deep, cold, nutrient-rich waters rise to the surface. It supports high primary productivity and sustains rich marine ecosystems. Upwelling zones are often associated with prolific fisheries due to nutrient availability. This phenomenon is driven by wind patterns and the Coriolis effect. In California, seasonal coastal upwelling supports diverse marine life but can also trigger harmful algal blooms when nutrient levels become excessive. Upwelling intensity and frequency can be altered by climate change, impacting marine biodiversity and fisheries. It plays a critical role in carbon cycling by bringing carbon-rich waters to the surface.

Why in news?

Increased upwelling caused by stronger winds linked to global warming has contributed

to nutrient surges that fuel toxic algal blooms along the California coast, impacting marine life.

Vembur Sheep

The **Vembur sheep** is an indigenous hair sheep breed native to Tamil Nadu, primarily found in Thoothukudi and Virudhunagar districts. It has a unique coat pattern with white fur and irregular reddish-brown or black fawn patches. Medium-sized with drooping ears and short tails, it thrives on natural grazing without commercial fodder. The breed is adapted to dry climates and feeds on native grasses like Mimosa pudica and Celosia argentea. Registered officially in 2007 by the National Bureau of Animal Genetic Resources, it has a slower reproductive cycle, typically producing one lamb per breeding season.

Why in news?

The Vembur sheep faces threats from a proposed SIPCOT industrial project in Thoothukudi, which would seize 1,000 acres of its natural grazing land, endangering the breed's survival and local farmers' livelihoods.

Warangal Chapata Chilli

The **Warangal Chapata chilli**, also known as Tomato chilli, is a bright red, round-shaped chilli from Telangana. It is less spicy than typical chillies but imparts a vivid red color due to its **capsicum oleoresin** content. Cultivated for over 100 years, it has three fruit types – **single patti, double patti, and odalu**. The chilli's cultivation centers around villages like Nagaram in Jammikunta mandal and Nadikuda, with seed sharing among the **Velama community**. It received the **Geographical Indication (GI) tag** on March 28, 2025, marking Telangana's 18th GI-tagged product.

Why in news?

Warangal Chapata chilli was granted the Geographical Indication tag by the Indian GI Registry in March 2025, recognizing its unique qualities and expanding its market potential.

Waste-to-Energy (WTE) Incineration

Waste-to-Energy incineration involves burning unsegregated municipal solid waste to generate heat, which produces steam to drive turbines for electricity. WTE plants emit pollutants like SOx, NOx, HCl, particulate matter, dioxins, and furans. Their bottom and fly ash are hazardous and require secure landfill disposal. WTE produces more CO2 per unit electricity than coal plants. In Delhi, WTE plants burned over 7,35,840 tons of plastic in FY 2022-23, contributing to high air chloride levels and poor air quality. WTE is criticized for undermining circular economy principles and causing health and environmental risks.

Why in news?

WTE incineration plants in Delhi were reclassified as blue category industries by CPCB, despite evidence of excessive pollutant emissions and environmental harm.

Wayanad Landscape

Wayanad is a district in Kerala, part of the Western Ghats biodiversity hotspot. It features

dense forests, fast-flowing rivers, and unique ecosystems supporting endemic species. The area is known for its fragile freshwater habitats, including streams and rivers that sustain diverse aquatic life. Wayanad's terrain is prone to environmental threats such as cloudbursts, flash floods, and landslides, which impact local biodiversity. It is a key region for conservation efforts due to its rich flora and fauna, including many species found nowhere else. Wayanad also holds cultural and ecological significance in southern India.

WHY IN NEWS?

Wayanad is the discovery site of Euphaea wayanadensis, underscoring the region's ecological importance and the urgent need for habitat conservation amidst increasing environmental threats.

Western Ghats Ecology Panel

The Western Ghats Ecology Panel, headed by K Kasturirangan, reviewed and updated an earlier report by environmentalist Madhav Gadgil. The panel's recommendations focus on regulating human activities to protect the biodiversity hotspot of the Western Ghats mountain range in India. It classified areas into ecologically sensitive zones with different levels of restrictions on development and resource use. The report emphasized sustainable development while conserving forests, wildlife, and water resources. Its implementation has impacted policies on mining, construction, and agriculture in the region.

WHY IN NEWS?

Kasturirangan's panel report remains a key reference for environmental regulation in the Western Ghats, mentioned in tributes on his passing.

Zero Liquid Discharge (ZLD) Plant

A **Zero Liquid Discharge (ZLD) plant** is an advanced wastewater treatment technology that recycles and reuses all wastewater, leaving no liquid waste to discharge into the environment. The 20 MLD capacity ZLD plant planned at PM MITRA Park will treat up to 20 million liters daily. It uses processes like evaporation, crystallization, and filtration to recover water and convert contaminants into solid waste. ZLD systems are crucial in textile industries to reduce water pollution and conserve water resources, meeting stringent environmental standards.

WHY IN NEWS?

The PM MITRA Park in Madhya Pradesh will include a 20 MLD Zero Liquid Discharge plant, denoting the project's focus on sustainable and eco-friendly industrial practices.

Zoological Survey of India Collections

The **Zoological Survey of India's National Zoological Collections** in Kolkata houses over a century's worth of faunal specimens, including mammals, birds, reptiles, and insects. Established in 1916, the collections serve as a critical repository for taxonomic and biodiversity research in South Asia. The mammal and osteology sections contain valuable type specimens and historical samples used to resolve taxonomic ambiguities. These collections enable modern morphometric and genetic analyses, providing vital

information about evolutionary relationships and species identification. The repository supports conservation efforts by documenting species diversity and distribution, especially for endemic and threatened taxa.

WHY IN NEWS?

The recent study on South Asian treeshrews utilized century-old specimens from the ZSI collections to clarify species distinctions and morphological diversity.

History (India / World) & Culture

Banarasi Bharwan Mirch

The **Banarasi Bharwan Mirch** is a spicy stuffed chili pepper dish native to Varanasi, made using locally grown long green chilies filled with a mixture of spices, gram flour, and sometimes minced meat or vegetables. It is traditionally prepared during festivals and special occasions. The dish reflects the culinary fusion of Mughal and Awadhi influences in the region. The GI tag protects the recipe's authenticity and the specific variety of chili used, which is known for its moderate heat and thick flesh, ideal for stuffing.

WHY IN NEWS?

Banarasi Bharwan Mirch was recently granted a GI tag, acknowledging its unique culinary heritage and importance in Varanasi's traditional cuisine.

Banarasi Shehnai

The **Banarasi Shehnai** is a traditional wind instrument made primarily from wood sourced in the Varanasi region. It features a conical bore and is known for its rich, piercing sound. The instrument's design includes intricate carvings and often uses buffalo horn for the reed. It is closely linked to auspicious occasions in North Indian culture, especially weddings and religious ceremonies. The Banarasi Shehnai gained international fame through Ustad Bismillah Khan, who elevated its status from a folk instrument to a classical one. The GI tag protects its unique craftsmanship and regional origin.

WHY IN NEWS?

The Banarasi Shehnai recently received a Geographical Indication (GI) tag, officially recognized by Prime Minister Narendra Modi at a public event in Mehndi Ganj, Varanasi.

Banarasi Tabla

The **Banarasi Tabla** is a variant of the classical Indian percussion instrument, distinguished by its unique construction using locally sourced wood and specially treated goat skin. The drum heads are tuned with a paste made from iron filings and starch, giving the Banarasi Tabla a distinct tonal quality. The instrument is integral to the Hindustani classical music tradition and is often handcrafted by families who have passed down the art for generations. The GI certification helps preserve the traditional manufacturing process and supports the livelihoods of Banarasi artisans.

WHY IN NEWS?

The Banarasi Tabla was recently awarded a GI tag, recognizing its unique regional craftsmanship and cultural significance in Varanasi's musical heritage.

Bengal Presidency

The Bengal Presidency was a vast administrative division of British India, encompassing

present-day West Bengal, Bihar, Odisha, and parts of Jharkhand and Bangladesh. Established in the 18th century, it was one of the largest presidencies under British rule. Odisha was part of this presidency until 1936 when it was separated to form an independent province. The presidency was a key center for British administration, trade, and education, with Calcutta as its capital. The reorganization of Bengal Presidency territories in the early 20th century led to the creation of new provinces based on linguistic and cultural identities, influencing the political landscape of colonial India.

WHY IN NEWS?

Odisha, previously part of Bengal Presidency, was recognized as an independent state in 1936, a fact brought into light during the 2025 Utkala Dibasa celebrations.

Bihu Dhol

The Bihu Dhol is a traditional Assamese drum essential to Bihu music and dance performances. Made from bamboo and cowhide, it produces a deep, resonant sound that sets the rhythm for Bihu folk dances. The instrument is played with two sticks – one thin and one thick, creating complex rhythmic patterns. The Bihu Dhol is integral to community celebrations, especially during Rongali Bihu, and symbolizes Assamese cultural identity. Skilled dhol players often undergo rigorous training to master the instrument's unique beats, which accompany singing and dancing, enhancing the festive atmosphere.

WHY IN NEWS?

Workshops on Bihu dance and Dhol playing commenced in Guwahati to train new generations ahead of the Rongali Bihu festival.

Birsa Munda

Birsa Munda (1875–1900) was an Indian tribal freedom fighter and religious leader from the Munda tribe in Jharkhand. He led the Ulgulan movement (The Great Tumult) against British colonial rule and exploitative landlords. Birsa sought to establish Munda Raj, a self-governed tribal state, and revive tribal identity and customs. He opposed British policies that disrupted tribal land ownership and culture. His leadership inspired subsequent tribal movements in India. The year 2025 marks the 150th birth anniversary of Birsa Munda, commemorated nationwide through various cultural and educational events.

WHY IN NEWS?

The National Tribal Youth Festival in Mizoram is held as part of the year-long celebration of Birsa Munda's 150th birth anniversary.

Buta Malik Legend

Buta Malik was a Muslim shepherd credited with the 19th-century rediscovery of the Amarnath cave. According to legend, a saint gifted him a bag of coal which turned into gold. When he returned to thank the saint, the holy cave with the ice Shiva linga appeared at the spot. The pilgrimage had diminished under Muslim rule but revived under the Dogra dynasty after this event. Buta Malik's story symbolizes communal harmony, as a Muslim is associated with a major Hindu pilgrimage site. The cave itself never disappeared

but was inaccessible for long periods due to political and climatic factors.

Why in news?

The Buta Malik legend is often recounted during Amarnath Yatra discussions to show the shrine's history and the revival of pilgrimage traditions after periods of decline.

Chaurasi Kos Parikrama

The **Chaurasi Kos Parikrama** is an ancient pilgrimage circuit around Ayodhya, covering approximately **84 kilometers**. This sacred walk encompasses numerous temples, sacred sites, and places associated with Lord Rama's life and the Ramayana. Traditionally, pilgrims undertake this journey on foot, reflecting deep devotion and spiritual discipline. The route includes diverse landscapes such as forests, rivers, and villages, preserving both religious and natural heritage. The Parikrama is performed cyclically, often over several days, and is believed to purify participants and strengthen their connection to Ayodhya's divine legacy. It remains a vital custom among devotees of Lord Rama.

Why in news?

Featured in the "Badi Hai Ayodhya" exhibition during Ayodhya Parv 2025, the Chaurasi Kos Parikrama was brought into light through photographs and artistic renditions, emphasizing its spiritual and cultural importance.

Chhanabora

Chhanabora is a traditional sweet from Murshidabad, West Bengal, made from **chhena** (cottage cheese), sugar, and ghee. It has a distinctive crisp outer crust with a soft, moist interior, differentiating it from other Bengali sweets like rosogolla. The sweet is often shaped into small, round forms and is known for its **golden-brown color** due to frying or slow cooking. Chhanabora has historical ties to the Nawabs of Murshidabad and reflects the region's rich culinary influences. It is less commonly found outside its native region, preserving its traditional preparation methods.

Why in news?

Chhanabora received a Geographical Indication (GI) tag in October 2025, denoting the cultural and economic importance of Murshidabad's regional sweets.

Dao (Machete)

The **dao** is a traditional single-edged machete widely used in northeastern India, especially among the Mizo people. It serves multiple purposes such as farming, woodcutting, and as a weapon. The dao features a broad blade, typically 12 to 18 inches long, with a flat back and a curved cutting edge. It is often crafted locally using indigenous steel forging techniques. The dao holds cultural significance, appearing in folk dances and rituals. Its design varies slightly between tribes but remains a symbol of self-reliance and craftsmanship in the region.

Why in news?

Dao images were found carved in the newly discovered rock art sites in Mizoram, reflecting the tool's historical and cultural relevance.

Dwarkadhish Temple

The Dwarkadhish Temple is a major Hindu temple dedicated to Lord Krishna, located on

Beyt Dwarka island. It is also known as the Jagat Mandir and is one of the Char Dham pilgrimage sites. The temple's architecture is notable for its five-story structure supported by 72 pillars, with intricate carvings dating back to the 15th-16th century. The temple has undergone several restorations due to damage from natural elements and invasions. It is situated near submerged archaeological sites, linking religious traditions with ancient maritime history. The temple is an active center for religious festivals and rituals.

Why in news?

The temple gained attention when Prime Minister Narendra Modi performed a deep-water dive near it and inaugurated the Sudarshan Setu bridge connecting Okha to Beyt Dwarka, enhancing access for pilgrims.

E. Sreedharan

E. Sreedharan, known as the "Metro Man of India," played important role in restoring the Pamban Bridge after the 1964 tsunami. Despite initial reluctance from the Railway Ministry, he completed the restoration in just 46 days. His success was aided by fishermen who helped locate and recover 126 girders from the sea, which were used to rebuild the bridge. This project was one of his earliest major engineering achievements before his later fame with the Delhi Metro. Sreedharan's work set a benchmark in rapid infrastructure restoration under challenging conditions.

Why in news?

Sreedharan's involvement in the Pamban Bridge restoration was recalled as part of the narrative around the inauguration of the new Pamban Bridge in 2025.

Gajsimha

The **Gajsimha** is a mythical creature combining the strength of an elephant and the **courage of a lion**. It appears in the art and architecture of the Pala dynasty (8th-12th century CE) in Bihar, especially in temples and pillars of Nalanda and Bodhgaya. The Pala rulers, known for their patronage of Buddhism, used Gajsimha as a symbol of protection and power. This creature is less commonly known outside regional studies of Indian iconography. It blends two powerful animals, symbolizing both physical might and regal authority, often depicted in stone carvings and sculptures during the Pala era.

Why in news?

Gajsimha was revealed as the mascot of the Khelo India Youth Games 2025, linking the event to Bihar's rich cultural and historical heritage.

Garia Puja

Garia Puja is a tribal festival primarily celebrated by the indigenous communities of Tripura, dedicated to **Garia Baba**, the deity associated with agriculture, prosperity, and well-being. It marks the beginning of the new agricultural cycle and involves rituals to invoke blessings for a good harvest. Traditionally, it includes offerings of rice, fruits, and traditional foods like **pakhara**. The festival features communal prayers, fairs, and cultural performances. Over time, it has transcended tribal boundaries to become a symbol of unity among various communities in Tripura. It usually occurs in April, coinciding with the

agricultural calendar.

Why in news?

Garia Puja was celebrated across Tripura, including Agartala, with widespread participation from diverse communities, emphasizing its evolution into a unifying cultural event.

International Day for Monuments and Sites

The International Day for Monuments and Sites, also known as World Heritage Day, is observed annually on **April 18**. It was established by the International Council on Monuments and Sites (**ICOMOS**) in 1982. The day aims to raise awareness about the diversity of cultural heritage and the efforts needed to protect it. It marks the importance of monuments and sites in historical, cultural, and scientific contexts. Each year, a specific theme is chosen to focus attention on pressing issues affecting heritage worldwide. The day is recognized by UNESCO and celebrated globally by governments and organizations.

Why in news?

World Heritage Day 2025 is being celebrated with the theme "Heritage Under Threat from Disaster and Conflicts," emphasizing protection efforts amid global challenges.

Jaya Sri Maha Bodhi

The **Jaya Sri Maha Bodhi** is the oldest living cultivated plant, a sacred Bo (Ficus religiosa) tree in Anuradhapura, Sri Lanka. It was grown from a branch brought in 288 BCE by **Sanghamitta**, daughter of Mauryan emperor Ashoka. The tree symbolizes peace and enlightenment and is central to Buddhist pilgrimage. It is cared for meticulously and can regrow from roots and seeds. The tree survived vandalism attempts, including a 1929 attack and violence during the 1985 LTTE conflict. The annual **Uduvapa Poya** festival celebrates Sanghamitta's arrival with the tree.

Why in news?

Prime Minister Narendra Modi visited the Jaya Sri Maha Bodhi temple in Anuradhapura, denoting the tree's spiritual significance and historical legacy during his Sri Lanka trip.

Jyotirao Phule

Jyotirao Phule (1827–1890) was a prominent social reformer from Maharashtra who worked to eradicate caste discrimination and promote women's education. He was among the first to openly criticize the caste system and Brahminical dominance. Phule and his wife Savitribai Phule pioneered girls' education in India by opening the first school for girls in Pune in 1848. He wrote extensively, including works like "Gulamgiri," which brought into light the oppression of lower castes. Phule's efforts laid the foundation for modern social justice movements and inspired future leaders advocating equality and education for marginalized communities.

Why in news?

Jyotirao Phule's birth anniversary was recently observed, with tributes paid by prominent Indian leaders citing his contributions to social reform and education.

K Kasturirangan

K Kasturirangan was an Indian space scientist who led ISRO from 1994 to 2003. He played

a key role in initiating India's Moon mission and human spaceflight projects. He promoted self-reliance in space technology after international sanctions post-1998 nuclear tests. Kasturirangan was involved in handling the ISRO spy scandal, a major crisis for the agency. Post-retirement, he served as a Rajya Sabha member and Planning Commission member (2009-2014). He headed committees on Western Ghats ecology and the New Education Policy, influencing environmental regulation and education reform in India. He passed away in 2025 at age 84.

WHY IN NEWS?

Kasturirangan's death was reported in October 2025, denoting his contributions to ISRO and national policies, coinciding with the Chandrayaan-3 lunar mission anniversary.

Kaal Bhairav Temple

The **Kaal Bhairav Temple** in Ujjain is dedicated to Kaal Bhairav, a fierce manifestation of Lord Shiva. It is famous for the unique custom where devotees offer liquor to the deity as a symbol of appeasement and reverence. This tradition is centuries old and distinguishes the temple from most Hindu places of worship, where alcohol is generally prohibited. The temple attracts thousands of pilgrims daily, many of whom bring alcohol for offerings. The temple's liquor offering ritual is believed to ward off evil spirits and grant protection. The temple is a major religious and cultural landmark in Madhya Pradesh.

WHY IN NEWS?

The Madhya Pradesh government's new liquor ban policy excludes the sale of alcohol near Kaal Bhairav Temple, allowing devotees to continue the custom of offering liquor to the deity despite the ban in surrounding areas.

Kavadi Ritual

The **kavadi** is a ceremonial burden carried by devotees during Hindu religious festivals, particularly in worship of Lord Murugan. It often consists of a wooden or metal structure decorated with peacock feathers, flowers, and other items, carried on the shoulders. The ritual symbolizes penance, devotion, and the bearing of physical hardship to seek divine blessings. In the Nilgiris, kavadi is performed by tribal and rural communities as a spiritual act linked to local temples like Annamalai Murugan. The practice blends religious faith with cultural identity and is integral to community protests invoking divine protection.

WHY IN NEWS?

Devotees protesting the hydro-electric project carried kavadi to the Annamalai Murugan temple to seek divine intervention against environmental damage caused by the project.

Khongjom War Memorial Complex

The Khongjom War Memorial Complex is located in Khebaching, Thoubal district, Manipur. It commemorates the 1891 Anglo-Manipuri War, marking the site of the last battle between Manipuri forces and the British. The complex includes a museum, a statue of Major Paona Brajabashi, and landscaped grounds. It serves as a focal point for annual Khongjom Day observances on April 23. The memorial was established to honor the bravery of Manipuri soldiers and preserve the history of Manipur's resistance against

British colonial forces. It also hosts cultural events and educational programs related to Manipuri heritage.

Why in news?

The State Government of Manipur is holding Khongjom Day observances at the Khongjom War Memorial Complex, with official participation and public transport arrangements for April 23, 2025.

Kilimanoor Palace

Kilimanoor Palace, located in Kerala, is the ancestral home of the royal family of Travancore. It is renowned as the birthplace and early workplace of Raja Ravi Varma, a celebrated Indian painter. The palace's architecture blends traditional Kerala style with colonial influences. It houses several rare artifacts and paintings, including works by Ravi Varma himself. The palace trust actively preserves its cultural heritage and organizes annual events commemorating Ravi Varma. The palace also contains the historic Chitrashala studio, built by Ravi Varma around 1875, where he created many masterpieces. It remains cultural landmark in Thiruvananthapuram.

Why in news?

Kilimanoor Palace is hosting a musical tribute and album release commemorating Raja Ravi Varma's 177th birth anniversary, denoting his life and works created there.

Kos Minar No.13

Kos Minars are medieval milestones built during the Mughal period, marking distances along major routes of the empire. **Kos Minar No.13** is one such milestone located in Haryana, part of a network used to measure travel distances in kos, an ancient Indian unit roughly equal to 3 kilometers. These minars were constructed from bricks and lime mortar, standing about 4 to 5 meters tall. They served as important markers for travelers and the imperial postal system. Many Kos Minars have fallen into neglect or disappeared due to urbanization and lack of conservation efforts. Kos Minar No.13 was recently delisted by ASI as untraceable.

Why in news?

Kos Minar No.13 was among 18 untraceable monuments recently delisted by the ASI, prompting calls for stricter documentation and conservation protocols.

Michael O'Dwyer

Michael O'Dwyer was the Lieutenant Governor of Punjab during the 1919 Jallianwala Bagh massacre. He implemented policies that led to the massacre and was sued for defamation by Nair in England. The trial lasted five and a half weeks, the longest civil case at the time, and was held before the King's Bench in London. The jury of 12 Englishmen, presided over by Justice Henry McCardie, ruled in O'Dwyer's favor by 11-1, with Harold Laski dissenting. O'Dwyer offered to waive damages if Nair apologized, but Nair refused.

Why in news?

O'Dwyer's role in the massacre and the subsequent trial against Nair were recalled during the 106th anniversary of the Jallianwala Bagh massacre.

Montagu-Chelmsford Reforms

The Montagu-Chelmsford Reforms (1919) were constitutional reforms introduced by the British government aimed at increasing Indian participation in provincial governance. They established a system of dyarchy, dividing provincial subjects between elected Indian ministers and British officials. The reforms expanded Indian representation but retained British control. Sankaran Nair played a role in expanding these provisions. The reforms were seen as a step towards self-government but were criticized for limited Indian autonomy and failing to address nationalist demands fully. They preceded the Government of India Act 1935, which introduced further constitutional changes.

Why in news?

The reforms were mentioned in relation to Sankaran Nair's political career and his advocacy for Indian self-government during the commemoration of Jallianwala Bagh's anniversary.

Omkareshwar Jyotirlinga

Omkareshwar is one of the twelve Jyotirlinga shrines dedicated to Lord Shiva, located on an island in the Narmada River in Madhya Pradesh. It is shaped like the Hindu sacred syllable "Om." The temple complex includes two main shrines – Omkareshwar and Mamleshwar. The site is a major pilgrimage destination and holds immense spiritual significance. The island is accessible by boat and bridge, and rituals here follow ancient traditions. Omkareshwar also hosts the annual Maha Shivaratri festival, attracting thousands of devotees. The temple architecture reflects the Paramara style prevalent in the region during the medieval period.

Why in news?

The government's liquor ban in Omkareshwar aims to curb alcohol-related disturbances near this important religious site, enhancing the sanctity of the area and respecting devotees' sentiments.

Operation Gibraltar

Operation Gibraltar was a Pakistani military operation launched in August 1965 aimed at infiltrating forces into Indian-administered Kashmir to incite rebellion. It was part of Pakistan's strategy to seize Kashmir by proxy. The operation failed due to strong Indian military response and lack of local support. It escalated into the full-scale Indo-Pakistani War of 1965. Operation Gibraltar was followed by Operation Grand Slam, a direct Pakistani attack on Indian positions. The failure of these operations led to the Tashkent Agreement, signed in January 1966, which restored pre-war boundaries and called for peaceful resolution of disputes.

Why in news?

Operation Gibraltar is referenced in the historical context of ongoing hostilities along the Line of Control, denoting repeated military confrontations between India and Pakistan over Kashmir.

Paan-Supari Bazaar

The **Paan-Supari Bazaar** was a historic marketplace situated in front of the Hazara Rama temple in Hampi. Excavations beginning in 1985 revealed it was a kilometer-long trading hub, renowned as the most lavish of Hampi's five bazaars. It specialized in the trade of paan (betel leaf) and supari (areca nut), commodities culturally in South India. Inscriptions confirm it attracted traders from across the world during the Vijayanagara Empire's peak. Much of the bazaar remains buried under vegetation, and recent excavations in 2022 uncovered new sections, indicating the site's extensive commercial importance in medieval times.

Why in news?

Excavations resumed in 2022 at the Paan-Supari Bazaar, revealing additional portions of the market and emphasizing Hampi's ongoing archaeological discoveries decades after initial exploration.

Pakhara

Pakhara is a traditional food item commonly prepared and distributed during Garia Puja and other tribal festivals in Tripura. It is typically made from **rice flour** and local ingredients, often steamed or fried, serving as a staple offering to deities and a communal dish among participants. The preparation methods and recipes vary slightly among different tribal groups, reflecting regional culinary diversity. Pakhara symbolizes hospitality and sharing during festive occasions. It is also valued for its simplicity and nutritional content, making it suitable for large gatherings and ritual offerings.

Why in news?

During the recent Garia Puja celebrations in Agartala, Mayor Dipak Majumdar distributed pakhara among residents, denoting its cultural and ritual significance.

Rajtarangini Chronicles

The **Rajtarangini** is a 12th-century historical chronicle of Kashmir written by Kalhana. It documents the region's rulers, culture, and geography. The text mentions Amarnath multiple times, including references to monasteries built near Amareśa and the construction of a lake believed to be Sheshnag lake. It provides early historical evidence of the shrine's existence and its religious significance. The chronicle is composed in Sanskrit and is a key source for Kashmir's medieval history. It also references local rulers like King Ananta and Queen Suryamati, linking them to religious endowments near Amarnath.

Why in news?

The Rajtarangini is cited to provide historical context about the Amarnath shrine and its longstanding cultural importance, coinciding with the start of the 2025 pilgrimage season.

Ramanathapuram Samasthanam

Ramanathapuram Samasthanam was a princely state in the Tamil region before Indian independence. It was ruled by local chieftains under the Nawab of Arcot before being integrated into the Madras Presidency. The Samasthanam included coastal areas and islands such as Katchatheevu before 1948. Its rulers maintained semi-autonomous control

over land and maritime resources. Post-independence, the region became part of Tamil Nadu, but territorial claims like those over Katchatheevu remain contentious. The Samasthanam's historical boundaries and governance structures influence contemporary disputes over maritime boundaries and fishing rights between India and Sri Lanka.

WHY IN NEWS?

The Leader of Opposition referenced Ramanathapuram Samasthanam to show historical ownership of Katchatheevu before it was ceded to Sri Lanka in 1974.

Sangama Dynasty

The **Sangama Dynasty** (c. 1336–1485 CE) was the founding dynasty of the Vijayanagara Empire in South India. It was established by brothers Harihara I and Bukka Raya I. The dynasty is noted for consolidating Hindu rule and resisting invasions from the Delhi Sultanate. The dynasty's genealogy traces back to mythical figures Chandra and Yadu, emphasizing royal legitimacy. The Sangama rulers promoted Sanskrit and Kannada literature and temple architecture. The dynasty's decline began in the late 15th century, leading to the rise of the Saluva and Tuluva dynasties within Vijayanagara.

WHY IN NEWS?

Copper plates from the Sangama Dynasty era, issued during King Devaraya I's coronation, were revealed, providing authentic genealogy and confirming historical dates related to the dynasty.

Sanghadana

Sanghadana is a Buddhist ritual offering, typically involving food, robes, or other necessities given to monks. It is a form of **merit-making** in Theravada Buddhism, symbolizing respect and support for the monastic community (Sangha). The practice strengthens the bond between laypeople and monks and is believed to generate positive karma. Sanghadana offerings are often made during religious ceremonies, festivals, or temple visits. The term derives from Pali, meaning gift to the Sangha, and is an integral part of Buddhist devotional customs across Southeast Asia.

WHY IN NEWS?

Prime Minister Modi offered Sanghadana to senior Buddhist monks during his visit to Wat Pho temple in Thailand as a mark of respect and religious tradition.

Sanghamitta

Sanghamitta, daughter of Emperor Ashoka, was a Buddhist nun who brought a branch of the original Bodhi tree from Bodhgaya to Sri Lanka in 288 BCE. She established the Bhikkhuni (female monastic) order in Sri Lanka, initiating royal women into Buddhism. Her mission was part of Ashoka's broader efforts to spread Buddhism after the Third Buddhist Council. Sanghamitta lived and died in Anuradhapura, where her arrival is commemorated annually during the Uduvapa Poya festival. Her role was crucial in establishing Buddhism's roots in Sri Lanka.

WHY IN NEWS?

Sanghamitta's historical role was brought into light during PM Modi's visit to the Jaya Sri Maha Bodhi temple, which was planted from the branch she brought.

Sarhul Mahotsav

Sarhul Mahotsav is a spring festival celebrated primarily by the tribal communities of Jharkhand, especially the Munda, Oraon, and Ho tribes. It marks the beginning of the new year and the onset of the spring season. The festival involves worship of trees and nature, symbolizing the bond between humans and the environment. Sarhul rituals include offerings to the Sal tree, traditional songs, dances, and community feasts. It is a time for social gathering and reaffirmation of tribal identity. The festival's name derives from Sar meaning Sal tree and Hul meaning collective uprising or celebration.

Why in news?

Sarhul Mahotsav 2025 was celebrated nationally in New Delhi under the Hamari Parampara, Hamari Virasat program to show tribal heritage and environmental conservation efforts by indigenous communities.

State Tribal Resource Centre, Kelsih

The **State Tribal Resource Centre** in Kelsih, near Aizawl, Mizoram, serves as a hub for tribal cultural preservation and promotion. It hosts various events focused on tribal heritage and youth engagement. The centre is equipped with facilities for exhibitions, workshops, and performances showcasing tribal arts. It plays a key role in educational initiatives about tribal history and traditions. The centre also supports research on tribal languages and customs. It is strategically located near Aizawl to facilitate access for various tribal communities in Mizoram and neighboring states. The centre actively collaborates with cultural organizations for festival planning and cultural exchanges.

Why in news?

The State Tribal Resource Centre, Kelsih, is the venue for the ongoing National Tribal Youth Festival celebrating tribal heritage and freedom fighters in Mizoram.

Surya Siddhanta

The **Surya Siddhanta** is an ancient Sanskrit astronomical treatise dating back to at least the 4th century CE. It presents detailed calculations for planetary motions, eclipses, and timekeeping, forming the basis of traditional Indian calendars. The text describes a geocentric model of the solar system and uses trigonometric methods for its astronomical computations. It influenced the development of various regional calendars, including the Bengali calendar. The Surya Siddhanta was revised multiple times, with the version commonly cited dating from around the 10th century CE. It remains a foundational text in Indian astronomy and calendar science.

Why in news?

The Bengali calendar, used for Pohela Boishakh celebrations, is based on principles derived from the Surya Siddhanta, linking ancient astronomy to modern cultural practices.

Ta Dha Museum

The **Ta Dha Museum** is a small museum dedicated to Pandit Chatur Lal, located near his residence in New Delhi's South Extension area. It houses **personal artifacts, musical instruments, and memorabilia** related to the tabla maestro. The museum preserves

historical recordings and photographs documenting Chatur Lal's contributions to Indian classical music and its introduction to Western audiences. It is one of the few institutions focused on preserving the legacy of tabla players from the mid-20th century. The museum also serves as a cultural hub for tabla students and enthusiasts in Delhi.

WHY IN NEWS?

Chatur Lal's centenary celebrations have renewed interest in his life, denoting the Ta Dha Museum as a key site preserving his legacy.

Viranarana Pallavarayan

Viranarana Pallavarayan was a military commander mentioned in the newly discovered inscription atop Somagiri hills near Melur, Madurai district. He played a key role in capturing and ruling parts of the Pandya country during Rajaraja Chola I's reign around 1000 CE. His leadership indicates Chola military presence in traditionally Pandya-controlled regions. The inscription credits him with establishing control and overseeing local administration. His name combines "Vira" (heroic), "Narana" (man), and "Pallavarayan" (a title linked to Pallava lineage), suggesting a possible connection or honorific linking Chola and Pallava traditions.

WHY IN NEWS?

Recent discovery of an inscription at Somagiri hills reveals Viranarana Pallavarayan's role in Chola military expansion into the Pandya region under Rajaraja Chola I.

Science & Technology

Axiom Mission-4 (Ax-4)

Axiom Mission-4 (Ax-4) is a private spaceflight mission to the International Space Station (ISS), operated by Axiom Space. It carries a multinational crew, including astronauts from India, the US, Hungary, and Poland. Ax-4 focuses on scientific research in microgravity, covering life sciences, biotechnology, and human adaptation studies. It is part of Axiom's broader plan to commercialize space travel and establish private space stations. The mission duration is approximately 14 days. Ax-4 is notable for being one of the first missions to integrate astronauts from multiple space agencies, including ISRO, NASA, and ESA, for collaborative scientific experiments.

WHY IN NEWS?

Indian cosmonaut Group Captain Shubhanshu Shukla is participating in the Ax-4 mission to conduct scientific experiments aboard the ISS.

Bharatiya Antariksh Station

The **Bharatiya Antariksh Station** is India's planned space station intended to support long-duration human and robotic missions in low Earth orbit. It aims to facilitate scientific research, technology development, and international collaboration. The station's development depends on advanced technologies like in-space docking, demonstrated by SPADEX. It will provide facilities for microgravity experiments, Earth observation, and space medicine. The project aligns with India's ambitions to become a major space power and complements its manned spaceflight program, including planned lunar landings.

Design and construction are expected to involve modular spacecraft assembled in orbit using docking technology.

Why in news?

The SPADEX mission's success in docking technology is crucial for the realization of the Bharatiya Antariksh Station, India's upcoming space station project.

Bilirubin

Bilirubin is a yellow pigment formed from the breakdown of heme in red blood cells. It is processed by the liver, conjugated, and excreted in bile. Elevated bilirubin levels cause jaundice, characterized by yellowing of the skin and eyes. Bilirubin exists in two forms – unconjugated (indirect) and conjugated (direct). Unconjugated bilirubin is fat-soluble and toxic, while conjugated bilirubin is water-soluble and excreted in bile. Disorders affecting bilirubin metabolism or liver function lead to hyperbilirubinemia. Bilirubin also has antioxidant properties and potential neurotoxicity at high concentrations, especially in newborns.

Why in news?

Bilirubin metabolism failure causing jaundice is one of the key liver failure signs brought into light during World Liver Day 2025.

Biosafety Level III Laboratory

A Biosafety Level III (BSL-3) laboratory is designed to safely study infectious agents that can cause serious or potentially lethal diseases through inhalation. It requires specialized engineering controls like directional airflow, sealed windows, and controlled access to prevent pathogen escape. BSL-3 labs use personal protective equipment including respirators and have strict decontamination protocols. India's BSL-3 laboratory at BRIC-inStem is a national asset supporting the One Health Mission, which integrates human, animal, and environmental health to address emerging infectious diseases and pandemics. It is vital for preparedness against high-risk pathogens like tuberculosis and SARS-CoV-2.

Why in news?

The BSL-3 lab was brought into light during Dr. Jitendra Singh's visit as a key facility for pandemic preparedness and pathogen research in India.

BlueBird Block-2 Satellites

BlueBird Block-2 satellites are part of AST SpaceMobile Inc.'s initiative to create a space-based cellular broadband network. These satellites aim to provide global mobile connectivity by linking directly to standard mobile phones without the need for ground-based towers. The Block-2 series features enhanced payload capacity and improved signal strength compared to earlier models. They are launched aboard heavy-lift rockets like ISRO's LVM-3. The technology supports underserved and remote areas, promising broader internet access worldwide. BlueBird Block-2 represents a pioneering effort in integrating space technology with terrestrial mobile networks.

Why in news?

ISRO plans to launch BlueBird Block-2 satellites in July aboard the LVM-3 rocket, expanding

India's role in international space-based communications infrastructure.

Carotid Artery Stenosis

Carotid artery stenosis is the narrowing of carotid arteries due to plaque buildup composed of fat, cholesterol, calcium, and fibrous tissue. This narrowing restricts blood flow to the brain, increasing stroke risk. Plaques may also contain inflammatory elements and, as recently discovered, micronanoplastics. Symptoms include mini-strokes and temporary vision loss. The condition can be asymptomatic or symptomatic, with symptomatic cases showing higher microplastic levels in plaques. Stem cells and macrophages within plaques influence inflammation and stability. Gene CD163, which suppresses inflammation, is reduced in plaques with high plastic content, suggesting altered immune responses.

Why in news?

The study correlated carotid artery stenosis symptoms with unusually high microplastic levels in artery plaques, denoting an emerging factor in vascular disease research.

CARTOSAT-3 Satellite

CARTOSAT-3 is an Indian earth observation satellite launched by ISRO in 2019, equipped with a high-resolution panchromatic camera capable of capturing images with a resolution of **0.25 meters**. It is a third-generation agile satellite used for cartographic applications, urban and rural planning, and disaster management. The satellite operates in a sun-synchronous orbit at an altitude of approximately **509 kilometers**. CARTOSAT-3 can steer its camera up to **±45 degrees** along and across its path, enabling rapid targeting and revisits. It supports multi-spectral imaging and is one of the highest resolution civilian imaging satellites globally.

Why in news?

CARTOSAT-3 captured pre- and post-earthquake images of Myanmar's Mandalay and Sagaing regions following the March 28, 2025, earthquake, assisting in damage assessment and disaster response.

ChaSTE (Chandra's Surface Thermophysical Experiment)

ChaSTE is a thermal probe on the Vikram lander of Chandrayaan-3, designed to measure in situ temperatures near the moon's south pole. It uses a **rotation-based deployment mechanism** to penetrate lunar soil up to 10 cm deep. It contains **10 temperature sensors spaced 1 cm apart** along its probe needle. ChaSTE was the first instrument to successfully penetrate and latch into the soil on a celestial body, providing crucial data on lunar surface temperature and soil properties. It operated from August 23 to September 2, 2023, confirming higher-than-expected water ice prevalence.

Why in news?

ChaSTE is in news for being the first successful thermal probe to penetrate the moon's south pole soil, providing new vital information about lunar water ice distribution after Chandrayaan-3's August 2023 landing.

Community-Acquired Meningitis

Community-acquired meningitis refers to meningitis contracted outside hospital settings, caused by bacterial or viral pathogens. It differs from hospital-acquired meningitis in pathogen profiles and treatment protocols. Common bacterial agents include Neisseria meningitidis, Streptococcus pneumoniae, and Haemophilus influenzae. Viral causes often involve enteroviruses and herpesviruses. Diagnosis relies on clinical signs, cerebrospinal fluid analysis, and rapid testing. Treatment varies by etiology but includes prompt antibiotic therapy for bacterial forms and supportive care for viral types. Community-acquired meningitis affects all ages but is especially dangerous for infants, elderly, and immunocompromised individuals.

Why in news?

The WHO guidelines provide updated clinical recommendations specifically for managing community-acquired meningitis in diverse healthcare settings.

DolphinGemma

DolphinGemma is an AI model developed by Google DeepMind, designed to decode and generate dolphin sounds. It is a **light-weight foundational model** capable of running on smartphones. Trained on the Wild Dolphin Project's acoustic database of Atlantic spotted dolphins, it processes sequences of natural dolphin vocalizations to identify patterns and predict subsequent sounds. The model functions as an **audio-in, audio-out system**, similar to how large language models predict words in human language. It represents one of the first AI systems aimed at understanding and synthesizing non-human animal communication.

Why in news?

DolphinGemma has been released as an open model by Google DeepMind in 2025, marking progress in AI-driven interspecies communication research.

ENTOMON Journal

ENTOMON is a peer-reviewed scientific journal focusing on entomology, the study of insects. It publishes original research on insect taxonomy, ecology, behavior, and genetics. The journal is known for documenting new species discoveries, especially in biodiversity hotspots like the Western Ghats. ENTOMON has contributed to the understanding of insect diversity in India and surrounding regions. It often features integrated approaches combining morphological and molecular methods to validate new species. The journal is published quarterly and is a key resource for entomologists studying Asian insect fauna.

Why in news?

ENTOMON published the official description of the new damselfly species Euphaea wayanadensis in its March 2025 issue, marking an important scientific milestone.

EOS-04 (RISAT-1A) Satellite

EOS-04, also known as RISAT-1A, is an Indian radar imaging satellite equipped with Synthetic Aperture Radar (SAR) technology, capable of all-weather, day-and-night earth

observation. It provides high-resolution data for agriculture, forestry, and disaster management. RISAT-1A improves upon its predecessor RISAT-1 by offering enhanced imaging capabilities and increased revisit frequency. Its radar sensors penetrate cloud cover and smoke, making it valuable for monitoring crop conditions in the monsoon and winter seasons. It operates in the X-band frequency and supports applications like soil moisture estimation and crop acreage assessment.

Why in news?

RISAT-1A data was used by ISRO to monitor wheat sowing and crop conditions during the 2024-25 Rabi season in India, contributing to the wheat production estimate released in October 2025.

Essential Vaccines

Essential vaccines refer to those immunizations recommended by WHO for routine use worldwide due to their impact on public health. These vaccines protect against diseases such as measles, polio, diphtheria, tetanus, and tuberculosis. Over the past 50 years, essential vaccines have saved more than **1.54 billion lives** globally. They are included in national immunization programs and are critical for achieving herd immunity. The development and distribution of these vaccines rely on international cooperation and funding. Their widespread use has led to the near-eradication or reduction of several infectious diseases.

Why in news?

WHO brought into light the impact of essential vaccines during World Immunization Week 2025, noting their role in saving over 1.54 billion lives.

Geosynchronous Satellite Launch Vehicle Mark II (GSLV Mk II)

The GSLV Mk II is a three-stage Indian rocket developed by ISRO, standing **50.9 metres tall**. It uses four liquid strap-on boosters and can carry **2,500 kg to Geosynchronous Transfer Orbit (GTO)** or **5,000 kg to Low Earth Orbit (LEO)**. The first stage employs a solid-fuel motor with liquid boosters, the second stage (GS2) uses a Vikas liquid engine fueled by hypergolic propellants UDMH and N_2O_4, and the third stage (GS3) uses cryogenic propellants (liquid hydrogen and liquid oxygen). The GSLV Mk II is crucial for placing satellites in precise orbits, enabling advanced missions.

Why in news?

The GSLV Mk II is the launch vehicle for the upcoming NASA-ISRO NISAR satellite mission scheduled for June 2025, marking step in India's space capabilities.

GLP-1 Hormone

The **GLP-1 hormone** (Glucagon-like peptide-1) is an incretin hormone that stimulates insulin secretion and inhibits glucagon release, regulating blood sugar levels. It also slows gastric emptying and reduces appetite, making it a target for diabetes and obesity drugs. Discovered in the 1980s, GLP-1 analogs like Ozempic and Wegovy mimic its effects to treat type 2 diabetes and promote weight loss. The hormone is secreted by intestinal L-cells in response to food intake. Its role in metabolic regulation has led to breakthroughs in

therapies addressing obesity and related metabolic disorders.

Why in news?

Five scientists were awarded the Breakthrough Prize in Life Sciences for discovering and characterizing GLP-1, enabling the development of effective weight-loss and diabetes drugs.

GRACE Mission

The **Gravity Recovery and Climate Experiment (GRACE)** was a joint NASA and German Aerospace Center mission (2002–2017) that mapped Earth's gravity field with high precision. It measured changes in gravity caused by mass redistribution, such as groundwater depletion, ice loss, and ocean currents. GRACE data helped quantify groundwater storage changes globally by detecting subtle variations in Earth's gravitational pull. Its successor, GRACE Follow-On, launched in 2018, continues this work. GRACE's unique ability to monitor subsurface water resources revolutionized hydrology and climate science, particularly in arid regions with limited direct groundwater measurement infrastructure.

Why in news?

GRACE satellite data was used to assess groundwater depletion in the Thar Desert, linking increased agricultural irrigation to declining water tables from 2002 to 2021.

Gut-Brain Connection

The gut-brain connection refers to the bidirectional communication system between the gastrointestinal tract and the central nervous system. It involves neural pathways, including the vagus nerve, as well as hormonal and immune signaling. This connection regulates digestion, gut motility, and pain perception. In IBS, this coordination is disrupted, leading to heightened gut sensitivity and altered bowel function without structural damage. Research shows gut microbiota influence this axis, affecting mood and gastrointestinal symptoms. The gut-brain axis plays a role in stress-related gastrointestinal disorders and is a target for therapies including probiotics, psychological interventions, and neuromodulators.

Why in news?

The gut-brain connection is central to understanding IBS pathophysiology, as brought into light in the April 2025 IBS Awareness Month materials focusing on symptom causes and management.

Hadean Plate Tectonics Signatures

Chemical signatures traditionally linked to plate tectonics, such as isotope ratios and mineral compositions, have been found in **Hadean protocrust rocks**. These signatures include evidence of subduction-related processes like melting and recycling of crustal material. However, recent research suggests these signatures may have existed before true plate subduction began, implying early Earth tectonic activity was different from modern plate tectonics. This challenges the assumption that plate tectonics started only after the Hadean eon. The study used geochemical modeling and lab simulations to

replicate early crust conditions and analyze these ancient signatures.

Why in news?

New research disputes the timing and nature of early plate tectonics by finding tectonic chemical signatures in the Hadean protocrust, potentially rewriting Earth's geological history.

Hub & Spoke Model

The **Hub & Spoke Model** is an organizational framework where a central entity (hub) coordinates activities and resources distributed among multiple associated partners (spokes). In research consortia, the hub typically leads coordination, while spokes contribute specialized expertise or capabilities. This model optimizes resource sharing, collaboration, and knowledge transfer among academic, industry, and R&D partners. It enables efficient management of complex, multi-disciplinary projects by consolidating core competencies under one umbrella while maintaining decentralized execution at spokes.

Why in news?

The Centres of Excellence under NCMM will operate as consortia using the Hub & Spoke Model to pool expertise from academic and industry partners for critical mineral research and technology development.

Hybrid Propulsion Rocket Engines

Hybrid propulsion rocket engines combine elements of solid and liquid rocket engines, using a solid fuel and a liquid oxidizer. This technology offers improved safety, controllability, and environmental benefits compared to traditional solid or liquid engines. Hybrid engines can be throttled, stopped, and restarted, which is advantageous for precise maneuvers. They produce fewer toxic emissions and are often used in experimental and sustainable aerospace projects. The development of hybrid propulsion is gaining traction in countries focusing on eco-friendly space technologies, including Nepal, which showcased a two-stage rocket powered by such engines at Startup Mahakumbh 2025.

Why in news?

Nepal displayed its largest pavilion at Startup Mahakumbh 2025, featuring a two-stage rocket powered by sustainable hybrid propulsion rocket engines.

India Semiconductor Mission (ISM)

The **India Semiconductor Mission** (ISM) is a government initiative focused on developing the semiconductor and active electronic components manufacturing ecosystem in India. It aims to attract global semiconductor companies through incentives and infrastructure support. ISM targets active components, including chips and integrated circuits, distinct from passive components covered under ECMS. The mission encourages investments from industry leaders like Applied Materials and Lam Research. ISM also encourages R&D, skill development, and ecosystem partnerships to reduce import dependency and build a sustainable semiconductor supply chain within India.

Why in news?

ISM is mentioned as the counterpart to the newly notified Electronics Components Manufacturing Scheme, denoting the government's dual approach to electronics manufacturing growth.

Indian Biological Data Centre (IBDC)

The Indian Biological Data Centre (IBDC) is a national repository for biological data, located at the Regional Centre for Biotechnology in Faridabad, Haryana. It stores genomic, proteomic, and other biological datasets relevant to Indian populations. IBDC supports large-scale projects like GenomeIndia by providing secure data storage and facilitating data sharing among researchers. It enables integration of diverse biological data for advanced analysis and research. The centre adheres to international standards for data management and privacy. It plays a critical role in advancing genomics, personalized medicine, and biotechnology research in India by maintaining comprehensive biological databases.

Why in news?

IBDC is mentioned as the repository where the GenomeIndia project's genomic data of 9,772 individuals from diverse Indian populations is deposited for research and analysis.

Indian National Space Promotion and Authorization Centre (IN-SPACe)

IN-SPACe was established in June 2020 as an autonomous agency under India's Department of Space. It serves as a single-window nodal agency to promote, authorize, and supervise private sector participation in Indian space activities. IN-SPACe facilitates access to ISRO's infrastructure, supports private development of launch vehicles and satellites, and oversees space-based service offerings by non-governmental entities (NGEs). It aims to democratize the Indian space sector by enabling private companies to innovate and reduce dependency on imports. IN-SPACe operates independently but coordinates closely with ISRO and the government.

Why in news?

IN-SPACe has launched the Satellite Bus as a Service (SBaaS) initiative inviting Indian private companies to develop small satellite bus platforms, aiming to boost domestic manufacturing and reduce import reliance.

Indigenous Propulsion System for Electric Locomotives

This propulsion system is an indigenously developed electric drive for 3-phase electric locomotives, featuring two 2.5 MVA traction converters and three 130 kVA auxiliary converters. It integrates an advanced Train Control and Management System (TCMS) to enhance performance, reliability, and operational flexibility. The system is a collaborative project between C-DAC, Chittaranjan Locomotive Works (CLW), and industry partners including Daulat Ram Engineering Services Pvt Ltd, JMV LPS Ltd, and Electro-waves Electronics Pvt Ltd. It supports Indian Railways' goal of full electrification by 2030 and is undergoing prototype testing and field validation for commercial rollout.

Why in news?

A Memorandum of Agreement was signed for the development and commercialization of

this indigenous propulsion system to advance India's rail electrification efforts.

Indium Gallium Arsenide (InGaAs)

Indium gallium arsenide (InGaAs) is a semiconductor alloy formed by substituting about 20% of gallium atoms in gallium arsenide with indium. This alteration tunes the material's bandgap and improves light emission properties, especially for near-infrared wavelengths around 1,020 nm. InGaAs layers are only a few atoms thick in advanced photonic devices and serve as the active region in lasers. The material is widely used in high-speed photodetectors, lasers, and optical communication components due to its superior electron mobility and direct bandgap characteristics.

Why in news?

The recent silicon photonics chip integrates thin InGaAs layers as the laser's active region, enabling efficient photon generation directly on silicon wafers.

Inertial Navigation System

An inertial navigation system (INS) calculates position, orientation, and velocity using motion sensors like accelerometers and gyroscopes without external references. INS is immune to GPS jamming or spoofing because it relies on internal measurements. It is used in aircraft, submarines, and spacecraft as a backup or primary navigation method. INS accuracy decreases over time due to sensor drift, requiring periodic recalibration. Modern INS units are integrated with GPS to combine precision and reliability. The system was first developed during World War II and remains critical for military and aerospace navigation in GPS-denied environments.

Why in news?

IAF pilots activated the inertial navigation system when their aircraft's GPS signals were spoofed during relief flights to Myanmar.

Ironwood AI Chip

The **Ironwood AI chip** is Google's seventh-generation AI processor, revealed in 2025 to accelerate inference computing—the rapid execution of AI model queries. Designed to work in clusters of up to 9,216 chips, Ironwood combines features from previous TPU designs and increases onboard memory, enhancing AI application performance. It delivers double the efficiency of the Trillium chip announced in 2024, consuming less energy for the same output. Ironwood targets AI tasks like those performed by ChatGPT, focusing on cost-effective AI deployment. Google has not disclosed the manufacturing partner for Ironwood, maintaining control over its proprietary design.

Why in news?

Google revealed Ironwood at a cloud computing conference, emphasizing its role in powering AI inference workloads and competing with Nvidia's AI processors.

ISRO Propulsion Complex (IPRC)

The **ISRO Propulsion Complex (IPRC)** is located in Mahendragiri, Tamil Nadu. It serves as the primary center for testing and assembling propulsion systems for ISRO's launch vehicles and spacecraft. Established in 1996, IPRC handles static tests for liquid engines,

including cryogenic and semicryogenic engines. It is equipped with multiple test stands for various engine types and supports integration and checkout of propulsion systems. The facility plays a critical role in validating engine performance and safety before flight. IPRC also conducts development and qualification tests, ensuring reliability of propulsion technologies for ISRO's missions.

Why in news?

IPRC conducted a short duration hot test of the semicryogenic engine's power head, marking a key step in engine validation for future ISRO launch vehicles.

ISRO System for Safe and Sustainable Space Operations Management (IS4OM)

IS4OM is an ISRO-developed system dedicated to monitoring and managing space assets and debris to ensure safe and sustainable space operations. It integrates radar tracking data and collaborates with international entities like USSPACECOM for precise orbital predictions. IS4OM plays a critical role in predicting re-entry events, assessing collision risks, and supporting debris mitigation strategies. It was actively involved in tracking POEM-4's decay and facilitating its controlled re-entry in April 2025. IS4OM supports ISRO's Debris Free Space Mission (DFSM), aiming to maintain the long-term sustainability of Earth's orbital environment.

Why in news?

IS4OM managed the tracking and re-entry prediction of the POEM-4 module, denoting ISRO's commitment to space debris mitigation during the PSLV-C60 mission.

Janasu Tunnel

The **Janasu Tunnel** is a 14.58 km long railway tunnel on the Rishikesh-Karnaprayag line in Uttarakhand. It is the longest transport tunnel in India, surpassing the previous record of 12.75 km on the Kashmir line. The tunnel is part of the Devprayag to Janasu stretch and was completed using a combination of Tunnel Boring Machine (TBM) and New Austrian Tunnelling Method (NATM). The TBM excavated 10.4 km, while NATM covered 4.11 km. The tunnel breakthrough was achieved on April 16, 2025, marking engineering milestone in Himalayan railway construction.

Why in news?

The Janasu Tunnel breakthrough was witnessed by Union Minister Ashwini Vaishnaw and Uttarakhand CM Pushkar Singh Dhami, marking the completion of a critical phase in the Rishikesh-Karnaprayag railway project.

K2-18b

K2-18b is an exoplanet located approximately **120 light years** from Earth, orbiting a star smaller and cooler than the Sun. It is about **nine times as heavy as Earth** and lies within the **habitable zone**, where liquid water can exist. Discovered in 2015, it was the first exoplanet outside our solar system where water vapor was detected in 2019. Recent observations revealed the presence of **dimethyl sulphide (DMS)** and **dimethyl disulphide (DMDS)**, gases linked to biological activity on Earth, fueling speculation about a warm ocean and potential life-supporting conditions.

Why in news?

K2-18b made headlines in October 2025 after researchers detected sulphur-containing gases in its atmosphere, signaling possible biological processes and renewed hope for extraterrestrial life.

Kulasekarapattinam Spaceport

Kulasekarapattinam spaceport is an upcoming space launch facility located in Thoothukudi district, Tamil Nadu. It is designed to support satellite launches and space missions, complementing India's existing space infrastructure. The site was chosen for its coastal location, which facilitates safer rocket launches over the sea. The spaceport aims to accommodate both government and private sector space activities. It is expected to enhance Tamil Nadu's role in space exploration and industry growth. The facility will include launch pads, testing labs, and support infrastructure for space startups and manufacturing units.

Why in news?

The spaceport is brought into light in the Tamil Nadu Space Industrial Policy 2025 as a key infrastructure project boosting the state's space technology capabilities.

Latrunculin A

Latrunculin A is a toxin derived from marine sponges that inhibits actin polymerization by binding to actin monomers. It disrupts the cytoskeleton, leading to reduced stiffness in cells such as red blood cells. In research, it is used to modulate and study cellular mechanical properties by artificially softening cells. This property enables quantification of the relationship between cell stiffness and functional parameters like micropore flight time. Latrunculin A has been instrumental in understanding cell mechanics and is widely used in biophysical studies of cytoskeletal dynamics and cellular deformability.

Why in news?

Researchers used Latrunculin A-treated red blood cells to calibrate and validate the electro-fluidic micropore device's measurement of cell stiffness for Sickle Cell Disease screening.

MOSDAC-IN

MOSDAC-IN stands for Meteorological and Oceanographic Satellite Data Archival CentreIndian Navy. It is a collaborative web service developed by the Directorate of Naval Oceanology and Meteorology (DNOM) and the Space Applications Centre (SAC), ISRO. MOSDAC-IN provides customized satellite-derived weather products tailored for individual Indian Naval Meteorological Offices, accessible via separate log-ins. It serves as a critical tool for real-time weather data analysis, enhancing naval meteorological forecasting and operational readiness. The platform integrates oceanographic and meteorological satellite data, supporting naval safety, strategic planning, and disaster preparedness.

Why in news?

MOSDAC-IN was officially launched during Meghayan 25, marking upgrade in the Indian Navy's meteorological data services.

NISAR Satellite

The **NASA-ISRO Synthetic Aperture Radar (NISAR)** satellite is a joint mission between NASA and ISRO designed to provide high-resolution Earth observations. It carries two radar instruments – a L-band radar from NASA and an S-band radar from ISRO. The satellite can detect surface changes as small as **one centimetre**. It is equipped with a **12-metre antenna**, one of the largest spaceborne radar antennas ever built. NISAR's data will help monitor natural hazards, climate change, glacier retreat, and vegetation changes. It underwent extensive testing and upgrades, including a return to the US for antenna improvements.

Why in news?

NISAR is scheduled for launch in June 2025 after delays caused by assembly and testing issues, marking milestone in US-India space collaboration.

P-band Synthetic Aperture Radar (SAR)

The **P-band SAR** operates at a frequency range of approximately 225 to 390 MHz, corresponding to wavelengths of about 70 cm to 1.3 meters. This long wavelength allows it to penetrate dense vegetation canopies, soil, and even some man-made materials, enabling detailed subsurface and forest biomass measurements. P-band SAR is rarely used in space due to regulatory frequency restrictions and technical challenges like antenna size and ionospheric distortion. Ground-based and airborne P-band systems have been used for archaeological and forestry studies. The Biomass mission will be the first spaceborne SAR to operate at P-band frequencies with a large 12-meter antenna.

Why in news?

The Biomass satellite will use the first spaceborne long-wave P-band SAR to map global forest biomass and carbon storage.

Parallel Processing

Parallel processing is a computing method where multiple processors or cores perform different parts of a task simultaneously. GPUs utilize parallel processing by having thousands of cores that break complex problems into smaller tasks executed concurrently, greatly speeding up computation. This contrasts with CPUs, which typically perform tasks sequentially with fewer cores. Parallel processing is crucial for graphics rendering, scientific simulations, and machine learning, enabling efficient handling of large-scale data and complex algorithms. The concept originated in the 1960s but became widespread with the rise of GPUs in the 2000s, transforming modern computing performance.

Why in news?

The article contrasts parallel processing in GPUs with sequential processing in CPUs to explain hardware differences relevant to AI model training and Google's TPU development.

Project EVolutionS

Project EVolutionS is an initiative by the Indian Department of Science and Technology

(DST) in collaboration with the Ministry of Heavy Industry (MHI) and the Automotive Component Manufacturing Association of India (ACMA). It provides grants to startups focusing on electric vehicle (EV) components and solutions, including electric two-, three-, and four-wheelers, e-buses, and EV charging infrastructure. The program supports pilot demonstrations, testing, validation, and industry connections to accelerate market readiness. Selected startups receive up to ₹50 lakh in funding, including ₹30 lakh as equity-linked instruments, promoting indigenous EV technology development and manufacturing in India.

Why in news?

Project EVolutionS was recently brought into light as the government announced new grants to support startups developing indigenous electric vehicle components and infrastructure, aiming to boost India's EV ecosystem.

Reinforcement Learning

Reinforcement learning (RL) is a machine learning paradigm where an agent learns to make decisions by receiving rewards or penalties from its environment. It was formalized in the 1980s by Andrew Barto and Richard Sutton, who developed algorithms based on the concept of maximizing cumulative reward. RL differs from supervised learning by relying on trial-and-error interactions rather than labeled data. It has applications in robotics, gaming, and autonomous systems. The Turing Award-winning work of Sutton and Barto laid the foundation for modern RL, enabling AI systems to improve behavior through feedback signals rather than explicit instructions.

Why in news?

OpenAI's new o3 and o4-mini models use reinforcement learning to improve reasoning and conversational abilities, marking advancement in AI training techniques.

Satellite Gravity Data

Satellite gravity data measures variations in Earth's gravitational field caused by differences in rock density beneath the surface. These measurements enable scientists to detect hidden geological structures like submerged landmasses. In the Davis Strait study, satellite gravity data helped identify the density anomalies indicating the presence of the proto-microcontinent. This method tracks minute changes in gravity pull, which correlate with subsurface rock formations, complementing seismic data that maps rock layers using acoustic wave reflections. Satellite gravity data is crucial for ocean floor studies where direct sampling is difficult or impossible.

Why in news?

Researchers used satellite gravity data combined with seismic readings to discover and model the newly identified proto-microcontinent beneath the Davis Strait.

Solar Photosphere

The **solar photosphere** is the Sun's visible surface layer from which most sunlight escapes. It has a temperature of about **5,800 K** and a thickness of approximately **500 kilometers**. The photosphere produces absorption lines known as Fraunhofer lines, used

to determine elemental abundances. Despite being the Sun's outermost layer visible to us, it is **opaque** due to the dense gas. Helium does not produce observable spectral lines here, complicating direct measurement of its abundance. The photosphere's opacity affects energy transport and solar atmosphere modeling, making its composition critical to astrophysics.

WHY IN NEWS?

The solar photosphere's helium content was recently measured directly for the first time using a novel spectroscopic technique involving magnesium and carbon lines.

Somayaan

Somayaan was the original name proposed for India's lunar exploration program by ISRO scientists during K Kasturirangan's leadership. The name was changed to Chandrayaan by then Prime Minister Atal Bihari Vajpayee, who found it more fitting. "Chandrayaan" means "Moon vehicle" in Sanskrit. The Somayaan proposal marked the formal beginning of India's lunar mission concept in the late 1990s, leading to Chandrayaan-1's successful launch in 2008. The program laid the foundation for subsequent missions, including Chandrayaan-3, which aimed for a soft landing on the Moon.

WHY IN NEWS?

The name Somayaan was referenced during discussions on Chandrayaan-3's 2023 Moon landing, illustrating the mission's historical origins.

Spoiler-Slot Deflectors

Spoiler-slot deflectors are aerodynamic control surfaces located on an aircraft's wings that manage airflow over the rear section to enhance stability and control. They function by disrupting or redirecting airflow, reducing lift or drag as needed, and helping maintain balance during flight maneuvers. In tailless flying-wing aircraft like the J-36, spoiler-slot deflectors compensate for the absence of horizontal stabilizers by providing additional pitch and roll control. These deflectors help mitigate destabilizing aerodynamic forces and improve handling in unpredictable conditions such as turbulent airflows or ship-airwake effects.

WHY IN NEWS?

Spoiler-slot deflectors are integral to the J-36's advanced flight control system, enabling stable carrier landings despite aerodynamic challenges posed by its tailless flying-wing design.

Stellite Alloy

Stellite is a **cobalt-based alloy** containing chromium, nickel, tungsten, and iron. It retains its strength at high temperatures up to **1150°C**, making it suitable for rocket nozzle applications. Developed indigenously by ISRO, Stellite replaces imported Columbium in the nozzle divergent of the PSLV's fourth stage, reducing costs by **90%**. It underwent a successful hot test lasting **665 seconds** at the ISRO Propulsion Complex in Mahendragiri, Tamil Nadu. Stellite alloys are known for their corrosion resistance and wear resistance, commonly used in aerospace and cutting tools due to their hardness and durability.

Why in news?

ISRO successfully tested a Stellite-made nozzle divergent for the PSLV, replacing expensive imported Columbium and advancing India's self-reliance in space technology.

String-of-Pearls Satellite Formation

The **string-of-pearls** configuration refers to a formation where multiple satellites follow each other in a closely spaced line along the same orbit. EZIE's three cubesats use this formation to provide sequential measurements of auroral electrojets as they pass over Earth, enabling spatial and temporal resolution of the phenomena. This formation enhances data quality by capturing evolving electrojet structures over short timescales. The approach is used in small satellite missions to maximize coverage and coordination without requiring large, complex spacecraft.

Why in news?

EZIE's use of the string-of-pearls formation allows unprecedented detailed mapping of auroral electrojets in the upper atmosphere.

Sun-Synchronous Orbit (SSO)

A **sun-synchronous orbit** is a near-polar orbit where a satellite passes over the same part of the Earth at roughly the same local solar time. This orbit is typically at an altitude between 600 and 800 km and is used for Earth observation satellites to ensure consistent lighting conditions. The orbit precesses approximately one degree per day, matching the Earth's revolution around the Sun. This allows satellites to maintain consistent shadow angles and illumination, which is essential for imaging and environmental monitoring. SSOs are used by many weather, reconnaissance, and scientific satellites.

Why in news?

The Biomass satellite will be placed in a sun-synchronous orbit at around 666 km altitude to enable consistent monitoring of forest biomass and carbon storage.

SW Donor Transplantation

SW donor transplantation, also known as swap or paired exchange transplantation, involves two or more biologically incompatible donor-recipient pairs exchanging organs to enable successful transplants. This process is legally permitted under Section 9 Sub-section 3A of the Transplantation of Human Organs and Tissues Act (THOTA), 1994, amended in 2011. Only near relatives of respective recipients can participate. Both donor-recipient pairs must enter a single agreement and receive prior approval from an authorisation committee before the transplant. This method increases transplant opportunities by matching donors and recipients more effectively across incompatible pairs.

Why in news?

NOTTO has urged all state of Indias and union territories to implement SW donor transplantation to enhance organ transplant numbers and streamline approval processes nationwide.

Synthetic Aperture Radar (SAR)

Synthetic Aperture Radar (SAR) is a form of radar used to create high-resolution images of

landscapes and objects from satellites or aircraft. Unlike optical sensors, SAR can operate 24/7 in all weather conditions, including through clouds and darkness. It uses microwave signals to detect surface features and movements, making it ideal for surveillance, reconnaissance, and mapping. SAR technology is crucial for military ISR missions, especially in border monitoring and maritime surveillance. India's new ISR satellites will be equipped with advanced SAR systems, improving real-time intelligence gathering and tracking of hypersonic missiles and UAVs.

WHY IN NEWS?

SAR is featured as a key sensor technology onboard ISRO's upcoming military satellites, enhancing India's all-weather space-based surveillance capabilities.

Tensor Processing Units (TPUs)

Google's **Tensor Processing Units (TPUs)** are custom-developed application-specific integrated circuits (ASICs) designed to accelerate machine learning workloads. Introduced in 2016, TPUs are optimized for neural network computations, especially for Google's internal AI models. The TPU family is split into two main types – one for training large AI models from scratch and another for inference, which focuses on deploying AI applications efficiently. TPUs are exclusively accessible to Google engineers or via Google's cloud services, giving Google a competitive edge. They support large-scale parallelism and high memory bandwidth, enabling rapid AI processing at reduced energy costs.

WHY IN NEWS?

Google's TPU technology underpins its AI infrastructure and is central to the performance improvements in the newly revealed Ironwood AI chip, denoting advancements in AI hardware.

Test Vehicle-D2 (TV-D2)

Test Vehicle-D2 (TV-D2) is an experimental mission designed to validate the Gaganyaan Crew Escape System by simulating an abort scenario during launch. It tests the rapid separation of the crew module from the launch vehicle in emergencies. The mission includes sea recovery operations to practice retrieval of the crew module after splashdown, ensuring astronaut safety protocols are effective. TV-D2 is a critical step in India's human spaceflight program, focusing on crew safety and emergency preparedness. It builds on previous test flights and is essential for the upcoming Gaganyaan crewed missions.

WHY IN NEWS?

The Government of India announced the TV-D2 mission as a key milestone in preparing for the first Indian crewed spaceflight, emphasizing safety and operational readiness.

Thromboembolism in Pediatrics

Thromboembolism involves the formation of blood clots that can block blood vessels, causing conditions like deep vein thrombosis or pulmonary embolism. It is rare but increasingly recognized in children, often linked to central venous catheters, infections, or inherited clotting disorders. Pediatric thromboembolism can lead to serious complications

including stroke or organ damage. Diagnosis relies on imaging such as ultrasound or CT scans, and treatment typically involves anticoagulation therapy. Risk factors differ from adults, often involving underlying medical conditions or immobility. Early detection is crucial to prevent long-term morbidity.

Why in news?

The study found an increased incidence of thromboembolism in children post-COVID-19, denoting the virus's impact on pediatric blood clot risks.

Thumba Equatorial Rocket Launching Station

Thumba Equatorial Rocket Launching Station (TERLS) was established in 1963 in Thiruvananthapuram, Kerala, near the Earth's magnetic equator. It is India's first rocket launching station dedicated to atmospheric and space research. The location was chosen for its proximity to the magnetic equator, ideal for studying ionospheric phenomena and equatorial electrojet currents. TERLS launched sounding rockets primarily for upper atmospheric research and laid the foundation for India's space program. It was instrumental in early Indian space experiments before ISRO's satellite launch vehicles were developed. The station is still operational for launching sounding rockets and atmospheric studies.

Why in news?

TERLS is mentioned as the initial site for India's rocket experiments before ISRO's satellite launch vehicle development, denoting India's early space research efforts.

Transiting Exoplanet Survey Satellite (TESS)

TESS is a NASA space telescope launched in 2018 to survey the brightest stars near the Sun for transiting exoplanets. It monitors about **200,000 stars** and has identified over **7,500 candidate exoplanets (TOIs)**, with **620 confirmed**. TESS uses wide-field cameras to detect periodic dips in starlight caused by planets crossing in front of their stars. It focuses on **bright, nearby stars**, enabling follow-up studies. TESS's discoveries include planets of various sizes and orbital periods, expanding the catalog of known exoplanets and contributing to understanding planetary system architectures.

Why in news?

TESS data led to the discovery and confirmation of TOI-2005 b, demonstrating its ongoing role in exoplanet detection and characterization.

TV-D2 Test Vehicle

The **TV-D2** (Test Vehicle-D2) is part of ISRO's Gaganyaan human spaceflight program. It is designed to simulate the abort scenario of the Crew Escape System (CES), which ensures astronaut safety in emergencies during launch. TV-D2 is an uncrewed test flight aimed at validating the CES's performance under realistic conditions. This mission is critical for demonstrating crew safety technologies before India's first crewed spaceflight. The test vehicle uses the GSLV rocket platform and will precede the actual human spaceflight missions in the Gaganyaan program.

Why in news?

TV-D2 is scheduled for launch in May 2025 as important step in validating safety systems

for India's upcoming first human spaceflight mission.

Vehicle-to-Grid (V2G) Technology

Vehicle-to-Grid (V2G) technology enables Electric Vehicles (EVs) to transfer stored energy back to the power grid using bi-directional chargers. When EVs are idle, their batteries act as decentralized energy storage, supporting grid stability and renewable energy integration. V2G systems manage both charging (Grid-to-Vehicle, G2V) and discharging (V2G) processes, often using Time of Use (ToU) tariffs to optimize electricity costs. V2G supports demand response markets and ancillary grid services. Globally, V2G pilots include electric buses and private EVs, with compensation schemes in Europe and California to incentivize energy supply during peak demand or grid instability.

Why in news?

Kerala State Electricity Board and IIT Bombay launched a pilot project exploring V2G integration in Kerala's power grid to manage peak demand and leverage EV batteries for grid support amid rising EV adoption and solar rooftop growth.

Vigyan Bhawan

Vigyan Bhawan is a premier convention center located in New Delhi, built in 1956. It is widely used for national and international conferences, government meetings, and cultural events. The building is noted for its modernist architecture and its role in hosting major diplomatic and scientific gatherings. Vigyan Bhawan has a seating capacity of over 1,000 and is equipped with advanced audio-visual facilities. It has hosted events such as the Commonwealth Heads of Government Meeting and the Indian Science Congress. The venue symbolizes India's commitment to science, technology, and diplomacy.

Why in news?

Vigyan Bhawan is the chosen venue for the Navkar Mahamantra Divas event on April 9, 2025, marking an important spiritual gathering with global participation.

Vikas Engine

The Vikas Engine is a family of liquid-fueled rocket engines developed by ISRO's Liquid Propulsion Systems Centre since the 1970s. It uses **UDMH (Unsymmetrical Dimethylhydrazine)** as fuel and **N2O4 (Nitrogen Tetroxide)** as oxidizer, producing a thrust of **725 kN**. The engine design is derived from the European Viking engine, with technology transferred from Societe Europeenne de Propulsion in 1974. Variants include the Vikas-2, Vikas-2B, and Vikas-4, used in PSLV and GSLV launch vehicles. It powers the second stage of PSLV and core stages of GSLV Mk I, II, and III.

Why in news?

ISRO conducted hot tests on the human-rated Vikas Engine at Mahendragiri for the Gaganyaan crewed space mission, confirming its readiness for upcoming launches.

Volcano Observatory Notice for Aviation (VONA)

The Volcano Observatory Notice for Aviation (VONA) is an official alert system used globally to inform aviation authorities and pilots about volcanic ash hazards. VONA warnings have four color-coded levels – green, yellow, orange, and red, indicating

escalating volcanic activity. The orange level, issued during the Mount Lewotobi eruption, is the second-highest alert, signaling ash emissions that can disrupt flights. The notice restricts aircraft from flying below **5,000 metres** near the volcano to avoid ash ingestion, which can cause engine failure and damage. VONA is crucial for aviation safety in volcanic regions worldwide.

Why in news?

The Volcanology and Geological Disaster Mitigation Centre issued a VONA orange-level warning during the October 2025 eruption of Mount Lewotobi, restricting flights under 5,000 metres near the volcano.

International Relations & Organizations

1949 Karachi Agreement

The **1949 Karachi Agreement** was signed between India and Pakistan to establish the Cease-Fire Line (CFL) in Jammu and Kashmir following the 1947-48 war. It was negotiated under the United Nations Commission for India and Pakistan (UNCIP) auspices. The agreement fixed January 1, 1949, as the cut-off date for territorial control. The line ran from Manawar near Akhnoor north to Keran in Kupwara, then east to glacier regions in Ladakh. The agreement explicitly excluded areas north of point NJ9842, deemed inaccessible. It was a military agreement, deliberately avoiding political issues, and formed the basis for future ceasefire arrangements.

Why in news?

The Karachi Agreement's demarcation of the ceasefire line is the foundation of the current Line of Control, which Pakistan recently threatened to suspend, questioning the LoC's legal validity amid ongoing conflict.

1972 Simla Agreement

The **1972 Simla Agreement** was signed between India and Pakistan after the 1971 Indo-Pak war, converting the ceasefire line in Jammu and Kashmir into the Line of Control (LoC). It established that neither side would alter the LoC unilaterally. The agreement aimed to maintain peace and resolve issues bilaterally. Despite this, ceasefire violations have occurred frequently. Pakistan suspended the agreement in 2025 amid rising tensions. The LoC stretches approximately **778 km** and is heavily militarized. The agreement remains a key reference point in India-Pakistan relations and conflict management in Kashmir.

Why in news?

Pakistan announced suspension of the 1972 Simla Agreement in October 2025, increasing tensions along the LoC and raising concerns about ceasefire stability between India and Pakistan.

Bangladesh-India Transshipment Facility

The transshipment facility allowed Bangladesh to export goods to third countries via Indian land customs stations, facilitating regional trade logistics. This arrangement excluded trade with Bhutan and Nepal. It was a critical part of Bangladesh's export infrastructure, enabling cost-effective and timely cargo movement. The facility supported

Bangladesh's garment industry by easing access to international markets. India's revocation of this facility marks setback for Bangladesh's export capabilities, disrupting established supply chains. The decision reflects escalating trade tensions and affects Bangladesh's ability to efficiently export goods through Indian territory.

Why in news?

India revoked the transshipment facility for Bangladesh following Bangladesh's unilateral closure of land ports and suspension of yarn imports from India, impacting regional trade cooperation.

India-Russia Investment Forum

The **India-Russia Investment Forum** is a bilateral platform designed to promote business collaboration between Indian and Russian enterprises. It involves participation from entrepreneurs, financial institutions, cargo companies, business chambers, researchers, and government officials. The forum facilitates networking, investment discussions, and partnership development across sectors. It is organized collaboratively by Invest India, Indian Chamber of Commerce (ICC), and the Russian Ministry of Economic Development. The forum supports the implementation of projects identified by the India-Russia Working Group on Priority Investment Projects and promotes investment opportunities in both countries.

Why in news?

The 2nd Edition of the India-Russia Investment Forum was held alongside the 8th IRWG-PIP session, featuring over 80 participants from both countries to boost bilateral business ties.

India-US Civil Nuclear Agreement, 2008

The **India-US Civil Nuclear Agreement** signed in 2008 ended India's nuclear isolation by allowing civil nuclear trade between the two countries. It enabled US companies to supply nuclear technology and fuel to India, despite India not being a signatory to the Nuclear Non-Proliferation Treaty. The deal required India to separate its civilian and military nuclear facilities and place civilian reactors under International Atomic Energy Agency safeguards. Despite the agreement, US firms have been reluctant to invest due to liability concerns and regulatory hurdles in India.

Why in news?

The agreement's potential benefits are being revisited as India considers foreign investment in nuclear plants, which could revive US nuclear business ties.

Indian Ocean Ship (IOS) Sagar

IOS Sagar stands for Security and Growth for All in the Region, a strategic Indian initiative aimed at enhancing maritime cooperation among Indian Ocean Region countries. Launched to promote peace, security, and economic growth, it involves joint naval exercises, capacity building, and information sharing. IOS Sagar focuses on collective security without compromising national sovereignty of participating countries. The initiative includes countries from Asia and Africa, encouraging equality in maritime rights

and duties. It supports anti-piracy operations and regional stability. IOS Sagar is part of India's broader maritime diplomacy to strengthen ties and ensure safe sea lanes.

Why in news?

The IOS Sagar expedition was flagged off by India's Defence Minister as a multi-nation maritime exercise to improve coordination and cooperation among Indian Ocean countries.

International Buddhist Confederation (IBC)

The **International Buddhist Confederation** (IBC) is a global organization established to promote Buddhist unity and cooperation among various traditions worldwide. Founded in 2013, it serves as a platform for dialogue and collaboration among Buddhist communities, scholars, and institutions. The IBC organizes international events, conferences, and cultural exchanges to encourage understanding of Buddhist teachings and heritage. It works closely with governments and NGOs to promote peace, social welfare, and cultural preservation. The IBC's headquarters is in New Delhi, and it includes members from over 40 countries representing diverse Buddhist schools.

Why in news?

IBC is hosting a two-day International Conclave in Namsai, Arunachal Pradesh, focusing on Buddha Dhamma and the Culture of North-East India in April 2025.

International Committee of the Red Cross (ICRC)

The **International Committee of the Red Cross (ICRC)** is a humanitarian institution founded in 1863, primarily focused on protecting victims of armed conflict. It proposed raising awareness about landmine dangers in 1980, leading to global campaigns on mine action. The ICRC promotes international humanitarian law, including treaties regulating landmines and explosive remnants of war. It provides medical aid, rehabilitation, and psychological support to landmine victims. The ICRC also engages in dialogue with armed groups to prevent the use of indiscriminate weapons and supports mine clearance efforts globally. It operates independently and neutrally in conflict zones.

Why in news?

The ICRC is referenced for its early advocacy in raising awareness about landmine dangers, which contributed to establishing the International Day of Mine Awareness.

International Court of Justice (ICJ)

The **International Court of Justice** is the principal judicial organ of the United Nations, established in 1945 and based in The Hague. It has 15 judges elected for nine-year terms by the UN General Assembly and Security Council. The ICJ settles legal disputes submitted by states and provides advisory opinions on legal questions referred by UN bodies. Its rulings are binding on states involved but it has no enforcement power. The court's jurisdiction depends on state consent, and not all UN members recognize it. It has issued key advisory opinions on Israel's actions in Palestinian territories and other international disputes.

Why in news?

The ICJ has begun hearings on a request from 40 countries concerning Israel's obligations

to provide humanitarian aid to Palestinians in Gaza and the West Bank.

International Labour Organisation (ILO)

The **International Labour Organisation (ILO)** was founded in 1919 as a United Nations agency dedicated to promoting social justice and internationally recognized human and labour rights. It has 187 member states and works through tripartite cooperation between governments, employers, and workers. The ILO sets international labour standards through conventions and recommendations, including those related to occupational safety and health. It organizes annual campaigns and events like the World Day for Safety and Health at Work. The ILO also provides technical assistance and research to improve working conditions worldwide. It won the **Nobel Peace Prize in 1969**.

Why in news?

The ILO initiated the World Day for Safety and Health at Work in 2003, which is observed annually on April 28 to promote workplace safety and health globally.

International Maritime Organisation (IMO)

The **International Maritime Organisation (IMO)** is a specialized United Nations agency established in 1948 to regulate shipping. It sets global standards for safety, security, and environmental performance in international shipping. The IMO's headquarters are in London. It has 175 member states and three associate members. The IMO is responsible for conventions such as MARPOL (pollution prevention) and SOLAS (safety of life at sea). The IMO's Environmental Committee develops policies to reduce shipping emissions. Despite its regulatory power, enforcement depends on member states. The IMO's decisions often require consensus, making negotiations complex and lengthy.

Why in news?

The IMO imposed the world's first global carbon tax on the shipping industry in April 2025, aiming to reduce emissions and promote cleaner fuels starting in 2028.

Joint Group of Customs (JGC)

The Joint Group of Customs (JGC) is a bilateral forum established between India and Bhutan to facilitate cooperation on Customs procedures and cross-border trade facilitation. It meets annually to discuss issues like Customs automation, data exchange, and transit cargo management. The JGC focuses on harmonizing Customs practices with global standards, improving trade efficiency, and addressing bilateral trade challenges. The group includes senior officials from both countries' Customs departments and works on initiatives like the Electronic Cargo Tracking System (ECTS) and Customs Mutual Assistance Agreement (CMAA) to secure and streamline border processes.

Why in news?

The 6th JGC meeting was held in April 2025 in Thimphu, Bhutan, focusing on enhancing India-Bhutan trade and transit cooperation through digitization and capacity-building initiatives.

Kailash Mansarovar Yatra

The Kailash Mansarovar Yatra is an annual pilgrimage undertaken by Indian devotees to

Mount Kailash and Lake Mansarovar in Tibet, China. It is considered sacred in Hinduism, Buddhism, Jainism, and Bon religions. The route passes through high-altitude terrain, including the Lipulekh Pass in Uttarakhand. The pilgrimage was suspended for several years due to border tensions and COVID-19 restrictions but resumed in June 2025. The yatra involves coordination between Indian and Chinese authorities for safe passage and has religious and geopolitical importance.

Why in news?

The resumption of the Kailash Mansarovar Yatra in June 2025 reflects improving India-China relations following recent disengagement and confidence-building measures along the LAC.

Kartarpur Corridor

The **Kartarpur Corridor** is a visa-free border crossing and corridor connecting **Dera Baba Nanak** in India to **Gurdwara Darbar Sahib** in Pakistan. It opened on **November 9, 2019**, marking the 550th birth anniversary of Guru Nanak Dev, founder of Sikhism. The corridor allows up to **5,000 pilgrims daily** to visit the shrine in Pakistan without a visa. It is one of the few cross-border religious corridors globally and symbolizes peaceful cooperation between India and Pakistan despite political tensions. The corridor is open year-round for pilgrims of all faiths.

Why in news?

The corridor remains open amid heightened India-Pakistan tensions following the Pahalgam terror attack, with pilgrims urging authorities to keep it accessible despite security concerns.

Operation Kaveri

Operation Kaveri was an Government of India evacuation mission launched in 2023 to rescue Indian nationals from the conflict zone in Sudan. Over **3,500 Indians** were safely evacuated with logistical support from Saudi Arabia, particularly through the port city of **Jeddah**. The operation involved coordination between multiple Indian ministries and Saudi government agencies, denoting bilateral cooperation in crisis management. It is one of the largest evacuation efforts India has conducted in recent years, showcasing the importance of regional partnerships in humanitarian emergencies. The operation also reinforced India's commitment to the safety of its diaspora abroad.

Why in news?

Operation Kaveri is referenced as a recent example of India-Saudi Arabia cooperation during PM Modi's April 2025 visit to Saudi Arabia, emphasizing bilateral humanitarian collaboration amid regional crises.

Paris Summit 2025

The Paris Summit in February 2025 shifted focus from speculative AI risks to immediate climate impact, sidelining ethical questions like data ownership and profit distribution. Notably, the absence of the US and UK weakened its influence, allowing Silicon Valley tech giants to dominate AI infrastructure discussions. The summit promoted national

sovereignty but overlooked the power imbalance created by private tech companies controlling AI tools. It brought into light tensions between pragmatic climate action and ethical governance, especially regarding AI-driven carbon markets that enriched intermediaries rather than vulnerable communities.

Why in news?

Held in early 2025, the Paris Summit's outcomes sparked debate over AI ethics and the role of major powers and corporations in climate technology governance.

Simla Agreement

The **Simla Agreement** was signed on **July 2, 1972**, between India and Pakistan after the 1971 war. It converted the ceasefire line in Jammu and Kashmir into the **Line of Control (LoC)**. The treaty committed both nations to resolve disputes bilaterally without third-party intervention. It included the release of over **93,000 Pakistani prisoners of war**. The agreement aimed to normalize diplomatic, economic, and cultural relations. Despite its intentions, it did not prevent future conflicts like the **Siachen conflict (1984)** and **Kargil War (1999)**. It remains a key reference in India-Pakistan diplomacy.

Why in news?

Pakistan declared the suspension of the Simla Agreement and closed the Wagah border following India's stringent measures after the Pahalgam terror attack.

Strategic Partnership Council

The **Strategic Partnership Council** between India and Saudi Arabia was established in 2019 to institutionalize and deepen bilateral ties across multiple sectors such as defence, trade, energy, technology, and culture. It serves as a high-level platform for dialogue and cooperation, facilitating coordinated responses to regional security challenges and humanitarian issues. The council meets periodically to review progress and set agendas for collaboration, reflecting the growing strategic importance of the India-Saudi relationship. It has played a key role in enhancing mutual trust and expanding partnerships beyond traditional energy ties.

Why in news?

The council's role is brought into light in the context of PM Modi's 2025 visit, focusing on strengthening multifaceted cooperation between India and Saudi Arabia.

Sub-national Diplomacy

Sub-national diplomacy refers to international relations and cooperation conducted by states, provinces, or regions within a country, rather than by the central government. It enables local governments to engage with foreign entities on economic, cultural, environmental, and political issues. This form of diplomacy complements traditional national foreign policy by leveraging regional strengths and addressing specific local-global challenges. It has grown with globalization and decentralization, allowing regions to build international partnerships, attract investment, and influence global governance. Examples include sister city agreements, regional trade missions, and participation in global networks of cities or states.

Why in news?

Telangana is hosting the Bharat Summit as an example of sub-national diplomacy, bringing together global leaders and think tanks to address worldwide challenges from a regional perspective.

Vasudhaiva Kutumbakam

Vasudhaiva Kutumbakam is a Sanskrit phrase from the ancient Indian text, the **Upanishads**, meaning "the world is one family." It promotes social harmony, unity, and global cooperation, discouraging division and sectarianism. The concept has influenced Indian philosophy, diplomacy, and social thought for centuries. It has gained renewed attention in international forums like the G20, symbolizing India's approach to global relations and multicultural integration. The phrase emphasizes interconnectedness and collective responsibility, encouraging peaceful coexistence and mutual learning among diverse communities worldwide.

Why in news?

Lisbon Mayor Carlos Moedas referenced Vasudhaiva Kutumbakam during his speech honoring President Murmu, denoting its relevance to social harmony and Indo-Portuguese relations.

Wagah Border

The **Wagah Border** is a key road border crossing between India and Pakistan near Amritsar, Punjab. It is famous for the daily Wagah border ceremony, a military parade performed by both countries. The border is a major transit point for trade and travel between the two nations. It was closed by Pakistan in October 2025 as a response to India's suspension of the Indus Waters Treaty and other diplomatic actions. The closure impacts cross-border movement, trade, and people-to-people contact. The Wagah border has been a symbol of both rivalry and limited cooperation between the countries.

Why in news?

Pakistan announced the closure of the Wagah border and halted all cross-border movement from India amid escalating tensions after the Pahalgam terror attack.

World Health Organization

The World Health Organization (WHO) was established on **April 7, 1950**, as a specialized agency of the United Nations focused on international public health. Its headquarters are in Geneva, Switzerland. WHO coordinates global health responses, sets international health standards, and supports countries in disease prevention and control. It played a critical role in eradicating smallpox and managing outbreaks like Ebola and COVID-19. The organization is governed by the World Health Assembly, comprising representatives from its 194 member states. WHO also publishes the International Classification of Diseases (ICD), a global health information standard.

Why in news?

World Health Organization's establishment is recognized annually on April 7th as World Health Day, which in 2025 promotes maternal and newborn health under the theme "Healthy Beginnings, Hopeful Futures."

Social Development & Government Schemes

Anoop Satpathy Committee

The **Anoop Satpathy Committee**, constituted in 2019, recommended establishing a National Floor Wage of Rs 375 per day as a minimum benchmark for wages across all states and sectors, including NREGA. This recommendation was based on July 2018 price levels and aimed to reduce wage disparities across states. The committee's proposal intended to ensure fair pay and reduce poverty among rural workers. However, as of FY 25-26, only two states, Goa and Haryana, have NREGA wages above this floor. The committee's suggestions have not been fully adopted by the government.

Why in news?

The committee's National Floor Wage recommendation marks the ongoing issue of low and uneven NREGA wages discussed in the 2025 Parliamentary Committee report.

ASHA Workers

Accredited Social Health Activists (ASHAs) are community health workers instituted by the Government of India in 2005 under the National Rural Health Mission. They act as a bridge between rural communities and public health systems, promoting health awareness and facilitating access to medical services. ASHAs are trained to identify health risks, provide basic care, and support immunization and maternal health programs. Their involvement in urban health initiatives like Delhi's Heat Action Plan 2025 signifies their expanding role beyond rural areas to address emerging urban health challenges, including heat safety education and community mobilization.

Why in news?

ASHA workers are engaged in executing Delhi's Heat Action Plan 2025 at the community level, raising awareness and assisting vulnerable groups during extreme heat conditions.

Aspirational Districts Programme

The **Aspirational Districts Programme** was launched by the Government of India in 2018 to rapidly transform underdeveloped districts through targeted interventions in health, education, agriculture, and infrastructure. It uses real-time data monitoring and collaboration between central and state governments. The program identifies districts based on socio-economic indicators and encourages innovation and best practice sharing. It is managed by NITI Aayog and involves multiple ministries. The program's focus on mining-affected districts under PMKKKY aligns developmental efforts to uplift marginalized communities impacted by mining activities.

Why in news?

The revised PMKKKY guidelines encourage DMFs to prioritize developmental projects in Aspirational Districts and Blocks to maximize impact on mining-affected populations.

Biju Swasthya Kalyan Yojana

The **Biju Swasthya Kalyan Yojana** was the precursor to the Gopabandhu Jan Arogya Yojana in Odisha, named after Biju Patnaik, a former Chief Minister and influential leader. It was launched to provide free healthcare services and financial protection against health

expenses for economically weaker sections. The scheme covered treatments in government and empaneled private hospitals, including critical illnesses and surgeries. It was one of the few state-level health insurance schemes that preceded and influenced the design of later programs like Gopabandhu Jan Arogya Yojana. The scheme was active until its rebranding and expansion in 2020.

Why in news?

The Biju Swasthya Kalyan Yojana was restructured into the Gopabandhu Jan Arogya Yojana, which was later merged with Ayushman Bharat in 2025 for unified health coverage in Odisha.

District Mineral Foundation (DMF)

The **District Mineral Foundation (DMF)** is a statutory fund established in 2015 under the Mines and Minerals (Development and Regulation) Act in India. It operates in 645 mining-affected districts across 23 states. The fund is financed by a levy on mining leases, aimed at the welfare and sustainable development of communities impacted by mining activities. By January 2025, DMF had collected over **₹1,04,250.74 crore** and sanctioned around **3.69 lakh projects**. Of these, **2.08 lakh projects** were completed, spending approximately **₹55,923.65 crore**. DMF funds are strictly earmarked for mining-affected areas and cannot be diverted.

Why in news?

A parliamentary panel brought into light concerns over unauthorized diversion of DMF funds to state treasuries and other unrelated schemes, violating the fund's intended purpose of supporting mining-affected communities.

Dysthymia

Dysthymia, also known as persistent depressive disorder (PDD), is a chronic form of depression lasting at least two years in adults and one year in children. It involves symptoms such as low energy, poor self-esteem, sleep disturbances, and difficulty concentrating. Unlike major depression, it requires fewer symptoms for diagnosis and has a gradual onset without distinct triggers. Dysthymia can coexist with major depression, leading to "double depression." It affects women more than men and is linked to chemical imbalances, stress, trauma, and social isolation. Treatment includes SSRIs, dual-action antidepressants, and various therapies targeting negative thought patterns and trauma.

Why in news?

Dysthymia is brought into light due to the popularity of Baek Sehee's memoir, which sparked conversations about this often overlooked mental health condition.

EPFO 2.01

EPFO 2.01 is an advanced IT system implemented by the Employees' Provident Fund Organisation to streamline claim settlements and improve operational efficiency. It supports over 8 crore active members and 78 lakh pensioners. The system facilitated the settlement of more than 6 crore claims in FY 2024-25, a 35% increase from the previous year. EPFO 2.01 integrates real-time data processing, automated verification, and faster

disbursal mechanisms. It enhances transparency and reduces processing time for provident fund and pension claims. The platform is designed to handle increased transaction volumes while maintaining data security and user accessibility.

Why in news?

EPFO 2.01's role in settling a record number of claims in FY 2024-25 was brought into light by the Union Minister of Labour during the announcement of expanded banking partnerships for EPFO collections.

Global Gender Gap Report

The **Global Gender Gap Report** is an annual study published by the World Economic Forum since 2006, measuring gender disparities across countries in economic participation, education, health, and political empowerment. It ranks countries based on their progress toward closing the gender gap. The report uses over 100 indicators and is widely cited by governments and organizations to guide policy. It integrates data from multiple sources including the International Labour Organization and World Bank. The 2025 edition uniquely incorporated AI skill metrics for the first time, denoting the intersection of technology and gender equality.

Why in news?

The 2025 report, developed with LinkedIn, focused on AI's impact on gender parity, warning that AI could worsen gender disparities in the workforce without deliberate intervention.

Jal Jeevan Mission

The **Jal Jeevan Mission** is an Government of India initiative launched on August 15, 2019, aimed at providing functional tap water connections to every rural household by December 2024. It targets about 16 crore rural households for "Har Ghar Jal" (water to every home). The mission is jointly funded by the Centre and states on a 50:50 basis. As of 2024, 75% of the target was achieved, with the remaining connections planned by extending the mission to December 2028. The mission's budget has escalated sharply, with states approving schemes worth over Rs 8 lakh crore, leading to funding challenges.

Why in news?

The mission's funding demand was cut by the EFC due to inflated costs and pending approvals, prompting concerns about states bearing additional financial burdens.

JAM Trinity

The **JAM trinity** refers to the integration of three key components – Jan Dhan bank accounts, Aadhaar unique identification numbers, and mobile phones. This framework underpins India's Direct Benefit Transfer system by ensuring direct, digital transfer of subsidies and welfare payments to beneficiaries. Jan Dhan accounts provide financial access, Aadhaar enables biometric identity verification, and mobile phones facilitate communication and transaction alerts. The JAM trinity reduces fraud and leakages by eliminating intermediaries and ghost beneficiaries. It is a mainstay of India's digital financial inclusion strategy, impacting over a billion people since its inception.

Why in news?

The JAM trinity is brought into light as a key feature enabling the success of India's DBT system, which has led to subsidy savings and improved public spending efficiency.

Jan Samarth Portal

The Jan Samarth portal is a digital platform launched by the Government of India to facilitate the implementation of various government schemes by integrating data from multiple departments and stakeholders. It enables real-time data sharing between applicants, vendors, banks, and distribution companies (Discoms). The portal supports schemes like PMSGMBY by fetching Discom data for consumer verification and subsidy processing. It faces technical challenges such as delayed or missing OTPs and data synchronization issues. The portal also includes functionalities for loan application processing and subsidy disbursal tracking, aiming to reduce paperwork and improve transparency.

Why in news?

Technical problems on the Jan Samarth portal, including OTP delays and Discom data fetching issues, are affecting the smooth processing of PMSGMBY applications, prompting calls for new functionalities.

Jan Swasthya Sahayog

Jan Swasthya Sahayog (JSS) is a non-profit healthcare organization based in **Chhattisgarh**, founded in 1996. It focuses on providing expert-led medical services, particularly in tribal and remote areas. JSS operates a hospital in **Bastar** district, offering free or low-cost treatment to underserved populations. The organization integrates community health workers and traditional knowledge with modern medicine. JSS also emphasizes training local healthcare providers to ensure sustainable medical support. It collaborates with government and international health bodies to address infectious diseases and malnutrition prevalent in tribal regions. JSS has been recognized for pioneering rural healthcare models in India.

Why in news?

Jan Swasthya Sahayog received the 3rd 'Yashraj Bharti Samman' for its contributions to healthcare in tribal areas during an award ceremony hosted by Maharashtra Governor C P Radhakrishnan.

Kaushal Bhawan

Kaushal Bhawan is a dedicated facility in New Delhi serving as the headquarters for India's Ministry of Skill Development and Entrepreneurship (MSDE). It functions as a central hub for policy formulation, coordination, and implementation of skill development initiatives across India. The building hosts high-level meetings and collaborations involving government agencies, industry leaders, and international organizations. Kaushal Bhawan symbolizes India's commitment to enhancing vocational education and workforce skilling. It integrates modern infrastructure to support digital learning and innovation in skill development. The name Kaushal means skill in Hindi, reflecting its core mission to

promote skill acquisition nationwide.

Why in news?

Kaushal Bhawan hosted the high-level roundtable for launching the India Skills Accelerator initiative, a public-private platform to enhance India's skilling ecosystem in collaboration with the World Economic Forum.

Khadi and Village Industries Commission (KVIC)

The **Khadi and Village Industries Commission (KVIC)** is a statutory body established in 1956 to promote khadi and village industries in India. It aims to generate rural employment, preserve traditional crafts, and encourage self-reliance. In 2024-25, KVIC reported a **347% increase in production** and a **447% increase in sales** since 2013-14, with production reaching Rs. 116,599.75 crore and sales Rs. 170,551.37 crore. KVIC supports women artisans, who constitute 80% of the khadi workforce, and runs multiple training centers benefiting over 7 lakh trainees in the last decade.

Why in news?

KVIC announced record production, sales, and employment figures for 2024-25, denoting its contribution to rural development and the government's vision of 'Viksit Bharat'.

Khelo India Scheme

The **Khelo India Scheme** is a flagship sports development program launched by the Government of India in 2018 to promote grassroots sports and identify young talent. It supports infrastructure creation, talent scouting, and financial incentives for athletes. In FY24, the scheme had a budget utilization rate of 87.2%, indicating under-spending. The program also focuses on integrating sports with education through residential sports schools at National Centres of Excellence (NCOEs). It aims to hold annual Khelo India Games and National Games to increase accessibility and regularity in competitive sports. Challenges include staffing shortages and limited rural outreach.

Why in news?

The parliamentary committee praised Khelo India's achievements but flagged underutilization of funds and staffing gaps, urging better integration with education and enhanced talent scouting.

Khelo India Tribal Games

Khelo India Tribal Games are a specialized segment of the Khelo India initiative aimed at promoting sports among tribal communities across India. These games focus on indigenous sports and traditional physical activities unique to various tribal cultures. They help preserve tribal heritage while encouraging youth participation in competitive sports. The games serve as a platform to identify tribal talent and integrate them into mainstream sports development programs. Tribal athletes get access to training facilities and exposure to national-level competitions. This initiative also encourages cultural exchange and awareness of tribal customs through sports.

Why in news?

The Union Sports Minister announced the inclusion of Khelo India Tribal Games as part of the expanded Khelo India Games program to be held across Bihar in 2025.

Kisan Credit Card (KCC)

The **Kisan Credit Card (KCC)** scheme was introduced by the Government of India in 1998 to provide timely and affordable credit to farmers for agricultural and allied activities. It offers short-term credit for purchasing inputs like seeds, fertilizers, and pesticides, as well as cash requirements related to crop production. As of December 2024, there are 77.1 million operational KCC holders, including 1.24 lakh for fisheries and 44.4 lakh for animal husbandry. KCC loans under the Modified Interest Subvention Scheme (MISS) offer interest rates as low as 4% for prompt repayment.

Why in news?

KCC accounts have shown a consistent decline in non-performing assets (NPAs) across banking sectors, reflecting improved credit discipline and increased agricultural credit flow in FY24-25.

Koch Rajbongshi Community

The **Koch Rajbongshi** community descends from the Koch Dynasty of the 16th-century Kamata Kingdom. They inhabit Assam, West Bengal, Bihar, Meghalaya, Bangladesh, Nepal, and Bhutan. In Assam, they are concentrated in western districts like Goalpara and Dhubri. The community holds **OBC status** in Assam but demands Scheduled Tribe status. They have a transborder presence, leading to many being tagged as D-voters (Doubtful voters) by Assam's Foreigner Tribunals. The Kamatapur Autonomous Council was established in 2020 for their socio-economic development. Some groups also advocate for a separate Kamatapur state spanning northern West Bengal and western Assam.

Why in news?

The Assam Cabinet withdrew around 28,000 pending Foreigner Tribunal cases against Koch Rajbongshi members, recognizing them as an indigenous community.

Krishi Nivesh

Krishi Nivesh is a unified digital platform launched by the Government of India to consolidate information and facilitate investments across multiple agriculture-related schemes. It integrates data from seven ministries including agriculture, food processing, Jal Shakti, renewable energy, and fertilizers. The platform currently provides details on **11 flagship agri-schemes** and aims to streamline loan disbursement and investment approvals. It supports investors with modules for detailed project reports and tracks implementation progress. The portal also plans to incorporate state-level schemes and chatbot assistance for investor queries, addressing issues like fragmented information and siloed departmental operations.

Why in news?

Krishi Nivesh is in news for expanding its scope to include more central and state agriculture schemes and introducing chatbot features to assist investors, aiming to accelerate agricultural investments and improve scheme accessibility.

Kudumbashree Mission

Kudumbashree is a poverty eradication and women empowerment programme initiated

by the Government of Kerala in 1998. It operates through a three-tier community network of Neighborhood Groups, Area Development Societies, and Community Development Societies. Kudumbashree focuses on microfinance, entrepreneurship, and social development activities. It has over 4 million women members and plays a key role in local governance and welfare schemes. The mission also contributes to digital literacy, health awareness, and environmental sustainability. It is considered one of the largest women-led community organizations in India.

Why in news?

Kudumbashree members were among the 2.57 lakh volunteers who helped implement the Digi Kerala digital literacy programme statewide.

Kuki-Zo Community

The **Kuki-Zo community** is an ethnic group primarily found in Northeast India, Myanmar, and Bangladesh. They speak languages from the Kuki-Chin subgroup of the Tibeto-Burman family. The community has a distinct cultural identity with traditional customs, festivals, and social structures. They are predominantly Christian, unlike neighboring Meitei people who follow Sanamahism and Hinduism. The Kuki-Zo have been involved in several ethnic conflicts, often demanding greater autonomy or a separate state called **Kukiland**. Their traditional attire includes colorful shawls and bamboo ornaments. The community practices shifting cultivation and hunting as part of their livelihood.

Why in news?

Kuki-Zo women organized a sit-in protest near the buffer zone in Manipur to block Meitei pilgrimage on Thangjing Hill, demanding political solutions and autonomy for Kukiland.

Kumaon Mandal Vikas Nigam

The **Kumaon Mandal Vikas Nigam (KMVN)** is a government agency established in 1976 to promote tourism and regional development in the Kumaon region of Uttarakhand. It manages hotels, resorts, and transport services, particularly supporting pilgrimage and eco-tourism activities. KMVN operates accommodations at key pilgrimage sites like Bageshwar, Almora, and Nainital. It also facilitates logistics for large-scale pilgrimages such as the Kailash Mansarovar Yatra. The agency plays a vital role in infrastructure development and coordinating with multiple government departments to ensure smooth travel and hospitality services in the region.

Why in news?

KMVN is preparing logistics and transport arrangements, including special transport from Dharchula to Lipulekh Pass, for the resumption of the Kailash Mansarovar Yatra in 2025 after a suspension since 2019.

Mahakumbh Festival

The **Mahakumbh** is a Hindu religious festival held every 144 years at Prayagraaj (formerly Allahabad), involving ritual bathing at the confluence of the Ganges, Yamuna, and mythical Sarasvati rivers. It is considered the largest peaceful gathering globally, attracting millions of devotees. The festival lasts 48 days and is marked by various

religious ceremonies and processions. The 2025 Mahakumbh reportedly boosted local economies through tourism and hospitality sectors. Despite its scale, many informal vendors and offerings during the festival remain outside GST tax net due to their non-taxable status.

Why in news?

The Mahakumbh in Prayagraaj increased GST collections in Uttar Pradesh in early 2025 by attracting vast numbers of devotees and boosting local economic activity.

Ministry of AYUSH

The **Ministry of AYUSH** is an Government of India body established in 2014 to promote traditional systems of medicine, including Ayurveda, Yoga, Naturopathy, Unani, Siddha, and Homeopathy. It supports research, education, and public awareness campaigns to integrate these systems into mainstream healthcare. The ministry runs various programs to validate traditional practices scientifically and improve healthcare accessibility. It plays a key role in organizing World Homeopathy Day events in India, encouraging dialogue between practitioners and researchers to enhance the credibility and use of alternative treatments.

Why in news?

The Ministry of AYUSH organizes World Homeopathy Day in India to promote awareness and research in homeopathy.

PM Surya Ghar Muft Bijli Yojana

The **PM Surya Ghar Muft Bijli Yojana** is a central government scheme designed to provide free or heavily subsidized solar power systems to residential users, particularly in rural and remote areas. It aims to increase solar energy penetration, reduce reliance on conventional power sources, and improve energy access. The scheme typically supports systems up to 3 kW, with a focus on affordability and ease of installation. Integration with state schemes, like Nagaland's Solar Mission, enhances its reach and impact.

Why in news?

Nagaland's new solar mission is implemented in alignment with the PM Surya Ghar Muft Bijli Yojana to maximize subsidies and expand clean energy use in the state.

PM-Gati Shakti Master Plan

The **PM-Gati Shakti National Master Plan** is an integrated infrastructure planning initiative launched by the Government of India to improve multimodal connectivity and streamline logistics. It coordinates multiple ministries to ensure synchronized development of roads, railways, ports, and airports. The plan uses a digital platform to map infrastructure projects and identify bottlenecks. It aims to reduce logistics costs and enhance economic growth by facilitating faster movement of goods and people. The initiative supports sustainable development by promoting efficient transportation modes, reducing emissions, and boosting employment through infrastructure projects across the country.

Why in news?

The PM-Gati Shakti Master Plan enabled the approval and integration of four multitracking

railway projects in Maharashtra, Odisha, and Chhattisgarh to boost rail capacity and connectivity.

PM-KISAN

PM-KISAN (Pradhan Mantri Kisan Samman Nidhi) is an Government of India income support scheme launched in 2019, providing direct cash transfers to small and marginal farmers. It offers Rs 6,000 annually in three equal installments to eligible farmers, aiming to supplement agricultural income. The scheme is linked with Aadhaar for beneficiary authentication and uses DBT for fund transfers. By 2024, PM-KISAN generated savings of Rs 22,106 crore through improved targeting and reduced leakages. It covers over 14 crore farmers and integrates with other rural welfare programs, contributing to financial inclusion and agricultural sustainability.

Why in news?

PM-KISAN was brought into light for generating Rs 22,106 crore in savings through the DBT system, demonstrating improved subsidy efficiency and farmer support.

PM-KISAN Exclusion Criteria

The **PM-KISAN scheme** excludes certain groups from receiving benefits, including institutional landholders, high economic status families (e.g., current/former ministers, MPs, MLAs, mayors), government employees and pensioners with pensions over Rs 10,000 (except lower-grade workers), income taxpayers, and registered professionals such as doctors, engineers, lawyers, CAs, and architects. These exclusions ensure that the scheme targets small and marginal farmers by preventing benefits to wealthier or institutional landowners. The definition of family includes husband, wife, and minor children, with state governments responsible for beneficiary identification.

Why in news?

The PM-KISAN exclusion categories were reiterated in April 2025 to clarify eligibility amid the ongoing registration drive and direct benefit transfers in Rajasthan.

PM-KUSUM Scheme

PM-KUSUM stands for Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan, a government initiative to promote solar energy use among farmers. It enables farmers to install solar pumps and grid-connected solar power plants, reducing dependence on fossil fuels and lowering electricity costs. The scheme supports decentralized renewable energy production and aims to add solar capacity in rural areas. It is implemented by the Ministry of New and Renewable Energy and integrates with other agricultural infrastructure schemes to enhance energy security and sustainability in farming practices.

Why in news?

PM-KUSUM is included among the flagship schemes featured on the Krishi Nivesh platform, denoting its role in the government's integrated approach to agricultural infrastructure and renewable energy investments.

PM-POSHAN Scheme

The **PM-POSHAN** (Pradhan Mantri Poshan Shakti Nirman) scheme, launched in 2021,

replaced the earlier Mid-Day Meal Scheme. It provides one hot cooked meal to over 11.20 crore students in balvatikas and Classes 1 to 8 across 10.36 lakh government and aided schools. The scheme includes nutritional standards mandating specific quantities of pulses, vegetables, and oil per meal. The Centre supplies about **26 lakh Metric Tonnes** of food grains annually through the Food Corporation of India, bearing 100% of the food grain and transportation costs. The program aims to improve nutrition and school attendance.

WHY IN NEWS?

The material cost for meals under PM-POSHAN has increased by 9.5%, adding ₹954 crore to the Centre's budget for 2025-26, effective May 1, 2025.

Poshan Bhi Padhai Bhi (PBPB)

Poshan Bhi Padhai Bhi (PBPB) is a training program launched on May 10, 2023, to enhance the skills of Anganwadi Workers (AWWs) in early childhood education and nutrition. It follows a two-tier model, covering play-based learning, child development, nutrition awareness, and community engagement. The program integrates the **Aadharshila** curriculum and **Navchetana** stimulation framework, promoting mother tongue-based education over 44 weeks using interactive videos, voice notes, and activity PDFs. By early 2025, over **4.2 lakh AWWs** have completed Round 1 training, improving education quality at Anganwadi Centres.

WHY IN NEWS?

The government reported progress in training Anganwadi Workers under the Poshan Bhi Padhai Bhi program to strengthen early childhood education alongside nutrition services.

Poshan Pakhwada

Poshan Pakhwada is a fortnight-long campaign initiated by the Government of India to raise awareness and promote nutrition-related activities. It focuses on improving nutritional outcomes for vulnerable groups like pregnant women, lactating mothers, and children under six. The event emphasizes key themes such as the first 1000 days of life, malnutrition management, and promoting healthy lifestyles to combat obesity. It involves multiple ministries and local workers like Anganwadi staff, aiming for coordinated action against malnutrition. Since its inception, six editions have been held, with the 7th edition continuing this nationwide effort.

WHY IN NEWS?

The 7th edition of Poshan Pakhwada is starting, focusing on malnutrition, Poshan Tracker, and child obesity, with a webcast involving multiple government officials and Anganwadi workers.

Poshan Tracker

The **Poshan Tracker** is a digital application launched on March 1, 2021, to monitor nutrition services at Anganwadi Centres across India. It registers beneficiaries, including children, pregnant women, and lactating mothers, enabling real-time tracking of attendance and growth monitoring. The app supports **24 languages** and replaces physical

records with auto-generated monthly reports. As of February 28, 2025, it has registered over **10.12 crore beneficiaries** nationwide, achieving **99.61% Aadhaar verification** in Karnataka. The platform has received commendations from UNICEF and the WHO for enhancing service delivery and accountability.

Why in news?

The Ministry of Women and Child Development announced that all Anganwadi Centres in India are now registered on the Poshan Tracker, marking step in digital transformation of nutrition services.

PoshanTracker Application

The **PoshanTracker Application** is a digital tool developed by the Ministry of Women and Child Development, to monitor and enhance nutrition services for women and children. It enables real-time data collection and tracking of beneficiaries under various nutrition schemes. The app supports frontline workers like Anganwadi workers by streamlining service delivery and improving accountability. It integrates with the POSHAN Abhiyaan (National Nutrition Mission) to ensure targeted interventions and timely follow-ups. The application includes a beneficiary module that empowers citizens to monitor their nutrition status and entitlements. It won the Prime Minister's Award for Excellence in Public Administration 2024 under the Innovation category.

Why in news?

The PoshanTracker Application received the Prime Minister's Award for Excellence in Public Administration 2024 during the 17th Civil Services Day celebrations for its innovative role in improving nutrition service delivery.

Pradhan Mantri Anusuchit Jaati Abhyuday Yojana (PM-AJAY)

PM-AJAY is a Centrally Sponsored Scheme launched in 2021-22 aimed at the socio-economic development of Scheduled Caste (SC) communities. It has three components – Adarsh Gram, Grants-in-aid for district/state projects, and Hostel facilities. Villages with over 40% SC population and at least 500 residents qualify. The scheme targets 50 socio-economic indicators across 10 domains including education, health, sanitation, and livelihood. As of 2024-25, 11,076 villages have been declared Adarsh Gram and 891 hostels sanctioned. Rs. 457.82 Crore has been released for 8,146 projects including 987 skill development projects.

Why in news?

PM-AJAY's progress and funding details were shared by the Minister of State for Social Justice and Empowerment in Lok Sabha, denoting recent achievements and ongoing initiatives for SC communities.

Pradhan Mantri Awas Yojana – Urban 2.0

Pradhan Mantri Awas Yojana – Urban 2.0 (PMAY-U 2.0) is a central government housing scheme launched to provide affordable housing to urban poor by 2025. It offers financial assistance up to Rs 2.5 lakh for construction or enhancement of houses on allotted plots. The scheme targets Economically Weaker Sections (EWS), Low Income Groups (LIG), and

Middle Income Groups (MIG). PMAY-U 2.0 promotes inclusive urban development with subsidies on home loans and direct benefit transfers. It integrates with state initiatives to ensure housing for all. The scheme emphasizes sustainable construction, use of eco-friendly materials, and digitized application processes.

Why in news?

PMAY-U 2.0 provides up to Rs 2.5 lakh financial aid to beneficiaries under Haryana's CM Urban Housing Scheme to support house construction on allotted plots.

Pradhan Mantri Employment Generation Program (PMEGP)

The **Pradhan Mantri Employment Generation Program (PMEGP)** is a government scheme promoting self-employment through the establishment of micro-enterprises. Since its launch, it has facilitated the creation of **1,018,185 units** with a government subsidy of Rs. 27,166.07 crore and loans amounting to Rs. 73,348.39 crore. The program currently supports over **9 million** people employed in rural and urban areas. It aims to generate sustainable employment and promote entrepreneurship in small industries and village enterprises. The scheme is implemented through KVIC and other agencies.

Why in news?

PMEGP's latest data shows over one million units created and nearly 90 lakh people employed, reflecting its role in rural employment generation in 2024-25.

Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)

The **Pradhan Mantri Khanij Kshetra Kalyan Yojana (PMKKKY)** is a central government scheme launched in 2015 to ensure the effective utilization of DMF funds. The scheme mandates that mining companies contribute to the DMF, which is then used for socio-economic development projects in mining-affected regions. PMKKKY focuses on health, education, infrastructure, and skill development in these areas. It aims to promote sustainable mining practices and improve the quality of life for local communities. The scheme is monitored by the Ministry of Mines to ensure compliance and transparency.

Why in news?

The parliamentary panel's concerns about DMF fund diversion directly relate to the PMKKKY's framework, as the scheme governs the proper use of these funds for mining-affected areas.

Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana (PM-MKSSY)

PM-MKSSY is an Government of India scheme providing aqua insurance incentives to fishers under the broader Pradhan Mantri Matsya Sampada Yojana (PMMSY). It offers a one-time incentive sanction-cum-release order to beneficiaries, aiming to enhance financial security and resilience among fisher communities. The scheme encourages formal insurance adoption in fisheries, a sector traditionally underserved by insurance products. It integrates digital tools and government support to improve coverage and streamline benefit distribution, reducing risks due to natural disasters and market fluctuations.

Why in news?

PM-MKSSY was officially launched and first-time incentives were awarded during the

Coastal States Fisheries Meet 2025 in Mumbai on April 28, 2025.

SANKALP 2.0

SANKALP 2.0 is the revised set of guidelines introduced by Sa-Dhan for Microfinance Institutions starting June 1, 2025. It focuses on three main areas – **pricing of loans**, **over indebtedness**, and **borrower discipline**. The guidelines mandate transparent loan pricing with components such as Cost of Funds (CoF), operational costs, risk margin, and profit margin clearly defined. Processing fees are capped at **1.5%**. Borrowers can have loans from no more than **3 lenders**, with a maximum combined exposure of ₹2 lakhs. Credit bureau checks are mandatory for clients and spouses/co-applicants. Loans are restricted if repayment obligations exceed 50% of monthly income.

Why in news?

SANKALP 2.0 guidelines were adopted by MFIs in a CEOs' conference to strengthen sector safeguards and protect clients from over-indebtedness and unfair practices.

Sardar Sarovar Yojana

The **Sardar Sarovar Yojana** is a large-scale water resource development project on the Narmada River, involving a dam, canal network, and hydropower facilities. It was initiated in the 1980s and is one of the largest multipurpose river projects in India. The dam's height is **163 meters**, and it has a reservoir capacity of about **9.5 billion cubic meters**. Its primary objectives include irrigation, drinking water supply, and hydroelectric power generation. The project has faced environmental and resettlement challenges but has increased water availability in drought-prone areas of Gujarat, Madhya Pradesh, and Maharashtra.

Why in news?

The irrigation water release schedule under the Sardar Sarovar Yojana was advanced to May 15, earlier than the usual June 15, to support farmers' agricultural activities during the Kharif season.

Social Inclusion in MUDRA

The MUDRA scheme has focus on social inclusion, with nearly half of its beneficiaries from Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Classes (OBC). Over 70% of the loans have been granted to women entrepreneurs, promoting gender equality in financial access. The scheme contributes to economic freedom by providing credit to those traditionally excluded from formal banking. It supports entrepreneurship in rural and semi-urban areas, enhancing livelihoods and reducing poverty. The inclusion of marginalized groups aligns with India's broader goals of social justice and equitable economic development.

Why in news?

The Prime Minister brought into light the social inclusion achievements of MUDRA during the 10-year anniversary celebrations in October 2025.

Socio-Economic and Caste Census (SECC) 2011

The **Socio-Economic and Caste Census (SECC) 2011** is a comprehensive survey conducted

by the Government of India to collect detailed data on socio-economic status and caste of households. It estimated that 3.72 lakh beggars lived in urban areas and over 6.62 lakh rural households rely on begging or charity. The census data is used extensively by ministries for welfare planning and targeting marginalized groups. The SECC is distinct from the decennial population census and provides granular data on income, occupation, education, and caste for more effective policy formulation.

WHY IN NEWS?

The Social Justice Ministry referenced SECC 2011 data to benchmark the scale of begging and assess the impact of the SMILE scheme.

Solar Mitra Yojana

The **Solar Mitra Yojana** is a government initiative launched in Uttar Pradesh aimed at developing a skilled workforce for the solar energy sector. The scheme focuses on training individuals in solar panel installation, maintenance, and grid integration to meet the growing demand for solar infrastructure. It targets unemployed youth and local communities, providing certified vocational courses and hands-on training. The program also promotes entrepreneurship by encouraging trainees to become solar energy service providers. The initiative supports the state's broader solar energy policy by ensuring a sustainable labor force for rapid solar capacity expansion.

WHY IN NEWS?

The Uttar Pradesh government brought into light the Solar Mitra Yojana as part of its strategy to boost employment and skill development alongside its ambitious solar energy targets.

State-Level Scheme Sanctioning Committees

State-Level Scheme Sanctioning Committees (SLSSCs) are state government bodies responsible for approving project proposals and work schemes under centrally sponsored missions like Jal Jeevan Mission. These committees review technical and financial aspects before sanctioning funds and work orders. Their approvals are mandatory for releasing central and state shares of funds. Delays or pendency in SLSSC approvals can stall project implementation and affect fund flow. SLSSCs typically include officials from relevant state departments and sometimes representatives from the central government or mission authorities.

WHY IN NEWS?

Works worth Rs 32,364 crore in Maharashtra, Bihar, Tamil Nadu, and Assam remain pending approval by SLSSCs, affecting the disbursement of central funds under the Jal Jeevan Mission.

Surrogacy (Regulation) Act, 2021

The **Surrogacy (Regulation) Act, 2021** regulates surrogacy in India, defining eligibility and procedures. It permits only intending couples or intending women (widows or divorcees aged 35-45) to opt for surrogacy, provided they have no surviving child except in specific medical exceptions. Section 4 restricts surrogacy to those without living children

unless the existing child has a life-threatening or incurable condition. The Act aims to prevent commercial surrogacy and exploitation, emphasizing altruistic surrogacy only. It defines surrogacy as a woman bearing a child for an intending couple with the intention of handing over the child after birth.

Why in news?

The Civil Surgeon rejected a divorced woman's surrogacy application citing this Act's provisions, leading her to approach the Bombay High Court and the Supreme Court for interpretation of eligibility criteria.

Swachh Bharat Abhiyan

Swachh Bharat Abhiyan is a nationwide sanitation campaign launched by the Government of India in 2014 aiming to eliminate open defecation and improve solid waste management. It targets 2.5 billion people lacking improved sanitation and 780 million without safe drinking water. The campaign promotes construction of millions of toilets, behavioral change in hygiene practices, and waste segregation. It has increased rural sanitation coverage and reduced open defecation by over 90% in many areas. The initiative also includes urban sanitation drives and has led to the Swachh Survekshan, an annual cleanliness survey ranking cities on sanitation.

Why in news?

Swachh Bharat Abhiyan is brought into light as a key intervention to reduce diarrhoeal diseases in India by improving sanitation and hygiene, especially in states with high disease burden.

Tele-MANAS Mobile Application

The Tele-MANAS Mobile Application was launched on World Mental Health Day, 10th October 2024, as part of India's National Tele Mental Health Programme. It is a comprehensive digital platform designed to support mental health issues ranging from general well-being to clinical mental disorders. The app offers counseling, psychological support, and resources in multiple languages, complementing the tele-mental health helpline services. It aims to provide easy and immediate access to mental health assistance across India, promoting early intervention and continuous care through mobile technology.

Why in news?

The Tele-MANAS Mobile Application launch marks digital advancement in India's mental health care, providing accessible support through smartphones nationwide.

UN Sustainable Development Goals (SDGs)

The **United Nations Sustainable Development Goals (SDGs)** are a set of 17 global objectives adopted in 2015 to address issues like poverty, inequality, climate change, and health by 2030. They replace the Millennium Development Goals and emphasize inclusive development. SDG 3 focuses on ensuring healthy lives and promoting well-being for all ages, including mental health and disabilities. SDGs integrate social inclusion, including disability rights, into development frameworks. The goals are monitored using specific

indicators and are supported by global partnerships between governments, NGOs, and the private sector.

Why in news?

The 2025 World Autism Awareness Day theme links autism acceptance to the UN SDGs, promoting neurodiversity as part of sustainable and inclusive development.

Virginia Tobacco Barn

A Virginia tobacco barn is a specialized structure used for curing Virginia tobacco leaves through controlled air curing. The barn's design allows for proper ventilation and humidity control essential for curing the leaves, which affects tobacco quality and flavor. Operating a tobacco barn requires a license under the Tobacco Board Act, 1975. India has about 91,000 licensed barns mainly in Andhra Pradesh, Karnataka, Telangana, and Odisha. The barn license renewal period has been extended from one year to three years to reduce administrative burdens on farmers. Barns are crucial for maintaining the quality standards demanded by export markets.

Why in news?

The barn operation license for Virginia tobacco curing was extended from one to three years by the Government of India to support tobacco farmers and streamline regulatory processes.

Vitamin D Kuposhan Mukt Bharat

The **Vitamin D Kuposhan Mukt Bharat** campaign is a proposed nationwide initiative aimed at eradicating Vitamin D deficiency in India. "Kuposhan Mukt Bharat" translates to "Malnutrition-Free India." The campaign would utilize schools, media, and community outreach to raise awareness, targeting vulnerable groups such as children, pregnant women, and the elderly. It complements existing government health programs by integrating Vitamin D testing and promoting fortified foods. The campaign emphasizes education about sun exposure, dietary sources, and affordable supplementation. It aligns with India's broader public health goals to reduce malnutrition and improve overall productivity and healthcare outcomes.

Why in news?

ICRIER recommended the launch of the Vitamin D Kuposhan Mukt Bharat campaign to address widespread Vitamin D deficiency, focusing on awareness and preventive health measures.

World Social Report

The **World Social Report** is an annual flagship publication by the United Nations Department of Economic and Social Affairs (UN DESA). It analyzes global social trends, such as poverty, inequality, and social cohesion, to inform international policy discussions. First issued in 1997, it serves as a background document for intergovernmental negotiations on social development. The report integrates data from diverse sources and marks emerging challenges and solutions. It is widely used by policymakers, researchers, and international organizations to track progress on social dimensions of sustainable

development and to recommend policy actions.

Why in news?

The 2025 edition was released, denoting rising economic insecurity, inequality, and social fragmentation worldwide, calling for urgent policy action.

ZooWIN Platform

ZooWIN is a digital platform developed to monitor the real-time availability of **anti-rabies vaccines (ARV)** and **anti-snake venom (ASV)** across India. It centralizes data from healthcare providers, municipal authorities, and veterinary services to improve coordination. Modeled after Co-WIN and U-WIN platforms, ZooWIN enhances logistical efficiency and timely distribution of critical treatments. The platform was developed by the **National Centre for Disease Control (NCDC)** with technical assistance from the **United Nations Development Programme (UNDP)**. It supports national efforts to reduce rabies and snakebite fatalities through better resource management.

Why in news?

ZooWIN was recently launched as a government initiative to streamline tracking and management of ARV and ASV supplies nationwide, aiding in the fight against rabies and snakebite deaths.

Defence

Akash Missile System

The **Akash air defence missile system** is an indigenous Indian surface-to-air missile with a range of 25 kilometers. It can intercept hostile aircraft, helicopters, drones, and subsonic cruise missiles. Developed by the Defence Research and Development Organisation (DRDO), it uses a multi-target tracking radar and a command guidance system. The system is mobile, mounted on a truck, and capable of engaging multiple targets simultaneously. Armenia is the first foreign customer for the Akash system. It forms part of India's export strategy to friendly countries, especially in the Gulf and ASEAN regions.

Why in news?

India offered the Akash missile system to the UAE during a delegation-level meeting to enhance bilateral defence cooperation, including joint projects and technology transfer.

Anti-Satellite (ASAT) Weapons

Anti-Satellite (ASAT) weapons are designed to destroy or incapacitate satellites in orbit, often by kinetic impact or directed energy. India demonstrated an ASAT capability in March 2019 by destroying a live satellite at approximately 300 km altitude using a three-stage interceptor missile in "hit to kill" mode. ASAT tests create space debris, posing collision risks for other satellites and spacecraft. The EU supports a UN ban on destructive ASAT testing to mitigate debris hazards. Several countries have conducted ASAT tests, raising concerns for space security and sustainability. ASAT weapons differ from cyber threats like jamming or spoofing, which disrupt satellite signals without physical destruction.

Why in news?

The EU Special Envoy brought into light concerns about debris from destructive ASAT tests

and emphasized the need for international agreements on responsible space behavior, referencing India's ASAT program.

Bilafond La Pass

Bilafond La is a mountain pass on the Siachen Glacier at an altitude exceeding 17,500 feet in the Karakoram range. It connects the glacier to the Nubra Valley and is strategically crucial for controlling movement between Indian-administered Ladakh and Pakistan-administered Gilgit Baltistan. Captured by Indian forces during Operation Meghdoot in 1984, Bilafond La remains a key military outpost. The pass is known for extreme weather, avalanches, and difficult terrain, making troop deployment and supply challenging. Control of Bilafond La helps dominate access routes from Gilgit Baltistan and secures the eastern approaches to the Karakoram Pass.

Why in news?

Bilafond La was one of the key positions seized on April 13, 1984, during Operation Meghdoot, commemorated annually on Siachen Day in 2025.

BrahMos Missile

The **BrahMos** is a supersonic cruise missile developed jointly by India's DRDO and Russia's NPO Mashinostroyenia. It travels at speeds of Mach 2.8 to 3.0, making it one of the fastest cruise missiles globally. The missile can be launched from land, sea, sub-sea, and air platforms. Its range was initially capped at 290 km but has been extended to over 400 km in recent variants. BrahMos is known for its precision strike capability against sea and land targets and has been exported to countries like the Philippines, marking India's growing defense export footprint.

Why in news?

BrahMos supersonic cruise missiles were delivered to the Philippines in April 2024 in a $375 million deal, contributing to India's record defense export figures in FY25.

Chetak Helicopter

The Chetak helicopter, a variant of the French Aérospatiale Alouette III, was the first helicopter of the Indian Air Force to land on the Siachen Glacier in **October 1978**. It played important role in high-altitude operations, ferrying troops and supplies to altitudes far exceeding manufacturer limits. Despite the extreme cold, low oxygen levels, and treacherous terrain, the Chetak enabled sustained military presence on the glacier before Operation Meghdoot began. It remains an iconic symbol of Indian high-altitude aviation capability and logistical support in the Karakoram range.

Why in news?

The Chetak helicopter's pioneering role in Siachen operations was brought into light during the 41st anniversary celebrations of Operation Meghdoot, reflecting on the logistical challenges overcome.

Daulat Beg Oldie (DBO)

Daulat Beg Oldie is a remote Indian military base located in the northernmost part of the Ladakh region, near the Line of Actual Control (LAC) with China. It sits at an altitude of

approximately **16,700 feet** and is one of the highest airstrips in the world. Established in the 1960s, DBO serves as a forward post for monitoring Chinese military activity. The area is named after a 19th-century trader, Daulat Beg Oldie. Its harsh weather conditions and difficult terrain make logistics challenging, requiring specialized equipment and acclimatization for troops stationed there.

Why in news?

DBO is among the high-altitude posts now equipped with reliable 4G and 5G connectivity, enhancing communication for troops in this strategic border area.

Defence Export Promotion Scheme

The **Defence Export Promotion Scheme** was launched in 2018 by India to encourage exports of domestically produced defence equipment. It provides financial incentives, including duty drawbacks and subsidies, to offset costs related to marketing, certification, and participation in international exhibitions. The scheme supports both public sector undertakings and private firms. It aligns with the Make in India initiative, aiming to increase India's share in the global defence market. The scheme also promotes technology transfers and joint ventures. It has contributed to a steady rise in defence exports, aiding India's target to reach ₹50,000 crore by 2029.

Why in news?

The scheme is mentioned as part of India's strategic efforts to expand defence exports and support domestic defence manufacturing growth.

Defence Public Sector Undertakings (DPSUs)

Defence Public Sector Undertakings (DPSUs) in India are government-owned corporations engaged in the production of defense equipment and systems. There are nine major DPSUs, including Hindustan Aeronautics Limited (HAL) and Bharat Electronics Limited (BEL). DPSUs have traditionally dominated India's defense manufacturing sector but have recently increased their contribution to exports by 42.85% in FY25. These units produce a wide range of products such as aircraft, naval vessels, electronic warfare systems, and missiles. DPSUs also collaborate with private sector firms and foreign partners to enhance indigenous defense capabilities and global market reach.

Why in news?

DPSUs showed increase of 42.85% in defense exports in FY25, contributing ₹8,389 crore to the total export figure, reflecting their growing role alongside private companies.

Defence Space Agency

The **Defence Space Agency (DSA)** is an integrated tri-service agency of the Indian Armed Forces, established in 2019 to coordinate space warfare capabilities. It combines resources from the Army, Navy, and Air Force to develop space-based defense strategies. The DSA focuses on satellite communication, surveillance, reconnaissance, and counter-space operations. It plays a key role in protecting India's space assets and developing offensive and defensive space capabilities. The agency also collaborates with ISRO and private sector firms for satellite launches and space technology advancements. It is very

important in shaping India's military space doctrine and policy.

Why in news?

The Defence Space Agency is preparing to release a new military space doctrine and is involved in launching a 52-satellite constellation for intelligence and surveillance, in partnership with ISRO and private companies.

Dhruv Advanced Light Helicopter (ALH)

The **Dhruv ALH** is an Indian multi-role helicopter developed by Hindustan Aeronautics Limited (HAL) since the 1990s. It features a composite airframe and is powered by twin Turbomeca TM 333-2B2 or Shakti engines. The ALH operates in diverse roles including transport, search and rescue, and armed reconnaissance. It has undergone multiple upgrades, including the Mark-III and weaponized Mk4 Rudra variants. The helicopter incorporates an Integrated Dynamic System (IDS) for flight controls. Despite over 400,000 flying hours, the ALH has faced repeated operational challenges like swash plate fractures and grounding due to technical faults. It supports operations from sea level to high altitudes like Siachen Glacier.

Why in news?

The entire fleet of 330+ ALHs remains grounded for over three months following fatal crashes linked to control system failures, impacting military and Coast Guard operational capabilities.

Dr APJ Abdul Kalam Island

Dr APJ Abdul Kalam Island, formerly known as Wheeler Island, is located off the coast of Odisha. It is a key missile testing range operated by the Defence Research and Development Organisation (DRDO). The island hosts the Integrated Test Range (ITR), which supports testing of various missile systems including surface-to-air and ballistic missiles. It was renamed in 2015 to honor the former President and missile scientist Dr APJ Abdul Kalam. The island's strategic location allows for safe missile trials over the Bay of Bengal, minimizing risk to populated areas. It plays a critical role in India's missile development program.

Why in news?

The island was the site of four successful flight-tests of the army version of the medium-range surface-to-air missile (MRSAM) conducted in April 2025.

DUSTLIK Military Exercise

DUSTLIK is an annual **joint military exercise** between India and Uzbekistan, alternating locations between the two countries. It focuses on joint sub-conventional operations, including counter-terrorism and counter-insurgency tactics. The exercise enhances **military cooperation** and strategic ties between India and Uzbekistan. It involves infantry, mechanized units, and air force elements from both sides. The name "DUSTLIK" means "friendship" in Uzbek, symbolizing bilateral goodwill. The first edition was held in 2016. The exercise also serves as a platform for sharing **best practices in Tactics, Techniques, and Procedures (TTPs)** related to modern warfare challenges.

Why in news?

The 6th edition of the India-Uzbekistan Joint Military Exercise DUSTLIK-6 began in Pune, Maharashtra, involving Indian Army's JAT Regiment and Uzbekistan army personnel, emphasizing enhanced defence cooperation.

Exercise Aakraman

Exercise Aakraman is a major Indian Air Force (IAF) drill focusing on ground attack and electronic warfare. It involves multiple airbases, including Ambala and Hashimara, with Rafale and Su-30 fighter jets participating. The exercise covers diverse terrains such as plains and mountainous areas to enhance operational readiness. It integrates advanced weaponry like Meteor air-to-air missiles and long-range, low-drag missiles such as Rampage and Rocks. The exercise aims to strengthen the IAF's regional air power and is conducted amid heightened tensions with neighboring countries. Top pilots participate under the supervision of highly qualified instructors.

Why in news?

Exercise Aakraman is currently underway in the central sector, showcasing India's enhanced air combat capabilities amid rising tensions with Pakistan after the Pahalgam incident.

Exercise Desert Flag

Exercise Desert Flag is a **multinational air combat exercise** hosted by the UAE Air Force at Al Dhafra Air Base. It began in 2010 and is held annually or biennially. The exercise features complex air combat scenarios involving fighter jets from various countries. Participating nations include the UAE, United States, United Kingdom, France, Germany, Australia, and others. It focuses on enhancing **interoperability**, tactical skills, and operational knowledge among air forces. The exercise simulates realistic combat environments, including air-to-air and air-to-ground missions, and involves advanced aircraft like F-16s, Eurofighters, and MiG-29s.

Why in news?

Exercise Desert Flag-10 is scheduled from 21st April to 8th May 2025, with the Indian Air Force participating for the first time, deploying MiG-29 and Jaguar aircraft.

Exercise Dustlik

Exercise Dustlik, meaning friendship in Uzbek, is an annual bilateral military exercise between India and Uzbekistan initiated to strengthen defense cooperation. It alternates locations between the two countries and focuses on counter-terrorism and sub-conventional warfare tactics, including anti-insurgency, hybrid warfare, and proxy conflicts. The exercise involves both Army and Air Force units and emphasizes joint planning, physical fitness, and special arms skills. It includes tactical drills such as heliborne operations, room intervention, and demolition of illegal structures. The exercise operates under United Nations mandates for counter-terrorism and aims to improve interoperability and tactical knowledge sharing.

Why in news?

Exercise Dustlik 2025 is scheduled in Pune, from April 16 to 28, continuing its role in

enhancing military ties between India and Uzbekistan.

Hypersonic Cruise Missile

A **Hypersonic Cruise Missile** travels at speeds greater than Mach 5 (>6,100 km/h) and uses an air-breathing engine, typically a scramjet, for propulsion. Unlike ballistic missiles, it flies within the atmosphere at sustained hypersonic speeds, allowing high maneuverability and reduced reaction time for defenses. The missile's engine relies on supersonic combustion, where fuel burns in a supersonic airflow, enabling efficient propulsion at extreme velocities. These missiles pose strategic challenges due to speed and agility. Development requires advanced materials, aerodynamics, and propulsion systems capable of enduring intense heat and pressure over long durations.

Why in news?

India's DRDO is progressing towards flight-ready hypersonic cruise missile technology following successful long-duration scramjet combustor tests in 2025.

IAF Jaguar Aircraft

The **SEPECAT Jaguar** is a ground attack aircraft used by the Indian Air Force since the 1970s. It was developed jointly by Britain and France for close air support and deep strike missions. The IAF Jaguars have been upgraded with modern avionics, navigation, and weapon systems under the DARIN (Display Attack Ranging Inertial Navigation) program. Jaguars are capable of carrying nuclear weapons and are used primarily for interdiction and tactical reconnaissance. The aircraft has a maximum speed of Mach 1.6 and a combat radius of over 850 km. It remains a key component of India's strike capabilities despite its age.

Why in news?

The IAF deployed Jaguar aircraft for the first time in Exercise Desert Flag-10, denoting their continued operational relevance in multinational exercises.

IASV Triveni

The **IASV Triveni** is a specialized sailing vessel designed for long-distance oceanic expeditions, equipped with advanced navigation and communication systems suitable for rigorous maritime challenges. It supports a crew of up to 12 members and integrates safety features tailored for training military personnel in ocean sailing. The vessel is constructed to withstand adverse weather and mechanical stresses encountered during extended voyages. It has been used for multiple preparatory missions, gradually increasing in complexity to build crew endurance and technical skills. The Triveni is named after the confluence of three rivers, symbolizing unity and strength in Indian culture.

Why in news?

The IASV Triveni is the vessel used for the tri-services all-women circumnavigation sailing expedition, Samudra Pradakshina, departing from Mumbai to Seychelles and back in 2025.

India-UAE Defence Partnership Forum

The **India-UAE Defence Partnership Forum** is a strategic platform established to promote joint ventures, co-production, and co-development projects between the two

countries' defence industries. It aims to leverage complementarities between India's Make-in-India and UAE's Make-in-Emirates initiatives. The forum supports collaboration in innovation, technology, and defence manufacturing, boosting bilateral defence ties. It facilitates institutional mechanisms for military exercises, training exchanges, and technology transfer. The partnership is part of a broader comprehensive strategic relationship focused on peace, prosperity, and regional stability.

Why in news?

The India-UAE Defence Partnership Forum was brought into light as a key mechanism to deepen defence cooperation during talks between defence ministers and leaders.

Indian Army Sailing Vessel TRIVENI

The Indian Army Sailing Vessel (IASV) TRIVENI is a specially commissioned sailing vessel used by the Indian Army for training and expeditions. Designed to support long-duration voyages, TRIVENI is equipped with modern navigation and safety equipment suitable for oceanic sailing. It serves as a platform for developing skills in seamanship, navigation, and team coordination among military personnel. The vessel is named "Triveni" symbolizing the confluence of three rivers, representing unity and strength. It is one of the few military-owned sailing vessels used for both training and actual expeditions, denoting the Indian Army's commitment to expanding operational capabilities beyond traditional land warfare.

Why in news?

TRIVENI is the official vessel for the first Tri-Services All Women Around The World Sailing Expedition, enabling the team to circumnavigate the globe.

Indian Navy P8I Aircraft

The Indian Navy P8I is a variant of the Boeing P-8 Poseidon, a long-range maritime reconnaissance and anti-submarine warfare aircraft. It is equipped with advanced sensors, including radar, electronic intelligence, and sonobuoys for submarine detection. The P8I can carry torpedoes, depth charges, and anti-ship missiles. It has a range of over 1,200 nautical miles and can remain airborne for more than 10 hours. The aircraft supports surveillance, reconnaissance, and interdiction missions in the Indian Ocean and beyond. India operates around 12 P8I aircraft, which are crucial for maritime domain awareness and countering illicit activities.

Why in news?

The P8I aircraft provided multiple intelligence inputs leading to the interception of narcotics trafficking vessels by INS Tarkash.

INS Aridhaman

INS Aridhaman is India's third nuclear-powered ballistic missile submarine (SSBN), displacing 7,000 tonnes and larger than its predecessors INS Arihant and INS Arighaat. It carries more K-4 missiles, each with a strike range of 3,500 km. The submarine strengthens the underwater leg of India's nuclear triad. It is part of a broader plan to build advanced nuclear submarines, including larger 13,500-tonne SSBNs with 190 MW

pressurized light-water reactors, replacing the existing 83 MW reactors. INS Aridhaman enhances India's strategic deterrence with improved missile capacity and stealth capabilities.

Why in news?

INS Aridhaman is set for commissioning in 2025, boosting India's underwater nuclear deterrence with enhanced missile payload and range.

INS Sunayna

INS Sunayna is an Indian Navy Offshore Patrol Vessel (NOPV) commissioned in 2014. It is designed for coastal patrol, anti-piracy, and search and rescue operations. The vessel is equipped with advanced navigation and communication systems, including a 30mm gun and machine guns for defense. It has a displacement of around 2,000 tons and a top speed of 25 knots. INS Sunayna supports multi-national exercises and humanitarian missions. The ship's crew includes personnel trained in diverse naval operations such as firefighting, damage control, and engine management. It plays a key role in securing the Indian Ocean Region (IOR).

Why in news?

INS Sunayna set sail on a historic maiden maritime exercise involving nine friendly nations from Asia and Africa, marking step in regional naval cooperation under the IOS Sagar initiative.

INS Surat

INS Surat is the latest indigenous guided missile destroyer of the Indian Navy, part of the Project 15B class. It is designed and built in India, featuring advanced stealth technology and enhanced weaponry. The ship is equipped with a variety of sensors, electronic warfare systems, and missile launchers, including medium-range surface-to-air missiles. It measures approximately 163 meters in length and displaces around 7,400 tons. INS Surat integrates cooperative engagement capabilities, allowing it to coordinate with other naval assets for precise target engagement. It enhances the Indian Navy's blue-water operational reach and maritime security.

Why in news?

INS Surat successfully carried out a precision cooperative engagement of a sea-skimming target and test-fired a medium-range surface-to-air missile in the Arabian Sea, marking a milestone in India's indigenous naval capabilities.

INS Tarkash

INS Tarkash is a **Talwar-class frigate** of the Indian Navy, commissioned in 2012. It was built at the Yantar Shipyard in Kaliningrad, Russia. The ship is equipped with **advanced stealth technology** and carries a mix of Russian and Indian weaponry, including BrahMos cruise missiles. It has a displacement of approximately 4,000 tons and a top speed of 30 knots. INS Tarkash is designed for anti-submarine warfare, anti-surface warfare, and air defense. It has participated in multiple international naval exercises and maritime security operations, especially in the Indian Ocean region. Its integral helicopter enhances its

surveillance and interdiction capabilities.

Why in news?

INS Tarkash intercepted and seized over 2,500 kg of narcotics in the Western Indian Ocean during a maritime security operation in 2025.

Integrated Test Range, Chandipur

The Integrated Test Range (ITR) at Chandipur, Odisha, is a premier missile testing facility operated by the DRDO. It supports testing of various missile systems including surface-to-air, ballistic, and cruise missiles. The range includes advanced radar systems, electro-optical tracking, telemetry, and command centers for real-time monitoring and data collection. It is strategically located near the coast for safe missile flight paths over the Bay of Bengal. ITR Chandipur has been instrumental in validating India's indigenous missile technologies and is a hub for collaborative projects with foreign defense industries.

Why in news?

ITR Chandipur provided radar and electro-optical tracking support during the successful MRSAM flight-tests in April 2025.

JAT Regiment

The JAT Regiment is an infantry regiment of the Indian Army, primarily composed of soldiers from the Jat community. It was raised in 1920 and has a distinguished combat record in both World Wars and various Indian military operations. Known for its **valor and discipline**, the regiment has earned multiple battle honours and gallantry awards. The regiment's motto is "Sangathan Va Veerta" (Unity and Valour). It has participated in UN peacekeeping missions and counter-insurgency operations. The regiment maintains regimental centres in Haryana and Rajasthan, and its soldiers are noted for physical robustness and esprit de corps.

Why in news?

A battalion of the JAT Regiment is part of the Indian contingent participating in the DUSTLIK-6 joint military exercise with Uzbekistan.

Kalam & Kavach Festival

The **Kalam & Kavach** Defence Literature Festival is an initiative to merge strategic thought leadership with defence innovation. Named symbolically after Dr. A.P.J. Abdul Kalam (India's former President and missile scientist) and the word "Kavach" meaning armor, the festival promotes discourse on defence reforms, technology, and policy. It brings together military leaders, policymakers, and industry experts to deliberate on India's security challenges and emerging warfare technologies. The event emphasizes literature's role in shaping defence narratives and policy-making. The festival is held at the Manekshaw Centre and is organized in collaboration with Pentagon Press.

Why in news?

The second edition, Kalam & Kavach 2.0, was held to discuss India's journey towards self-reliant, tech-driven defence capabilities under the theme 'Securing India's Rise through Defence Reforms'.

Keel Laying Ceremony

The keel laying ceremony is a traditional maritime event marking the formal start of a ship's construction. It involves placing the first section of the ship's keel on the slipway or in the dry dock. This event is symbolic of the birth of the vessel and is often attended by dignitaries and key stakeholders. The ceremony is a milestone in the shipbuilding timeline, indicating that the project has moved from design to physical construction. The keel laying is followed by further stages such as launching and commissioning.

Why in news?

The keel laying ceremony for Yard 3040, the fourth NGOPV vessel, was conducted at GRSE, Kolkata, marking step in the construction of this indigenous naval ship.

Kolkata-class Destroyer

The **Kolkata-class destroyer** is a class of guided missile destroyers built for the Indian Navy, featuring advanced stealth design and indigenous weapon systems. Commissioned starting in 2014, these ships have a displacement of around 7,400 tons and are equipped with the Barak 8 surface-to-air missile system and BrahMos supersonic cruise missiles. They incorporate modern sensor suites like the EL/M-2248 MF-STAR radar and are designed for multi-role operations including anti-air, anti-surface, and anti-submarine warfare. Built at Mazagon Dock Limited, Mumbai, they represent leap in India's naval capabilities with an emphasis on network-centric warfare.

Why in news?

The Kolkata-class destroyers were part of the Indian Navy's recent anti-ship missile firing exercises demonstrating combat readiness amid tensions with Pakistan after the Pahalgam terror attack.

Krivak-class Frigate

The Krivak-class frigate is a series of Soviet-designed warships originally built during the Cold War, known for their anti-submarine warfare capabilities. Some of these vessels were acquired and modernized by the Indian Navy, serving as multi-role frigates with enhanced weaponry and sensors. They typically displace around 3,000-4,000 tons and are equipped with surface-to-air missiles, torpedoes, and anti-ship missiles. Their design emphasizes speed and maneuverability, with a helicopter deck for maritime patrol. These frigates have been gradually phased out or upgraded but remain important in India's naval history as a bridge to more advanced indigenous platforms.

Why in news?

Krivak-class frigates were part of the recent Indian Navy missile firings and naval exercises aimed at reaffirming operational readiness following the Pahalgam terror attack.

MiG-29K

The MiG-29K is a Russian carrier-based multirole fighter aircraft, operated by the Indian Navy since 2013. It has a maximum takeoff weight of 24,000 kg and can carry a variety of air-to-air and air-to-surface weapons. The MiG-29K features advanced avionics, including a phased array radar and infrared search and track (IRST) system. It operates from the INS

Vikramaditya and INS Vikrant aircraft carriers. Despite its capabilities, the MiG-29K fleet has faced serviceability and maintenance challenges, leading to operational readiness issues. The aircraft remains a key component of India's naval aviation until Rafale-Marine fully integrates.

Why in news?

The Rafale-Marine acquisition aims to complement and eventually address the limitations of the existing MiG-29K fleet on Indian Navy carriers.

Operation Meghdoot

Operation Meghdoot was launched by the Indian Army on **April 13, 1984**, to secure control over the Siachen Glacier. It was the first military assault on the world's highest battlefield. Troops were airlifted and supplied by a combination of fixed-wing aircraft (An-12, An-32, IL-76) and helicopters (Mi-17, Mi-8, Chetak, Cheetah). The operation pre-empted Pakistani attempts to capture the Sia La and Bilafond La passes. Commanded by Lt. Gen. Manohar Lal Chibber, Lt. Gen. PN Hoon, and Maj. Gen. Shiv Sharma, it established full Indian control over the glacier, a region strategically vital in the Kashmir dispute.

Why in news?

April 13, 2025, marked the 41st anniversary of Operation Meghdoot, commemorated as Siachen Day, honoring the Indian Army's strategic victory and continued presence on the glacier.

Pahalgam Terrorist Attack

Pahalgam is a town in Jammu and Kashmir, known for tourism and religious significance. On April 22, 2025, it suffered a terrorist attack killing 26 people. The attack targeted civilians and security forces, escalating regional security concerns. It led to a diplomatic fallout between India and Pakistan, including India's downgrading of diplomatic ties and suspension of the Indus Water Treaty. Pahalgam has been a flashpoint in the Kashmir conflict and has witnessed prior militant incidents due to its strategic location and symbolic importance.

Why in news?

The terrorist attack in Pahalgam triggered a diplomatic crisis, prompting India to take strong retaliatory measures against Pakistan, including expulsions and treaty suspensions.

Project Seabird

Project Seabird is a major Indian Navy infrastructure development project at Karwar, Karnataka, with an investment exceeding Rs 2,000 crore. It includes marine infrastructure for berthing ships, submarines, and harbour crafts, an armament wharf, two refit piers, marine utility complexes, and residential facilities for 480 sailors and defence civilians. The base features a 25 km road network, 12 km storm water drainage, water reservoirs, waste management plants, and security watch towers. Over 90% of materials and equipment are sourced domestically, supporting the Government's Aatmanirbhar Bharat vision and boosting industrial growth in the Uttar Kannada region.

Why in news?

Raksha Mantri Rajnath Singh inaugurated the modern operational, repair, and logistic facilities under Project Seabird during the flag-off of IOS SAGAR in April 2025.

Project Varsha

Project Varsha is India's strategic naval base development initiative near Rambilli, Andhra Pradesh, designed to house nuclear submarines in underground pens and tunnels. It enables stealthy deployment into the Bay of Bengal, facilitating deterrent patrols towards the Malacca Strait. The project has faced over a decade of technological and environmental challenges. The first phase is nearly complete and commissioning is expected in 2026. It is expandable in phases and complements the western seaboard's Karwar base under Project Seabird. The base enhances India's naval capabilities against regional threats by providing secure, covert submarine operations.

Why in news?

Project Varsha's first phase is nearing completion, with commissioning planned for 2026, marking upgrade in India's nuclear submarine infrastructure on the eastern seaboard.

Samudra Pradakshina

Samudra Pradakshina is a tri-services, all-women sailing expedition initiated by the Indian Armed Forces, involving personnel from the Army, Navy, and Air Force. The 2025 voyage covers approximately 4,000 nautical miles between Mumbai and Seychelles over 55 days. The expedition is a preparatory mission for a planned global circumnavigation in 2026. Selected from 41 volunteers, the 12-member crew underwent two years of rigorous ocean sailing training. The mission promotes gender parity in defense maritime operations and honors historical female warriors of India. It also tests resilience, navigation skills, and teamwork under challenging oceanic conditions.

Why in news?

Samudra Pradakshina was flagged off in 2025 as a pioneering all-women military maritime expedition, denoting women's empowerment and preparing for a larger circumnavigation mission.

Southern Machine-Building Plant

The **Southern Machine-Building Plant** is a key Ukrainian defense manufacturing facility located near Dnipro (formerly Dnepropetrovsk). It has been involved in assembling operational-tactical missile systems, including the Grom-2 (Sapsan) and Tochka-U missiles. The plant suffered targeted Russian strikes during the conflict, aiming to disrupt missile production and development. Despite damage, it remained central to Ukraine's missile efforts. The plant's history dates back to the Soviet era, and it continues to be a strategic asset for Ukraine's defense industrial base.

Why in news?

The plant was struck multiple times by Russian forces in 2022 and 2024 to impede production of the Sapsan missile system, reflecting its strategic importance in Ukraine's missile program.

Sub-conventional Domain Warfare

Sub-conventional domain warfare refers to conflicts that are below the level of traditional, conventional warfare and include irregular, asymmetric, or hybrid forms of conflict. This domain encompasses anti-insurgency operations, proxy wars, terrorism, and hybrid warfare tactics that involve non-state actors and unconventional methods. These conflicts often require specialized military responses such as intelligence-driven operations, small team insertions, and combined arms tactics. This form of warfare challenges traditional military doctrines and necessitates joint operations across multiple domains, including land, air, cyber, and intelligence. It is a focus area for modern military exercises like Dustlik.

Why in news?

Exercise Dustlik 2025 centers on counter-terrorism operations within the sub-conventional domain, denoting evolving military strategies against asymmetric threats.

Tri-Services 'Future Warfare Course'

The **Tri-Services 'Future Warfare Course'** is a specialized training program initiated in 2024 to equip Indian military officers with knowledge of emerging technologies and modern warfare concepts. It covers doctrinal updates, strategies, and Tactics, Techniques, and Procedures (TTP) relevant to future combat. The course includes practical demonstrations and visits to defense institutions, involving participants from all ranks and services, as well as industry and research organizations like DRDO and DPSUs. It focuses on joint operations, technology integration, and aligning military capabilities with indigenous defense production. The program is designed to develop strategic leaders adept at managing complex, multi-domain warfare challenges.

Why in news?

The second edition of the Tri-Services 'Future Warfare Course' is scheduled for April-May 2025, expanding its curriculum and participant diversity to enhance preparedness of Indian armed forces for evolving warfare.

Tri-Services All Women Sailing Expedition

The Tri-Services All Women Around The World Sailing Expedition is a pioneering maritime journey involving 11 women officers from the Indian Army, Navy, and Air Force. The team will cover approximately 4,000 nautical miles across the Indian Ocean in 55 days, including navigating the treacherous Southern Ocean. Selected from 41 volunteers, the officers underwent intensive training in sailing, navigation, meteorology, and emergency procedures. This expedition aims to set a world record as the first all-women tri-service team to circumnavigate the globe by sea. It symbolizes women's empowerment in the armed forces and showcases their capability in traditionally male-dominated fields.

Why in news?

The expedition is scheduled to flag off on April 7 from Mumbai, marking a historic milestone for Indian women in the military.

Year of Reforms 2025

The **Year of Reforms 2025** is an initiative declared by India's Ministry of Defence to accelerate defence modernization and operational readiness. It focuses on fast-tracking reforms in procurement, defence manufacturing, and technology transfer. The initiative promotes deeper public-private partnerships and niche innovations to build a combat-ready, technology-driven military. It aligns with the Aatmanirbhar Bharat mission for self-reliance in defence. The roadmap includes multi-domain integration across land, air, sea, cyber, and space domains to enhance strategic capabilities. Defence Minister Rajnath Singh announced this mission-mode approach to transform India's defence ecosystem.

WHY IN NEWS?

The Year of Reforms 2025 was brought into light during the Kalam & Kavach 2.0 festival as a key driver of India's evolving defence strategy and modernization.

Zorawar Light Tank

The **Zorawar light tank** weighs around 25 tonnes and is powered by a **750 HP Cummins engine**. It is equipped with a **105 mm turret gun** jointly manufactured by Belgium-based John Cockerill Defence (JCD) and Electro Pneumatics & Hydraulics Pvt Ltd (EPHL). Designed for high-altitude and desert operations, it accommodates a **three-member crew** and integrates UAV capabilities for enhanced battlefield awareness. The tank was developed rapidly by L&T and DRDO's CVRDE, aiming to replace heavier tanks with a more agile platform suitable for the Line of Actual Control (LAC) in Ladakh. Production is planned at L&T's Hazira plant.

WHY IN NEWS?

The Zorawar light tank is undergoing field firing tests in Rajasthan desert after successful trials in Ladakh, ahead of its possible induction into the Indian Army by 2027.

Awards, Honours, Personalities, Books, Sports etc.

Kaamya Karthikeyan

Kaamya Karthikeyan is the youngest Indian female to complete the **Seven Summits challenge**, which involves climbing the highest peak on each of the seven continents. This feat requires extensive mountaineering skill, physical endurance, and logistical planning across diverse and extreme climates. Kaamya's accomplishment has brought attention to Indian women in adventure sports and mountaineering. She has participated in various mountaineering expeditions and uses her platform to inspire youth and promote environmental awareness related to mountain ecosystems.

WHY IN NEWS?

Kaamya Karthikeyan is holding an interactive session during the Silver Jubilee celebrations of NCPOR in April 2025.