Current Affairs [Prelims] Lexicon - May, 2025

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Contents

Polity & Governance

Archakar

An archakar is a Hindu temple priest responsible for performing daily rituals and ceremonies. Traditionally, archakars are trained in the Agamic scriptures, which guide their duties and rituals. In Tamil Nadu, archakars have historically been Brahmins, but recent efforts have aimed to include non-Brahmin priests after government training. The role includes conducting poojas, maintaining temple sanctity, and managing religious festivals. Archakars must adhere to strict ritual purity and knowledge of mantras. The term is specific to South Indian temple practices, and their appointment is often regulated by religious and governmental bodies.

Why in news?

The Supreme Court ordered a freeze on archakar appointments in Agamic temples pending identification, while allowing appointments in non-Agamic temples, denoting tensions over caste and religious qualifications.

Baglihar Dam

The **Baglihar Dam** is a run-of-the-river hydroelectric power project on the Chenab River in Jammu and Kashmir's Ramban district. It has a capacity of 900 MW and was completed in two phases, in 2008 and 2015. The dam stores limited water, requiring release once capacity is reached. Built under the **Indus Waters Treaty**, it allows India non-consumptive use of the Chenab, a western river primarily allocated to Pakistan. Pakistan objected to its design, fearing strategic advantages, leading to World Bank arbitration that partially upheld Pakistan's concerns but allowed the dam's operation as designed.

Why in news?

India temporarily stopped water flow through the Baglihar Dam following the Pahalgam terror attack, signaling a warning to Pakistan amid heightened bilateral tensions.

Berubari Case

The Berubari Union case (1960) concerned the ceding of territory by India to Pakistan under a treaty. The Supreme Court ruled that transferring territory required a constitutional amendment under Article 368. The case clarified that the Parliament cannot cede territory through ordinary legislation alone. This ruling established the constitutional procedure for altering India's boundaries and influenced later territorial disputes and treaty implementations. The decision telld the importance of constitutional safeguards in territorial changes and remains a key precedent for India's territorial integrity and sovereignty issues.

Why in news?

The Berubari case is referenced in discussions on constitutional amendments and territorial authority, relevant to questions raised in the current Supreme Court reference under Article 143.

Booth Level Agents

Booth Level Agents (BLAs) are representatives appointed by political parties during

elections to observe and report the voting process at polling stations. They ensure compliance with election laws, monitor voter turnout, and report irregularities. BLAs do not have voting rights at the polling booth but serve as the party's eyes and ears. The number of BLAs can vary by constituency, with parties nominating them to cover each polling station. They play a critical role in safeguarding the electoral process by preventing fraud and intimidation and ensuring transparency at the grassroots level.

Why in news?

The new ECINET platform will support nearly 15 lakh Booth Level Agents, helping them access election data and perform their duties more efficiently.

Cauvery Stage VI

The **Cauvery Stage VI** is a proposed phase in the Cauvery water supply expansion plan for Bengaluru. It involves large-scale infrastructure development to increase water intake, treatment, and distribution capacity. Several banks have shown interest in funding this project, indicating strong financial backing. The project aims to meet Bengaluru's growing water demand and reduce dependency on groundwater. Discussions on this stage have gained momentum after previous debates on water supply privatization were dropped. The project is expected to enhance water security for the metropolitan region.

Why in news?

The Karnataka government is considering implementing Cauvery Stage VI, with financial institutions interested in funding the expansion of Bengaluru's water supply system.

Center of Policy Research and Governance (CPRG)

The **Center of Policy Research and Governance (CPRG)** is an Indian think tank focusing on policy analysis and governance reforms. It engages in interdisciplinary research on public policy, including technology and education sectors. CPRG actively participates in international forums related to Artificial Intelligence, influencing policy frameworks globally. It collaborates with government bodies to implement evidence-based solutions and promote innovation. The organization is known for bridging academic research and practical governance, emphasizing transparency and inclusivity. CPRG's initiatives often involve capacity building and stakeholder engagement to democratize access to technology and policy benefits across diverse populations.

Why in news?

CPRG hosted the 'Padh AI – Conclave on AI in Education' where it brought into light government efforts to democratize AI in India's education system, emphasizing accessible AI technology for all societal levels.

Central Advisory Committee (CAC)

The **Central Advisory Committee (CAC)** is a key consultative body under the Food Safety and Standards Authority of India (FSSAI). It meets regularly to review and advise on food safety policies and implementation strategies across India. The CAC includes representatives from State Food Safety Commissioners, Central Ministries, food industry stakeholders, consumer groups, agriculture experts, laboratories, and research

organizations. It plays important role in coordinating between central and state authorities to ensure uniform food safety standards. The committee's decisions influence national health initiatives such as obesity control and nutritional awareness programs. The 47th meeting was held in New Delhi on May 27, 2025.

Why in news?

The 47th CAC meeting on May 27, 2025, focused on obesity control, oil consumption reduction, and the implementation of school sugar boards as part of nationwide public health efforts led by FSSAI.

Central African Republic (CAR)

The Central African Republic is a landlocked country in Central Africa with a population of about 5 million. It has experienced recurrent political instability and armed conflict since independence in 1960. CAR is rich in natural resources like diamonds, gold, and uranium but remains one of the poorest countries globally. The country has faced severe humanitarian crises, including widespread conflict-related sexual violence, with over 11,000 cases reported in the first half of 2024 alone. CAR's infrastructure and governance are weak, and it relies heavily on international peacekeeping forces to maintain security.

Why in news?

CAR is brought into light in Amnesty International's 2024/25 report for rising conflict-related sexual violence and worsening humanitarian conditions amid ongoing armed conflict.

Central Water Commission

The **Central Water Commission (CWC)** is a premier technical organization under the Union Ministry of Jal Shakti. Established in 1945, it is responsible for the regulation and management of water resources in India. The CWC provides technical guidance on flood control, irrigation, and hydropower projects. It conducts hydrological surveys, designs dams, and monitors river basin development. The commission plays a key role in inter-state water disputes by offering expert assessments and reports. It also manages national flood forecasting and warning systems. The CWC's technical expertise is crucial in projects like Polavaram for ensuring safety and compliance with environmental and social norms.

Why in news?

The Central Water Commission is involved in the ongoing discussions and technical evaluations related to the Polavaram Project, helping resolve disputes and facilitate project progress.

Chief Electoral Officers (CEOs) of India

Chief Electoral Officers (CEOs) are appointed by the Election Commission of India for each State and Union Territory. They oversee election preparations, including updating electoral rolls, voter education, and election day management. CEOs coordinate with district officials and polling staff to implement election laws and ensure free and fair elections. They play a key role in addressing electoral challenges such as duplicate voter IDs and voter list errors. CEOs report directly to the Election Commission and are

instrumental in executing election-related reforms and technological implementations across their jurisdictions.

Why in news?

CEOs led the comprehensive search of the electoral database to detect and rectify similar EPIC numbers across all Assembly Constituencies as part of the Election Commission's initiative.

Competition Commission of India

The Competition Commission of India (**CCI**) is a regulatory authority established in 2003 to prevent anti-competitive practices and promote fair competition in Indian markets. It investigates mergers, acquisitions, and business agreements that may affect market competition. CCI has the power to impose penalties, order divestments, and approve or reject mergers. It operates under the Competition Act, 2002, and works alongside other regulators like the Reserve Bank of India for sector-specific approvals. CCI's decisions have impacts on market structure and consumer welfare in India, especially in sectors like banking, telecommunications, and pharmaceuticals.

Why in news?

CCI's approval is required for the Yes Bank stake sale to SMBC to ensure that the transaction does not harm competition in the Indian banking sector.

Constitutional Conventions in India

Constitutional conventions in India are unwritten rules guiding political practices, such as offering the Deputy Speaker post to the Opposition. These conventions supplement the written Constitution, ensuring power-sharing and parliamentary harmony. Though not legally enforceable, conventions carry statutory effect in the absence of explicit constitutional provisions. They preserve democratic resilience by encouraging cooperation between ruling and opposition parties. The Westminster model influences these conventions, emphasizing checks and balances. Violating conventions, such as withholding the Deputy Speaker post from the Opposition, can centralize power and undermine democratic processes despite no direct legal penalties.

Why in news?

The government's refusal to appoint an Opposition member as Deputy Speaker violates constitutional conventions, sparking debate on democratic norms and power-sharing in Parliament.

cVIGIL

is a mobile application launched by the Election Commission of India to enable citizens to report violations of the Model Code of Conduct during elections. It allows users to capture and send real-time evidence such as photos and videos of electoral malpractices directly to election officials. The app supports multilingual interfaces and geotags reports for precise location tracking. It was first introduced in 2017 and has since been instrumental in increasing transparency and accountability during elections. The app also provides feedback to the complainant once the issue is addressed by authorities, ensuring a closed-

loop reporting system.

Why in news?

cVIGIL is one of the multiple apps being integrated into the new ECINET platform to streamline election-related digital services in India.

DHRUVA Policy

The **DHRUVA** policy, or Digital Hub for Reference and Unique Virtual Address, is a comprehensive framework for developing a national digital addressing public infrastructure in India. It promotes a standardized, interoperable, and geocoded digital address system with a focus on secure, consent-based sharing of address data. Central to DHRUVA is the Address-as-a-Service (AaaS) model, which supports efficient data management and secure interactions between users, governments, and private entities. The policy emphasizes user autonomy, data security, and collaborative innovation, aiming to integrate address data ecosystems across sectors like governance, e-commerce, and logistics.

Why in news?

DHRUVA was released to establish guidelines and governance for India's evolving digital addressing infrastructure, complementing the DIGIPIN initiative.

Directorate General of Civil Defence

The **Directorate General of Civil Defence (DGCD)** was established in 1962 following the Sino-Indian War to coordinate civil defense activities across India. It operates under the Ministry of Home Affairs and is responsible for training civilians in emergency preparedness, including air-raid precautions, firefighting, and evacuation procedures. The DGCD manages a network of approximately **four lakh volunteers** nationwide. It collaborates with other agencies like the police, National Cadet Corps, and Nehru Yuva Kendra Sangathan to conduct drills and maintain passive defense readiness. Its efforts focus on minimizing civilian casualties during conflicts or disasters.

Why in news?

The DGCD has been directed to organize nationwide civil defense drills in 244 districts amid rising India-Pakistan tensions, involving volunteers and state authorities to enhance preparedness against potential hostile attacks.

Directorate of Revenue Intelligence

The **Directorate of Revenue Intelligence (DRI)** is India's premier anti-smuggling agency under the Central Board of Indirect Taxes and Customs (CBIC). It investigates customs duty evasion, smuggling, and economic offenses involving cross-border trade. The DRI conducts intelligence gathering, enforcement operations, and legal proceedings. It coordinates with other agencies and international bodies to curb illicit trade. The Ludhiana DRI unit has been involved in strict interpretations of customs rules, influencing policy adjustments like the recent relaxation on Advance Authorisation scheme benefits.

Why in news?

The DRI's previous strict stance on shipments before licence issuance under the AA scheme prompted government reconsideration and procedural relaxation to benefit

exporters.

Division Bench

A **Division Bench** is a judicial panel consisting of two or more judges of a High Court in India, which hears and decides cases collectively. It is typically constituted to hear appeals or matters requiring more than one judge. Division Benches have the authority to overrule decisions made by a single judge of the High Court. Their rulings carry greater precedential value and can establish binding legal principles. The size of a Division Bench can vary, but it generally includes two or three judges. Division Benches are distinct from Full Benches, which involve a larger number of judges for more complex legal questions.

Why in news?

A Division Bench of the Delhi High Court upheld a single judge's order directing the Wikimedia Foundation to take down a Wikipedia page, which was later overturned by the Supreme Court.

Form 6 (Electoral Registration)

Form 6 is an official document used in India for voter registration, allowing citizens aged 18 and above to apply for inclusion in electoral rolls. Applicants must provide self-attested age and address proofs but are not required to submit citizenship proof. The form includes a mandatory declaration of Indian citizenship, signed by the applicant. False declarations can lead to imprisonment of up to one year, fines, or both under Section 31 of the Representation of the People Act, 1950. The Electoral Registration Officer (ERO) verifies claims and objections, with the help of Booth Level Officers (BLOs), before finalizing registration. The process includes opportunities for hearings and appeals.

Why in news?

Form 6 is relevant as some Pakistani nationals deported from India reportedly possessed voter IDs obtained through this form, raising legal and procedural questions about citizenship verification during voter registration.

Form 7 (Electoral Roll Deletion)

Form 7 is an official document used by the Election Commission of India for the deletion of a voter's name from the electoral roll. It is typically filled when a voter has died, shifted residence, or is otherwise disqualified. The form must be submitted to the Electoral Registration Officer (ERO) to initiate deletion. Traditionally, the family of the deceased or an authorized person files the form. The recent changes allow Booth Level Officers (BLOs) to verify death registrations directly with families and assist in filling Form 7, expediting the removal process from voter lists.

Why in news?

The Election Commission's new process will enable deletion of deceased electors from rolls based on Form 7, with BLOs verifying death data directly after receiving electronic death registrations.

Gram Sabha

Gram Sabha is a village assembly consisting of all adult members of a village or a cluster

of villages in India. It functions as the basic unit of local self-governance under the Panchayati Raj system. Gram Sabhas have powers to approve development plans, monitor public services, and safeguard community resources. Under the Forest Rights Act (FRA) 2006, Gram Sabhas can claim Community Forest Resource (CFR) rights, enabling them to manage and protect forest produce and land. They can issue transit permits for minor forest produce and override conflicting state laws related to forest resource trade.

Why in news?

Eight Gram Sabhas in Odisha's Koraput district are awaiting government notification to deregulate kendu leaf trade, aiming to manage the trade independently under FRA provisions.

Groups of Ministers (GoMs)

Groups of Ministers (GoMs) are ad hoc committees formed by the Government of India to examine complex policy issues requiring inter-ministerial coordination. They consist of ministers from relevant departments and are tasked with detailed study and recommendations. GoMs have been used in GST policy formulation, including rate rationalisation and compensation cess matters. They enable focused deliberations outside the Cabinet and facilitate quicker decision-making. Their reports form the basis for further government action or Cabinet decisions. GoMs are distinct from Cabinet Committees and are dissolved after submitting their reports.

Why in news?

GoMs have submitted reports on GST rate rationalisation and compensation cess issues, which will be discussed in the upcoming GST Council meeting.

Integrated Command Control Centre (ICCC)

The **Integrated Command Control Centre (ICCC)** is a centralized hub used by Hyderabad authorities to monitor and coordinate emergency responses. It integrates data from police, fire services, medical teams, and disaster response units, enabling real-time management of incidents. The ICCC uses advanced communication technologies to route verified information, counter fake news, and dispatch resources efficiently. It plays important role during large-scale drills and actual emergencies, ensuring seamless coordination among various departments and rapid dissemination of alerts to field teams and the public.

Why in news?

The ICCC was brought into light during Operation Abhyaas as the official communication channel to counter fake news and coordinate emergency responses in Hyderabad.

Jammu and Kashmir Resettlement Bill (1980)

The Jammu and Kashmir Grant of Permit for Resettlement Bill, 1980, regulated the resettlement of individuals or descendants who migrated to Pakistan between March 1, 1947, and May 14, 1954. President Giani Zail Singh made a reference under Article 143 questioning its constitutional validity. The Supreme Court returned the reference unanswered in 2001 because the Bill had already become law and was assented to by the

Governor after a second passage. Challenges to the law were separately adjudicated, making the advisory opinion redundant.

WHY IN NEWS?

The 1980 Bill is cited as precedent in discussions on the limits of Article 143 references, illustrating when the Supreme Court may refuse to answer Presidential references.

Jan Vishwas Act 2023

The **Jan Vishwas Act 2023** is an Indian law aimed at decriminalizing minor offences by converting many fines into penalties up to ₹5 lakh and removing imprisonment as punishment for several violations. It supports ease of doing business by reducing legal burdens and promoting quicker dispute resolution. The Act enables authorities to impose monetary penalties instead of prosecution for minor infractions across various sectors, including pharmaceuticals. It also provides the legal basis for the compounding of offences, allowing offenders to pay fines and avoid court trials.

WHY IN NEWS?

The Jan Vishwas Act 2023 underpins the Drugs & Cosmetics (Compounding of Offences) Rules 2025, which were notified to streamline legal processes in the pharmaceutical sector.

Joint Plant Committee (JPC)

The **Joint Plant Committee (JPC)** is a statutory body under India's Ministry of Steel, established in 1964. It collects, compiles, and publishes data on the Indian steel industry, including production, consumption, imports, exports, and prices. JPC data is used for policy formulation, industry analysis, and trade negotiations. It monitors trends affecting competitiveness and global trade dynamics. The committee also provides inputs for parliamentary discussions and government decisions. Its reports are considered authoritative sources for understanding India's steel sector performance.

WHY IN NEWS?

JPC data was cited to show the impact of U.S. tariffs on Indian steel exports, denoting declines and subsequent recovery trends amid ongoing trade disputes.

Justice Pinaki Chandra Ghose

Justice **Pinaki Chandra Ghose** is a retired judge of the Supreme Court of India and the first Lokpal of India, appointed in 2019. He served on the Supreme Court from 2016 to 2018. Ghose is known for his contributions to judicial reforms and transparency in governance. His appointment as Lokpal was aimed at strengthening anti-corruption efforts in India. He has also served as the Chief Justice of the High Courts of Odisha and Jammu & Kashmir. His role in heading commissions of inquiry is recognized for impartiality and thoroughness.

WHY IN NEWS?

Justice Ghose is heading the commission investigating alleged irregularities in the Kaleshwaram project, summoning key political figures for questioning.

Justice V Ramaswami

Justice V Ramaswami was the first Indian judge to face impeachment proceedings in

Parliament in 1993. Elevated to the Madras High Court in 1971, he was the son-in-law of Justice K Veeraswami. Ramaswami was accused of corruption and misconduct, leading to a rare parliamentary impeachment motion. The motion failed due to insufficient votes, marking the only time impeachment proceedings against a judge reached that stage in India. His case brought into light the challenges of holding judges accountable and influenced judicial and parliamentary reforms concerning judicial discipline.

Why in news?

Justice Ramaswami's impeachment is referenced in discussions about judicial accountability following the controversy around Justice Yashwant Varma.

Kaladan Multi Modal Transit Project

The **Kaladan Multi Modal Transit Transport Project** connects Kolkata port in India to Sittwe port in Myanmar's Rakhine State via sea. From Sittwe, cargo moves inland through the Kaladan River to Paletwa, then by road to Zorinpui in Mizoram. It provides an alternative route to the North-East, bypassing Bangladesh. Funded by India's Ministry of External Affairs, it aims to reduce dependency on the Siliguri Corridor and enhance connectivity under India's Act East Policy. The project combines sea, river, and road transport modes and is expected to be operational by 2030.

Why in news?

The Kaladan project is brought into light as part of the new highway connectivity plan linking Shillong to Silchar, enhancing access to the North-East and reducing reliance on Bangladesh routes.

Kendu Leaf

Kendu leaf, scientifically known as **Diospyros melanoxylon**, is a vital minor forest produce predominantly found in central and eastern India. It is widely used for rolling traditional Indian cigarettes called bidis. The leaf harvesting season is strictly regulated to ensure sustainability. Odisha is one of the largest producers, contributing to tribal livelihoods. The leaf's commercial value has earned it the nickname **Green Gold of Odisha**. The collection and trade of kendu leaves are governed under the Forest Rights Act, 2006, which recognizes forest dwellers' rights over minor forest produce like kendu leaves.

Why in news?

Kendu leaf transportation was blocked by tribal women protesting the Forest Department's denial of Gram Sabha-issued transit permits in Odisha's Kalahandi district, denoting conflicts over forest rights and governance.

Kishanganga Dam

The **Kishanganga Dam** is a run-of-the-river hydroelectric project on the Kishanganga River in Gurez, near the Line of Control in Jammu and Kashmir. It has a 330 MW generation capacity and diverts water from one tributary to another, a point contested by Pakistan under the Indus Waters Treaty. Pakistan challenged the project at the World Bank and in a Court of Arbitration, which ruled in favor of India. The dam's design allows limited storage and primarily supports hydroelectric power generation without water

retention.

Why in news?

India is planning similar temporary water stoppage measures at the Kishanganga Dam, following the suspension of the Indus Waters Treaty after the Pahalgam terror attack.

Lok Adalats

Lok Adalats are alternative dispute resolution forums in India that facilitate amicable settlements between disputing parties. Established under the Legal Services Authorities Act, 1987, they provide a cost-effective, speedy, and voluntary mechanism for dispute resolution, including civil, criminal compoundable, and banking cases. Decisions made by Lok Adalats are binding and have the status of a civil court decree, with no appeal allowed. Lok Adalats help reduce the backlog of cases in courts and tribunals by encouraging settlements outside formal judicial procedures. They are organized regularly at various levels, including district and state, and often focus on cases pending in Debt Recovery Tribunals.

Why in news?

The colloquium emphasized using Lok Adalats as an alternate dispute resolution mechanism to expedite disposal of debt recovery cases in DRTs.

Mandal Commission

The Mandal Commission, established in 1979, estimated the population of Other Backward Classes (OBCs) in India at **52%**. It was tasked with identifying socially and educationally backward classes for affirmative action. The commission's recommendations led to the reservation of 27% government jobs for OBCs in 1990. The Mandal Commission report categorized OBCs into various groups based on social and educational backwardness but did not provide detailed caste-wise population data. Its estimates remain a reference point despite controversies and alternative population estimates based on National Sample Survey data.

Why in news?

The Mandal Commission's OBC population estimate is a key reference in debates over the need for caste enumeration in the 2025 Census.

Mission Karmayogi

Mission Karmayogi is an initiative by the Government of India aimed at transforming the civil services through capacity building and digital learning. It seeks to create a **future-ready bureaucracy** by promoting continuous skill upgradation, competency-based training, and a citizen-centric approach. The mission integrates technology, including the iGOT Karmayogi platform, to deliver training at scale. It encourages collaboration between government, academia, and private sector experts to develop relevant learning content. The mission aligns with broader governance reforms and emphasizes **efficiency, transparency, and accountability** in public administration.

Why in news?

Mission Karmayogi's success is reflected in the rapid expansion of the iGOT Karmayogi platform, reaching one crore civil servant registrations.

National Geospatial Policy 2022

The National Geospatial Policy 2022 aims to develop an advanced geospatial infrastructure to support digital governance and public service delivery in India. It promotes interoperability, open data sharing, and the use of geospatial technologies across government and private sectors. The policy encourages the adoption of standardized geospatial data frameworks and tools like DIGIPIN. It also supports the integration of geospatial data in decision-making processes and service delivery. The policy encourages collaboration between central and state governments, research institutions, and industry players for building a robust geospatial ecosystem nationwide.

Why in news?

The launch of DIGIPIN and related platforms aligns with the National Geospatial Policy 2022, marking a step toward modernizing India's digital addressing and spatial governance.

National Human Rights Commission (NHRC), India

The **National Human Rights Commission (NHRC)** was established in 1993 under the Protection of Human Rights Act. It is an autonomous public body responsible for protecting and promoting human rights in India. The NHRC can take suo motu cognizance of violations, inquire into complaints, and recommend actions. It also monitors the implementation of human rights treaties. The commission consists of a chairperson, usually a retired Chief Justice of India, and members from diverse backgrounds. The NHRC has powers similar to a civil court during inquiries and can summon witnesses and demand documents. It plays a key role in addressing police excesses and custodial deaths.

Why in news?

The NHRC took suo motu cognizance of the abduction, rape, and murder of a minor girl in Hubballi, Karnataka, and the subsequent death of the accused in a police encounter, demanding a detailed report from authorities.

National Load Dispatch Centre (NLDC)

The National Load Dispatch Centre (NLDC) is the apex body responsible for real-time monitoring and control of the entire Indian power grid. It coordinates power flow between five regional load dispatch centres (RLDCs) and state load dispatch centres (SLDCs). NLDC ensures grid stability, manages frequency regulation at 50 Hz, and oversees power trading between states and private entities. It also integrates renewable energy sources into the national grid and implements smart grid technologies. NLDC operates under the Power Grid Corporation of India Ltd and uses advanced satellite communication, transformers, and reactors to maintain uninterrupted power supply.

Why in news?

NLDC is central to managing India's national grid operations, including inter-state power flow and renewable energy integration, as power demand and supply balance improve.

National Medical Register (NMR)

The **National Medical Register (NMR)** is a centralized electronic database mandated by

the National Medical Commission Act, 2019, to maintain records of all registered medical practitioners in modern medicine in India. It contains personal details, recognized qualifications, and registration information of licensed doctors. Enrollment in the NMR became mandatory as per a gazette notification dated May 10, 2023. The database aims to ensure transparency and streamline verification of medical practitioners across states. Despite its significance, the registration process has faced challenges, including low application rates and a high percentage of non-approval of submitted applications.

WHY IN NEWS?

The NMR has received less than 1% of doctor applications since its launch in August 2023, with 98% of those applications not approved, raising concerns about its implementation and complexity.

National Productivity Council (NPC)

The **National Productivity Council (NPC)** is an autonomous organization under India's Department for Promotion of Industry and Internal Trade (DPIIT). It functions as the national implementing agency for APO programs, facilitating capacity-building initiatives across industrial, agricultural, and service sectors. NPC organizes training, consultancy, and demonstration projects to enhance productivity and competitiveness. It plays a key role in promoting Industry 4.0 technologies and Green Productivity practices among Indian MSMEs. The NPC has contributed to improving operational efficiency and sustainable development in Indian enterprises through its collaboration with the APO and other international bodies.

WHY IN NEWS?

NPC supports over 100 Indian professionals annually in APO-led programs, contributing to productivity improvements as India assumes the APO Chairmanship for 2025–26.

National Restaurant Association of India (NRAI)

The **National Restaurant Association of India (NRAI)** is a trade association representing the organized food service industry in India. Founded in 1982, NRAI advocates for the interests of restaurants, food chains, and catering services. It works on policy advocacy, industry standards, and skill development. NRAI organizes events like the India Food Forum, a major industry conference. The association also focuses on digital transformation, sustainability, and regulatory reforms in the food service sector. It collaborates with government bodies and private organizations to support growth and innovation. NRAI membership includes both small eateries and large multinational chains.

WHY IN NEWS?

NRAI is currently engaged with ONDC to build an interoperable digital commerce network that benefits food businesses of all sizes across India.

National Security Advisory Board (NSAB)

The **National Security Advisory Board (NSAB)** was established in **December 1998** as an advisory body to the National Security Council (NSC) of India. It comprises eminent persons from diverse domains such as industry, media, and civil society. The NSAB's

primary function is to provide **long-term analysis and policy recommendations** on national security issues referred by the NSC. It operates under the guidance of the National Security Council Secretariat (NSCS) and is periodically reconstituted to maintain continuity and incorporate fresh perspectives. The board typically includes retired military officers, diplomats, intelligence officials, and experts in strategic affairs.

WHY IN NEWS?

The NSAB was recently reorganised with Alok Joshi appointed as Chairman and seven new members inducted amid rising tensions following the Pahalgam terror attack in April 2025.

National Semiconductor Mission

The **National Semiconductor Mission** is an initiative by the Government of India to boost semiconductor manufacturing and ecosystem development in India. It focuses on attracting investments, developing manufacturing capabilities, and promoting research and innovation in semiconductor technology. The mission aims to reduce import dependence and support the electronics industry's growth. It encourages the adoption of best practices across States and Union Territories to strengthen the semiconductor supply chain and infrastructure. The mission plays a critical role in India's ambitions to become a global hub for semiconductor production.

WHY IN NEWS?

PM Modi reviewed best practices in India's semiconductor ecosystem and encouraged States to adopt successful initiatives under the National Semiconductor Mission.

National Single Window System (NSWS)

The National Single Window System (NSWS) is a digital platform launched by the Government of India to facilitate seamless registration, compliance, and regulatory approvals for businesses. It integrates multiple government services into a single portal to reduce procedural delays and enhance transparency. NSWS supports various sectors, including sugar, by enabling units to register and comply with regulations digitally. This system aims to improve governance by providing real-time tracking, reducing paperwork, and ensuring timely enforcement of policies. It is part of the broader push towards digitalization and ease of doing business in India.

WHY IN NEWS?

The 66 large gur and khandsari units must register on NSWS within two months under the amended Sugar Control Order.

NEP 2020 Controversy in Kerala

The **National Education Policy (NEP) 2020** is a comprehensive framework to overhaul India's education system, emphasizing multidisciplinary learning, technology integration, and skill development. Kerala's government, led by the CPI(M), has opposed the NEP, claiming it promotes saffronisation—a perceived ideological influence favoring Hindu nationalist views. Kerala also fears loss of state autonomy in education due to the PM SHRI scheme under NEP. Despite this, Kerala has implemented many NEP elements

independently, including infrastructure improvements like 40,000 smart classrooms with broadband connectivity.

Why in news?

Kerala's refusal to adopt NEP 2020-based schemes like PM SHRI has led to conflict with the Centre over education funding and policy control.

NSDC International

NSDC International is a division or affiliated unit of the National Skill Development Corporation focused on global skill development initiatives and partnerships. It facilitates international collaborations to enhance vocational training standards and promote skill exchange programs. NSDC International works to align Indian skill development with global best practices and supports Indian workforce mobility abroad. The unit's key appointments and governance have been under scrutiny, especially during Ved Mani Tewari's tenure, denoting the importance of consultative processes with the Ministry. It plays a strategic role in NSDC's mission to expand skill development beyond national boundaries.

Why in news?

NSDC International's key appointments became a point of contention during the recent leadership crisis at NSDC, contributing to the removal of the CEO.

Polavaram Project

The **Polavaram Project** is a multi-purpose irrigation project on the Godavari River in Andhra Pradesh. It involves constructing a dam and canal system to provide water for irrigation, hydroelectric power, and drinking water. The project covers an area of approximately 364,000 hectares and has a reservoir capacity of about **3.13 billion cubic meters**. It is classified as a national project by the Government of India, making the Union government responsible for funding and execution. The project has faced inter-state disputes due to submergence concerns affecting Telangana, Odisha, and Chhattisgarh. It is expected to benefit millions of farmers in Andhra Pradesh.

Why in news?

Prime Minister Narendra Modi is convening a meeting with the chief ministers of Andhra Pradesh, Telangana, Odisha, and Chhattisgarh to resolve disputes related to the Polavaram Project, focusing on land submergence and rehabilitation issues.

Polling Stations in India

India has over **10.50 lakh polling stations** spread across 36 States and Union Territories. Each polling station caters to a specific geographic area and maintains its own electoral roll. Polling stations are the fundamental units of election administration, ensuring voters cast ballots in their designated areas. The Election Commission regularly updates polling stations to accommodate population changes and maintain accessibility. Each station is managed by election officials who verify voter identities and maintain order. Polling stations are critical for decentralized election management and help uphold the principle of one person, one vote in the world's largest democracy.

Why in news?

Polling station data was crucial in identifying and correcting duplicate EPIC numbers, as the Election Commission conducted a nationwide verification of electoral rolls across all stations.

PRAGATI Platform

PRAGATI (Pro-Active Governance and Timely Implementation) is an **ICT-based multi-modal platform** launched by the Government of India to monitor and review important projects and grievances. It integrates inputs from Centre and State governments, enabling real-time problem-solving. The platform uses video conferencing and data analytics to track progress across sectors like infrastructure, health, and transport. PRAGATI meetings are chaired by the Prime Minister and involve multiple ministries. It helps reduce delays by facilitating coordination among stakeholders. The platform supports transparency and accountability in governance by providing a unified dashboard for project monitoring and issue redressal.

Why in news?

The 46th edition of PRAGATI was chaired by Prime Minister Narendra Modi, reviewing eight major infrastructure projects worth around 90 thousand crore rupees across India.

PRS Legislative Research

PRS Legislative Research is a **non-profit, non-partisan organisation** founded in 2005 to improve the legislative process in India. It tracks the functioning of Parliament and state legislatures, providing data-driven reports on bills, sitting days, and legislative transparency. PRS publishes the **Annual Review of State Laws**, which analyses state legislative activity, including the number of bills passed and assembly sittings. It aims to make lawmaking more informed and participatory by offering easy-to-understand legislative summaries to policymakers, media, and the public. PRS also monitors compliance with constitutional provisions like the election of Deputy Speakers in assemblies.

Why in news?

PRS released its Annual Review of State Laws 2024, denoting that state of India assemblies continue to meet for fewer than 30 days annually, with many not meeting their own targets for sitting days.

Shillong-Silchar Highway Project

The **Shillong-Silchar Highway Project** is a major infrastructure initiative connecting Shillong in Meghalaya with Silchar in Assam. Estimated to cost ₹22,864 crore, it aims to improve connectivity in the Northeastern region of India. The highway will reduce travel time, boost trade, and enhance access to remote areas. The project includes multiple bridges, tunnels, and bypasses due to challenging hilly terrain. It is expected to promote regional economic growth, tourism, and integration with national transport networks. The project also aligns with India's Act East policy to strengthen ties with Southeast Asia.

Why in news?

The Union Cabinet approved the Shillong-Silchar highway project in April 2025, marking

investment in Northeastern India's infrastructure development.

Special PMLA Courts

Special PMLA courts are designated judicial forums in India established to exclusively handle cases under the Prevention of Money Laundering Act. There are **100 such courts** nationwide. Despite their creation, these courts face a heavy workload as many also hear cases under other laws. Trials are often interrupted by interlocutory applications, writ petitions, and bail matters, sometimes escalating to higher courts, which disrupts continuity and timely disposal. These courts were set up to expedite money laundering cases but systemic and procedural hurdles continue to cause delays.

Why in news?

The ED's latest annual report pointed out the stretched judicial resources and procedural interruptions in special PMLA courts as major obstacles to timely trial completion.

Special Purpose Vehicle (SPV) in Indian Railways

A **Special Purpose Vehicle (SPV)** is a legal entity created for a specific project or purpose, often to isolate financial risk. In Indian Railways, SPVs like KRCL are formed to undertake complex projects requiring focused management and investment, such as constructing difficult railway lines. The Konkan Railway SPV was unique for its collaboration between the central and state governments and its role in navigating the rugged terrain of the Western Ghats. SPVs operate with some autonomy but remain accountable to their stakeholders, blending public and state interests in infrastructure development.

Why in news?

The Konkan Railway was originally established as an SPV to handle the complex construction and operation of the route. The merger announcement marks the sustainability challenges faced by such SPVs.

State Investigation Agency (SIA)

The **State Investigation Agency (SIA)** is a specialized investigative body established in Jammu and Kashmir in 2021 to probe terror-related crimes and organized criminal activities. It operates under the Jammu and Kashmir government, focusing on cases under the Unlawful Activities Prevention Act (UAPA) and other anti-terror laws. The SIA conducts raids, gathers intelligence, and files chargesheets against suspects involved in terrorism, separatism, and radicalization. It coordinates with central agencies and local police to dismantle terror networks and sleeper cells. The agency's formation aimed to strengthen counter-terrorism efforts in the region.

Why in news?

The SIA conducted multiple raids in Kashmir targeting sleeper modules of militants, seizing incriminating materials and detaining suspects for questioning.

Third Judges Case

The Third Judges case (1998) was a landmark Supreme Court reference that laid down the collegium system guidelines for appointing judges to the higher judiciary in India. The collegium consists of the Chief Justice of India and senior Supreme Court judges,

responsible for judicial appointments and transfers. This case emphasized judicial independence by limiting executive interference in appointments. The collegium system evolved from this ruling, replacing the earlier system where the executive had a dominant role. Despite criticism, the Third Judges case remains the foundational judgment for judicial appointments in India.

Why in news?

The Third Judges case is cited in the historical context of Supreme Court references under Article 143, denoting the Court's role in constitutional interpretation and judicial governance.

Wireless Telegraphy Act, 1933

The **Wireless Telegraphy Act, 1933** is an Indian legislation governing the possession and use of wireless telegraphy apparatus. It mandates licensing for operating wireless equipment and restricts unauthorized possession or use. The Act empowers the government to regulate frequencies, issue licenses, and seize illegal devices. It aims to prevent interference with official communication systems, including police and emergency networks. The Act is enforced alongside the Indian Telegraph Act, 1885, and updated by rules such as the 2018 exemption for low-power devices. Violations can lead to confiscation, fines, or imprisonment.

Why in news?

The 2025 CCPA guidelines emphasize compliance with the Wireless Telegraphy Act, 1933, requiring disclosures about licensing obligations for walkie-talkies sold online.

Economy & Banking/Finance

Cash Reserve Ratio (CRR)

The Cash Reserve Ratio is the percentage of a bank's total deposits that must be maintained with the central bank in the form of liquid cash. It is a monetary policy tool used to control liquidity and inflation. In India, the RBI sets the CRR periodically. A lower CRR means banks can lend more, increasing money supply, while a higher CRR restricts lending. Changes in the CRR affect the banking system's ability to create credit. It is distinct from the Statutory Liquidity Ratio, which mandates banks to hold government securities.

Why in news?

The RBI recently slashed the CRR as part of its liquidity management measures, impacting the banking system's lending capacity and overall liquidity.

Centralised Information Management System (CIMS)

The **Centralised Information Management System (CIMS)** is a digital platform developed by the Reserve Bank of India to collect, manage, and monitor data from regulated entities, particularly in the financial sector. It enables streamlined reporting and real-time data updates. CIMS supports regulatory oversight by consolidating information on digital lending apps and other financial activities. The system automates list updates and reduces manual intervention. It enhances transparency and compliance by providing

a centralized repository of data submitted by entities without RBI conducting independent validation. CIMS is part of RBI's broader digital infrastructure modernization initiative.

Why in news?

CIMS portal launched for regulated entities to report details of their digital lending apps starting May 13, 2025, with a deadline for initial data submission by June 15, 2025.

Coal Linkage

Coal linkage refers to the allocation of coal supply contracts to power plants and industries to ensure a steady fuel supply. In India, coal linkages are granted by the government to thermal power plants, both central and state-owned, and private producers. Linkages can be on nomination basis or through auctions, with prices either notified by the government or set via competitive bidding. The linkage system aims to stabilize coal supply, prevent shortages, and control costs. It is a critical component of India's energy policy, given coal's dominant role in electricity generation.

Why in news?

The revised SHAKTI scheme approved by the Cabinet Committee on Economic Affairs updates the coal linkage process, introducing two pricing windows and expanding eligibility criteria for coal allocation.

Collateral-Free Debt Funding

Collateral-free debt funding refers to loans provided without requiring borrowers to pledge physical or financial assets as security. This type of funding reduces barriers for startups that typically lack substantial tangible assets. Governments and financial institutions use schemes like CGSS to mitigate lender risk by offering guarantees. This funding model encourages innovation by enabling startups to access capital based on their potential rather than existing assets. It is crucial in early-stage financing, where startups focus on product development and market entry rather than asset accumulation. This approach encourages entrepreneurship in sectors like technology and research.

Why in news?

The revised CGSS aims to enhance collateral-free debt funding for startups by increasing the guarantee limit, facilitating easier access to credit.

Commission for Agricultural Costs and Prices (CACP)

The **Commission for Agricultural Costs and Prices (CACP)** is an advisory body under the Ministry of Agriculture, established in 1965. It recommends minimum support prices (MSP) and fair prices for various crops, including sugarcane, based on production costs, demand-supply, and market trends. CACP conducts detailed cost analyses, considering factors like labor, seeds, fertilizers, and irrigation. Its recommendations influence government policies on crop pricing, ensuring farmer welfare and market stability. CACP also engages with state governments and stakeholders during consultations to finalize pricing frameworks.

Why in news?

CACP's recommendations formed the basis for the 2025-26 FRP increase for sugarcane, aiming to balance farmer remuneration and sugar industry sustainability.

Common Agricultural Policy (CAP)

The **Common Agricultural Policy (CAP)** is the European Union's framework for agricultural subsidies and rural development, established in 1962. It aims to support farmers, improve agricultural productivity, ensure a stable food supply, and promote sustainable farming. CAP includes direct payments, market measures, and rural development programs. It is funded by the EU budget and periodically reformed to address challenges like climate change, environmental protection, and market volatility. CAP strategic plans guide member states in implementing policies, including new financial measures to manage climate risks in agriculture.

Why in news?

European Agriculture Commissioner Christophe Hansen urges member states to integrate financial measures into CAP strategic plans to mitigate climate risks and encourage investment in resilient agriculture.

Concentration Limit

The concentration limit is a regulatory cap that restricts the maximum exposure of investors, such as FPIs, to a single issuer or category of securities to mitigate risk. In India's corporate debt market, FPIs faced a concentration limit of 15% for long-term investments and 10% for other categories, preventing excessive risk concentration in any single issuer or sector. These limits help maintain market stability by avoiding over-dependence on a few borrowers. Concentration limits vary by country and asset class and are periodically reviewed by regulators to balance market growth and risk containment.

Why in news?

The RBI has scrapped the concentration limit for FPIs investing in corporate debt securities, allowing more flexible allocation and potentially higher foreign investment in lower-rated bonds.

Confederation of Indian Industry (CII)

The Confederation of Indian Industry (CII) is a non-government, industry-led organization founded in 1895 to promote Indian business and economic development. It represents over 9,000 members across sectors and regions, facilitating policy advocacy, business networking, and industrial growth. CII organizes annual summits and forums to connect industry leaders with government officials. It plays a key role in advancing initiatives like Make-in-India and encouraging public-private partnerships. CII also supports innovation, sustainability, and skill development programs in India's industrial sectors.

Why in news?

The Defence Minister addressed the CII annual business summit in New Delhi, announcing record defence production and private sector involvement in the AMCA project.

Countervailing Duties

Countervailing duties are tariffs imposed by a country to counteract subsidies provided by foreign governments to their exporters. These duties aim to level the playing field by

offsetting unfair price advantages. The European Union applied OEM-specific countervailing duties on Chinese battery electric car imports in 2024 to address subsidies received by Chinese manufacturers. Such duties differ from anti-dumping tariffs as they specifically target subsidies rather than pricing below market value. They are calculated based on the estimated subsidy amount and can vary by exporter or product. These duties are part of trade defense instruments under World Trade Organization rules.

Why in news?

The EU imposed countervailing duties on Chinese electric car imports in 2024 to offset alleged manufacturing subsidies, affecting the competitiveness of Chinese EVs in the European market.

Coupon Rate

Coupon rate is the annual interest rate paid by bond issuers to bondholders, expressed as a percentage of the bond's face value. It determines the periodic interest payments investors receive until maturity. The rate is set at issuance based on prevailing market interest rates, inflation expectations, and credit risk. A coupon rate of 6.33% means bondholders receive 6.33% of the bond's principal annually. Coupon rates influence bond prices inversely; when market rates rise, existing bonds with lower coupons fall in price. Governments set coupon rates to attract investors while managing borrowing costs.

Why in news?

The newly issued 10-year government bond carried a coupon rate of 6.33%, aligning with market expectations and reflecting borrowing cost conditions in May 2025.

Debt Recovery Appellate Tribunals (DRATs)

Debt Recovery Appellate Tribunals (DRATs) are quasi-judicial bodies established under the Recovery of Debts Due to Banks and Financial Institutions Act, 1993. They hear appeals against orders passed by Debt Recovery Tribunals (DRTs). DRATs have jurisdiction over the entire country, and their decisions can be challenged only in the High Courts. The tribunals primarily handle cases related to recovery of debts owed to banks and financial institutions. DRATs aim to expedite debt recovery, reducing the burden on traditional courts. Their members are appointed by the central government and include judicial and technical members with expertise in finance and law.

Why in news?

DRAT Chairpersons convened in New Delhi to discuss reforms, including revised regulations and technology adoption, to improve debt recovery efficiency and reduce case pendency.

Designated Settlement Banks (DSB)

Designated Settlement Banks (DSBs) are specific banks authorized by the RBI to facilitate settlement of trades and obligations in certain financial market segments, including government securities and repo markets. They act as intermediaries in the settlement process, ensuring timely clearing and settlement of transactions. The working group recommended unifying TREP trading hours for members settling through DSBs and

the RBI to harmonize settlement processes. DSBs help reduce settlement risk and improve operational efficiency in India's financial markets by coordinating between market participants and the central bank.

Why in news?

The RBI working group recommended synchronizing TREP trading hours for members using Designated Settlement Banks and the RBI to streamline settlement and operational processes in the overnight money market.

Dollar Index

The **Dollar Index** (DXY) measures the value of the U.S. dollar relative to a basket of six major currencies – the euro, Japanese yen, British pound, Canadian dollar, Swedish krona, and Swiss franc. It was introduced in 1973 by the Intercontinental Exchange (ICE). The index is weighted heavily towards the euro, which makes up about **57.6%** of the basket. Movements in the index influence global trade and investment flows, as many commodities and financial contracts are priced in dollars. The index is used by traders and policymakers to gauge the dollar's strength and its impact on international markets.

Why in news?

The dollar index declined from around 105 to 99 in April 2025, influencing foreign institutional investment flows into Indian equities by making the rupee relatively stronger.

Foreign Current Assets

Foreign current assets (FCA) are the largest component of a country's foreign exchange reserves, consisting primarily of foreign currency assets held in cash, deposits, bonds, and treasury bills issued by foreign governments and institutions. They provide liquidity and can be used to stabilize the domestic currency. FCAs are valued at current exchange rates and market prices, making them subject to revaluation gains or losses. These assets typically exclude gold, SDRs, and reserve tranche positions with the IMF. The composition and valuation of FCAs influence a nation's forex reserve figures and its ability to manage external economic shocks.

Why in news?

Foreign current assets in India's forex reserves increased marginally by $196 million in the week ended May 9, 2025, contributing to the overall rise in total foreign exchange reserves.

Grant Thornton

Grant Thornton is a global professional services network of independent accounting and consulting member firms. It specializes in audit, tax, advisory, and investigative services. Founded in 1924 in the United States, it operates in over 130 countries with a focus on mid-market businesses. Grant Thornton India LLP is a leading audit and advisory firm in India, often appointed to conduct forensic audits and investigations into financial discrepancies. The firm plays a critical role in uncovering financial irregularities by examining complex transactions and internal controls, helping organizations comply with regulatory frameworks and improve governance.

Why in news?

Grant Thornton was appointed by IndusInd Bank to investigate accounting lapses and the root cause of discrepancies in the bank's derivatives portfolio.

Green Shoots

The term "green shoots" refers to early signs of economic recovery or growth after a period of downturn or stagnation. It is commonly used in economic and business contexts to indicate optimism about future performance based on initial positive indicators. The phrase originated in the 1990s during economic recoveries and is often applied to sectors showing early improvement. In trade and export contexts, green shoots signify emerging growth trends in specific industries, suggesting potential expansion and increased activity in upcoming periods.

Why in news?

India's Commerce Secretary mentioned "green shoots" in sectors like gems and jewellery, indicating early positive growth signs in April 2025 exports.

Gross Value Added (GVA)

Gross Value Added (GVA) measures the value of goods and services produced in an area, industry, or sector of an economy, minus the cost of inputs and raw materials. It is used to estimate the contribution of different sectors to the economy and is linked to GDP by adding taxes and subtracting subsidies on products. In India, GVA data is crucial for understanding sectoral growth, especially manufacturing and services. The unorganised sector, which has a large weight in manufacturing GVA, often complicates accurate measurement. GVA data helps policymakers identify growth bottlenecks and sectoral shifts.

Why in news?

Economists are concerned about a possible downside in manufacturing GVA due to subdued industrial output and the weight of the unorganised sector in FY25's growth estimates.

India International Bullion Exchange

The **India International Bullion Exchange (IIBX)** is the first international bullion exchange in India, established in 2022. It operates under the International Financial Services Centres Authority (IFSC Authority) and is located in the Gujarat International Finance Tec-City (GIFT City). The IIBX facilitates transparent and regulated trading of gold and other precious metals, enabling better price discovery and reducing reliance on imports. It allows qualified jewellers and authorized agencies to trade bullion under regulated conditions. The exchange supports India's goal of becoming a global hub for bullion trade and helps integrate Indian markets with international standards.

Why in news?

The IIBX is relevant as the new import rules permit bullion imports only through agencies authorized by the IIBX, RBI, or DGFT, aligning with India's updated precious metals import policy in May 2025.

India's $5 Trillion Economy Target

India's goal of achieving a **$5 trillion economy** by 2027 is a government-led economic vision emphasizing rapid industrialization, infrastructure development, and increased private consumption. This target requires sustained GDP growth rates near 10% annually for two consecutive years, a level rarely maintained by major economies. The plan includes boosting manufacturing under initiatives like "Make in India," improving rural income, and expanding digital infrastructure. Achieving this milestone would mark India as a major global economic power. The target was first publicized in 2019 and remains central to India's economic policy framework.

Why in news?

The IMF's 2025 outlook reaffirmed India's potential to reach $5 trillion GDP by 2027, following projected high growth rates in 2025-2026.

International Monetary Fund (IMF) April Outlook

The **IMF April Outlook** is a biannual economic forecast report published by the International Monetary Fund, focusing on global economic trends and individual country projections. It provides detailed GDP growth rates, inflation forecasts, and risk assessments for over 190 countries. The April edition often updates projections made in January, reflecting new data and global economic conditions. It is used by policymakers, investors, and analysts to gauge economic stability and growth prospects. The report incorporates trade tensions, geopolitical risks, and consumption trends, offering a comprehensive view of the global economic landscape for the coming years.

Why in news?

The IMF April Outlook 2025 projected India surpassing Japan to become the world's fourth largest economy, with detailed GDP and growth rate forecasts through 2030.

Issue Department

The Issue Department is a specialized division of the Reserve Bank of India responsible for issuing currency notes and managing the currency circulation. It holds assets, including gold, to back the currency issued. The department maintains a minimum reserve of ₹200 crore in gold and foreign securities. Its assets are distinct from those of the Banking Department, focusing primarily on currency stability. The Issue Department manages the currency chest system and ensures adequate currency supply across India. It operates under the provisions of the Reserve Bank of India Act, 1934, and maintains a separate balance sheet from the Banking Department.

Why in news?

The RBI's annual report for FY 2024–25 brought into light an increase in gold holdings by the Issue Department, rising to 311.38 metric tonnes, reflecting its role in backing currency issuance.

Jal Marg Vikas Project

The Jal Marg Vikas Project (JMVP) is an initiative to develop the National Waterway-1 (River Ganga) for navigation and inland water transport. It aims to improve cargo movement

and boost tourism along the river. JMVP includes dredging, river conservancy, and setting up terminals for cruise tourism. The project emphasizes **community engagement** to support local artisans and entrepreneurs under the 'One District One Product' scheme. It also promotes sustainable economic development by enhancing river-based transport and tourism infrastructure. JMVP is funded by the World Bank and aims to reduce logistics costs and carbon footprint.

Why in news?

Prime Minister Modi brought into light the need for strong community involvement along the river stretches to boost cruise tourism under the Jal Marg Vikas Project during the PRAGATI meeting.

Jan Dhan Accounts

Jan Dhan accounts are zero-balance savings accounts launched in India in 2014 under the Pradhan Mantri Jan Dhan Yojana to promote financial inclusion. These accounts provide access to banking services for the unbanked population, including benefits like accidental insurance and direct government subsidies. Many Jan Dhan accounts remain inoperative due to inactivity or incomplete KYC (Know Your Customer) documentation. Reactivation requires completion of eKYC, a digital verification process. Jan Dhan accounts are critical for direct benefit transfers and financial inclusion but face challenges with dormancy and fraud risks.

Why in news?

RRBs and sponsor banks have been advised to reactivate inoperative Jan Dhan accounts and complete eKYC to enhance financial inclusion and leverage benefits from the recent amalgamation.

K V Subramanian

K V Subramanian is an Indian economist and civil servant who served as India's Executive Director at the IMF. He was appointed for a three-year term but left the position prematurely, six months before completion, for undisclosed reasons. Subramanian has a background in economic policy and has contributed to fiscal reforms in India. Prior to his IMF role, he held senior positions in the Government of India's finance ministry. His early departure from the IMF board is notable due to the lack of official explanation and the timing during critical financial discussions involving South Asia.

Why in news?

Subramanian's premature exit from the IMF board created the vacancy filled by Parameswaran Iyer during a sensitive period for IMF financial decisions.

Khandsari Sugar

Khandsari is an unrefined raw sugar produced traditionally in India, mainly from sugarcane juice. It is less processed than white refined sugar and retains more natural molasses content, giving it a brownish color and distinct taste. Khandsari units typically use non-centrifugal sugar crystallization methods and are smaller scale compared to modern sugar mills. These units are concentrated in states like Uttar Pradesh and

Maharashtra. Khandsari production consumes about 31% of India's annual sugarcane output. The industry faces challenges such as outdated technology, low mechanization, and regulatory issues, impacting farmers' payments and production accuracy.

Why in news?

The government plans to bring 66 large khandsari units under the Sugar Control Order to ensure fair payments to farmers and improve sugar production estimates.

Kpler

Kpler is a market intelligence company specializing in real-time data and analytics for commodity markets, especially oil, gas, and LPG. Founded in 2014, Kpler uses satellite tracking, AI, and big data to monitor tanker movements, storage, and cargo flows globally. It provides vital information about supply and demand dynamics, helping traders, analysts, and policymakers make informed decisions. Kpler's data is widely used to estimate shipments, stockpiles, and trade flows, offering transparency in opaque markets like LPG and LNG. The company is headquartered in Paris with offices in London, Houston, and Singapore.

Why in news?

Kpler's ship tracking data is cited to estimate the surge in U.S. LPG shipments to India, reflecting shifting global trade patterns amid tariff-induced market changes.

Liberalised Remittance Scheme (LRS)

The **Liberalised Remittance Scheme** by the Reserve Bank of India allows resident individuals to remit up to **USD 250,000 per financial year** abroad for specific purposes like education, medical treatment, travel, gifts, foreign investments, business, and emigration. Introduced in 2004, it aims to facilitate overseas payments while maintaining foreign exchange controls. The scheme has undergone several revisions, including expanding permissible transactions and increasing limits. The RBI monitors outflows under LRS closely, which amounted to around **$30 billion in FY25**. It also enables investments in international financial centers like GIFT City.

Why in news?

The RBI is reviewing the LRS framework in 2025 to rationalise limits, permitted purposes, and payment modes, aiming to promote the rupee as an international currency and reduce compliance burdens.

Malegam Committee

The **Malegam Committee** was a technical committee appointed by the RBI in 2013, headed by Y H Malegam, to review the adequacy of the central bank's reserves and recommend a surplus distribution policy. It suggested increasing the transfer of surplus to the government while maintaining sufficient contingency reserves. Following its recommendations, the RBI raised the percentage of surplus transferred to the government dramatically, from 53.40% in 2012-13 to 99.99% in 2013-14. The committee also reinforced the need for a contingency fund equal to 12% of the RBI's balance sheet.

Why in news?

The Malegam Committee's recommendations continue to influence the RBI's surplus

transfer policies, which are under review in May 2025 for record surplus distribution.

March-End Reconciliation

March-end reconciliation refers to the process where businesses align their financial records and GST returns for the fiscal year ending March 31. This involves adjusting input tax credits, finalizing sales and purchases, and settling outstanding tax liabilities. It often results in increased tax payments due to corrections or additional liabilities identified during the audit. This process can cause a spike in GST collections in April, as businesses clear dues related to the previous fiscal year. Reconciliation ensures compliance and accurate tax reporting, reducing discrepancies between reported and actual transactions, and is critical for maintaining transparency in GST administration.

Why in news?

The record GST collections in April 2025 were partly driven by the March-end reconciliation process, which typically leads to additional tax payments by businesses, boosting revenue figures for the government.

Marginal Cost of Funds-based Lending Rate (MCLR)

The **Marginal Cost of Funds-based Lending Rate (MCLR)** is a benchmark lending rate introduced by the Reserve Bank of India in 2016 to determine interest rates on loans by banks. It reflects the marginal cost of funds, including the repo rate, operating costs, and tenor premium, promoting transparency and faster transmission of monetary policy. MCLR replaced the base rate system, allowing more frequent revisions of lending rates. It affects the interest rates on loans like those under the KCC scheme, influencing the affordability of credit for farmers and rural borrowers.

Why in news?

The continuation of MISS and interest subvention is tied to current trends in MCLR and repo rates, ensuring rural banks can provide low-cost credit to farmers.

Meet in India Conclave

The **Meet in India Conclave** is an annual event organized to promote India's MICE industry, bringing together stakeholders from government, industry, and international delegates. It focuses on showcasing India's capabilities in hosting global meetings, incentives, conferences, and exhibitions. The conclave features discussions on infrastructure, policy support, and innovation in event management. It serves as a platform for networking, business development, and policy announcements aimed at boosting tourism and economic growth through the MICE sector. The conclave rotates locations, with the 2025 edition held in Jaipur, Rajasthan.

Why in news?

The conclave is the platform where the Tourism Minister announced India's strategic vision for the MICE industry's growth and the elevation of Indian cities as global event destinations.

Minimum Access Rice

Minimum Access Rice is a tariff-rate quota system established under Japan's

commitments to the World Trade Organization (WTO) in 1995. It allows Japan to import a fixed volume of rice, approximately 700,000 tons annually, free of tariffs to ensure minimum market access for foreign producers. This quota is part of Japan's effort to balance domestic rice protectionism with international trade obligations. Imports above this quota face high tariffs, maintaining high domestic prices. The system has been controversial due to its impact on Japan's rice market and its role in trade negotiations, especially with the United States.

Why in news?

Japan is considering using increased rice imports under the Minimum Access Rice system as a bargaining tool in tariff talks with the United States amid a domestic rice supply crisis.

Monetary Penalty by RBI

The **Reserve Bank of India (RBI)** has the authority to impose monetary penalties on banks and financial institutions for non-compliance with regulatory directions under the Banking Regulation Act, 1949. Penalties serve as a deterrent to ensure adherence to prudential norms, reporting standards, and operational guidelines. The amount of penalty depends on the severity and frequency of violations. These penalties are part of RBI's supervisory framework to maintain banking sector discipline and financial stability, and they are publicly disclosed to enhance accountability and market discipline.

Why in news?

RBI imposed monetary penalties on Deutsche Bank and Yes Bank for regulatory non-compliance, reflecting its active role in enforcing banking regulations.

Monetary Policy Committee (MPC) of India

The **Monetary Policy Committee (MPC)** is a six-member body established in 2016 to set interest rates in India. It includes three RBI officials and three external members appointed by the government. The MPC meets every two months to decide the repo rate and other policy measures to control inflation and support economic growth. Decisions are based on CPI inflation, growth forecasts, and global economic conditions. The MPC aims to maintain inflation within a target range of 2-6%. It publishes minutes of meetings and voting patterns to ensure transparency.

Why in news?

The MPC is expected to evaluate April 2025 inflation data, monsoon forecasts, and tariff issues before deciding on interest rate changes in its upcoming June and August meetings.

Most Favored Nation (MFN) Policy

The **Most Favored Nation (MFN) drug pricing policy** aims to reduce U.S. prescription drug costs by tying Medicare payments to the lowest prices paid in a select group of economically advanced countries. It targets drugs administered in doctors' offices and uses prices from OECD countries with comparable GDPs, adjusting for volume and purchasing power. Initially proposed by President Trump in 2020, the policy faced legal challenges and was rescinded by the Biden administration. The Inflation Reduction Act of

2022 partially removed Medicare's negotiating restrictions, allowing limited price bargaining for a small number of drugs. The pharmaceutical industry opposes MFN due to potential profit losses.

Why in news?

President Trump announced reviving the MFN policy through an executive order in May 2025 to slash U.S. prescription drug prices by up to 80%, revisiting his first-term initiative that was previously blocked by courts.

Multilateral Trading System

The multilateral trading system is a global framework governing international trade through agreements under the World Trade Organization (WTO). It is based on principles like non-discrimination, transparency, and dispute resolution to facilitate free and fair trade among countries. The system aims to reduce tariffs, eliminate trade barriers, and promote economic cooperation. However, escalating trade frictions and protectionist policies have strained this system, causing fragmentation and marginalization of smaller and vulnerable economies. Strengthening multilateral cooperation and revitalizing rules-based trade are considered essential to maintain global economic stability and support sustainable development, particularly for developing countries.

Why in news?

The UN report warns that escalating trade tensions are straining the multilateral trading system, increasing challenges for small and vulnerable economies in the fragmented global trade landscape of 2025.

NABARD (National Bank for Agriculture and Rural Development)

NABARD is an apex development financial institution in India, established in 1982 to promote sustainable agriculture and rural development. It provides refinancing to banks and financial institutions for rural projects, including irrigation, flood control, and infrastructure. NABARD also supports watershed management and rural livelihoods. It plays a key role in implementing government schemes like watershed development and microfinance. The institution collaborates with state governments and local bodies to fund flood protection projects, emphasizing sustainable and community-based solutions. NABARD's interventions have helped reduce rural poverty and improve agricultural productivity across India.

Why in news?

NABARD is co-funding flood protection projects in Uttar Pradesh, including embankment repairs and pumping stations, to mitigate monsoon flood risks in vulnerable districts.

National Statistics Office (NSO)

The **National Statistics Office (NSO)** is the central agency responsible for the collection, compilation, and dissemination of official statistical data in India. It was formed in 2019 by merging the Central Statistics Office (CSO) and the National Sample Survey Office (NSSO). The NSO conducts large-scale surveys and provides key economic indicators such as GDP, industrial output, and inflation rates. It releases various estimates including advance GDP

growth forecasts. The NSO operates under the Ministry of Statistics and Programme Implementation. It plays a critical role in informing government policy and economic planning through its data releases.

Why in news?

The NSO released its second advance estimates for FY25 GDP growth and industrial output, which economists are analyzing to assess the economic performance and growth trajectory of India.

National Trade Estimate (NTE) Report

The National Trade Estimate Report on Foreign Trade Barriers is an annual publication by the Office of the U.S. Trade Representative (USTR). It identifies trade barriers faced by U.S. exporters in foreign markets, including tariffs, import bans, and regulatory policies. The 2025 NTE Report marks issues such as South Korea's ban on American beef from cattle over 30 months old, emissions regulations on imported cars, and pharmaceutical pricing policies. The report serves as a basis for U.S. trade negotiations and enforcement actions, providing detailed data on foreign trade restrictions that affect U.S. industries.

Why in news?

The 2025 NTE Report flagged South Korea's trade barriers, prompting technical consultations between the U.S. and South Korea to address tariffs and non-tariff measures amid rising trade tensions.

Nationalised Banks Dividend

Nationalised banks in India are government-owned financial institutions that contribute dividends to the central government's revenue. These banks operate under government control, aiming to serve public interest and financial inclusion. Dividends depend on the banks' profitability and regulatory requirements. The government expects dividends as part of its non-tax revenue, which supplements budgetary resources. In FY26, dividends from nationalised banks were combined with RBI surplus transfers to boost government funds. The dividend payout ratio and timing can vary, influenced by economic conditions and bank performance, impacting government cash flow and fiscal management.

Why in news?

Dividends from nationalised banks, combined with RBI surplus transfers, were factored into government revenue projections amid rising defence spending in FY26.

Navratna Status

The Navratna status is a recognition granted by the Government of India to public sector undertakings (PSUs) that demonstrate strong financial performance and operational autonomy. Companies with this status receive greater independence in decision-making, including investment limits and joint ventures, without requiring government approval. The scheme was introduced in 1997 to empower PSUs to compete globally. Navratna PSUs are evaluated based on parameters such as net profit, net worth, total cost of production, and total manpower cost. IRFC, as a Navratna PSU, benefits from enhanced strategic and financial flexibility in its operations.

Why in news?

IRFC's bond issuance was noted for its credit spread and pricing, benefiting from its Navratna status, which enhances investor confidence and operational autonomy.

NEOM

NEOM is a planned futuristic city in northwestern Saudi Arabia, covering an area roughly the size of Belgium. It is part of Saudi Arabia's Vision 2030 economic diversification plan and aims to incorporate smart city technologies, renewable energy, and advanced robotics. The project envisions sectors such as biotechnology, energy, entertainment, and manufacturing. NEOM will include "The Line," a linear city designed to have no cars or streets, powered entirely by clean energy. The city is expected to attract international investment and skilled workers, though it has faced criticism for displacement of local tribes. Construction began in 2021 with an estimated cost exceeding $500 billion.

Why in news?

NEOM was brought into light during Trump's visit to Saudi Arabia as part of the kingdom's multi-billion-dollar development projects shown to U.S. investors.

Net Card Additions

Net card additions represent the difference between newly issued credit cards and cards that have been closed or become inactive during a specific period. It is a key metric for assessing growth in the credit card market. Despite increased issuance, net additions can decline if more cards are closed or deactivated. Factors influencing net additions include credit quality policies, customer retention strategies, and market saturation. Banks often focus on cross-selling to existing customers rather than aggressive acquisition, affecting net growth. Net card additions provide a clearer picture of active cardholder growth than gross issuances alone.

Why in news?

Recently, India's credit card net additions were 551,315, stable month-on-month but down nearly 25% year-on-year, reflecting cautious lending and market saturation.

Net Demand and Time Liabilities (NDTL)

Net Demand and Time Liabilities (NDTL) represent the total deposits held by banks, including demand deposits (withdrawable anytime) and time deposits (fixed tenure). NDTL is a key metric used by the RBI to calculate the cash reserve ratio (CRR) and statutory liquidity ratio (SLR), which banks must maintain. It serves as a base for measuring liquidity in the banking system. Changes in NDTL influence monetary policy decisions and liquidity management. The RBI targets liquidity surplus as a percentage of NDTL to achieve effective monetary transmission and stable interest rates.

Why in news?

The RBI aims to maintain a liquidity surplus of about 1% of NDTL by March 2026, influencing OMO operations and interest rate policy amidst changing government expenditure and currency leakage.

Net External Assets

Net external assets represent the difference between a country's overseas assets owned

by its residents and the domestic assets owned by foreigners, adjusted for currency fluctuations. This measure reflects a nation's net creditor or debtor status internationally. It accumulates over time based on the current account balance, which includes trade surplus or deficit, income from abroad, and unilateral transfers. A positive net external asset position means a country is a net lender to the world, while a negative position indicates net borrowing. Japan held the largest net external assets for 34 years before being overtaken by Germany in 2024.

Why in news?

Japan lost its position as the world's largest creditor nation to Germany in 2024 despite record overseas assets, reflecting shifts in global economic balances and trade surpluses.

Net Foreign Direct Investment (Net FDI)

Net FDI is the difference between gross FDI inflows and the sum of repatriated earnings by foreign companies plus outward FDI by domestic companies. It reflects the actual net capital retained by the host country. Unlike gross FDI, net FDI accounts for money flowing out, including dividends, profits, and reinvested earnings sent back to investors' home countries. Net FDI can be negative or very low even when gross FDI is high, indicating capital outflows. This metric is crucial for understanding the real investment impact on the domestic economy beyond headline inflow figures.

Why in news?

India's net FDI crashed by over 96% to $353 million in 2024-25 due to record repatriation and increased outward investments by Indian companies, despite gross FDI remaining strong.

Neutral Rate

The neutral rate is the theoretical interest rate at which monetary policy neither stimulates nor restrains economic growth. It balances inflation and output, guiding central banks in setting policy rates. In India, the neutral rate is estimated to be between 5% and 6%, but it varies with economic conditions. The RBI's repo rate falling below this neutral rate signals an accommodative stance to boost growth. The neutral rate is unobservable and inferred from models, making it a key but challenging reference for monetary policy decisions globally.

Why in news?

SBI Research indicated the RBI's repo rate could fall below the neutral rate by March 2026, signaling potential monetary easing amid declining inflation.

New Credit Assessment Model for MSMEs

The new credit assessment model for MSMEs uses **digital footprints and cash flow analysis** to evaluate creditworthiness, moving beyond traditional collateral-based methods. It incorporates data from online transactions, GST returns, and payment histories to generate a dynamic risk profile. This model aims to improve access to finance for micro, small, and medium enterprises by providing a more accurate and real-time evaluation of business health. It supports faster loan approvals and customized credit

products, enhancing MSMEs' growth potential. The model is part of the government's push for digital transformation in the financial sector.

Why in news?

This model is part of the credit enhancement schemes discussed in the Finance Minister's meeting to boost MSME financing and promote responsible lending.

New Space India Limited (NSIL)

New Space India Limited (**NSIL**) is the commercial arm of the Indian Space Research Organisation (**ISRO**), established in 2019 to promote and commercialize space products, services, and technologies. NSIL manages satellite launches, transponder leasing, and production of small satellites. It generated revenue of Rs 2,940 crore in 2022-2023, with an estimated year-on-year growth of around 24%. NSIL plays a key role in transferring ISRO technologies to industry and enabling private sector participation. It also coordinates international satellite launches and commercial satellite communications services. NSIL supports Make in India initiatives in the space sector.

Why in news?

NSIL's revenue growth and expanding role in India's space economy were brought into light in a 2025 study assessing the sector's economic impact and employment generation.

New Umbrella Entities (NUEs)

New Umbrella Entities (NUEs) are non-bank payment system operators licensed by the Reserve Bank of India to promote competition and innovation in the payments sector. NUEs can operate payment systems similar to those run by banks, including payment gateways and card networks. They are part of India's strategy to diversify payment infrastructure and reduce reliance on traditional banking institutions. NUEs are expected to enhance tokenization, improve customer safety, and encourage a level-playing field for non-bank players. Their entry is intended to expand digital payment options and support the growth of real-time payment systems like UPI.

Why in news?

NUEs were mentioned as potential new participants in India's payments ecosystem during discussions on the formation and priorities of the Payments Regulatory Board in 2025.

Niryat Portal

The **Niryat Portal** is an online platform managed by the Directorate General of Foreign Trade (DGFT), Government of India. It provides real-time data on India's export-import statistics, including state-wise and commodity-wise export performance. The portal helps businesses and policymakers track trade trends, analyze export growth, and identify emerging markets. It includes detailed reports on export values, growth rates, and trade policies. The portal is updated regularly with data from customs and other government agencies, making it an essential tool for export promotion and monitoring India's foreign trade dynamics.

Why in news?

The Niryat Portal data was cited to show export growth trends of state of Indias, including Uttar Pradesh, Gujarat, Maharashtra, Tamil Nadu, and Karnataka, denoting their

contributions to India's $433 billion exports in FY25.

Niveshak Shivir

Niveshak Shivir is a pilot initiative launched by the Investor Education and Protection Fund Authority (IEPFA) and SEBI to facilitate direct interaction between investors, companies, and Registrars and Transfer Agents (RTAs). It aims to eliminate intermediaries and provide immediate grievance redressal through dedicated kiosks. The program focuses on resolving issues related to unclaimed dividends and shares, enabling on-the-spot KYC and nomination updates, and addressing pending IEPFA claims. The initiative targets regions with high volumes of unclaimed investments and plans multiple camps across India to enhance investor protection and transparency in financial transactions.

Why in news?

Niveshak Shivir was launched with its first pilot camp held on June 1, 2025, in Pune as part of IEPFA's efforts to streamline investor grievance resolution and dividend recovery.

Nomura Asia

Nomura Asia is the Asian division of Nomura Holdings, a major Japanese financial services group specializing in investment banking and asset management. It provides economic analysis, market research, and financial forecasts for Asian economies. Nomura's reports often focus on macroeconomic trends, trade impacts, and geopolitical risks affecting markets. Their Asia research noted a widespread decline in manufacturing PMIs across Asia in April 2025, attributed to trade uncertainty and tariff impositions, except for countries like India and the Philippines where domestic demand remains strong.

Why in news?

Nomura Asia issued a note denoting the decline in Asian manufacturing PMIs in April 2025 due to global trade tensions, contrasting with India's resilient manufacturing growth.

NPCI (National Payments Corporation of India)

NPCI is an umbrella organization for operating retail payments and settlement systems in India, established in 2008 by the Reserve Bank of India and Indian Banks' Association. It developed key payment systems like UPI, IMPS, RuPay, and Bharat QR. NPCI's UPI platform enables instant fund transfers between bank accounts via mobile devices, revolutionizing digital payments. NPCI also manages the RuPay card network, India's domestic card scheme. It plays a critical role in driving financial inclusion by promoting interoperable, cost-effective digital payment solutions across the country.

Why in news?

NPCI data revealed the rapid growth of UPI QR codes in FY25, underscoring its central role in India's digital payments infrastructure expansion.

Orange Economy

The **orange economy**, also known as the creative economy, encompasses economic activities based on creativity, culture, and intellectual property. It includes sectors like film, music, publishing, design, and digital media. The term originated in Latin America in the early 2000s to show cultural industries' economic potential. This economy generates

employment and wealth by leveraging artistic and cultural assets. India's orange economy is rapidly growing, contributing billions to GDP and creating millions of jobs. It emphasizes innovation, cultural diversity, and global cultural exchange. The orange economy is distinct from traditional sectors due to its focus on intangible assets like ideas and creativity.

WHY IN NEWS?

Prime Minister Modi referenced the orange economy during the WAVES summit to show India's growing creative industry and urge global companies to create content in India for worldwide audiences.

Outward Foreign Direct Investment (OFDI)

OFDI is investment made by domestic companies to acquire assets or establish business operations in foreign countries. It includes mergers, acquisitions, joint ventures, and greenfield investments abroad. OFDI reflects the global expansion of home-country firms and impacts the net FDI by reducing domestic capital inflows. It often concentrates in sectors where domestic firms have competitive advantages, such as finance, manufacturing, and services. OFDI flows are tracked to understand economic globalization, corporate strategies, and financial linkages between countries.

WHY IN NEWS?

Indian companies' OFDI surged 75% to $29.2 billion in 2024-25, contributing substantially to the decline in India's net FDI despite strong gross FDI inflows.

PM-Gati Shakti Plan

The **PM-Gati Shakti National Master Plan** is an integrated infrastructure development initiative launched by the Government of India to improve multi-modal connectivity across the country. It coordinates projects across 16 ministries to enable faster movement of goods and people. The plan aims to reduce logistics costs by up to 10-15%, enhance infrastructure efficiency, and boost economic growth. It incorporates digital mapping and GIS-based tools for planning and monitoring. The initiative targets development of roads, railways, ports, and airports in a synchronized manner. It was launched in October 2021 and is a key driver for India's infrastructure expansion.

WHY IN NEWS?

The PM-Gati Shakti Plan underpins the approval of two multi-tracking railway projects to improve connectivity and logistics efficiency in Maharashtra and Madhya Pradesh.

PRAVAAH Portal

PRAVAAH stands for **Platform for Regulatory Application, Validation And AutHorisation**. It is a **web-based system launched on May 28, 2024** by the Reserve Bank of India to handle regulatory filings digitally. The portal processes applications related to authorisations, licenses, and other regulatory submissions from various financial entities. It supports real-time tracking, provides a centralized digital audit trail, and aims to improve efficiency, transparency, and standardisation. Since its launch, it has processed nearly **4,000 applications**. It covers Scheduled Commercial Banks, NBFCs, Housing

Finance Companies, Primary Dealers, and other financial institutions.

Why in news?

RBI mandated all regulatory applications and license requests be submitted exclusively through PRAVAAH starting May 1, 2025, to eliminate offline submissions and streamline compliance.

Qualified Remittance Providers

Qualified remittance providers are financial institutions or money transfer services that have agreements with the US Internal Revenue Service (IRS) to verify the citizenship status of senders. Under the proposed tax law, transfers made through these providers by verified US citizens and nationals may be exempt from the 5% remittance transfer tax. These providers are responsible for collecting the tax at the point of transfer and remitting it to the US Treasury. They must maintain compliance with anti-abuse rules to prevent tax evasion through indirect or creative transfer methods.

Why in news?

The bill provides exemptions and tax credit mechanisms linked to transfers processed by qualified remittance providers, impacting how NRIs and other non-citizens remit funds internationally.

R-2 (High) Rating

The R-2 (high) rating is a short-term credit rating assigned by Morningstar DBRS, indicating a high-grade ability to meet financial obligations in the near term. It ranks above R-2 (middle) and below R-1 ratings in the agency's short-term scale. This rating reflects strong liquidity, stable cash flows, and minimal credit risk over a short horizon, typically under one year. Entities with R-2 (high) are considered to have good credit quality but may carry some susceptibility to adverse economic conditions. This rating is crucial for investors and creditors assessing short-term lending risk.

Why in news?

India's Short-Term Foreign and Local Currency Issuer Ratings were raised to R-2 (high) from R-2 (middle) by Morningstar DBRS in May 2025, reflecting improved short-term creditworthiness.

Rabi and Kharif Crops

India's agricultural year is divided into two main cropping seasons – **Rabi** and **Kharif**. Rabi crops, sown in winter (October-December) and harvested in spring (April-June), include wheat, barley, mustard, and pulses. Kharif crops are sown with the onset of monsoon (June-July) and harvested in autumn (September-October), including rice, maize, and cotton. The second advance estimates for rabi crops provide early official forecasts of production levels, crucial for food supply and inflation outlook. Kharif arrivals refer to the market availability of these crops post-harvest, impacting food prices and inflation in the latter half of the year.

Why in news?

Record wheat production in the rabi season and robust kharif crop arrivals are expected to ease food inflation, influencing RBI's monetary policy decisions.

Rebalancing Mechanism

The **Rebalancing Mechanism** is a proposed trade clause designed to compensate exporters affected by carbon border taxes like CBAM. India has inserted this mechanism into the general exceptions chapter of trade negotiations with the UK to protect its industries from losses due to carbon duties. It allows India to claim compensation and avoid disputes at the World Trade Organization (WTO). This mechanism is unusual in trade agreements and aims to balance environmental regulations with economic fairness for developing countries facing carbon-related trade barriers.

Why in news?

India proposed the rebalancing mechanism during UK trade talks to counter the financial impact of the UK's CBAM on Indian exports and prevent WTO disputes.

Sectoral Deployment of Bank Credit

Sectoral deployment of bank credit refers to the distribution of loans and advances by banks to various sectors like agriculture, industry, services, and personal loans. RBI collects and publishes this data from select commercial banks, which account for about 95% of total non-food credit. This data helps assess economic health and sectoral growth trends. It includes sub-sectors such as petroleum, coal products, nuclear fuels, infrastructure, and trade. Changes in sectoral credit growth can indicate shifts in economic priorities, risks, and investment patterns, influencing policy decisions by the RBI and government.

Why in news?

The RBI released data showing slowing credit growth in agriculture and flat growth in industry for the fortnight ended March 21, 2025.

Securitised Debt Instruments (SDIs)

Securitised Debt Instruments (SDIs) are financial securities created by pooling various debt types like loans, mortgages, or receivables and selling shares to investors. This process converts illiquid assets into liquid ones, providing funding alternatives. Investors earn returns based on the underlying debt pool's performance, with risks spread across multiple assets. SDIs must be issued and transferred in demat form under current regulations. The minimum ticket size for issuance is Rs 1 crore. Public offers must stay open for 3 to 10 days, with advertisement rules matching those for non-convertible securities. Re-securitisation and synthetic securitisation are prohibited.

Why in news?

Sebi mandated a Rs 1 crore minimum investment threshold and updated rules for SDIs to enhance transparency and risk management in securitisation activities.

Self-Regulatory Organisation (SRO)

A **Self-Regulatory Organisation (SRO)** is an entity empowered by a regulatory authority to create and enforce industry regulations and standards autonomously. SROs operate within the framework set by government regulators but manage compliance, dispute resolution, and market conduct internally. They are common in financial markets

worldwide to enhance market discipline and reduce regulatory burdens on government agencies. In India, SROs like FIMMDA help maintain orderly market practices, improve transparency, and protect investor interests by setting codes of conduct and monitoring member behavior.

Why in news?

The Reserve Bank of India granted SRO status to FIMMDA, enabling it to regulate fixed income and derivatives market participants more effectively.

Self-Reliant India Fund

The Self-Reliant India Fund is a government-backed financial mechanism designed to support R&D and innovation projects within MSME clusters. It channels funds into high-impact, cluster-based industrial research and development initiatives aimed at enhancing product quality, innovation, and competitiveness. The fund emphasizes strategic sectors with national significance and promotes collaboration between enterprises, research institutions, and government bodies. It plays important role in bridging financial gaps for R&D in medium enterprises, encouraging technology-driven growth and reducing dependence on imports.

Why in news?

The NITI Aayog report proposes leveraging the Self-Reliant India Fund to establish dedicated R&D cells within the Ministry of MSME for cluster-based projects.

Shadow Banking in India

Shadow banking refers to credit intermediation outside traditional banking regulation, including NBFCs, margin lenders, repo traders, and brokers. In India, brokers provide margin funding by lending to retail investors against collateral, often charging interest rates exceeding 20%. These transactions can be opaque, with investors unaware of the effective costs. Shadow banking is unregulated or lightly regulated, creating systemic risks similar to those that triggered the 2008 global financial crisis. The European Union has enacted legislation to collect comprehensive shadow banking data, a step India has yet to emulate, leaving the scale of shadow lending uncertain.

Why in news?

Shadow banking is identified as a critical blind spot in India's financial sector, with calls for transparency and data collection to prevent a potential crisis stemming from unregulated credit activities.

Special Drawing Rights (SDR)

Special Drawing Rights (SDR) are an international reserve asset created by the International Monetary Fund (IMF) in 1969 to supplement member countries' official reserves. SDRs are not a currency but represent a potential claim on freely usable currencies of IMF members. The value of an SDR is based on a basket of major currencies – the US dollar, euro, Chinese yuan, Japanese yen, and British pound. SDR allocations are distributed to countries in proportion to their IMF quotas. SDRs can be exchanged among governments for these currencies during balance of payments needs.

Why in news?

India's SDR holdings rose by $21 million to $18.59 billion as part of its foreign exchange reserves data released by the Reserve Bank of India in late April 2025.

Special Economic Zone (SEZ) for AI

A Special Economic Zone (SEZ) is a designated area with economic regulations different from the rest of the country to attract investment and promote exports. The SEZ within the Nava Raipur Data Center Park is the first in India dedicated exclusively to AI-based services. It spans 2.7 hectares and offers tax incentives, simplified customs procedures, and infrastructure support tailored to AI firms. This SEZ aims to encourage innovation by clustering AI startups, research centers, and service providers. It is expected to accelerate AI adoption in sectors like FinTech, HealthTech, and Defense, boosting both domestic capabilities and international collaborations.

Why in news?

The new AI-focused SEZ is part of the Data Center Park project, designed to promote AI-driven services and investments in Chhattisgarh.

Speciality Steel

Speciality steel refers to high-grade steel alloys with enhanced properties such as strength, corrosion resistance, and heat tolerance, used in sectors like automotive, aerospace, and defense. India is the world's second-largest steel producer but imports quantities of speciality steel due to technological gaps and limited domestic production capacity. The PLI scheme targets this segment to promote value-added steel manufacturing, reduce import dependence, and move up the steel value chain. Speciality steel production requires advanced technology and higher capital investment compared to commodity steel.

Why in news?

India's PLI scheme focuses on speciality steel to improve domestic production capacity and reduce reliance on imports, prompting scrutiny by the US over subsidy practices amid global overcapacity concerns.

Standing Deposit Facility (SDF)

The **Standing Deposit Facility (SDF)** is a liquidity absorption tool used by the RBI, allowing banks to park excess funds overnight without collateral. Introduced in 2018, the SDF rate is usually lower than the reverse repo rate, encouraging banks to deposit surplus liquidity with the RBI. This facility helps manage surplus liquidity and stabilize short-term interest rates. Unlike the reverse repo, the SDF does not require collateral, making it simpler and more flexible. Banks often use the SDF when they have excess funds but limited opportunities to lend in the interbank market.

Why in news?

Banks have parked surplus funds in the SDF due to liquidity mismatches and limited call-money market hours, prompting RBI to extend trading hours to better balance liquidity.

Surplus Transfer to Government

Surplus transfer refers to the distribution of the Reserve Bank of India's profits to the

government after meeting its operational expenses and reserves. This transfer is source of non-tax revenue for the government. The RBI's surplus primarily comes from its earnings on government securities, foreign exchange operations, and other income. The amount transferred varies annually based on RBI's net profits. This transfer impacts the government's fiscal position and can influence liquidity in the banking system when the government spends these funds.

Why in news?

The RBI is expected to announce a large surplus transfer ranging between ₹2.5 lakh crore and ₹4 lakh crore to the government soon, influencing liquidity conditions.

Tariff Tantrums

Tariff Tantrums refers to periods of sudden and increases in import tariffs or trade barriers between countries, causing economic uncertainty and disruptions in global supply chains. Such events can lead to volatility in industrial production, commodity prices, and investment flows. The term gained prominence during trade tensions in the late 2010s but is applied broadly to any sharp tariff escalations that disrupt trade. Tariff tantrums often trigger retaliatory tariffs, affecting multiple sectors and slowing industrial growth. They can also cause shifts in trade routes and sourcing strategies for businesses globally.

Why in news?

Economic uncertainty caused by Tariff Tantrums contributed to the slowdown in India's infrastructure output growth in April 2025, as cited by economists analyzing the latest industrial data.

Tariff-Based Competitive Bidding (TBCB)

Tariff-Based Competitive Bidding (TBCB) is a procurement process used by state of Indias to select Independent Power Producers (IPPs) for power projects. Under TBCB, power producers submit bids based on the tariff they will charge, and the lowest tariff wins the contract. This method promotes transparency and competitive pricing in power procurement. TBCB is used under the SHAKTI scheme to allocate coal linkages to IPPs, ensuring efficient use of coal resources. It has been instrumental in encouraging private sector participation in power generation by providing a fair and transparent selection process.

Why in news?

TBCB is referenced in the revised SHAKTI scheme as the method for identifying IPPs eligible for coal linkages under the notified price window.

Tax Collected at Source (TCS) on LRS

Tax Collected at Source (TCS) on LRS transactions was introduced to monitor and tax foreign remittances above a threshold. Initially, TCS applied at 5% on remittances above Rs 7 lakh, but from October 2023, the rate increased to 20% on overseas tour packages. The threshold for TCS collection was raised from Rs 7 lakh to Rs 10 lakh in the 2025 Union Budget. TCS is not an additional tax but can be claimed as a refund during income tax

filing. TCS is not levied on credit card spending abroad, but applies to remittances processed by banks for travel and other purposes.

Why in news?

The Union Budget 2025 increased the TCS threshold on LRS transactions, aiming to boost travel, education, and foreign exchange sectors amid declining remittances for studies and travel.

Trans-shipment Pact

A **trans-shipment pact** is an agreement allowing goods to be shipped through a third country's ports en route to their final destination, facilitating smoother and cost-effective trade. The India-Bangladesh trans-shipment pact enabled Indian goods to be transported via Bangladesh's Chittagong port to Northeast India, reducing transit time and logistics costs. Its scrapping by India in 2025 ended this facilitation, forcing rerouting of goods through longer sea routes like Kolkata and Nhava Sheva. The termination has raised concerns over increased trade costs and supply chain inefficiencies, particularly affecting the Northeast's connectivity and economic integration with the rest of India.

Why in news?

India scrapped the trans-shipment pact with Bangladesh, contributing to new trade restrictions and forcing imports to be routed through distant sea ports, impacting regional trade and supply chains.

Tri-Party Repo (TREP)

The **Tri-Party Repo (TREP)** is a collateralised borrowing and lending mechanism involving three parties – the borrower, the lender, and a third-party agent who manages the collateral. The third party, often a custodian bank, ensures the collateral is transferred and maintained properly, reducing counterparty risk. TREP transactions dominate the overnight money market in India, accounting for about **69% of daily average volume**. TREP allows for efficient collateral management and reduces operational risks compared to bilateral repos. The segment's growth has been , with annual turnover rising from ₹245.27 trillion in 2014-15 to ₹1,296.62 trillion in 2024-25.

Why in news?

The RBI working group recommended synchronising and extending TREP trading hours till 4 pm and unifying trading hours for members settling obligations through Designated Settlement Banks and the RBI.

TriParty Repo (TREP)

The **TriParty Repo (TREP)** is a collateralized borrowing and lending instrument in the Indian overnight money market, where a third party (usually a clearing corporation) acts as an intermediary to manage collateral and settlement. It accounts for about **69% of the daily average volume** in the overnight money market. TREP enhances operational efficiency by reducing counterparty risk and simplifying collateral management. Members settling obligations through Designated Settlement Banks and the RBI follow unified TREP trading hours. The segment's growth has contributed to the expansion of India's

collateralized overnight money market turnover over the past decade.

Why in news?

The RBI working group recommended synchronizing and extending TREP trading hours until 4 pm to improve market efficiency and liquidity management in the overnight money market.

Western and Southern Indian States

Western state of Indias, including Maharashtra and Gujarat, are noted for **strong fiscal management, economic performance, and financial development**. Southern states like Karnataka excel in environmental sustainability, governance, and diverse economic growth. This regional distinction reflects historical industrialization patterns, infrastructure development, and policy focus. Western states benefit from robust manufacturing and foreign investment, while southern states emphasize IT, services, and green initiatives. The dominance of these regions in rankings reflects their strategic importance to India's overall development goals, including the vision of becoming a developed nation by 2047.

Why in news?

The 2025 CareEdge State Ranking Report brought into light the dominance of Western and Southern state of Indias in top positions for economic and social development metrics.

Wholesale Price Inflation (WPI)

Wholesale Price Inflation (WPI) measures the average change in prices of goods at the wholesale level before reaching consumers. It includes prices of raw materials, intermediate goods, and final goods traded between businesses. WPI is a critical economic indicator used to anticipate consumer inflation trends and monetary policy decisions. In India, the Office of Economic Adviser publishes WPI data monthly. The WPI basket comprises primary articles, fuel and power, and manufactured products. It often shows more volatility than Consumer Price Index (CPI) inflation due to its sensitivity to commodity price fluctuations.

Why in news?

WPI inflation dropped to a 13-month low of 0.85% in April 2025, signaling easing inflationary pressures and influencing RBI's potential rate cut in the June policy review.

Geography (Indian & Physical)

Beyt Dwarka

Beyt Dwarka, also known as Shankhodhar, is a small island located at the mouth of the Gulf of Kutch, approximately 25 km northeast of Dwarka. It is connected to the mainland town of Okha by the Sudarshan Setu, a four-lane cable-stayed bridge inaugurated in 2024. The island holds archaeological significance due to submerged remains and ancient artifacts found in its vicinity, indicating historical maritime activity. Beyt Dwarka is considered part of the ancient port complex linked to Dwarka and has been a site for underwater archaeological studies by the ASI. It is also a pilgrimage destination related to

Lord Krishna.

Why in news?

Recent ASI underwater explorations included Beyt Dwarka to study submerged archaeological remains, following the inauguration of the Sudarshan Setu bridge connecting it to Okha in early 2024.

Blocking Highs

Blocking highs are persistent high-pressure systems that obstruct the normal west-to-east movement of weather patterns. In the Southern Hemisphere, air circulates anticlockwise around these highs, causing warm, dry conditions inland and moist, onshore winds along coasts. These systems can remain stationary for days or weeks, leading to prolonged weather patterns such as heatwaves or droughts. Blocking highs over the Tasman Sea frequently influence Australia's southeast climate, contributing to dry spells in Victoria and South Australia while increasing rainfall along the New South Wales and Queensland coasts. The descending air within these systems also causes surface warming.

Why in news?

Blocking highs have dominated southern and southeastern Australia during autumn 2025, causing unseasonal warmth and dry conditions in parts of the continent while increasing rainfall along some coastal areas.

Chenab Valley

The **Chenab Valley** is a region in the Jammu division of Jammu and Kashmir, encompassing the districts of Doda, Kishtwar, and Ramban. It is named after the Chenab River, which flows through the area. The valley is known for its rugged terrain, diverse culture, and strategic importance due to its proximity to the Line of Control. It has a mixed population of various ethnic groups, including Gujjars, Paharis, and Kashmiri Muslims. The region has seen intermittent militant activity since the late 20th century, affecting security and development. Its economy largely depends on agriculture, horticulture, and hydroelectric power projects.

Why in news?

The Chenab Valley is the location of a recent anti-terror operation in Kishtwar district, denoting ongoing security challenges in the region.

Chintpurni Special Area

Chintpurni Special Area is a designated zone in Una district, Himachal Pradesh, created to regulate unplanned rural growth and commercial development. It surrounds the famous Chintpurni Temple, a major Hindu pilgrimage site dedicated to Goddess Chinnamasta. The area faces challenges from rapid infrastructure expansion and tourism-related pressures. Development plans focus on sustainable land use, preserving cultural heritage, and controlling urban sprawl along National Highway corridors. The designation as a Special Area allows for stricter zoning laws and coordinated planning efforts by local authorities to maintain ecological balance and support the local economy.

Why in news?

The Himachal Pradesh Cabinet decided to prepare development plans for the Chintpurni

Special Area to control unplanned growth and commercial development in the region.

Coastline Paradox

The **coastline paradox** describes the counterintuitive problem where the measured length of a coastline increases as the measurement scale becomes finer. First identified by Lewis Fry Richardson in the 1950s and mathematically explored by Benoît Mandelbrot in 1967, it shows that coastlines exhibit fractal-like properties, causing their length to vary dramatically with the size of the measuring tool. Coastlines are not true fractals but have a fractal dimension that quantifies their complexity. The paradox implies that measuring a coastline with an infinitely small ruler would yield an infinite length, revealing the geometric complexity of natural boundaries.

Why in news?

India revised its coastline length from 7,516.6 km to 11,098.8 km using finer measurement scales, illustrating the coastline paradox's practical implications in geographic measurement.

Dzongu Region

The **Dzongu region** is a 78 sq. km triangular area in Sikkim, located at elevations from 700 to 6,000 meters above sea level. It borders the **Khangchendzonga National Park and Biosphere Reserve** and lies within the Indo-Myanmar Biodiversity Hotspot. Dzongu is home to rich forests and diverse cultures, especially of the Lepcha community. Its unique geography and protected status support a high level of biodiversity, including over 400 butterfly species, representing nearly 61% of Sikkim's butterfly fauna. The region is recognized for its ecological and cultural significance.

Why in news?

Dzongu is in the news due to a 10-year study documenting 420 butterfly species there, marking it as one of India's richest butterfly habitats in celebration of Sikkim's 50 years of statehood.

Halite Mining

Halite is the mineral form of sodium chloride, commonly known as rock salt. It forms through the evaporation of saline water in enclosed basins. Halite deposits are typically found in sedimentary rocks and are mined for use in chemical industries, food processing, and de-icing roads. Large halite deposits exist worldwide, with reserves in Rajasthan. The mineral is translucent to transparent with a cubic crystal structure. Halite can contain impurities such as clay, anhydrite, and sylvite. Its mining involves both underground and surface methods. Halite's solubility in water makes it important in geological and environmental studies.

Why in news?

Halite blocks were auctioned for the first time in India's fifth tranche of critical mineral block auctions, with Hindustan Zinc Ltd winning some of these blocks, marking step in domestic mineral resource development.

India's Northeastern and Eastern Belts

India's **northeastern and eastern belts** comprise eight states in the Northeast (Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim) and eastern states like West Bengal, Odisha, and Bihar. These regions have diverse ethnic groups and rich natural resources but face challenges such as limited infrastructure, connectivity issues, and lower industrial development. The government promotes these belts through special economic zones and cluster-based MSME development to boost inclusive growth. Despite geographic and logistical constraints, these regions have emerging sectors like agro-processing, handlooms, and handicrafts, with potential for increased MSME-driven economic contributions.

Why in news?

The NITI Aayog report emphasizes creating platforms for direct market linkages and targeted interventions to unlock MSME growth potential in India's northeastern and eastern belts.

Jiribam District

Jiribam is the westernmost district of Manipur, bordering Assam, known for its strategic location as a transit point between the two states. It was carved out as a separate district in 2016 to improve administrative efficiency. The district has a diverse population including Meitei, Naga, and Kuki communities. Jiribam is for trade and connectivity, hosting a railway station that connects Manipur to the Indian Railways network. The area has witnessed ethnic tensions and sporadic violence linked to insurgent activities. It is geographically hilly and forested, contributing to its role as a hideout for militants.

Why in news?

Jiribam district is the location where militants allegedly killed a woman and burned houses, prompting NIA arrests related to the Manipur violence.

Kachchh Region

Kachchh (also spelled Kutch) is a district in Gujarat, characterized by its **arid and salty terrain**, including the Rann of Kachchh, a large salt marsh. It experiences extreme temperature variations and has a unique geological setting with ancient sedimentary rocks and mineral deposits like jarosite. The region's environment closely resembles Martian surface conditions, making it a valuable terrestrial analog for planetary research. Kachchh is also prone to seismic activity and has a rich cultural heritage with traditional crafts and festivals, but its geological features are of particular interest for astrobiology and planetary science.

Why in news?

Kachchh's jarosite veins were sampled to simulate Martian conditions and test the mineral's potential as a natural radiation dosimeter for future Mars missions.

Kalahandi District

Kalahandi is a district in southwestern Odisha, known for its tribal population and rich mineral resources. It has historically been associated with poverty, drought, and

underdevelopment, despite abundant natural resources. The district is home to several PVTGs, including the Dongria Kondh. Kalahandi gained national attention in the 1980s for widespread starvation deaths, which led to policy focus on drought relief and tribal welfare. The terrain is largely hilly and forested, complicating infrastructure development. Agriculture is mainly rain-fed, and the district faces challenges in healthcare, education, and road connectivity.

Why in news?

Kalahandi district is part of the NHRC's investigation into the lack of basic amenities and poor living conditions of tribal communities, including PVTGs like the Dongria Kondh.

Karan Bridge

The **Karan Bridge** was constructed in 1933-34 over the Chenab River by Maharaja Hari Singh of Jammu and Kashmir through a German company. It was named after his son, Dr. Karan Singh. The bridge replaced an older structure that had been washed away by floods. It was destroyed during the severe floods on September 10, 1992. Remnants of the bridge remain visible on the riverbed, especially when water levels drop . The bridge was a key transport link in the region during its time.

Why in news?

Remnants of the Karan Bridge appeared on the Chenab riverbed in Akhnoor in May 2025 when water levels fell unusually low due to dam gate closures.

Kavaratti Island

Kavaratti is the capital of the Lakshadweep Union Territory, located in the Arabian Sea. It is a coral atoll known for its lagoons, coral reefs, and rich marine biodiversity. The island's economy relies on fishing, coconut cultivation, and tourism. Kavaratti faces threats from climate change, including coral bleaching and sea-level rise. It has a population of around 11,000 people and is connected to mainland India by air and sea. The island has a unique culture blending Arab and South Indian influences, with traditional boat-building and fishing methods still practiced.

Why in news?

Kavaratti was included in the list of areas likely to experience high wave surges and erosion as per the INCOIS alert issued in May 2025.

Kaza-Nako Road

The Kaza-Nako road is important high-altitude route in Himachal Pradesh's Spiti district, linking the town of Kaza, the administrative center of Spiti Valley, to Nako village near the border with Tibet. The road traverses rugged terrain, passes through remote villages, and crosses several mountain passes above 4,000 meters. It is often closed during winter due to heavy snowfall and landslides. The route is vital for local trade, tourism, and access to ancient monasteries and natural reserves. Its remote location provides habitats for endangered species like the snow leopard and Himalayan ibex.

Why in news?

The snow leopard sighting took place on the Kaza-Nako road, denoting the road's passage through critical wildlife habitats and its significance for eco-tourism in the region.

Keshav Prayag

Keshav Prayag is the confluence of the **Alaknanda** and **Saraswati rivers** located near Mana village in Chamoli district, Uttarakhand. It is considered a sacred site where the Saraswati river is believed to emerge from underground. The site is historically linked to Maharishi Ved Vyas, who composed the **Mahabharata** here. It is also associated with South Indian scholars Ramanujacharya and Madhvacharya, who are said to have received divine knowledge from Goddess Saraswati at this location. The confluence is a key ritual spot for the Pushkar Kumbh festival, held every 12 years.

Why in news?

Keshav Prayag is the central ritual site for the 12-year Pushkar Kumbh festival held in May 2025, attracting thousands of pilgrims and marking an important spiritual event near the India-China border in Chamoli.

Khangchendzonga

Mt. Khangchendzonga, at **8,586 metres**, is the third-highest mountain in the world, located on the border between Sikkim (India) and Nepal. The name means "**five treasures of the high snows**," referring to hidden divine treasures. It is considered sacred by the indigenous communities of Sikkim, worshipped as the abode of the guardian deity **Dzoe-Nga**, also called **Pho-lha**. Climbing is banned on the Indian side under the Sacred Places of Worship (Special Provisions) Act, 1991, but permitted from Nepal. The first successful ascent was in 1955 after many failed attempts.

Why in news?

Sikkim's Chief Minister urged the Government of India to stop climbing on Khangchendzonga from Nepal, citing religious and legal concerns after a recent ascent by a Nepal-based team.

Kumbakonam Vetrilai

Kumbakonam vetrilai is a variety of betel leaf cultivated in the Cauvery river basin of Tamil Nadu. It is known for its distinctive **oblong, heart-shaped leaves** with a pungent taste and aroma. The cultivation areas include Thiruvaiyaru, Papanasam, Thiruvidaimarudur, Kumbakonam, and Rajagiri. The crop requires careful plucking of mature leaves from side shoots after the vines reach a certain height. The first-year harvest, called **maaruvethalai**, produces larger leaves with a shelf life of six to seven days, while subsequent yields, kelavethalai and kattavethalai, are smaller. It was granted a Geographical Indication (GI) tag in 2025.

Why in news?

Kumbakonam vetrilai received a GI tag in April 2025, recognizing its unique regional qualities and cultural importance, enhancing Tamil Nadu's total GI products to 62.

Madku Dweep

Madku Dweep is a locally island in the Mungeli district of Chhattisgarh, known for its natural beauty and cultural importance. It hosts the Shri Hariher Kshetra temple, attracting pilgrims and tourists. The island is undergoing infrastructure upgrades

including stairs called **Pachri** at Navghat near the riverbank, retaining walls, and a concrete road to improve accessibility. Sanitation facilities were enhanced with the construction of toilets in 2018, now maintained by the local Gram Panchayat and a women's self-help group. The area is a focus of government development to boost tourism and local economy.

Why in news?

The Chhattisgarh High Court is monitoring development efforts at Madku Dweep, reviewing progress on infrastructure and sanitation improvements as part of a Public Interest Litigation.

Marusudar River

The **Marusudar River** is the largest tributary of the Chenab River, flowing through the Kishtwar district of Jammu and Kashmir. It originates from the Warwan Valley and covers a length of approximately 133 kilometers before joining the Chenab. The river is known for its steep gradient and fast flow, making it suitable for hydropower projects. The Marusudar basin is sparsely populated and rich in biodiversity, with several endemic species. The river's hydrology plays a critical role in the Indus River system, contributing to the water volume of the Chenab.

Why in news?

The Marusudar River is the site of the Pakal Dul Hydropower Project, which recently received expedited government approval for its transmission line, denoting its strategic importance in water resource management.

Marwari Camel

The **Marwari camel** is an indigenous breed native to Rajasthan, known for its exceptional strength, endurance, and adaptability to harsh desert conditions. It has a distinctive appearance with **long legs** and a **curved neck**. This breed is valued for its ability to travel long distances with minimal water and feed on sparse desert vegetation, including medicinal plants. Marwari camels played important role in transportation, agriculture, and as status symbols in Rajasthan's desert communities. Their population has declined due to mechanization and land use changes, threatening the breed's survival.

Why in news?

The Marwari camel faces population decline due to reduced utility and habitat loss, affecting Rajasthan's indigenous livestock biodiversity.

Mascarene High

The **Mascarene High** is a semi-permanent high-pressure system located near the Mascarene Islands in the southern Indian Ocean. It forms prominently during the Asian summer monsoon season. The strength and position of this high-pressure area influence the southwest monsoon winds over the Indian subcontinent. Variations in its intensity affect the moisture transport and rainfall along India's west coast. The Mascarene High also interacts with other pressure systems such as the heat-low over the Arabian Sea and the Somali jet, modulating the monsoon's strength and timing. It is named after the

Mascarene Islands, which include Mauritius, Réunion, and Rodrigues.

Why in news?

The Mascarene High was one of the key atmospheric factors that contributed to the early arrival of the 2025 monsoon season over Kerala and adjoining regions.

Moreh Area, Tengnoupal District

Moreh is a border town in Tengnoupal district, Manipur, located on the India-Myanmar border and serving as a key trade gateway between the two countries. It is part of the India-Myanmar-Thailand Trilateral Highway project, facilitating regional connectivity. Moreh is ethnically diverse, with Meitei, Kuki, and Naga populations, and has a history of insurgency and cross-border smuggling. The town's strategic importance makes it a frequent site of security operations and occasional militant attacks. Tengnoupal district was created in 2016 to manage local governance and improve security.

Why in news?

Moreh area witnessed an attack on the India Reserve Battalion post in January 2024, linked to ongoing insurgency, with a recent arrest of a suspect from this incident reported by the NIA.

Mount Elbrus

Mount Elbrus is the highest peak in Europe, located in the Caucasus Mountains in Russia, with an elevation of 5,642 meters (18,510 feet). It is a dormant volcano with two summits, both of which are volcanic domes. Elbrus is part of the Seven Summits challenge and is considered technically less difficult than Everest but challenging due to weather and altitude. The mountain has a ski resort on its slopes and is a popular destination for climbers and tourists. Its first recorded ascent was in 1874 by a British expedition led by F. Crauford Grove.

Why in news?

Vishwanath's first attempt to summit Mount Elbrus in 2021 was unsuccessful, but he later succeeded, progressing towards completing the 7 Summits challenge.

Mount Iso (Tempu)

Mount Iso, also known as Tempu, stands at **2,994 metres** above sea level and is recognized as the highest peak in **Manipur**. It is located in the **Barail Range**, straddling the border between Manipur and Nagaland. Although commonly associated with Manipur, Mount Iso is also well-known in Nagaland. The Barail Range is mountainous region in Northeast India, rich in biodiversity and home to several indigenous tribes. The peak is less frequented by climbers compared to other Himalayan summits but holds cultural and ecological importance in the region.

Why in news?

Mount Iso was summited by Bhukya Yashwanth on May 4, 2025, as part of his mission to hoist the Indian flag on the highest peaks of every state of India.

Mt. Makalu

Mt. Makalu stands at **8,485 metres** and is the fifth highest mountain in the world. Located on the Nepal-China border in the Himalayas, it is known for its steep pyramid shape. The

mountain was first summited in 1955 by a French expedition. Makalu is considered one of the most difficult eight-thousanders to climb due to its sharp ridges and technical climbing sections. The mountain has five summits, with the main peak being the highest. It lies about 19 km southeast of Mt. Everest and is part of the Mahalangur range.

Why in news?

The Indo Tibetan Border Police (ITBP) successfully scaled Mt. Makalu on April 19, 2025, marking the first ascent by any Central Armed Police Force (CAPF) on this peak.

Mullaperiyar Dam

The **Mullaperiyar Dam** is a 125-year-old masonry gravity dam located on the Periyar River in Kerala, but operated and maintained by Tamil Nadu under a lease agreement signed in 1886. It was constructed using lime surkhi mortar and has a height of 53.6 meters. The dam supplies water for irrigation and drinking to Tamil Nadu's arid regions. Its **structural safety has been a subject of disputes** between Kerala and Tamil Nadu due to its age and seismic risk. The dam's reservoir capacity is approximately 443 million cubic meters, and it plays important role in regional water management.

Why in news?

The Supreme Court issued directions to resolve issues related to tree cutting, transportation of repair materials, and grouting of the Mullaperiyar Dam's super-structure, facilitating cooperation between Kerala and Tamil Nadu for dam maintenance.

Mumbai Trans Harbour Link (MTHL)

The **Mumbai Trans Harbour Link (MTHL)**, also called **Atal Setu**, is India's longest sea bridge, spanning almost 22 km. It connects Mumbai with Navi Mumbai across the Mumbai Harbour. The bridge was designed to reduce travel time and ease congestion on existing routes. Construction involves advanced engineering techniques to withstand tidal forces and seismic activity. The MTHL is a cable-stayed bridge with multiple spans supported by deep-water piers. It is expected to boost economic activity by improving connectivity between Mumbai and the mainland. The project is a key component of Mumbai's broader infrastructure modernization plan.

Why in news?

Mentioned as a length benchmark for the new elevated creek road bridge, denoting its significance in Mumbai's infrastructure network.

Nangal Dam

The **Nangal Dam** is part of the Bhakra-Nangal project, located on the Sutlej River in Punjab. It serves as a regulating dam downstream of the Bhakra dam, controlling water flow for irrigation and power generation. The dam was completed in 1955 and includes a hydroelectric power station. It is named after the nearby town of Nangal and is crucial for water management in Punjab and Haryana. The dam's reservoir capacity and water release schedules are vital for agricultural cycles in the region. It also supports flood control and is a key component of the Bhakra-Nangal multipurpose project.

Why in news?

The Nangal dam was the site of a protest where the BBMB chairperson was locked inside

the rest house to stop water release to Haryana amid ongoing water-sharing tensions.

National Hydrographic Office (NHO)

The **National Hydrographic Office** (NHO) is India's central agency responsible for hydrographic surveying and nautical charting. It produces electronic navigation charts used for maritime navigation and safety. The NHO collaborates with the Survey of India to incorporate data from satellite altimetry, LIDAR-GPS, and drone imaging. It uses the highwater line as a reference for coastline measurement, closing river mouths and creeks at fixed inland thresholds. The NHO's work supports maritime security, disaster preparedness, and fishing rights management by providing accurate coastal datimportant for India's extensive coastline.

Why in news?

The NHO contributed to the updated measurement of India's coastline, improving accuracy with advanced technologies and finer-scale electronic navigation charts.

Nava Raipur

Nava Raipur, also known as Atal Nagar, is the planned capital city of Chhattisgarh. It covers approximately 8,500 hectares and was developed to replace Raipur as the state capital. The city incorporates modern urban planning with a focus on sustainability, including green spaces and smart infrastructure. Nava Raipur hosts several government offices, educational institutions, and IT parks. The city is designed to support a population of over 560,000. It is also strategically located near the Durg-Bhilai industrial region. The development includes a Special Economic Zone (SEZ) dedicated to technology and innovation, such as the AI-based data center park inaugurated in 2025.

Why in news?

Nava Raipur is in the news for hosting India's first AI-based data center park, step in the city's evolution as a tech and digital hub in Chhattisgarh.

Paddy Crop Seasons

Paddy, or rice, is uniquely cultivated in India during **all three crop seasons** – kharif, rabi, and zaid. The **kharif season** (monsoon) is the primary season, but paddy cultivation during the rabi and zaid seasons helps stabilize rice production throughout the year. This multi-season cultivation supports India's position as one of the world's largest rice producers. The government targets **147.35 million tonnes** of rice production for 2025-26. Paddy's adaptability to different climatic conditions across seasons is due to varieties that tolerate varying water and temperature levels.

Why in news?

The government's rice production target for 2025-26 marks the importance of paddy grown across all three seasons in meeting foodgrain goals.

Pahalgam

Pahalgam is a town in the Anantnag district of Jammu and Kashmir, situated on the banks of the Lidder River. It is known for its scenic beauty, attracting tourists and pilgrims visiting the Amarnath Cave shrine. The town's economy relies heavily on tourism and local

handicrafts. Pahalgam also serves as a base camp for trekking expeditions into the Himalayas. It has witnessed security challenges due to militancy and insurgency in the region, making it a sensitive area for Indian security forces. The town's strategic location has made it a target for terrorist attacks.

Why in news?

The Pahalgam terror attack resulted in 26 deaths, triggering India's response to Pakistan's alleged involvement and proposals to re-list Pakistan on the FATF grey list.

Palakkad Gap

The Palakkad Gap is a low mountain pass approximately 30 kilometers wide in the Western Ghats, located between Tamil Nadu and Kerala. It serves as a natural corridor for species migration and gene flow but also acts as a biogeographic barrier for many endemic species. The gap influences climatic patterns by allowing moist winds from the Arabian Sea to enter the Tamil Nadu plains. It divides the Western Ghats into northern and southern ecological zones, resulting in distinct genetic populations of animals like the Nilgiri tahr. The gap is also historically for trade and cultural exchange between the two states.

Why in news?

The Nilgiri tahr population in Coimbatore is genetically linked to populations north of the Palakkad Gap, denoting the gap's role in species distribution and conservation planning.

Papum Pare District

Papum Pare is one of the 25 districts of Arunachal Pradesh, with Yupia as its headquarters. It covers an area of about 2,875 square kilometers and is home to several indigenous tribes, including the Nyishi, who are the largest ethnic group. The district has rich biodiversity with dense forests and wildlife sanctuaries. Agriculture, horticulture, and forestry are the main economic activities. Papum Pare is strategically important due to its proximity to the state capital and its role in connecting Arunachal Pradesh with Assam. The district is also known for its cultural festivals and traditional crafts.

Why in news?

Papum Pare district is the location of the SAFF U-19 Football Championship 2025, bringing regional attention to this northeastern district.

Parvati-Kalisindh-Chambal Link

The Parvati-Kalisindh-Chambal river linking project is an inter-state water management initiative aimed at connecting the Parvati and Kalisindh rivers with the Chambal River in central India. This project seeks to enhance water availability for irrigation, drinking, and hydroelectric power in parts of Madhya Pradesh and Rajasthan. It involves constructing canals, dams, and reservoirs to regulate water flow and improve agricultural productivity in the region. The project was inaugurated by Prime Minister Narendra Modi and is seen as step in regional cooperation between the two states. It also has implications for ecological balance and wildlife habitats along the river basins.

Why in news?

The Parvati-Kalisindh-Chambal river linking project was cited by Madhya Pradesh's CM as a

precedent for cooperation between MP and Rajasthan in the cheetah corridor initiative.

Pong Dam

The **Pong Dam**, located on the Beas River in Himachal Pradesh, is a multipurpose dam completed in 1974. It serves irrigation, hydroelectric power generation, and flood control purposes. The reservoir created by Pong Dam is one of the largest artificial lakes in India, supporting a rich ecosystem and bird sanctuary. The dam has a capacity of approximately 990 million cubic meters and generates around 396 MW of electricity. It plays important role in maintaining downstream water supply to Punjab and Haryana. Water levels in the dam fluctuate seasonally, heavily influenced by snowfall in the catchment area.

Why in news?

Pong Dam's water levels are currently reported to be 31.87% lower than last year, impacting Punjab's water availability and contributing to the dispute over water release to Haryana.

Ri Bhoi District

Ri Bhoi is a district in Meghalaya, situated between the East Khasi Hills and the border with Assam. It is known for its rich biodiversity, including forest reserves and wildlife sanctuaries. The district has population of Khasi tribes and is predominantly agrarian, with betel nut and pineapple as major crops. Ri Bhoi is also emerging as an industrial hub due to proximity to Shillong and Guwahati. The district experiences heavy rainfall and has a hilly terrain. It forms important part of the NH-6 corridor, facilitating connectivity between Meghalaya and Assam.

Why in news?

The new greenfield corridor passes through Ri Bhoi district, enhancing transport infrastructure and connectivity between Meghalaya and Assam as part of the Shillong-Silchar corridor project.

Senapati District

Senapati is a district in Manipur state, Northeast India, known for its mountainous terrain and tribal populations. It serves as the administrative region closest to Willong Khullen village, located about **37 kilometres away**. The district is inhabited primarily by the Poumai Naga tribe and other Naga communities. Senapati's economy is largely agrarian, with shifting cultivation as a common practice. The district is culturally rich, with traditional festivals, customs, and languages preserved by the tribes. Infrastructure development in Senapati is ongoing, with efforts to improve road connectivity and promote tourism to nearby heritage sites like Willong Khullen.

Why in news?

Senapati district is brought into light as the gateway to the Willong Khullen megalithic site, with growing interest in improving access and tourism infrastructure in the region.

Shipki La Pass

Shipki La is a mountain pass at an altitude of about 3,720 meters in the Himalayas, located on the border between Tibet (China) and Himachal Pradesh (India). It serves as one of the

few border crossings between India and China in this region. The Sutlej River enters India near Shipki La after originating in Tibet. The pass is historically for trade and cultural exchange but is now a sensitive military and geopolitical location due to border disputes. The region around Shipki La is sparsely populated and features rugged terrain, making infrastructure development challenging.

Why in news?

Shipki La is relevant as the entry point of the Sutlej River into India, central to discussions on water security and China's control over upstream water sources amid the Indus Water Treaty suspension.

Spiti Valley

Spiti Valley is a high-altitude cold desert located in the northern state of India of Himachal Pradesh, nestled in the Himalayas. It lies between the Kunzum and the Greater Himalayan mountain ranges at an average elevation of about 4,270 meters (14,000 feet). The valley is sparsely populated, primarily by Tibetan Buddhists, and is known for its rugged terrain, ancient monasteries like Key Monastery, and unique flora and fauna adapted to cold desert conditions. The region experiences harsh winters and short summers. Spiti's isolation has preserved its traditional culture and biodiversity, making it location for ecological and anthropological studies.

Why in news?

The snow leopard sighting occurred in Spiti Valley during a road trip between Kaza and Nako, denoting the valley's role as a rare habitat for this elusive predator.

Svalbard

Svalbard is an Arctic archipelago under Norwegian sovereignty, located midway between mainland Norway and the North Pole. It hosts the Svalbard Satellite Station, the world's northernmost satellite ground station. Svalbard is governed by the Svalbard Treaty of 1920, which allows citizens of signatory countries equal rights to engage in commercial activities there. The archipelago has no indigenous population but hosts researchers, miners, and tourists. It is known for its polar climate, unique Arctic wildlife, and as a strategic location for scientific research and satellite communication. Svalbard is also home to the Global Seed Vault, a secure storage facility for seeds from around the world.

Why in news?

India's cooperation with KSAT on Svalbard is part of its growing involvement in the Arctic, emphasized during the Arctic Circle India Forum 2025.

Tethys Sea

The Tethys Sea was a vast, shallow marine ocean that existed between the ancient continents of Gondwana and Laurasia during much of the Mesozoic and early Cenozoic eras. It played a key role in the distribution of marine sediments and fossils, including stromatolites. The sea gradually closed as the Indian plate drifted northward and collided with the Eurasian plate, forming the Himalayas. Sedimentary rocks from the Tethys Sea, such as limestone, shale, and sandstone, are found uplifted in the Himalayan region. The

Tethys Sea's closure influenced global climate and biodiversity patterns during its existence.

WHY IN NEWS?

The stromatolite-bearing Krol Group rocks in Chambaghat were formed in the ancient Tethys Sea, revealing tectonic and biological history before India's collision with Tibet.

Tillari Dam Agreement

The **Tillari Dam** is a multi-state water-sharing project involving Goa and Maharashtra. The dam is constructed upstream in Maharashtra, allowing both states to share water resources without Goa hosting large-scale infrastructure. This model mitigates environmental and social impacts in Goa, which lacks suitable geography for large dams. The agreement exemplifies cooperative inter-state water management. The Tillari dam supports irrigation, drinking water supply, and power generation, and serves as a precedent for resolving similar disputes like the Mahadayi river conflict.

WHY IN NEWS?

Researchers suggest a similar cooperative model to the Tillari dam could help resolve the Mahadayi river water dispute between Goa and Karnataka.

Vanessa indica (Indian Red Admiral)

The **Indian Red Admiral (Vanessa indica)** is a butterfly species native to South Asia, especially found in the Himalayan foothills. It closely resembles the European Red Admiral but can be distinguished by its broader, less intense crimson discal bands and the **absence of a diagnostic white spot on the upper forewing**. It primarily feeds on nettle species and thrives in temperate forested areas. The species is not migratory like its European counterpart and has a relatively stable distribution in India. It serves as an important indicator species for forest health in the Himalayan region.

WHY IN NEWS?

The European Red Admiral's sighting near Dharamshala was compared with its close relative, Vanessa indica, to confirm species identification and understand butterfly diversity in the Himalayas.

Wadadham Fossil Park

Wadadham Fossil Park, located about 27 km from Kaleshwaram in Maharashtra's Gadchiroli district, is paleontological site known for well-preserved fossils from the Gondwana period. It contains fossilized flora and fauna that provide vital information about prehistoric ecosystems dating back over 250 million years. The park is part of an emerging eco-tourism circuit linking cultural and natural heritage sites in Telangana and Maharashtra. It serves as an educational resource for geologists and tourists interested in Earth's ancient biological history and is less frequented compared to other fossil parks in India.

WHY IN NEWS?

Tourism enthusiasts proposed linking Wadadham Fossil Park with Kaleshwaram's spiritual sites to promote eco-tourism and cultural heritage, enhancing the region's appeal beyond religious pilgrimage.

West Kameng District

West Kameng is a district in Arunachal Pradesh, known for its rugged terrain in the Eastern Himalayas. It features diverse ecosystems ranging from subtropical forests to alpine meadows. The district is home to several indigenous tribes and culturally sites. Geologically, it lies in a seismically active zone with numerous hot springs, which are surface expressions of geothermal heat. West Kameng's complex tectonics result from the Indian plate colliding with the Eurasian plate, creating conditions favorable for geothermal energy exploration and seismic research.

Why in news?

West Kameng district hosts the newly drilled geothermal production well at Dirang, denoting its geological importance in renewable energy initiatives.

Willong Khullen

Willong Khullen is a remote village in Manipur, known for its extensive collection of ancient monoliths. These megaliths vary in size, with the tallest reaching **20 feet** and some weighing as much as a small truck. Unlike Stonehenge, the stones here lack geometric symmetry, suggesting different cultural or ritual purposes. The site is approximately **37 kilometres from Senapati** and **146 kilometres from Imphal**. The monoliths are believed to have been erected over decades by a community, possibly for spiritual, calendrical, or celebratory reasons. The site remains under-researched and less promoted internationally.

Why in news?

Willong Khullen is gaining attention as an ancient megalithic site in Manipur, often compared to Stonehenge, with local efforts to promote and preserve it as a cultural and archaeological treasure.

Zojila Pass

The **Zojila Pass** is a high mountain pass in the Himalayas, connecting Ladakh and the Kashmir Valley. It lies at an elevation of 3,528 meters (11,575 feet) and serves as a critical route for military and civilian traffic. The pass is known for its extreme weather conditions, often closed during winter due to heavy snowfall. Managed by the **Border Roads Organisation (BRO)**, it is vital for logistics and connectivity in the region. The pass has historically been a strategic military route during conflicts and plays important role in the supply chain to Ladakh.

Why in news?

Zojila Pass was reopened early in 2025 after a 32-day closure, enabling access to Ladakh's Siachen base camp and other tourist sites earlier than usual.

Zorinpui Checkpost

The Integrated Customs & Immigration Checkpost at Zorinpui, located on the India-Myanmar border, has been operational since 2017. It serves as a critical gateway for trade and transit between Mizoram and Myanmar as part of the Kaladan corridor. The checkpost facilitates customs clearance and immigration formalities for cargo and

passengers, enabling smoother cross-border movement. Its establishment was a milestone in operationalizing the KMMTTP and enhancing regional connectivity. The checkpost reflects India's focus on developing infrastructure to strengthen ties with Myanmar and bypass Bangladesh for access to Northeast India.

Why in news?

Zorinpui's checkpost is central to the Kaladan project's progress, linking newly sanctioned highways to improve connectivity amid shifting geopolitical dynamics in South Asia.

Environment & Ecology

Anamalai Tiger Reserve

The **Anamalai Tiger Reserve (ATR)** is located in the Western Ghats of Tamil Nadu, spanning over 958 square kilometers. It was declared a tiger reserve in 2008 and is part of the Nilgiri Biosphere Reserve. ATR is home to **approximately 70 tiger individuals** as per recent estimates, making it a critical habitat for tiger conservation. The reserve also houses diverse species including elephants, gaur, and Nilgiri langurs. It features a range of altitudes from 400 to 2,695 meters, creating varied ecosystems. The region is known for its unique montane forests and is a UNESCO World Heritage Site under the Western Ghats.

Why in news?

The pre-monsoon Phase IV population monitoring of tigers and other wildlife began in the Anamalai Tiger Reserve, covering multiple forest ranges in Pollachi and Tiruppur divisions.

Aravalli Green Wall Project

The **Aravalli Green Wall Project** is an afforestation and reforestation initiative aimed at restoring the ecological health of the Aravalli mountain range, India's oldest mountain range. It focuses on increasing green cover, biodiversity, soil fertility, water availability, and climate resilience. The project promotes restoration of water bodies and abandoned mines to enhance wildlife habitats and water resources. It integrates multiple stakeholders, including local communities, government agencies, and youth volunteers. The project also incorporates innovative technologies, seedling nurseries in panchayats, and the Green Credit Programme to support eco-restoration activities across Rajasthan, Haryana, Gujarat, and Delhi.

Why in news?

The project was brought into light during a national workshop in Udaipur, Rajasthan, where a detailed action plan for the Aravalli restoration was finalized with multi-stakeholder inputs and government support.

Badlands

Badlands are landscapes formed by prolonged and intense erosion, characterized by deeply dissected terrain with steep slopes, minimal vegetation, and irregular ridges. They result from extended gully erosion that carves the land into rugged, barren forms. Badlands reduce agricultural productivity by destroying fertile topsoil and cause water stress and drought conditions. These landscapes are common in arid and semi-arid

regions and often indicate severe land degradation. Badlands can force human migration due to declining land usability. Their formation is linked to natural erosion processes accelerated by human activities like deforestation and poor land management.

Why in news?

The 2025 report connects badlands formation to ongoing gully erosion in India, emphasizing the need for land restoration to meet the country's Land Degradation Neutrality commitments.

Bandhavgarh National Park

Bandhavgarh National Park is located in Madhya Pradesh, covering approximately **446 square kilometers**. It is famous for having one of the highest densities of Bengal tigers in the world. The park also contains **ancient rock formations** and the **Bandhavgarh Fort**, which dates back to the 10th century. It was declared a national park in 1968 and a tiger reserve in 1993 under Project Tiger. The park's diverse ecosystem includes sal forests, grasslands, and bamboo thickets, supporting over **250 species of birds**. Mining activities have been a contentious issue due to its ecological sensitivity.

Why in news?

The Supreme Court dismissed a plea alleging illegal mining activities in Bandhavgarh National Park, upholding the ban on mining within the park and its critical tiger reserve boundaries.

Bern Convention

The **Bern Convention** (Convention on the Conservation of European Wildlife and Natural Habitats) is a binding international legal instrument adopted in 1979 under the Council of Europe. It aims to conserve wild flora and fauna and their natural habitats, particularly endangered and vulnerable species. It covers most European countries plus some Mediterranean and African states. The convention established strict protection for listed species and regulates exploitation. It also promotes cooperation between countries to protect migratory species. The Bern Convention's Standing Committee oversees implementation and can issue recommendations or sanctions for non-compliance. It complements other treaties like the Bonn and Barcelona Conventions.

Why in news?

The Bern Convention is cited as a key framework under which Mediterranean countries pledged to halve illegal killing, taking, and trade of birds by 2030, but progress is lagging according to a recent study.

Black Carbon Aerosols

Black carbon aerosols are fine particulate matter formed by incomplete combustion of fossil fuels and biomass. Unlike reflective sulphate aerosols, black carbon strongly absorbs sunlight, heating the atmosphere but cooling the surface by reducing solar radiation reaching the ground. It is a major component of air pollution in India, especially from crop burning and vehicle emissions. Black carbon also influences cloud formation and atmospheric chemistry. During the 2020 COVID-19 lockdown in Delhi, a reduction in black

carbon led to unexpected cooling of the surface temperature at night, denoting its complex role in local climate dynamics.

Why in news?

The 2020 Delhi lockdown showed a 25% reduction in black carbon aerosols, causing a surprising drop in nighttime temperatures, illustrating black carbon's dual effect on atmospheric heating and surface cooling.

Black Softshell Turtle (Nilssonia nigricans)

The Black Softshell Turtle (Nilssonia nigricans) is a critically endangered freshwater turtle native to northeastern India and Bangladesh. It has a soft, leathery shell unlike hard-shelled turtles. Historically, it was found in temple ponds, where it was protected due to religious beliefs. Its population has drastically declined due to habitat loss and hunting. Conservation efforts focus on captive breeding, habitat restoration, and community protection programs. This species is unique for its smooth carapace and elongated snout. It plays an important role in aquatic ecosystems by scavenging dead matter, contributing to water cleanliness.

Why in news?

The Black Softshell Turtle is one of the critically endangered species sustained by the Nagshankar Temple conservation project brought into light during the 2025 World Turtle Day event.

Black Soldier Fly

The **Black Soldier Fly (Hermetia illucens)** is used in organic waste management for its larvae that consume large amounts of biodegradable waste rapidly. The larvae convert waste into protein-rich biomass, useful as animal feed, and reduce landfill dependence. This insect's lifecycle and waste conversion ability make it a sustainable tool in decentralized composting and waste treatment. Black Soldier Fly larvae can reduce waste volume by up to 50% and decrease pathogens in waste. They require minimal water and space, making them suitable for urban waste management. Their use in Kerala's waste campaigns reflects an innovative approach to organic waste recycling.

Why in news?

The Black Soldier Fly was brought into light during the Vruthi conclave as a technology-neutral, decentralized solution for organic waste management in Kerala's garbage-free campaign.

Blue Flood Line

The **blue flood line** refers to a demarcated boundary along rivers indicating the maximum water level reached during floods, beyond which construction is prohibited to prevent flood damage. It is important environmental and urban planning tool used in India and other countries to protect floodplains and maintain natural river ecosystems. Development within this line is illegal as it increases flood risk and environmental degradation. The blue flood line is established based on historical flood data and hydrological studies, and violations often lead to legal actions, including demolition of

unauthorized structures. It is distinct from the higher floodplain boundary known as the red flood line.

Why in news?

Illegal construction of 36 bungalows within the blue flood line of the Indrayani River in Chikhali was demolished by PCMC following Supreme Court orders.

Blyde Rondavel Flat Gecko

The **Blyde Rondavel flat gecko** (Afroedura rondavelica) was first identified in 1991 in the Blyde River Canyon, Mpumalanga, South Africa. It measures about 8-9 centimeters when fully grown and is named after the distinctive circular rocky outcrops called "rondavels." The species was not recorded again for over 30 years, leading to uncertainty about its existence and classification. It is listed as **data deficient** by the International Union for Conservation of Nature (IUCN). Rediscovery efforts involved difficult access, requiring helicopter drops onto cliffs over 100 meters high. Tissue samples will help confirm its distinct species status.

Why in news?

Researchers rediscovered the Blyde Rondavel flat gecko in April 2025 after it had not been seen since 1991, solving a long-standing conservation mystery.

Bright Products, Dark Intentions

"Bright products" refers to tobacco and nicotine products designed with attractive colors, flavors, and packaging to appeal especially to young people. These include flavored e-cigarettes, menthol cigarettes, and other novel nicotine delivery systems. The phrase "Dark intentions" points to the tobacco industry's deliberate strategy to increase addiction and sales by targeting youth and new users. This tactic involves **shameless manipulation** through advertising, product design, and misinformation. Regulatory bodies worldwide are increasingly focusing on banning flavored tobacco products to counter this trend and reduce youth initiation rates.

Why in news?

The 2025 World No Tobacco Day theme "Bright products. Dark intentions." exposes the tobacco industry's manipulative marketing of flavored and appealing products to hook new generations of users.

Carbon Border Adjustment Mechanism

The **Carbon Border Adjustment Mechanism (CBAM)** is a European Union policy set to be enforced in 2026 that imposes tariffs on imports based on their carbon emissions. It targets carbon-intensive goods such as steel, cement, and aluminium to prevent carbon leakage and promote global emission reductions. CBAM requires importers to purchase carbon certificates equivalent to the emissions embedded in their products. This mechanism affects trading partners like India, where industries must reduce carbon footprints to avoid tariffs. CBAM incentivizes cleaner production and aligns international trade with climate goals under the Paris Agreement framework.

Why in news?

CBAM is relevant due to its impending enforcement in 2026, which will impact Indian

exporters of carbon-intensive goods, prompting increased investments in carbon offset projects and sustainability measures.

Carbon Emission Trading System

A **carbon emission trading system** is a market-based approach to controlling pollution by providing economic incentives for achieving reductions in the emissions of pollutants. Companies are given emission allowances and can trade these credits to meet regulatory limits. The system encourages companies to innovate and reduce emissions below their allocated cap and sell excess allowances. Japan's system, starting April 2026, applies to firms emitting over 100,000 tonnes of carbon annually, covering about **60% of Japan's greenhouse gas emissions**. It aligns with similar systems like the European Union's Emissions Trading System (EU ETS).

Why in news?

Japan enacted a law requiring major companies to join a carbon emission trading system starting fiscal 2026 to meet its climate goals and reduce greenhouse gas emissions.

Central Leather Research Institute (CLRI)

The Central Leather Research Institute (CLRI), located in Chennai, Tamil Nadu, is a premier national institute dedicated to leather research and development. Established in 1948, CLRI focuses on leather processing technology, product development, and environmental management. It provides testing and certification services to ensure quality standards in leather exports. CLRI's research has contributed to innovations in tanning, finishing, and waste management in the leather industry. Its certification was previously mandatory for exporting certain leather products but has been recently removed to streamline export procedures.

Why in news?

The government eliminated the mandatory requirement for CLRI testing and certification for certain leather exports, simplifying export processes for Indian leather manufacturers.

Central Pollution Control Board (CPCB)

The **Central Pollution Control Board (CPCB)** is a statutory organization under India's Ministry of Environment, Forest and Climate Change, established in 1974. It coordinates pollution control activities across states and Union Territories and advises the central government on environmental policies. The CPCB sets standards for air and water quality, monitors pollution levels, and oversees the functioning of State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs). It also operates a network of laboratories for environmental testing. The CPCB plays a key role in implementing the Water (Prevention and Control of Pollution) Act, 1974, and the Air (Prevention and Control of Pollution) Act, 1981.

Why in news?

The CPCB submitted a report to the NGT revealing that 46.53% of sanctioned posts in pollution control bodies remain vacant, affecting pollution monitoring and enforcement.

Centre for Wildlife Studies (CWS)

The Centre for Wildlife Studies (CWS) is a **Bengaluru-based research organization** focused on wildlife ecology and conservation in India. Established in 1994, CWS conducts field-based research on species behavior, habitat use, and human-wildlife interactions. It employs advanced techniques such as **GPS tracking** and **movement modeling** to study spatial ecology. CWS has contributed to conservation policies and management strategies for endangered species in India. It collaborates with governmental and non-governmental bodies to promote evidence-based wildlife conservation.

Why in news?

CWS led a new study on lion-tailed macaques' arboreal and terrestrial space use in Silent Valley National Park, denoting ecological flexibility and habitat response to human pressures.

Certified Green Municipal Bond

India's first **Certified Green Municipal Bond** was issued by Ghaziabad, raising ₹150 crore to fund sustainable urban infrastructure projects. These bonds finance environmentally friendly projects and are certified by designated agencies to ensure funds are used for green initiatives. Green bonds help cities attract investors focused on sustainability. The certification process involves strict criteria on environmental impact and transparency. Globally, green municipal bonds have been used for renewable energy, water management, and pollution control projects. India's entry into this market marks step in aligning urban development with climate goals and financial innovation.

Why in news?

Ghaziabad issued India's first Certified Green Municipal Bond to finance a state-of-the-art Tertiary Sewage Treatment Plant under the Swachh Bharat Mission-Urban initiative.

Chandola Lake

Chandola Lake is a **notified water body** located in Ahmedabad, Gujarat. It has been subject to encroachments and illegal settlements, primarily by migrants. The lake area has no official development permissions for construction. It serves as a habitat for various illegal activities, including alleged shelter for Bangladeshi immigrants linked to criminal networks. The lake's ecological and security significance has prompted government action to remove unauthorized structures. It also plays a role in local water management and flood control. The lake's boundaries and status have been upheld by the Gujarat High Court in demolition-related rulings.

Why in news?

Chandola Lake was the site of a large-scale demolition drive in April 2025 targeting illegal settlements allegedly occupied by Bangladeshi immigrants, following security concerns and a Supreme Court judgment on unauthorized structures.

Changthang High Altitude Cold Desert Wildlife Sanctuary

The **Changthang High Altitude Cold Desert Wildlife Sanctuary** is located in eastern Ladakh, characterized by extreme cold desert conditions and high altitude. It covers a vast

area of rugged terrain with sparse vegetation and low human density. The sanctuary provides habitat for several rare species including the snow leopard, Tibetan wild ass, and kiang. Despite being a protected area, it recorded the lowest snow leopard densities in the region, possibly due to harsher environmental conditions and prey scarcity. The sanctuary plays a key role in preserving cold desert ecosystems and supporting traditional nomadic pastoralist lifestyles.

Why in news?

The sanctuary was noted in the 2025 snow leopard study for having the lowest recorded snow leopard densities within the Ladakh region.

Chemical Review Committee (CRC)

The **Chemical Review Committee (CRC)** is a subsidiary body of the Rotterdam Convention responsible for evaluating chemicals and pesticide formulations for inclusion in Annex III. It reviews scientific data on health and environmental hazards, assessing whether chemicals meet criteria for PIC listing. The CRC's recommendations guide Parties' decisions at COP meetings. Established to ensure evidence-based regulation, the CRC has faced challenges due to political and commercial interests delaying consensus on certain chemicals. It plays important role in balancing trade and safety by advising on potentially hazardous substances.

Why in news?

CRC recommendations influenced the 2025 decisions on listing carbosulfan and fenthion, after years of blockades and debates on hazardous pesticides.

Churdhar Wildlife Sanctuary

Churdhar Wildlife Sanctuary is located in the Sirmaur district of Himachal Pradesh. It spans over 56 square kilometers and is named after Churdhar Peak, the highest peak in the outer Himalayas at 3,647 meters. The sanctuary hosts diverse flora including oak, pine, and deodar forests, and fauna such as leopards, barking deer, and Himalayan monal. It is also a pilgrimage site due to the ancient Shirgul Maharaj temple near the peak. The sanctuary is part of the Western Himalayas biodiversity hotspot and serves as a critical habitat for endangered species.

Why in news?

The Himachal Pradesh forest department suspended a user charge for visitors to the sanctuary after protests from locals and religious groups, emphasizing the area's dual role as a wildlife habitat and pilgrimage destination.

CITES Database on Leopard Trade

The CITES (Convention on International Trade in Endangered Species) database tracks international trade in endangered species and their parts. Between 2020 and 2023, it recorded approximately 12,000 leopard specimens traded worldwide, including skins, bones, teeth, and live animals. Leopards are listed under CITES Appendix I or II depending on the population, granting them strict trade controls. Despite these protections, illegal trade persists due to mislabeling and weak enforcement. The database helps monitor

trends, identify trafficking hotspots, and support law enforcement actions. It is a critical tool for global wildlife conservation and policy-making.

Why in news?

The CITES database revealed extensive trade in leopard parts disguised as tiger products, denoting ongoing challenges in wildlife trafficking enforcement.

Climate Action Tracker

The **Climate Action Tracker** (CAT) is an independent scientific analysis tool that monitors government climate actions globally. It evaluates national commitments against the Paris Agreement goals, focusing on greenhouse gas emissions, energy policies, and climate finance. CAT provides ratings on countries' progress toward limiting warming to 1.5°C. Established in 2009, it is a collaboration between three research organizations – Climate Analytics, NewClimate Institute, and Potsdam Institute for Climate Impact Research. It offers detailed sectoral assessments, including power generation, transport, and industry. CAT's methodology combines emission data, policy analysis, and scenario modeling to project future climate outcomes under current policies.

Why in news?

The Climate Action Tracker was cited in a new analysis denoting India's renewable energy capacity growth but low actual electricity generation from renewables, emphasizing challenges in meeting climate goals.

Climate Finance Taxonomy

A **Climate Finance Taxonomy** is a standardized classification system used to categorize economic activities based on their environmental impact, particularly their alignment with climate goals. It helps investors identify sustainable projects by providing detailed criteria for green investments, reducing the risk of greenwashing. These taxonomies include sectors like power, mobility, agriculture, and hard-to-abate industries such as iron and steel. The taxonomy supports climate adaptation and resilience by guiding funds to projects that reduce carbon emissions or follow low-carbon pathways. India's draft framework adopts a hybrid approach tailored to its diverse industrial structure and aims for Net Zero by 2070.

Why in news?

India's Department of Economic Affairs released a draft framework for its Climate Finance Taxonomy, inviting public comments to guide sustainable investments and support the country's climate goals and green transition.

Cloud Seeding

Cloud seeding is a weather modification technique that disperses substances such as **silver iodide** or **dry ice** into clouds to encourage precipitation. It was first experimented with in the late 1940s and is used to enhance rainfall, reduce hail, or clear fog. The process works by providing cloud condensation or ice nuclei around which moisture can coalesce. Effectiveness varies depending on cloud type and atmospheric conditions. Environmental concerns include potential chemical impacts and altered weather patterns. Cloud seeding

is used worldwide, including in the US, China, and UAE, often to combat drought or improve water supply.

Why in news?

Delhi government approved five cloud-seeding trials to combat air pollution, with IIT Kanpur overseeing the project, marking a new approach to tackle environmental challenges using weather modification.

Coastal Aquaculture Authority

The Coastal Aquaculture Authority (CAA) was established in 2005 by the Government of India to regulate and promote sustainable aquaculture practices along the Indian coastline. It oversees licensing, monitoring, and development of coastal aquaculture, ensuring environmental protection and compliance with national policies. The CAA restricts use of certain pharmacologically active substances specifically in coastal aquaculture to prevent ecological damage and maintain seafood safety. It focuses on regulating inputs in shrimp and fish farming in brackishwater zones, balancing economic growth with environmental sustainability and public health concerns.

Why in news?

Recently, the Coastal Aquaculture Authority's earlier ban on certain antibiotics in coastal aquaculture was referenced amid updated nationwide prohibitions on medically important antimicrobials in aquaculture.

CPD KFW Project

The **CPD KFW Project** is a collaborative environmental and forestry initiative involving the **Central Pollution Department (CPD)** and **Kreditanstalt für Wiederaufbau (KfW)**, a German development bank. It focuses on sustainable forest management, biodiversity conservation, and pollution control in Himachal Pradesh. The project office in Dharamshala serves as a regional hub for coordinating wildlife conservation efforts and forestry development. It integrates modern ecological practices with local governance to balance environmental protection and economic development. The relocation of the Wildlife Wing to this office aims to streamline wildlife management and enhance interdepartmental coordination.

Why in news?

The Himachal Pradesh Cabinet approved shifting the Wildlife Wing of the Forest Department from Shimla to the CPD KFW Project Office building in Dharamshala for better management and coordination.

Cyclone-related Disaster Displacement

Cyclones are intense tropical storms causing widespread damage, flooding, and displacement. In 2024, cyclones accounted for **54% of all disaster-related internal displacements** worldwide. Disaster displacement refers to people forced to leave their homes due to natural hazards, often temporarily. The frequency and intensity of cyclones have increased due to climate change, leading to more severe humanitarian crises. In 2024, a record 45.8 million new disaster displacements were reported globally, with

cyclones as a major cause. Disaster displacement can result in long-term housing insecurity and challenges in disaster risk reduction planning.

Why in news?

Cyclones were a leading cause of the record-high 45.8 million new disaster displacements reported in 2024, as documented in the 2025 GRID report.

Desert Shrubs Grazing

Desert shrubs, including species like **Prosopis cineraria** and **Capparis decidua**, form the primary diet for camels in Rajasthan's arid regions. These plants are rich in medicinal compounds that enhance camel health and immunity. Grazing on common lands with diverse shrub species allows camels to maintain robustness and endurance. The traditional migratory grazing system ensures sustainable use of these desert plants, preventing overgrazing. Shrinking common lands due to agriculture and development threaten this balance, reducing available forage and impacting camel health and productivity.

Why in news?

Shrinking grazing lands in Rajasthan are limiting access to vital desert shrubs, endangering camel health and the traditional herding economy.

Dhussi Bandhs

Dhussi bandhs are traditional embankments or small dams constructed along riverbanks and floodplains to control and divert surplus river water. Common in Punjab and neighboring regions, these structures help prevent flooding of agricultural land and villages during heavy rains by channeling excess water into designated areas or canals. They are part of indigenous flood management systems predating modern canal infrastructure. Dhussi bandhs are often earthen embankments reinforced with local materials and require regular maintenance. Their effectiveness depends on timely construction and community participation. Despite their historical use, many dhussi bandhs have fallen into disrepair or been encroached upon, reducing their flood mitigation capacity.

Why in news?

The article mentions dhussi bandhs as a potential but underutilized method for better flood and surplus water management in Punjab's river systems.

Dioxin

Dioxin is a group of chemically-related compounds that are persistent environmental pollutants. It is a contaminant in the herbicide 2,4,5-T, part of Agent Orange. Dioxin is fat-soluble and bioaccumulates in the food chain, particularly in animal fats. It has a half-life in soil of over 100 years when buried or submerged and up to 20 years in the human body. Exposure causes immune system damage, reproductive and developmental problems, and cancer. Dioxin can enter humans through inhalation, skin absorption, and ingestion of contaminated food, especially fish and waterfowl from polluted areas.

Why in news?

Dioxin contamination remains a major cause of health problems in Vietnam decades after

Agent Orange spraying, with ongoing environmental cleanup challenges.

Direct Ocean Capture (DOC)

Direct Ocean Capture (DOC) involves capturing CO2 directly from seawater, which contains about **50 times more carbon than the atmosphere**. DOC methods increase water acidity to release dissolved carbon dioxide, which is then extracted and purified. The ocean acts as a major carbon sink, absorbing roughly **25% of global CO2 emissions**. DOC startups include Captura in Hawaii and Brineworks in Amsterdam, both developing cost-effective seawater carbon capture technologies. DOC requires renewable energy and permanent underground storage of compressed CO2. Potential environmental effects on marine ecosystems are a concern, necessitating careful site selection and mitigation strategies.

Why in news?

Interest in DOC has grown due to its potential for large-scale carbon removal, with SeaCURE and other pilot projects advancing the technology and assessing ecological impacts.

Direct-Seeded Rice (DSR) Farming

Direct-seeded rice (DSR) farming involves sowing rice seeds directly into the field, bypassing traditional nursery transplantation. This method reduces water usage by approximately **30%** and lowers labor and transplanting costs by around Rs **4,500 per acre**. DSR also decreases greenhouse gas emissions by **35%** compared to transplanted rice. It requires herbicide-tolerant rice varieties to manage weeds effectively. The Indian Agricultural Research Institute has developed herbicide-tolerant basmati varieties like **Pusa Basmati 1985** and **Pusa Basmati 1979** specifically suited for DSR farming.

Why in news?

DSR farming is proposed as a sustainable alternative to traditional paddy transplantation in Punjab to conserve water and reduce environmental impact amid seed-related controversies.

Distributed Renewable Energy (DRE)

Distributed Renewable Energy (DRE) refers to decentralized power generation systems located close to the point of consumption, often off-grid or mini-grid setups. DRE systems include small solar home lighting, microgrids, solar streetlights, and solar pumps, typically under 200 watts capacity. These systems improve energy access in remote or underserved areas where grid infrastructure is absent or unreliable. DRE reduces transmission losses and enhances energy security locally. In India, DRE has been promoted through government programs and policies, including subsidies and relaxed technical standards, to accelerate rural electrification and sustainable development. DRE adoption supports socio-economic growth by powering households, schools, and small businesses.

Why in news?

The MNRE introduced a specific DRE category in May 2025 by lowering efficiency standards for small solar modules, aiming to increase adoption of affordable off-grid solar

solutions in rural India.

Drugs for Neglected Diseases Initiative (DNDi)

The Drugs for Neglected Diseases initiative (DNDi) is a non-profit organization established in 2003 to develop new treatments for neglected tropical diseases affecting impoverished populations. DNDi operates through collaborative research and partnerships with public and private sectors. It has contributed to developing treatments for diseases such as kala-azar, sleeping sickness, and Chagas disease. DNDi emphasizes affordable, accessible, and effective therapies, including oral formulations to improve patient compliance. It also supports capacity building in endemic countries. DNDi is headquartered in Geneva, Switzerland, and works globally with a focus on Africa, Asia, and Latin America.

Why in news?

DNDi supported the signing of the MoU by East African countries to eradicate visceral leishmaniasis and brought into light the need for new oral treatments during the 78th World Health Assembly in 2025.

Dugong Tooth Regeneration

Dugongs possess a unique dental adaptation among marine mammals – they continuously regrow their teeth throughout life. Unlike most mammals with a single replacement set, dugongs replace worn teeth multiple times to counteract the abrasion caused by their diet of abrasive seagrass. Their horned teeth crush tough leaves and stems, and the cellulose digestion process accelerates tooth wear. This dental replacement occurs horizontally, with new teeth growing from the back and pushing older ones forward. This adaptation allows dugongs to maintain effective feeding despite their nutrient-poor diet, supporting their survival in seagrass meadows over lifespans up to 70 years.

Why in news?

The dugong's feeding habits and tooth regeneration are brought into light amid conservation efforts following the establishment of India's first dugong reserve in Palk Bay, focusing on protecting their seagrass habitats and ensuring food availability.

Dust Advection

Dust advection is the horizontal transport of dust particles by wind from one geographic area to another. It commonly occurs in arid and semi-arid regions where loose soil and sand are easily lifted by surface winds. Dust advection can affect air quality hundreds or thousands of kilometers away from the source, influencing weather, climate, and human health. It contributes to increased particulate matter in the atmosphere, reducing visibility and aggravating respiratory conditions. Dust advection events are often linked to dust storms and are monitored using meteorological data and satellite imagery to predict their impact.

Why in news?

Dust advection from West Rajasthan to Delhi NCR on the night of May 14, 2025, caused drop in air quality and visibility in Delhi and surrounding areas.

Female-Biased Birth Ratio

A female-biased birth ratio refers to a demographic condition where slightly more females than males are born, contrary to the natural global average of approximately 105 males per 100 females. This bias can arise from genetic, environmental, or social factors. A higher number of female births lowers extinction risks in populations by increasing the number of potential mothers, thereby enhancing lineage survival over generations. Female-biased ratios are rare but have been observed in some animal populations and specific human communities. The phenomenon influences population dynamics and long-term demographic stability.

Why in news?

Researchers found that a female-biased birth ratio reduces the risk of population extinction, supporting more surviving family lineages over time, as discussed in the recent fertility and extinction study.

Gauriganga River

The **Gauriganga River** is a tributary of the Kali River, flowing through the Pithoragarh district of Uttarakhand. It originates from the higher Himalayan ranges and supports local agriculture and biodiversity. The river basin is characterized by rugged terrain and dense forests. Gauriganga's water resources are for hydroelectric projects and irrigation. The river flows close to the India-Nepal border and is part of the larger Sharda River system. Its catchment area is ecologically sensitive but not designated as a national park or sanctuary, allowing for controlled developmental projects like hydroelectric power generation.

Why in news?

The Sirkari Bhyol Rupasiya Bagad Hydroelectric Project is planned on the Gauriganga River, contributing to Uttarakhand's clean energy goals.

Green Hydrogen Certification Scheme

India's **Green Hydrogen Certification Scheme** was recently launched to provide a standardized framework for certifying green hydrogen production. This scheme ensures that hydrogen is produced using renewable energy sources and meets environmental norms. It supports market transparency and consumer confidence, facilitating trade and investment in green hydrogen. The certification helps distinguish green hydrogen from other hydrogen types like grey or blue hydrogen, enhancing India's credibility in the global hydrogen economy.

Why in news?

The scheme was mentioned during the World Hydrogen Summit 2025 as part of India's efforts to create regulatory frameworks supporting the nascent green hydrogen industry.

Green India Mission

The **Green India Mission** is a key component of India's National Action Plan on Climate Change, launched in 2014. Its objective is to increase forest cover and improve ecosystem services in degraded forest areas. The mission focuses on afforestation, forest

conservation, and sustainable forest management, involving local communities in decision-making. Between 2017 and 2021, it contributed to a 0.56% increase in India's forest cover. The mission also targets biodiversity conservation, carbon sequestration, and livelihood improvement for forest-dependent populations. It integrates scientific research, capacity building, and policy interventions to restore ecological balance and enhance climate resilience.

Why in news?

The Green India Mission is mentioned for its role in reviving degraded forests and promoting sustainable forest management as part of India's climate change mitigation strategy.

Ground-Level Ozone Formation

Ground-level ozone is a secondary air pollutant formed when sunlight reacts with nitrogen oxides (NOx) and volatile organic compounds (VOCs). It is not emitted directly but results from chemical reactions in the atmosphere. Ozone at ground level is harmful to human health, aggravating respiratory diseases and reducing lung function. It also damages crops and ecosystems. In India, reducing particulate pollution may increase solar radiation, potentially accelerating ozone formation, especially in hotter months. This creates a complex trade-off between improving air quality and controlling climate warming and ozone pollution simultaneously.

Why in news?

Studies warn that lowering particulate matter pollution in India could increase ground-level ozone formation due to more sunlight reaching the surface, complicating efforts to improve air quality and mitigate climate change.

Gulf of Mannar Biosphere Reserve

The Gulf of Mannar Biosphere Reserve, located between Tamil Nadu and Sri Lanka, spans approximately 10,500 sq km, including marine and coastal ecosystems. It harbors rich biodiversity, including coral reefs, mangroves, seagrass beds, and endangered species such as dugongs and sea turtles. Established in 1989, it is India's first marine biosphere reserve and part of UNESCO's Man and Biosphere Programme. The reserve supports traditional fishing communities and conservation research. Its seagrass meadows cover areas, providing critical habitat for dugongs. Threats include industrial pollution, overfishing, and climate change impacts on marine habitats.

Why in news?

The Gulf of Mannar Biosphere Reserve is central to dugong conservation efforts in India, with initiatives to protect seagrass beds and regulate fishing to reduce accidental dugong deaths and habitat degradation.

HD-3385 Wheat

HD-3385 is a wheat variety released in 2023 with an average yield of 6 tonnes per hectare and potential yields over 7.3 tonnes. It is resistant to all major rust diseases – yellow (stripe), black (stem), and brown (leaf) rusts. HD-3385 can be sown early (October 15 to

November 2-3), normal (November 4-25), or late (after November 25), allowing flexibility in planting. Early sowing reduces exposure to temperature spikes during grain formation, improving yield stability. It is a product of ongoing breeding efforts to increase yield, disease resistance, and climate adaptability in wheat.

Why in news?

HD-3385 is brought into light in 2025 for its improved yield, rust resistance, and sowing flexibility, contributing to wheat area expansion and productivity gains in India.

High-Level Clouds

High-level clouds, typically cirrus clouds, form at altitudes above 6 kilometers and consist mainly of ice crystals. They are thin and wispy, often covering large areas and influencing Earth's radiation balance by trapping outgoing infrared radiation, thus contributing to warming. Unlike low-level clouds, which reflect sunlight and cool the surface, high-level clouds have a net warming effect. Studies show that the frequency and altitude of high-level clouds have increased in India's monsoon season by about 11% per decade, linked to atmospheric warming and expansion. These changes affect regional climate dynamics and monsoon intensity.

Why in news?

Research using radiosonde data revealed an increase in high-level clouds over India during monsoon seasons, indicating shifts in cloud types due to global warming.

Indian National Centre for Ocean Information Services (INCOIS)

The Indian National Centre for Ocean Information Services (**INCOIS**) is an autonomous institute under the Ministry of Earth Sciences. Established in 1999, it provides ocean information and advisory services to various stakeholders including fishermen, coastal communities, and disaster management authorities. INCOIS operates advanced ocean observation systems and develops models for ocean state forecasting, tsunami warnings, and climate research. It is notable for its real-time data acquisition and dissemination capabilities. INCOIS also collaborates internationally on projects related to oceanographic and geophysical monitoring, playing a key role in India's ocean science infrastructure and disaster preparedness mechanisms.

Why in news?

INCOIS has been selected by the international scientific community to deploy a 150 km submarine cable observatory west of Wandoor, Andaman, for long-term Indian Ocean observations including tsunami and seismic activity monitoring.

Indian Softshell Turtle

The Indian Softshell Turtle (Nilssonia gangetica) inhabits rivers and ponds in the Indian subcontinent. It has a flexible, leathery shell unlike hard-shelled turtles, aiding in swift underwater movement. This species plays an ecological role by consuming carrion, aquatic plants, fish, and turtle eggs, helping maintain water body cleanliness. It can grow up to 60 cm in shell length and has a long neck with a snorkel-like nose for breathing while submerged. It is listed as Vulnerable on the IUCN Red List due to habitat loss and

hunting pressures. Its scavenging behavior supports aquatic ecosystem health by recycling nutrients.

Why in news?

The Indian Softshell Turtle is brought into light at Keoladeo National Park for its ecological role in cleaning water bodies and thriving in the park's aquatic habitats.

International Big Cat Alliance (IBCA)

The **International Big Cat Alliance (IBCA)** is a global platform launched by India aimed at conserving the seven big cat species – tiger, lion, leopard, snow leopard, clouded leopard, cheetah, and jaguar. It facilitates joint research, knowledge exchange, and capacity-building among member countries. IBCA promotes collaborative efforts to combat threats like poaching, habitat loss, and human-wildlife conflict. It supports scientific studies and policy development for big cat conservation. The alliance also encourages sharing best practices and technological innovations to strengthen protection measures. IBCA is unique in its multi-national approach focused exclusively on big cat species conservation.

Why in news?

India invited all UN member states to join the IBCA during the 20th session of the United Nations Forum on Forests (UNFF20) in May 2025, denoting its role in global big cat conservation efforts.

Japanese Encephalitis

Japanese Encephalitis (JE) is a viral brain infection transmitted primarily by Culex mosquitoes, prevalent in rural and agricultural areas of Asia, including India. The virus cycles between mosquitoes and pigs or water birds, which act as reservoirs. Most infections are asymptomatic, but severe cases can cause inflammation of the brain, leading to neurological damage or death. Vaccination is the primary preventive measure. JE outbreaks are seasonal, often peaking during monsoon months. Climate change influences mosquito distribution and breeding, potentially expanding JE risk zones. Treatment is supportive, as no specific antiviral therapy exists.

Why in news?

India reported 1,548 Japanese encephalitis cases in 2024, underscoring the disease's ongoing threat and the importance of vaccination under the Universal Immunisation Programme.

Jute Carbon Sequestration

Jute plants have environmental impact through carbon sequestration. Each hectare of jute absorbs approximately **15 tons of carbon dioxide** and releases over **10 tons of oxygen** annually. This makes jute cultivation beneficial for soil fertility and combating climate change. Jute's deep root system improves soil structure and moisture retention. Its cultivation is often promoted as an eco-friendly alternative to synthetic fibers. Despite climate change challenges, jute farming contributes positively to the environment and supports sustainable agriculture by enhancing land productivity for subsequent crops.

Why in news?

JCI officials cited jute's environmental benefits while addressing climate change impacts

on jute production and dispelling rumors of production shortfalls.

Kalasa Tributary

The **Kalasa tributary** is branch of the Mahadayi river originating in Karnataka's Western Ghats. It is central to Karnataka's plan to divert water to drought-prone regions through the Kalasa-Banduri Nala project, aiming to supply water to districts in Karnataka. The diversion has been opposed by Goa due to concerns over ecological damage and reduced river flow impacting the Mhadei Wildlife Sanctuary. The tributary's flow is critical for maintaining the sanctity of the river ecosystem and local agriculture. Its diversion remains a flashpoint in the inter-state water dispute.

Why in news?

The Kalasa tributary's proposed diversion was brought into light in a recent scientific study assessing its localized ecological impact, sparking protests in Goa.

Kaleshwaram Lift Irrigation Project

The **Kaleshwaram Lift Irrigation Project (KLIP)** is the world's largest multi-stage lift irrigation scheme, located on the Godavari River in Telangana. It spans 500 km across 13 districts with a canal network of **1,800 km**. The project lifts water using pumps to a high delivery chamber for distribution, unlike gravity-fed irrigation. It plans to utilize **240 TMC (thousand million cubic feet) of water**, with 70% allocated for irrigation, 30 TMC for Hyderabad's municipal use, and 10 TMC for drinking water. The Medigadda Barrage supplies 195 TMC, Sripada Yellampalli 20 TMC, and 25 TMC comes from groundwater.

Why in news?

The project's three barrages, including Medigadda, were found to have irreparable structural damage by the National Dam Safety Authority after flooding and sinking incidents in 2023-2024.

Kancha Gachibowli

Kancha Gachibowli is a village located near the University of Hyderabad in Telangana. It encompasses a 400-acre forested area classified as moderately dense to heavily dense forest. The region is known for its ecological significance within the urbanizing landscape of Hyderabad. Kancha Gachibowli has witnessed increasing land-use conflicts due to its proximity to IT parks and educational institutions. The area is home to diverse flora and fauna, protected under Telangana's wildlife regulations. The forest acts as a green lung for Hyderabad, helping to maintain local biodiversity and microclimate. Its deforestation has triggered legal and environmental debates.

Why in news?

The Telangana government began large-scale deforestation in Kancha Gachibowli to develop IT parks, leading to a Supreme Court case over environmental violations and forest protection.

Kandla, Paradip, and Tuticorin Ports

The Government of India has designated **Kandla, Paradip, and Tuticorin ports** as green hydrogen hubs to facilitate production, storage, and export of green hydrogen and green

ammonia. These ports are strategically located to leverage renewable energy resources and existing infrastructure for hydrogen logistics. The initiative aims to develop integrated supply chains, reduce carbon footprints in shipping, and boost exports. The ports will also support pilot projects in green hydrogen mobility and shipping sectors, forming key nodes in India's hydrogen economy.

Why in news?

These three ports were identified by the Ministry of Ports, Shipping and Waterways as part of India's infrastructure push for green hydrogen during the 2025 World Hydrogen Summit.

Karenia mikimotoi

Karenia mikimotoi is a species of marine dinoflagellate algae known for forming harmful algal blooms (HABs). It produces **reactive oxygen species** that damage fish gill cells, leading to suffocation. This algae can photosynthesize and also feed on other organisms, making it mixotrophic. Blooms cause fish haemorrhaging and neurotoxic effects, impacting marine life behavior and survival. It thrives in warm, calm waters with low turbulence. Though non-toxic to humans, it can cause skin irritation and respiratory symptoms. Karenia mikimotoi blooms have been reported globally, including in Japan, Europe, and Australia, often leading to ecological and economic damage.

Why in news?

Karenia mikimotoi is causing a large toxic algal bloom along South Australia's coastline since March 2025, killing over 200 marine species and disrupting fisheries and aquaculture.

Kaso Mitras

Kaso Mitras are community turtle guardians in Assam, dedicated volunteers who protect freshwater turtles in temple ponds and local habitats. Their role includes monitoring turtle populations, preventing poaching, and educating villagers on turtle conservation. The term "Kaso" relates to turtles, and "Mitras" means friends, emphasizing their protective role. These guardians collaborate with NGOs and government bodies, strengthening grassroots conservation efforts. Kaso Mitras often come from local communities, ensuring traditional knowledge and cultural respect are maintained alongside scientific methods. Their work supports the survival of endangered turtle species in northeastern India's aquatic ecosystems.

Why in news?

Kaso Mitras were acknowledged at the Nagshankar Temple event for their contributions to freshwater turtle conservation in Assam.

Kasso E-Methanol Plant

The **Kasso e-methanol plant** in southern Denmark is the world's first commercial-scale facility producing e-methanol using renewable energy and captured CO2 from biogas and waste incineration. It cost approximately 150 million euros and produces **42,000 metric tons** (53 million liters) annually. The plant is jointly owned by Denmark's European Energy

and Japan's Mitsui 8031.T. Excess heat from production heats 3,300 local households. E-methanol produced here can replace fossil methanol in plastics and as a low-emission shipping fuel. It represents a pioneering step in scaling sustainable fuel production.

Why in news?

The plant began operations in May 2025, marking a milestone in commercial e-methanol production, with Maersk as a major customer for its shipping fleet.

Kasturirangan Committee

The Kasturirangan Committee was appointed by the Government of India in 2012 to review the earlier Gadgil Committee report on the Western Ghats. It recommended a **downsized eco-sensitive zone** to allow more developmental activities compared to the original proposal. The committee's report suggested categorizing areas into zones with varying levels of protection, balancing conservation with economic growth. However, its recommendations have faced criticism for diluting environmental safeguards. The report remains partially implemented, contributing to ongoing debates on land use, biodiversity conservation, and sustainable development in the Western Ghats.

Why in news?

Karnataka's government favored the Kasturirangan Committee's report over the Gadgil report, affecting land regulation policies in the Western Ghats.

Kawardha Range

The **Kawardha Range** is a forested area within the Bhoramdev Wildlife Sanctuary in Chhattisgarh. It is known for its dense vegetation and diverse wildlife, including bears. The range is a critical habitat for several species and supports local communities who depend on forest resources like tendu leaves. The terrain is rugged and often difficult to access, which complicates wildlife management and human-wildlife conflict mitigation efforts. Kawardha Range experiences seasonal influxes of leaf collectors, increasing human presence during certain months, which raises the risk of encounters with wild animals.

Why in news?

The Kawardha Range was the location of a recent bear attack injuring four people collecting tendu leaves, denoting ongoing man-animal conflicts in the area.

Keoladeo National Park

Keoladeo National Park, located in Rajasthan, is a UNESCO World Heritage Site known primarily for its avian biodiversity. It covers approximately 29 square kilometers and was originally a man-made wetland created in the 18th century. The park supports over 370 bird species, including migratory birds from Siberia and Central Asia. Apart from birds, it hosts diverse fauna such as turtles, mammals, and fish. The park's ecosystem includes wetlands, marshes, and grasslands, sustained by seasonal monsoon rains and irrigation canals. It faces challenges like water scarcity and habitat degradation but remains critical for regional biodiversity conservation.

Why in news?

Keoladeo National Park is gaining attention as a major sanctuary for turtles, sheltering eight of Rajasthan's ten turtle species, alongside its famed avian population.

Kiang (Wild Ass)

The **kiang** (Equus kiang) is the largest wild ass species native to the Tibetan Plateau and surrounding high-altitude regions, including Spiti Valley. It inhabits elevations from 3,000 to 5,700 meters and is well adapted to cold, arid environments. Kiangs live in herds and primarily graze on grasses and shrubs. Unlike other wild asses, kiangs have a robust body, thick fur, and a short mane. They are not currently endangered but face habitat threats from human encroachment. The kiang plays a vital ecological role as a prey species for predators like snow leopards and Tibetan wolves.

Why in news?

Kiangs are among the rare mammals found in the newly notified Tsarap Chu Conservation Reserve, denoting the region's ecological significance.

King Chilli (Naga Morich)

King Chilli, locally known as Naga Morich, is one of the hottest chili varieties globally, native to Nagaland and Northeast India. It ranks among the top in Scoville Heat Units, often exceeding 1 million SHU. The chili is prized for its intense heat and unique flavor, used in local cuisine and traditional medicine. Cultivation is challenging due to its sensitivity to environmental conditions and pollination requirements. Improved pollination by stingless bees has increased fruit set and seed weight, enhancing both yield and quality. King Chilli is also culturally , featuring in regional festivals and culinary traditions.

Why in news?

The stingless bees' pollination increased King Chilli's fruit set from 21% to nearly 30%, boosting crop productivity and seed viability in Nagaland's agricultural research.

Koraput Finger Millet Varieties

Koraput district in Odisha is home to at least 14 traditional finger millet varieties, including jam mandia, jana mandia, Dussehra mandia, and kalia mandia. These varieties are known for their adaptability to poor soils and erratic weather, making them drought-resistant and climate-resilient. Finger millet from Koraput contains 7.3g protein, 3.6g fiber, and 2.7g minerals per 100g, with high iron (3.9mg) and calcium (344mg) content. The district cultivated finger millet on around 74,000 hectares in 2021–22, accounting for nearly 25% of its total cultivated area and 79% of millet cultivation.

Why in news?

Koraput's traditional millet varieties are threatened by government programs promoting high-yielding but less adapted seed varieties, raising concerns about loss of native biodiversity and food security.

Koyalpura Forest Area

Koyalpura is a forest region within the Motichur range of Rajaji National Park. It is known for its large reservoirs which provide water to wildlife, especially elephants. This area supports population of wild elephants concentrated in the western end of the park. The reservoirs in Koyalpura help maintain water availability even during dry seasons, reducing

the need for elephants to migrate outside forest boundaries. The forest is part of a larger ecosystem that includes riverine habitats and dense forest cover, facilitating diverse flora and fauna. It plays a key role in wildlife conservation strategies within Rajaji.

Why in news?

A video from Koyalpura forest showed over two dozen wild elephants bathing in a large reservoir, denoting improved water availability due to conservation efforts.

Kraal Enclosure

A kraal is a temporary enclosure used to capture wild elephants safely. These structures are designed to confine elephants without causing harm, facilitating their capture for relocation or rehabilitation. After capture, kumki elephants assist in the training and taming process by walking alongside the captured elephants and correcting aggressive behavior. Kraals are typically constructed using strong wooden or metal barriers and are strategically placed in forested areas where elephant movements are frequent. The use of kraals is an important method in wildlife conservation to manage elephant populations and reduce human-elephant conflicts.

Why in news?

Kumki elephants help tame wild elephants captured in kraals, a technique used in Andhra Pradesh and Karnataka to manage elephant populations and reduce conflicts.

Kunming-Montreal Global Biodiversity Framework (KMGBF)

The Kunming-Montreal Global Biodiversity Framework is an international agreement adopted in 2022 to guide global biodiversity conservation efforts through 2030. It sets ambitious targets, including raising $200 billion annually for biodiversity finance by 2030 under Target 19. KMGBF aims to integrate conservation with sustainable development, emphasizing the role of Indigenous Peoples and local communities (IPLC) in biodiversity management. It was finalized during the 15th Conference of the Parties (COP15) to the Convention on Biological Diversity, held in Kunming, China, and Montreal, Canada. The framework includes specific goals on habitat protection, species recovery, and equitable benefit-sharing.

Why in news?

KMGBF's Target 19 on biodiversity finance is under scrutiny as a study reveals that funds are not reaching Indigenous Peoples and local communities effectively, despite the framework's goals.

Kuttanad Region

Kuttanad, known as the Rice Bowl of Kerala, is a unique low-lying agricultural region situated below sea level. It features an extensive network of backwaters and paddy fields interspersed with canals and rivers. The area relies heavily on the Vembanad Lake ecosystem for irrigation and flood control. Kuttanad faces challenges from flooding, land encroachment, and pollution, which threaten its traditional farming systems. Faecal sludge and sewage treatment plants are planned to combat pollution. The region's agriculture is increasingly shifting towards organic practices to reduce chemical runoff

into the lake.

Why in news?

Kuttanad's restoration is linked to the Vembanad Lake Rejuvenation Project, with specific plans for pollution control and sustainable farming to preserve its unique agro-ecology.

Land Surface Temperature (LST)

Land Surface Temperature (LST) measures the temperature of the Earth's surface, distinct from air temperature. It varies with land cover, moisture, and solar radiation. LST influences local climate, agriculture, and water cycles. Satellite remote sensing is commonly used to monitor LST globally. In semi-arid regions, LST can exceed 50°C during droughts, impacting soil moisture and crop viability. LST changes serve as early indicators of ecosystem stress and climate change effects. It is crucial for managing water resources and planning climate-resilient agriculture. LST data helps policymakers design interventions like afforestation and water harvesting to mitigate heat effects.

Why in news?

LST was studied in Jalna district, Maharashtra, revealing extreme temperatures during drought years and its importance for climate adaptation and agricultural planning up to 2047.

Language Extinction

Language extinction occurs when a language loses all its native speakers and ceases to be used. Over **40% of the world's 6,700+ spoken languages** are predicted to disappear within the next century. Language loss leads to the disappearance of unique cultural elements such as oral traditions, music, art, and identity. Factors accelerating extinction include globalization, urbanization, and dominance of major languages. Some languages have only a handful of elderly speakers left. Efforts to revive endangered languages include documentation, education programs, and community initiatives, but success rates vary widely depending on resources and political support.

Why in news?

The study marks that alongside population risks, language extinction threatens cultural diversity, with nearly half of all languages potentially disappearing within 100 years.

Lion-tailed Macaque

The **Lion-tailed macaque** (Macaca silenus) is an **endemic primate species** found only in the **Western Ghats of India**. It is **endangered** with fewer than 4,000 individuals remaining. This species is known for its distinctive silver-white mane surrounding a black face, resembling a lion's tail. It is primarily arboreal, inhabiting dense tropical rainforests. The macaque has a **highly selective diet** focusing on fruits, leaves, and insects. Its social structure is typically organized in troops with complex hierarchical relationships. Silent Valley National Park is a critical conservation stronghold for this species.

Why in news?

The species' spatial ecology and movement strategies were studied in Silent Valley National Park to understand its response to varying human pressures within protected forest zones.

Lonar Lake

Lonar Lake in Maharashtra is a rare **soda lake formed by a meteorite impact**. It exhibits extreme conditions – high salinity, elevated pH, and nutrient scarcity. These conditions support a unique microbial community adapted to survive harsh environments. The microbe Methylophaga lonarensis isolated here produces ectoine, a molecule used in skincare for its protective properties. Lonar Lake's ecosystem is valuable for studying extremophiles and biotechnological applications, providing vital information about microbial adaptation and potential industrial uses.

Why in news?

Scientists studying bacterial genomes from Lonar Lake revealed specialized microbes with biotechnological applications, brought into light in the 'One Day One Genome' initiative.

Long Period Average (LPA)

The **Long Period Average (LPA)** is a 30-year average temperature baseline used by meteorological agencies to assess climate trends. It is periodically updated to reflect recent climatic conditions. India Meteorological Department (IMD) has revised its LPA four times since 2004 – from 1961–1990, to 1971–2000, then 1981–2010, and most recently 1991–2020. Each update raises the baseline temperature, which reduces the measured anomaly or deviation from the average. This adjustment can mask the true extent of warming by comparing current temperatures to a warmer baseline rather than a historical one. LPA is central to climate data interpretation.

Why in news?

IMD's 2024 climate summary used the 1991–2020 LPA, lowering reported warming anomalies and sparking debate about the actual extent of India's temperature rise in 2024.

Madden-Julian Oscillation (MJO)

The **Madden-Julian Oscillation (MJO)** is an eastward-moving atmospheric phenomenon characterized by a large-scale coupling between atmospheric circulation and tropical convection. It completes a global circuit around the equator every 30 to 60 days, sometimes up to 90 days. The MJO has distinct active and suppressed phases, influencing rainfall patterns by enhancing precipitation during its active phase and reducing it during the suppressed phase. It mainly affects regions between **30°N and 30°S**. The MJO was first identified in 1971 by Roland Madden and Paul Julian at the National Centre for Atmospheric Research, Boulder, Colorado. It moves at 4-8 meters per second.

Why in news?

The MJO was a key driver behind the early onset of the southwest monsoon in Kerala and Mumbai in May 2025, contributing to unusually early rainfall patterns in India.

Mahout-Elephant Bond

Mahouts are skilled handlers who form lifelong partnerships with kumki elephants. They train elephants using **verbal, tactile, and foot-based commands**, ensuring the animals remain calm and obedient during stressful operations. Mahouts often stay with the same

elephant throughout its life, allowing them to interpret subtle behavioral cues and command without force. This deep trust and discipline enable kumkis to perform delicate tasks such as silently guiding wild elephants away from populated areas or restraining aggressive individuals during captures. The mahout-elephant relationship is critical for effective wildlife management and conservation efforts involving kumki elephants.

Why in news?

The success of kumki elephants in managing human-elephant conflicts depends heavily on the mahouts' expertise and their lifelong bond with the animals.

Maize Ethanol Production Process

Maize grains, containing **68-72% starch**, are processed to produce ethanol through milling into flour, starch breakdown into fermentable sugars, fermentation to 15% alcohol, distillation to 94% spirit, and dehydration to 99.9% pure ethanol fuel. One tonne of maize yields about **380 litres of ethanol**. India's ethanol production from maize rose sharply from 31.51 crore litres in 2022-23 to a contracted 484.35 crore litres for 2024-25, requiring over **12.7 million tonnes of maize**. This surge has disrupted maize supply-demand balance and increased grain prices.

Why in news?

The rapid increase in maize ethanol production in India has caused maize shortages, price hikes, and shifts in agricultural commodity markets, affecting livestock feed and other industries.

Maldhari Communities

The Maldharis are a pastoralist community primarily found in the Gir region of Gujarat. Traditionally cattle herders, they coexist with Asiatic lions, tolerating occasional livestock predation. This tolerance is unique and contributes to lion conservation. The government compensates Maldharis for cattle losses caused by lions, encouraging coexistence. Maldharis follow seasonal migration patterns within the forest and maintain traditional knowledge of wildlife behavior. Their lifestyle and customs have been integral to preserving the Gir ecosystem. Maldharis also participate in eco-tourism initiatives, linking their livelihood with conservation efforts.

Why in news?

Maldharis are noted for their role in lion conservation through tolerance of lion predation, which supports the growing lion population in Gujarat's expanding habitats.

Manas National Park

Manas National Park is a UNESCO World Heritage Site located in Assam, spanning approximately **950 square kilometers**. It is a biodiversity hotspot known for its rare and endangered species including the Indian rhinoceros, pygmy hog, and wild water buffalo. The park is part of the Eastern Himalayan biodiversity region and serves as a critical corridor between Bhutan and India for wildlife migration. It faces threats from poaching and habitat loss. The park was declared a tiger reserve in 1990 and a biosphere reserve in 1989. It is managed jointly by the Assam Forest Department and local communities.

Why in news?

Manas National Park is in the news due to the arrest of three persons for allegedly poaching three wild elephants near the India-Bhutan border within the park.

Mandal Dam

Mandal Dam is a large dam project located within the Palamu Tiger Reserve (PTR) in Jharkhand. The project was initially halted in the 1990s due to local protests and environmental concerns. It spans the districts of Garhwa, Latehar, and Palamu. The dam's reservoir will submerge seven villages, requiring the relocation of approximately 780 households. The dam aims to create water body that will reduce human-animal conflicts and generate grassland for wildlife such as tigers and elephants. Despite forest and wildlife clearance obtained in 2018, the dam has remained non-functional pending village relocation agreements.

Why in news?

The Jharkhand government has approved relocation and compensation packages for seven villages submerged by the Mandal Dam reservoir, clearing the way for the dam's operationalization after decades of delay.

Marine Environment Protection Committee (MEPC)

The **Marine Environment Protection Committee (MEPC)** is a key body of the International Maritime Organization (IMO) responsible for addressing environmental issues related to shipping. It oversees the implementation of the MARPOL convention, which governs pollution prevention from ships. MEPC sessions discuss regulations on air pollution, ballast water management, and greenhouse gas emissions. The committee develops Market-Based Measures (MBMs) such as emission levies and fuel standards to reduce shipping's environmental impact. MEPC decisions require ratification by IMO member states and can amend international maritime conventions. Its 83rd session (MEPC-83) was very important in adopting the first mandatory emissions levy framework for shipping.

Why in news?

MEPC-83 approved the IMO's Net Zero Framework, adopting Singapore's hybrid emissions levy model to decarbonize global shipping for the first time through a binding Market-Based Measure.

Marine Life Resilience at Hydrothermal Vents

Marine ecosystems around hydrothermal vents, such as those on Axial Seamount, are highly resilient. After eruptions, which can cover vent areas in lava and wipe out existing life, animals and bacteria recolonize the area within months. These ecosystems rely on chemosynthesis, where bacteria convert chemicals from vent fluids into energy, supporting diverse species including tube worms and crustaceans. Recovery rates vary but can be rapid, illustrating adaptation to extreme and dynamic environments. This resilience marks the unique biological processes sustaining life independent of sunlight.

Why in news?

Scientists expect marine life to return quickly after the upcoming Axial Seamount

eruption, based on observations from previous eruptions showing rapid recolonization of vent ecosystems.

MARPOL Convention

The International Convention for the Prevention of Pollution from Ships (**MARPOL**) was adopted in 1973 and modified by a 1978 protocol. It is the main international agreement aimed at preventing marine pollution from ships due to operational or accidental causes. MARPOL includes six annexes covering oil, noxious liquid substances, harmful packaged goods, sewage, garbage, and air pollution from ships. It mandates pollution prevention measures, oil discharge standards, and shipboard pollution control equipment. MARPOL is enforced globally by flag states and port states, with many countries integrating it into domestic law. It has reduced oil pollution from shipping worldwide.

Why in news?

MARPOL regulations apply to the capsized MSC ELSA 3 vessel, which was carrying hazardous cargo and fuel oil, raising concerns about potential oil spills.

Mayflower Apartments

Mayflower Apartments is a residential complex located at Mallapur Crossroad in Nacharam, Hyderabad. It was one of the four designated sites for the recent Operation Abhyaas civil defence drill. The building was used to simulate emergency evacuations and rescue operations, involving residents as participants. The site was chosen for its typical urban residential layout, providing a realistic setting for testing disaster response strategies, including evacuation, medical triage, and communication between teams. It represents a key example of community involvement in city-wide emergency preparedness efforts.

Why in news?

Mayflower Apartments served as a critical site for rescue and evacuation simulations during Hyderabad's Operation Abhyaas drill.

Medog Dam

The **Medog Dam** is a massive hydroelectric project under construction by China on the Yarlung Tsangpo River, the upper stream of the Brahmaputra. With a planned capacity of 60,000 MW, it is the world's largest hydropower dam by output. The dam is located in Medog County, Tibet Autonomous Region. It has raised geopolitical and environmental concerns downstream in India and Bangladesh due to potential water flow regulation and flood risks. The dam's construction has intensified regional water security debates, prompting downstream states to consider countermeasures like the Siang Dam.

Why in news?

The Medog Dam's upstream presence is cited by Arunachal Pradesh officials as a strategic reason for building the Siang Dam to safeguard water security and counter potential water-based threats.

Melanin and Pollution

Melanin pigments produce black and grey colours in bird feathers and have chemical

properties that allow them to bind to environmental toxins. This binding may provide a protective advantage in polluted urban environments by reducing the toxicity impact on birds. Melanin-rich plumage is linked to increased survival in cities, possibly explaining why darker-coloured birds thrive better in urban areas. This phenomenon marks a direct biochemical interaction between feather pigmentation and pollution, influencing evolutionary adaptation to human-altered habitats.

Why in news?

The 2025 study found that birds with melanin-based dark plumage are more successful in cities, suggesting pollution tolerance influences urban bird colouration patterns.

Membrane Phospholipid Replacement

Membrane phospholipid replacement is a microbial adaptation where phosphorus-containing phospholipids in cell membranes are substituted with non-phosphorus lipids, such as sulfolipids or betaine lipids. This process helps microbes conserve phosphorus under nutrient-limited conditions. It alters membrane composition without compromising function, enabling microbial survival in phosphorus-poor environments. This strategy is widespread among soil bacteria and fungi in ancient, weathered soils. It also affects microbial community structure and nutrient cycling by influencing phosphorus availability to plants. The mechanism involves complex enzymatic pathways regulated by phosphorus sensing and stress response systems.

Why in news?

Researchers discovered that soil microbes in Cooloola National Park use membrane phospholipid replacement to cope with phosphorus scarcity, denoting a key survival strategy in nutrient-depleted soils.

MetSwift

MetSwift is a private meteorological company specializing in weather communication on social media platforms, including X (formerly Twitter). It provides real-time weather updates and expert analysis, aiming to improve public understanding of weather phenomena. Its head meteorologist, James Peacock, has contributed insights on the impact of sea surface temperature anomalies on regional weather. MetSwift is notable for bridging the gap between scientific meteorology and public communication, using digital media to disseminate weather information rapidly and accessibly, especially during extreme weather events.

Why in news?

MetSwift's head meteorologist James Peacock commented on the dramatic North Atlantic sea surface temperature anomaly affecting the UK's spring weather, emphasizing the role of ocean temperatures in regional heat events.

Mission LiFE

Mission LiFE (Lifestyle for Environment) is an initiative launched by the Government of India aiming to promote sustainable living and mindful resource use among citizens. It focuses on seven themes – Save Energy, Save Water, Say No to Single Use Plastic,

Sustainable Food Systems, Reduce Waste, Reduce E-waste, and Adopt Healthy Lifestyles. The mission encourages behavioral change and environmental responsibility through citizen participation. It integrates individual actions with broader climate goals, aiming to reduce ecological footprints and promote eco-friendly habits at scale. Mission LiFE was officially launched in 2023 as part of India's commitment to global environmental sustainability.

WHY IN NEWS?

The Union Ministry of Environment, Forest and Climate Change announced winners under the 'Ideas4LiFE' initiative, part of Mission LiFE, selecting innovative citizen-driven ideas for sustainable living across the mission's seven themes.

Mitiyala Sanctuary

Mitiyala Wildlife Sanctuary, located in Gujarat's Bhavnagar district, spans approximately 18.22 square kilometers. It serves as a critical habitat for Asiatic lions and supports a diverse range of flora and fauna. The sanctuary connects the Gir National Park ecosystem to other forested areas, facilitating lion movement. Mitiyala is known for its dry deciduous forests and scrublands, providing prey species like chital and sambar deer. It also plays a role in reducing human-lion conflict by offering a buffer zone. Despite its small size, Mitiyala has recorded steady lion populations and is a key area in Gujarat's lion conservation strategy.

WHY IN NEWS?

Mitiyala Sanctuary is mentioned as one of the extended habitats where Asiatic lions have been spotted beyond Gir National Park, indicating their expanding range in Gujarat.

Modifiable Behavioral Risk Factors

Modifiable behavioral risk factors are lifestyle habits that can be changed to reduce disease risk. For hypertension, these include **tobacco and alcohol consumption**, excessive salt intake, **sedentary lifestyle**, poor dietary choices, and **mental stress**. These factors contribute to the development and progression of high blood pressure. Public health strategies target these behaviors through education, policy changes, and community programs. Reducing salt intake by less than 5 grams per day can lower blood pressure. Physical activity of at least 150 minutes per week is recommended to manage hypertension risk.

WHY IN NEWS?

The rising prevalence of hypertension is closely linked to these modifiable behaviors, forming the basis of World Hypertension Day's prevention and management campaigns.

Monsoon Bistability

Monsoon bistability refers to the monsoon system's ability to exist in two stable states – wet and dry. This is governed by a critical threshold of atmospheric water vapor, around 35 kilograms per square meter. When vapor exceeds this threshold, the monsoon switches on and sustains rainfall; below it, the monsoon switches off. This bistable behavior creates abrupt transitions rather than gradual changes in monsoon activity. It is

driven by self-reinforcing moisture patterns, independent of oceanic influences. Bistability explains the resilience and sudden shifts in monsoon rainfall, impacting billions who depend on these seasonal rains.

Why in news?

The 2025 PIK study revealed monsoon bistability as a mechanism controlling abrupt shifts in rainfall, denoting the role of atmospheric moisture thresholds in monsoon dynamics.

Monsoon Fishing Ban (India)

India imposes a **monsoon fishing ban** annually to protect fish breeding during the monsoon season. The ban lasts 61 days – April 15 to June 14 on the east coast and June 1 to July 31 on the west coast. It applies to the Exclusive Economic Zone (EEZ) of India and prohibits fishing activities to allow fish populations to reproduce and sustain themselves. This ban is equivalent to a zero TAC during the period. The ban helps maintain marine biodiversity and supports the livelihoods of fishing communities by ensuring long-term fish stock availability. It is enforced by the Government of India and fisheries departments.

Why in news?

The monsoon fishing ban is referenced as an example of a zero TAC used to protect fish stocks, contrasting with international disputes over TAC enforcement in other regions.

Morphological Ridge

The **Morphological Ridge** is an extended geological area adjoining the Delhi Ridge, characterized by rocky Aravalli outcrops, shallow soil, and tropical dry thorn forest vegetation. It is not officially notified as forest land but is protected under various High Court and Supreme Court rulings. The area features drought-resistant plants like bistendu and broad-leaved dhak, with vegetation density varying from north to south due to soil differences. Based on the 2006 seismic zonation map by the Geological Survey of India, the Morphological Ridge acts as a buffer zone to protect the core Ridge forest and is deemed ecologically critical.

Why in news?

The Supreme Court issued notices related to unauthorized construction in the Morphological Ridge area, denoting violations of ecological protection directives in Vasant Kunj, Delhi.

MSME Climate Adaptation

Micro, Small, and Medium Enterprises (MSMEs) face unique challenges in adopting climate-friendly practices due to limited technological and financial resources. Climate adaptation frameworks for MSMEs often include **simplified criteria and phased implementation** to ease compliance burdens. MSMEs contribute to employment and GDP but have limited capacity for rapid technological upgrades. Supporting MSMEs in climate finance involves providing access to affordable capital, technical assistance, and incentives to adopt sustainable technologies. India's draft taxonomy proposes a staggered approach for MSMEs to encourage their participation in climate initiatives without overwhelming them with regulatory demands.

Why in news?

The draft climate finance taxonomy acknowledges MSMEs' constraints and proposes simplified, phased criteria to facilitate their involvement in India's climate adaptation and mitigation efforts.

Mukundara Hills Tiger Reserve

Mukundara Hills Tiger Reserve is located in Rajasthan, covering over 1,500 square kilometers across the districts of Kota, Bundi, Baran, and Jhalawar. It was declared a tiger reserve in 2013 and consists of three wildlife sanctuaries – Darrah, Jawahar Sagar, and Chambal. The reserve is characterized by dry deciduous forests and hilly terrain, providing habitat for tigers, leopards, and several herbivore species. It plays important role in regional biodiversity conservation and acts as a buffer zone connecting multiple protected areas. The reserve is now being integrated into the cheetah reintroduction project to expand the species' range.

Why in news?

Mukundara Hills Tiger Reserve is part of the newly planned wildlife corridor facilitating cheetah movement between Madhya Pradesh and Rajasthan.

Multi-layered Plastics (MLP)

Multi-layered plastics (MLP) are composite materials made by laminating multiple layers of different polymers to achieve specific barrier and mechanical properties. They are widely used in food packaging due to their durability and ability to preserve contents but are difficult to recycle because the layers cannot be easily separated. MLPs constitute about 68.5% of plastic waste in the Himalayan region according to the THC 2024 Report. Their complex structure leads to limited recycling infrastructure and low market value for waste collectors. Banning MLPs is a key recommendation to reduce non-recyclable plastic pollution in fragile ecosystems.

Why in news?

MLPs were identified as the dominant and problematic plastic waste type in the Himalayan Cleanup 2024 report, prompting calls for regulatory bans.

Nagar Van Yojana

Nagar Van Yojana is an urban forest development scheme launched by India's Ministry of Environment, Forest and Climate Change in 2020. The program aims to create 1,000 urban forests by 2027 to increase green cover in cities. As of 2023, it has contributed to an increase of 1,445.81 km^2 of tree and forest cover nationwide. The scheme supports biodiversity, improves air quality, and mitigates urban heat islands. It integrates community participation, afforestation, and ecological restoration in urban areas, aligning with national policies for sustainable urban development and environmental protection.

Why in news?

Nagar Van Yojana's progress was brought into light in 2025 following Prime Minister Narendra Modi's remarks on wildlife and urban forest conservation during World Wildlife Day.

Nagarhole Tiger Reserve

Nagarhole Tiger Reserve, also known as Rajiv Gandhi National Park, is located in Karnataka, South India. It covers approximately 643 square kilometers and is part of the Nilgiri Biosphere Reserve. The reserve is renowned for its high density of Bengal tigers and diverse fauna including elephants, leopards, and Indian bison. It features moist deciduous forests, bamboo groves, and grasslands. Established as a wildlife sanctuary in 1955 and later upgraded to a tiger reserve, Nagarhole is a key site for tiger conservation in India. The reserve also has a history of Indigenous habitation, notably by the Jenu Kuruba tribe, whose eviction has been controversial.

Why in news?

The Jenu Kuruba's return to their ancestral village within Nagarhole Tiger Reserve marks ongoing conflicts between conservation efforts and Indigenous rights in this protected area.

National Mission on Natural Farming (India)

The National Mission on Natural Farming (NMNF) is a Centrally Sponsored Scheme launched by the Government of India under the Ministry of Agriculture & Farmers' Welfare. It promotes sustainable agriculture by encouraging farmers to adopt natural farming techniques that avoid synthetic chemical pesticides and fertilizers. The mission supports organic inputs, biofertilizers, and indigenous seed usage to improve soil health, reduce input costs, and enhance biodiversity. NMNF aims to increase farmers' income while ensuring environmental conservation and food security. It integrates traditional farming knowledge with modern science and is part of India's broader effort to reduce chemical pesticide dependence.

Why in news?

Recently, the Government of India brought into light NMNF as a source of alternatives to chlorpyrifos during international pesticide regulation debates.

National Oceanic and Atmospheric Administration (NOAA)

NOAA is a U.S. federal agency founded in 1970 under the Department of Commerce. It focuses on the conditions of the oceans, major waterways, and atmosphere. NOAA operates the National Weather Service, National Hurricane Center, and National Climatic Data Center. The agency uses satellites, radar, and weather stations to monitor and forecast weather and climate. NOAA also conducts research on climate change, ocean ecosystems, and marine fisheries. It maintains one of the largest environmental data repositories in the world. NOAA's tornado records are a key source for tracking severe weather trends in the United States.

Why in news?

NOAA reported that last year the U.S. recorded nearly 1,800 tornadoes, the second-highest annual total ever documented, denoting the severity of recent weather patterns affecting states like Kentucky and Missouri.

National Tiger Conservation Authority (NTCA)

The **National Tiger Conservation Authority (NTCA)** was established in 2005 under the Wildlife Protection Act, 1972, to oversee tiger conservation in India. It implements the Project Tiger initiative, coordinating tiger population monitoring and habitat management. NTCA mandates a standardized **eight-day protocol** for tiger and prey population estimation, ensuring uniform data collection across reserves. It also focuses on reducing human-wildlife conflict and enhancing anti-poaching measures. NTCA collaborates with state forest departments and research institutions, providing technical and financial support. It maintains the All India Tiger Estimation report and works to improve habitat connectivity and wildlife corridors.

Why in news?

The NTCA's eight-day protocol is being followed for the ongoing Phase IV population monitoring exercise in the Anamalai Tiger Reserve from May 10 to 17.

Neemastra

Neemastra is a biopesticide formulation derived from the neem tree (Azadirachta indica), widely used in natural farming to control insect pests and diseases. It contains azadirachtin, a compound that disrupts insect growth and feeding. Neemastra is valued for its low toxicity to beneficial insects and the environment. It is commonly used in organic agriculture and sustainable pest management practices. The product is prepared from locally available neem extracts and can target a variety of pests including aphids, whiteflies, and caterpillars. Its use reduces reliance on synthetic pesticides, helping maintain ecosystem health.

Why in news?

Neemastra is mentioned as an effective natural pest control method promoted in the International Day of Plant Health 2025 campaign to reduce chemical pesticide use and protect plant health.

New World Screwworm

The New World screwworm (Cochliomyia hominivorax) is a parasitic fly whose larvae infest wounds of warm-blooded animals, causing severe tissue damage and sometimes death. It was eradicated in the United States in the 1980s but re-emerged in Mexico in December 2024, with 8,363 outbreaks reported across seven countries by 2025. The disease causes economic losses by reducing livestock productivity and increasing veterinary costs. The screwworm is controlled by sterile insect technique (SIT), which releases sterilized males to interrupt reproduction. Its reappearance in Mexico threatens livestock industries in Central America due to its rapid spread and difficulty in early detection.

Why in news?

The WOAH report documented the first detection of New World screwworm in Mexico since eradication, denoting resurgence and ongoing outbreaks in Central America.

Noncommunicable Diseases Prevention

Walking and cycling contribute to the prevention of **noncommunicable diseases (NCDs)**

such as breast, colon, and endometrial cancers, strokes, diabetes, and hypertension. Regular physical activity balances hormone levels, strengthens immunity, and improves digestion. It also reduces obesity and overweight risks, which are major contributors to NCDs. Mental health benefits include decreased depression and anxiety symptoms. Among children and adolescents, these activities promote healthy growth, muscle development, and cognitive skills. The World Health Organization promotes active transport as a cost-effective public health intervention to reduce NCD burdens globally.

WHY IN NEWS?

The 2025 UN Global Road Safety Week emphasizes walking and cycling for health benefits beyond road safety, linking physical activity to NCD prevention.

Nongkhyllem Wildlife Sanctuary

Nongkhyllem Wildlife Sanctuary, established in **1981**, covers 29 sq. km in Meghalaya's Ri-Bhoi district. It harbors over **400 bird species**, including the endangered rufous-necked hornbill. The sanctuary is recognized for its effective protection and minimal human disturbance, as noted in the **2021 Management Effectiveness Evaluation report** for northeast India. It is a critical habitat for diverse fauna including mammals, reptiles, and insects. The sanctuary's small size makes it vulnerable to developmental pressures, and it serves as a key site for biodiversity conservation in Meghalaya's subtropical forests.

WHY IN NEWS?

The sanctuary is the site of a contested ₹23.7 crore ecotourism project opposed by local groups due to ecological concerns.

Normalized Difference Vegetation Index (NDVI)

The **Normalized Difference Vegetation Index (NDVI)** is a satellite-derived index used to measure live green vegetation. It is calculated using near-infrared and red light reflectance, with values ranging from -1 to +1, where higher values indicate denser vegetation. NDVI is widely used in monitoring droughts, deforestation, and crop health globally. It was first developed in the 1970s using data from the Landsat satellite program. NDVI can detect subtle changes in vegetation health over time, making it critical for assessing ecosystem dynamics and climate impacts. It is often used alongside other indices like EVI and SAVI for comprehensive analysis.

WHY IN NEWS?

NDVI values showed a 45.4% decline in Mount Kenya's forests from 2010 to 2020, indicating vegetation loss linked to climate and human pressures.

Northern Fulmar (Fulmarus glacialis)

The northern fulmar is a surface-feeding seabird found in the North Atlantic and North Pacific. It is used as a bioindicator species for marine plastic pollution because it frequently ingests floating plastic debris. Fulmars retain plastic in their stomachs for weeks or months, exposing them to chemical leaching from plastics. Their estrogen receptors respond to plastic-associated chemicals, indicating hormonal disruption. They are long-lived, with lifespans up to 40 years, and breed on cliffs and rocky islands. Fulmars

feed on fish, squid, and carrion, and their surface-feeding behavior increases their risk of ingesting plastic debris floating on the ocean surface.

Why in news?

Northern fulmars were studied for their ingestion of plastic and the subsequent hormonal disruption caused by chemicals leached from plastics retained in their stomachs.

Ocean-to-Land Heatwaves (OTLH)

Ocean-to-land heatwaves (OTLH) are heatwave events that initiate over the ocean and move onto adjacent land areas. They are characterized by higher frequency, larger spatial coverage, and greater intensity compared to land-only heatwaves. OTLHs typically last about nine days and cover an area averaging 6.33 million square kilometers. These events are increasing due to greenhouse gas-induced global warming, with a 39.3% rise in frequency over land between 1981 and 2020. OTLHs are especially prevalent in western South America, central Africa, southern Europe, and eastern Asia, influenced by atmospheric circulation changes such as intensified subtropical high-pressure systems.

Why in news?

A recent study brought into light the UK's spring warmth as an example of an ocean-to-land heatwave, drawing attention to the growing importance of OTLHs in climate change discussions and their increasing frequency worldwide.

Operation Olivia

Operation Olivia is an annual marine conservation initiative by the Indian Coast Guard (ICG) focused on protecting Olive Ridley turtles along Odisha's coast. It runs from November to May, targeting key nesting sites like Gahirmatha Beach and the Rushikulya river mouth. The operation involves **surface patrol sorties**, **aerial surveillance missions**, and community engagement to prevent illegal fishing and habitat disruption. Since inception, over **5,387 patrol sorties** and **1,768 aerial missions** have been conducted, detaining **366 boats** engaged in illegal fishing. It also promotes Turtle Excluder Devices (TEDs) and collaborates with NGOs through formal MoUs.

Why in news?

Recently, Operation Olivia helped protect a record 6.98 lakh Olive Ridley turtles nesting at the Rushikulya river mouth, marking conservation success.

Oran Lands

Oran lands are **sacred groves** in Rajasthan dedicated to various deities, managed by rural communities as a socio-religious tradition. Covering about **6 lakh hectares** across approximately **25,000 sites**, these lands serve multiple ecological functions like grazing, natural water filtration, and supporting the livestock economy. They are community-protected and have historically been outside formal forest classification, leading to vulnerability to encroachment. The Supreme Court recognized Oran lands as forests under the **Forest Conservation Act, 1980**, mandating detailed mapping and legal protection as community reserves under the Wildlife Protection Act, 1972.

Why in news?

Rajasthan's government is initiating the process to classify Oran lands as forests following

a Supreme Court directive for better conservation and protection of these sacred groves.

Pakal Dul Hydroelectric Project

Pakal Dul is a **1,000 MW hydroelectric project** on the Chenab river in Jammu and Kashmir's Kishtwar district. It is the **state's first water storage project** among run-of-the-river types, with a live storage capacity of nearly **109 million cubic meters (mcm)**. This capacity is **more than three times that of the Baglihar dam**, allowing better control over downstream water flow. The project is being developed by NHPC Ltd and is expected to be commissioned by September 2026. Once operational, it will be the **largest hydropower project in Jammu and Kashmir**.

Why in news?

Pakal Dul is part of four hydro projects fast-tracked by India to increase regional hydropower capacity and manage water flows amid increasing India-Pakistan tensions.

Palla Village

Palla is a village located on the banks of the Yamuna River, near the meeting point of Delhi, Haryana, and Uttar Pradesh. It is part of the floodplain ecosystem of the Yamuna, characterized by seasonal water flow and diverse flora and fauna. The area serves as important habitat corridor for various wildlife species, including leopards, hyenas, and now wolves. Palla's bund road is a known spot for wildlife enthusiasts to observe nocturnal animals. The region's proximity to urban Delhi makes it a rare example of wildlife presence close to a major metropolis.

Why in news?

Palla village is the location where the Indian grey wolf was photographed in May 2025, denoting its ecological importance as a wildlife corridor near Delhi.

Pangolin Scale Trade

Pangolin scales are keratinous structures used in traditional Chinese medicine, believed to have healing properties. Pangolins are the most trafficked mammals worldwide, with scales often smuggled in large consignments. Between 2015 and 2024, over **370 tonnes of pangolin scales** were seized globally, representing an estimated **100,000 to one million pangolins**. The illegal trade peaked in 2019 with seizures exceeding 100 tonnes. Trafficking shifted from air cargo to maritime routes post-2020. The value of pangolin scales declined and stabilized after 2020. Smugglers use encrypted social media communication to evade detection and prefer smaller shipments.

Why in news?

The report details drop in pangolin scale seizures after 2020, attributing it to pandemic disruptions, enforcement, and evolving smuggling methods, with recent increases in multi-tonne land and stockpile seizures.

Paraquat Dichloride

Paraquat dichloride is a highly toxic herbicide widely used in agriculture for weed control. It is known for its acute toxicity to humans and environmental persistence. Paraquat has been linked to severe health effects, including lung damage and Parkinson's

disease. Despite meeting the Rotterdam Convention's listing criteria, its inclusion in Annex III has been blocked repeatedly for over a decade due to opposition from some countries citing trade and economic concerns. Paraquat use is restricted or banned in several countries, but it remains in use globally, raising ongoing safety and regulatory debates.

Why in news?

Paraquat dichloride's listing under the Rotterdam Convention was again blocked at the 2025 COP, continuing a 12-year delay despite health and environmental risks.

Paryavaran Sanrakshaks

"Paryavaran Sanrakshaks" translates to "environment protectors" in Hindi. These are specially trained students and educators designated as eco-leaders within their institutions. They receive capacity-building training to mentor peers and spread environmental awareness. The concept is rooted in community-based conservation models emphasizing local stewardship. Paryavaran Sanrakshaks act as grassroots agents encouraging sustainable behaviors and biodiversity conservation. This role is part of India's broader environmental education framework, aiming to embed sustainability in youth culture. Their training includes climate change science, waste management, and biodiversity protection, enabling them to lead eco-clubs and organize hands-on eco-actions in schools.

Why in news?

The Delhi Government's campaign includes training 80 paryavaran sanrakshaks to serve as eco-leaders, scaling the initiative by mentoring students and educators in environmental protection across Delhi-NCR educational institutions.

PM2.5 Concentration

PM2.5 refers to particulate matter with a diameter of less than 2.5 micrometers, capable of penetrating deep into the lungs and bloodstream. It is a key indicator of air pollution and is linked to respiratory and cardiovascular diseases. The World Health Organization's recommended limit for PM2.5 concentration is **15 µg/m³ annual mean**. Bangladesh's PM2.5 levels were reported to be over **15 times this limit in 2024**, making it one of the most polluted countries globally. Major sources include brick kilns, vehicle emissions, and industrial activities. PM2.5 is a major contributor to premature deaths worldwide.

Why in news?

Bangladesh's air quality ranked second worst globally in 2024 due to extremely high PM2.5 levels, with brick kilns identified as pollution source in recent studies.

Polluters' Pay Pact

The **Polluters' Pay Pact** is an agreement signed by major worker groups from India, Sri Lanka, Bangladesh, and Nepal calling for governments to impose new taxes on fossil fuel companies responsible for greenhouse gas emissions. The pact advocates that revenues from these taxes be directed toward climate adaptation efforts to support vulnerable communities facing extreme weather impacts. It marks the principle that polluters must bear the financial responsibility for environmental damage. The pact emphasizes worker

rights and climate justice, linking economic and environmental policies to protect informal and vulnerable labor sectors across South Asia.

Why in news?

Signed on Labour Day 2025 in New Delhi by ten major South Asian worker groups, the Polluters' Pay Pact demands taxing fossil fuel companies to fund climate adaptation amid worsening heatwaves and floods.

Pollution Control Committees (PCCs)

are statutory bodies functioning in Union Territories (UTs) of India to regulate pollution control activities where State Pollution Control Boards do not exist. Established under the Water and Air Acts, PCCs monitor pollution from industries, enforce environmental laws, and issue consent for operation. They conduct scientific sampling of air, water, and noise pollution, and oversee compliance with environmental clearances. PCCs often face resource and staffing challenges due to smaller administrative setups in UTs. Their effectiveness is critical for pollution management in UTs like Chandigarh, Lakshadweep, and others.

Why in news?

PCCs in Union Territories are part of the ongoing NGT suo motu case requiring filling of vacant posts to strengthen pollution control enforcement by April 30, 2025.

Project Lion

Project Lion is a ₹2,927 crore conservation initiative approved by the Government of India in 2025 to protect and expand the Asiatic lion population. It aims to develop new habitats, including the Barda Wildlife Sanctuary, and enhance community involvement in conservation and eco-tourism. The project focuses on habitat restoration, scientific monitoring, and mitigating human-lion conflicts. It also plans to improve compensation mechanisms for livestock losses and promote awareness programs. Project Lion is designed to increase the lion population beyond the Gir core area while ensuring sustainable coexistence with local communities.

Why in news?

Project Lion was recently approved by the Government of India as a major step to conserve and expand the Asiatic lion population in Gujarat and beyond.

Project Snow Leopard

Project Snow Leopard is an Government of India initiative launched to conserve the snow leopard and its fragile high-altitude habitat. It was brought into light by Prime Minister Narendra Modi at the 13th Conference of the Parties (CoP) to the Convention on Migratory Species in 2020. The project includes scientific population assessments, habitat protection, community involvement, and anti-poaching measures. Between 2019 and 2023, India conducted its first comprehensive Snow Leopard Population Assessment, estimating 718 individuals, about 10-15% of the global population. The project integrates ecological research with local knowledge to ensure sustainable conservation outcomes.

Why in news?

At the Sagarmatha Sambaad, Bhupender Yadav referenced Project Snow Leopard and its

recent population assessment results, underscoring India's commitment to protecting this vulnerable species.

Protection Gap

The protection gap is the difference between total economic losses from disasters and the portion covered by insurance. In 2024, global economic losses from disasters were $318 billion, with only 57% insured, leaving a $181 billion protection gap. This gap reflects vulnerabilities where many individuals, businesses, or governments lack adequate insurance coverage against natural catastrophes. The protection gap increases financial instability and recovery time after disasters. It is influenced by factors such as affordability, insurance availability, and risk awareness. Closing this gap is a key goal for insurers, governments, and international organizations to improve disaster resilience.

Why in news?

The 2024 protection gap of $181 billion was reported by Swiss Re, denoting ongoing challenges in insuring against rising climate disaster losses worldwide.

Red Sanders

Red Sanders (Pterocarpus santalinus) is a tree species native to the Eastern Ghats of India, valued for its deep red heartwood used in furniture, handicrafts, and traditional medicine. It is listed as a threatened species under India's Biodiversity Act 2002 due to overharvesting and habitat loss. The wood has high economic value, leading to strict regulations on its trade and conservation efforts. Red Sanders is included in the 2025 Regulation's high conservation value biological resources, requiring a minimum 5% benefit sharing from commercial use. Its trade is monitored to prevent illegal logging and ensure sustainable management.

Why in news?

Red Sanders is listed under the new Regulation as a biological resource with high conservation value, subject to benefit sharing from commercial exploitation.

Regulatory Assistance Project (RAP)

The Regulatory Assistance Project is an international NGO founded in 1992 that provides technical and policy expertise to promote sustainable energy solutions. RAP advises governments and regulators on clean energy integration, grid modernization, and market design. It focuses on achieving reliable, equitable, and cost-efficient energy systems worldwide. RAP supports policies for renewable integration, energy efficiency, and demand response. The organization collaborates with multiple stakeholders, including utilities, NGOs, and international agencies. RAP is known for its influential white papers, workshops, and advocacy on electricity market reforms and decarbonization strategies.

Why in news?

RAP experts commented on the causes of recent blackouts, emphasizing transmission network failures over generation issues in the context of Europe's energy transition.

Sea Ice Extent

Sea ice extent measures the area of ocean with at least 15% sea ice concentration, tracked

via satellite since 1979. It is a critical indicator of climate change, reflecting polar temperature trends. Arctic sea ice reaches its minimum in September and maximum in March, while Antarctic ice peaks in September and is lowest in February. Sea ice loss affects global weather patterns, ocean circulation, and ecosystems dependent on ice habitats. Recent decades show a marked decline in Arctic sea ice extent, while Antarctic trends are more variable but also declining overall. Sea ice extent influences albedo, with less ice causing more solar absorption and accelerated warming.

WHY IN NEWS?

April 2025 recorded Arctic sea ice at 3% below average and Antarctic sea ice at 10% below average, marking declines in the satellite era.

Sea Turtle Magnetic Navigation

Sea turtles use Earth's **geomagnetic field** to navigate thousands of miles across oceans. They possess magnetoreceptors that detect magnetic intensity and inclination, allowing them to determine latitude and longitude. Hatchlings imprint on the magnetic signature of their natal beach, enabling adults to return precisely to the same location to lay eggs. This magnetic sense functions as a natural GPS, guiding turtles through open ocean with remarkable accuracy. Research shows turtles can detect subtle changes in the magnetic field, helping them avoid predators and find feeding grounds. This ability is vital for their long-distance migrations and survival.

WHY IN NEWS?

The text marks sea turtles' use of Earth's magnetic field to return to their birth beaches, emphasizing their ancient navigation skills and vulnerability to habitat loss.

Seagrass Genera for Dugongs

Dugongs feed on specific seagrass genera including **Cymodocea**, **Halophila**, **Thalassia**, and **Halodule**. These underwater flowering plants form dense meadows in shallow coastal waters and provide essential nutrients for dugongs. Each genus differs in morphology and habitat preference; for example, Thalassia is known as turtle grass and forms large beds, while Halophila species are smaller and more delicate. These seagrasses stabilize sediment, support diverse marine life, and capture carbon. Dugongs consume leaves, stems, and rhizomes, often uprooting plants, which helps maintain healthy seagrass ecosystems by promoting growth and nutrient cycling.

WHY IN NEWS?

The conservation focus on dugongs includes protecting their critical seagrass food sources, with mapping and restoration efforts targeting these genera to sustain dugong populations in Indian waters.

Semrai Lake

Semrai Lake is a key wetland located in Uttar Pradesh, known as a **stopover for migratory birds** during their seasonal journeys. It supports diverse avian species, including several rare and endangered birds. The lake plays important role in maintaining regional biodiversity and acts as a natural habitat for aquatic flora and fauna. It forms part

of an ecological corridor connecting various protected areas. Efforts are underway to develop Semrai Lake as an ecotourism destination, particularly for birdwatchers, denoting its importance as a natural heritage site in the region.

Why in news?

Semrai Lake is being developed as part of the new ecotourism circuit under the Buffer Mein Safar Yojana to attract birdwatchers and promote conservation.

Senge Tsangpo Hydroelectric Plant

The **Senge Tsangpo Hydroelectric Plant** is located near the source of the Indus River in Tibet. It is one of the key Chinese hydroelectric projects that can regulate water flow into the Indus basin. This plant uses the flow from the Seng Khabab glacier and nearby tributaries for power generation. Its construction reflects China's strategic control over transboundary rivers originating in Tibet. The plant's capacity and operational details remain largely undisclosed publicly. It plays a role in China's ability to manage water resources that affect both India and Pakistan downstream, especially during seasonal variations.

Why in news?

China's hydroelectric facilities like Senge Tsangpo near the Indus source are central to concerns over potential water flow control amid tensions following the pause of the Indus Water Treaty between India and Pakistan.

Shade Coffee Agroforests

Shade coffee agroforests are coffee plantations where coffee plants grow under a canopy of native and non-native shade trees. This system mimics natural forests, enhancing biodiversity and providing habitat for wildlife. Shade trees improve soil fertility, regulate microclimate, and reduce pest outbreaks by increasing plant diversity. In the Western Ghats, shade coffee agroforests serve as refuges for over 90 native tree species and many frugivorous birds and mammals. These agroforests contribute to forest restoration by acting as seed sources and supporting ecological connectivity. They are in sustainable coffee production and biodiversity conservation in tropical regions.

Why in news?

Shade coffee agroforests in Karnataka and Tamil Nadu are being studied and utilized as native plant sources for large-scale forest restoration projects in the Western Ghats.

Shola Forests

Shola forests are a type of stunted tropical montane forest found in the higher elevations of the Western Ghats, especially in the Nilgiris. These forests grow in patches amid rolling grasslands and are characterized by dense, evergreen trees adapted to cool, moist conditions. Shola ecosystems are rich in endemic flora and fauna and play a critical role in water retention and soil conservation. They act as natural water reservoirs, feeding streams and rivers in the region. The unique microclimate of Sholas supports rare species like the Nilgiri Tahr and various amphibians. These forests are highly sensitive to disturbances such as deforestation and land-use changes.

Why in news?

The proposed hydropower project aims to avoid impacting Shola forests by minimizing forest land use and keeping key infrastructure underground.

Sitaram Ki Baghi Pond

Sitaram Ki Baghi is a pond within Keoladeo National Park known for its spiritual and ecological significance. It serves as a habitat for hundreds of turtles, many reportedly over 200 years old. The pond is famous for a unique custom where a priest calls out “Aao-Aao” (come-come), and turtles respond by climbing steps to be fed by visitors. This interaction has become a tourist attraction and a symbol of coexistence between humans and wildlife. The pond’s environment includes deep water and abundant vegetation, providing ideal conditions for turtle life cycles and conservation.

Why in news?

Sitaram Ki Baghi pond is noted for its large, ancient turtle population and the ritual feeding practice that attracts tourists and supports conservation awareness.

Snow Cover Albedo Effect

The snow cover albedo effect describes the capacity of snow to reflect sunlight and heat, thereby protecting glaciers from rapid melting. Fresh, clean snow can reflect up to 90% of incoming solar radiation. When snow cover is thin or dirty (e.g., dust-covered), the albedo decreases , increasing heat absorption. This effect is critical in glacier mass balance, especially during summer months. Variations in snow cover thickness and purity directly influence glacier survival. The albedo effect is a key factor in climate models predicting glacier response to warming and is monitored closely by glaciologists.

Why in news?

Swiss glaciers experienced a **13% lower snow depth** than the 2010-2020 average in winter 2025, reducing the protective albedo effect and threatening glacier stability.

Snow Leopard (Panthera uncia)

The snow leopard is a large cat native to the mountain ranges of Central and South Asia, known for its thick, smoky-gray coat with black rosettes and spots. It is adapted to cold, rugged terrain at elevations between 3,000 and 5,500 meters. Snow leopards have wide, fur-covered paws that act as natural snowshoes and long tails for balance and warmth. They are solitary and elusive, making direct sightings rare. Classified as vulnerable, their population faces threats from habitat loss, poaching, and retaliatory killings by herders. Conservation efforts include community-based monitoring and anti-poaching initiatives across their range.

Why in news?

Tourists in Spiti Valley captured a rare video of a snow leopard calmly walking on the road, an unusual sighting especially in May, emphasizing ongoing conservation challenges and public interest.

Sohagibarwa Wildlife Zone

Sohagibarwa Wildlife Zone is an ecologically rich area in Uttar Pradesh, characterized by dense forests and diverse wildlife, including tigers, leopards, and various herbivores. It

forms part of the Terai Arc Landscape, a transboundary conservation area spanning India and Nepal. The zone is vital for maintaining genetic connectivity between protected habitats. It supports several rare plant species and is home to indigenous communities practicing traditional forest-based livelihoods. Conservation efforts here focus on habitat restoration and mitigating human-wildlife conflict, with recent initiatives aiming to integrate ecotourism to enhance local economic benefits.

Why in news?

Sohagibarwa has been included in the Buffer Mein Safar Yojana to develop ecotourism and strengthen conservation in Uttar Pradesh's forest buffer zones.

Soil Moisture Influence

Soil moisture levels affect the onset of humid heat waves by controlling evaporation rates. In arid regions, rainfall before humid heat events increases surface moisture, which evaporates and raises humidity. In contrast, humid regions with high soil moisture experience reduced evaporation during heavy cloud cover but increased surface warming and humidity after rainfall decreases. Soil moisture data from satellites can provide near-real-time monitoring, enabling better forecasting of humid heat waves. The interaction between precipitation, soil moisture, and surface evaporation is a key driver behind regional humid heat extremes.

Why in news?

The research identifies soil moisture and rainfall patterns as critical factors triggering humid heat waves across tropics and subtropics, offering potential for improved early warning systems.

Solar Energy Corporation of India (SECI)

The **Solar Energy Corporation of India (SECI)** is a government-owned company under the Ministry of New and Renewable Energy, established in 2011 to promote solar energy projects across India. It conducts competitive bidding for large-scale solar power projects, enabling tariff-based auctions to ensure cost-effective renewable energy procurement. SECI also manages the implementation of various government solar schemes and facilitates grid integration of renewable energy. It supports innovative solar technologies, including hybrid and floating solar projects. SECI plays a critical role in India's renewable energy targets, aiming to achieve 280 GW of installed renewable capacity by 2030.

Why in news?

SECI signed a 25-year Power Purchase Agreement with Reliance NU Suntech to develop Asia's largest integrated solar and battery energy storage system, marking step in India's renewable energy expansion.

Sonam Wangchuk Lepcha

Sonam Wangchuk Lepcha is a citizen scientist from Noom Panang village in Sikkim's Mangan district. Between 2016 and 2024, he conducted extensive fieldwork, including trekking through forests, climbing hills, and crossing rivers, to record butterflies in the Dzongu region. His work documented 420 butterfly species, nearly 61% of Sikkim's total.

He collaborated with zoologist Monish Kumar Thapa to publish findings in the Journal of Threatened Taxa. Lepcha's contributions show the role of local citizen scientists in biodiversity research and conservation efforts in northeastern India.

Why in news?

Sonam Wangchuk Lepcha is in the news for his decade-long butterfly survey in Dzongu, which expanded knowledge of the region's butterfly diversity.

Spongy Tissue Disorder

Spongy tissue disorder is a physiological condition affecting mangoes, especially the Alphonso variety. It causes internal fruit tissue to become soft, spongy, and water-soaked, reducing fruit quality and market value. The disorder is linked to heat stress during fruit development and uneven ripening. It often appears as a result of high temperatures combined with fluctuating weather patterns during the fruit-setting stage. This condition leads to a loss of the typical mango flavor and texture, affecting consumer acceptance. Spongy tissue disorder is a major concern for mango growers in regions experiencing climate variability and heat waves.

Why in news?

The disorder is mentioned as a consequence of rising temperatures affecting mango quality in India's 2024-25 mango season.

SSP Climate Scenarios

Shared Socioeconomic Pathways (SSPs) are climate change scenarios used to project future global warming and its impacts. They combine assumptions about greenhouse gas emissions, economic growth, and technological development. SSP1-2.6 represents a low-emission, sustainable development pathway, while SSP5-8.5 assumes high emissions and fossil-fuel dependency. SSP2-4.5 and SSP3-7.0 represent intermediate scenarios. These pathways influence predicted temperature rises, precipitation patterns, and climate impacts on ecosystems. SSPs are integral to IPCC reports and climate modeling, guiding policy and research on mitigation and adaptation strategies globally.

Why in news?

The study on common noctule bats used SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5 to model how climate warming affects their hibernation range across Europe.

Station M

Station M is a deep-sea research site located approximately 200 km offshore of Central California at a depth of about 4000 meters. It serves as a long-term observatory for monitoring abyssal seafloor processes, including carbon fluxes from the surface ocean to the deep sea. The site has provided critical data on episodic pulses of organic carbon deposition and how deep-sea ecosystems respond to these events. Station M is equipped with sensors and instruments that measure physical, chemical, and biological parameters, enabling scientists to study the ocean carbon cycle and benthic community dynamics over extended periods.

Why in news?

Station M data helped reveal unexplained pulses of carbon export to the deep seafloor,

prompting new satellite-based modeling approaches to estimate ocean carbon export more accurately.

Swachhata Green Leaf Rating (SGLR)

Swachhata Green Leaf Rating (SGLR) is a certification system under SBM-G Phase II that assesses villages on sustainability and environmental cleanliness. It rates villages based on criteria like waste segregation, plastic waste management, water conservation, and greenery development. The SGLR promotes eco-friendly sanitation practices and incentivizes local governance bodies to maintain green and clean environments. This rating system complements the ODF Plus Model by emphasizing long-term sustainability and environmental health in rural sanitation efforts.

Why in news?

SSG 2025 includes SGLR sites in its survey to measure the environmental sustainability of rural sanitation initiatives across state of Indias and districts.

Swadeshi Bihana Manch

Swadeshi Bihana Manch is a local organization in Odisha advocating for the conservation of indigenous seed varieties and traditional agricultural practices. It opposes government initiatives that promote corporate seed dependence, particularly in millet and paddy cultivation. The group marks the risk of losing native biodiversity and food sovereignty due to the introduction of high-yielding, non-indigenous seeds. It actively campaigns against policies perceived as favoring seed companies over farmers' rights and ecological sustainability. Saroj Mahanty is a prominent activist and convenor of this organization.

Why in news?

Swadeshi Bihana Manch is protesting the Odisha Millet Mission's shift to high-yielding seeds, which they claim endangers indigenous millet varieties and promotes corporate control over agriculture.

Swamiyaralakudy and Kurumbanmoozhi Hamlets

Swamiyaralakudy (Idukki district) and Kurumbanmoozhi (Pathanamthitta district) are two remote tribal hamlets in Kerala's Western Ghats, chosen as pilot sites for the THDMP. Both face frequent natural hazards such as **landslides, flash floods, heavy rainfall, and wildlife attacks**. They suffer from **limited road connectivity and fragile housing**, increasing disaster vulnerability. These hamlets are ecologically sensitive and geographically isolated, complicating rescue operations. The local communities have a strong repository of indigenous disaster knowledge, which is being integrated with modern techniques under the THDMP to improve preparedness and response.

Why in news?

These hamlets were the first beneficiaries of Kerala's new disaster management plan focused on tribal safety, serving as models for expanding the initiative statewide.

Tapti Basin Mega Recharge Project

The **Tapti Basin Mega Recharge Project** is designed to divert water from the Tapti River to meet drinking water and irrigation needs in northeastern Maharashtra and southern

Madhya Pradesh. It aims to benefit **5.78 lakh acres** and provide permanent irrigation to **1,23,082 hectares** in Madhya Pradesh and **2,34,706 hectares** in Maharashtra. The project involves the use of **3,362 hectares** of land without displacing any villages. Estimated cost is ₹**19,244 crores** (2022–23). It is considered the **world's largest recharge scheme** and funding is expected to be 90% by the Central government.

WHY IN NEWS?

Madhya Pradesh and Maharashtra signed an MoU in 2025 to jointly implement the Tapti Basin Mega Recharge Project, marking renewed cooperation for regional water security and sustainable river resource management.

Tertiary Sewage Treatment Plant (TSTP)

A **Tertiary Sewage Treatment Plant** (TSTP) uses advanced filtration technologies such as microfiltration, ultrafiltration, nanofiltration, and reverse osmosis to treat wastewater beyond primary and secondary stages. This treatment removes pathogens, organic matter, and dissolved solids, producing water suitable for industrial reuse. TSTPs are crucial for water-scarce regions, reducing freshwater dependency. The Ghaziabad TSTP has a capacity of 40 million liters per day (MLD) and is connected to a 95 km pipeline network supplying treated water to over 1,400 industrial units. TSTPs contribute to circular water economies by converting wastewater into valuable resources.

WHY IN NEWS?

Ghaziabad developed a cutting-edge TSTP funded by the Green Municipal Bond to boost sustainable water reuse for industrial purposes.

Tetragonula iridipennis

Tetragonula iridipennis is a species of stingless bee native to South and Southeast Asia, particularly found in India and Sri Lanka. Unlike honeybees, it lacks a functional sting, making it safer for human handling. These bees produce a distinct, medicinal honey valued for its antimicrobial properties. They nest in hollow tree trunks or crevices and have a complex social structure with a queen, workers, and drones. Their foraging behavior supports pollination of various crops and wild plants. T. iridipennis is crucial in traditional beekeeping practices in northeastern India and is being studied for its potential in sustainable agriculture.

WHY IN NEWS?

Tetragonula iridipennis was identified as one of the most efficient stingless bee species improving chilli crop yield and quality in a recent study by Nagaland University researchers.

Thin Fat Indian

The term **Thin Fat Indian** describes individuals, mainly in India, who have a normal body mass index (BMI) but possess a high percentage of body fat and an abnormal waist-to-hip ratio. These people are prone to insulin resistance, metabolic disorders like diabetes, and dyslipidemia despite appearing lean. This phenotype is linked to genetic, nutritional, and lifestyle factors unique to South Asians. The condition increases cardiovascular risk and

complicates traditional obesity assessments. It challenges the reliance on BMI as the sole obesity indicator in Indian and South Asian populations, necessitating more comprehensive metabolic health evaluations.

WHY IN NEWS?

The concept is mentioned in relation to sleep deprivation's impact on obesity and metabolic disorders in India, denoting unique health risks in the population.

Thuapani Beat

The **Thuapani Beat** is a designated forest management unit within the Kawardha Range of the Bhoramdev Wildlife Sanctuary. In Indian forestry, a "beat" is the smallest administrative unit used for forest protection and management. It is patrolled regularly by forest guards and rangers to monitor wildlife, prevent illegal activities, and assist local communities. Thuapani Beat is known for its mixed deciduous forest and presence of wildlife such as bears and deer. It plays a role in balancing conservation efforts with the livelihoods of people who depend on the forest, such as tendu leaf collectors.

WHY IN NEWS?

The bear attack took place in the Thuapani Beat area, where villagers were collecting tendu leaves, triggering a response from forest officials.

Total Allowable Catch (TAC)

The **Total Allowable Catch (TAC)** is a fisheries management tool that sets a maximum quantity of fish that can be legally caught in a specific area within a defined period. It is used globally by governments and agencies to prevent overfishing and maintain sustainable fish populations. TACs are usually based on scientific assessments of fish stock health and reproductive rates. They help balance economic fishing interests with ecological conservation. Enforcement of TACs involves monitoring catches, licensing fishers, and imposing penalties for violations. TACs can vary by species, region, and season to adapt to changing environmental conditions and stock levels.

WHY IN NEWS?

TACs are central to recent disputes over Patagonian toothfish fishing quotas in the South Atlantic, involving the US blocking imports and Russia rejecting TAC agreements set by international commissions.

Tral Wildlife Sanctuary

Tral Wildlife Sanctuary is located in the Pulwama district of Jammu and Kashmir and covers approximately 127.1 square kilometers. It is biodiversity hotspot and serves as a vital corridor for the Hangul deer, facilitating animal movement between habitats. The sanctuary features diverse flora and fauna typical of the Himalayan temperate forest ecosystem. It is less well-known compared to Dachigam National Park but plays important role in regional conservation efforts. The sanctuary's proximity to local villages requires careful management to balance human activity and wildlife protection.

WHY IN NEWS?

Tral Wildlife Sanctuary has been surrounded by a newly declared Eco-Sensitive Zone to enhance protection measures for the critically endangered Hangul deer population

residing in and around the sanctuary.

Transboundary Heatwaves

Transboundary heatwaves occur when heatwave events span both land and adjacent ocean areas, moving from one to the other. They are more extensive, persistent, and severe than land-only or ocean-only heatwaves. Ocean-to-land heatwaves (OTLH) last on average nine days and cover about 6.33 million square kilometers, while land-to-ocean heatwaves (LTOH) last around eight days, covering approximately 4.24 million square kilometers. OTLHs are more frequent and intense in western South America, central Africa, southern Europe, and eastern Asia. LTOHs increase with latitude in the Northern Hemisphere, especially in the Atlantic and Southern Oceans. Their frequency is rising due to global warming and altered atmospheric circulation.

Why in news?

The UK experienced a spring heatwave linked to unusually warm North Atlantic sea surface temperatures, denoting the significance of transboundary heatwaves in current climate patterns and their increasing frequency with global warming.

Transition Minerals

Transition minerals are metals and elements essential for clean energy technologies, including lithium, cobalt, nickel, and copper. They are critical for batteries, electric vehicles, solar panels, and wind turbines. Demand for these minerals has surged due to global decarbonization efforts. Their extraction often occurs in developing countries and poses environmental and social challenges, such as habitat destruction, pollution, and community displacement. Transition minerals are central to the global energy transition but raise concerns about sustainable mining practices, supply chain ethics, and geopolitical dependencies. Efforts are underway to improve recycling and reduce the environmental footprint of their extraction and use.

Why in news?

The World Bank's land reform initiatives, criticized in the Oakland Institute's report, are linked to opening lands for mining transition minerals required for clean energy technologies, potentially causing displacement and ecological harm.

Tungareshwar Wildlife Sanctuary (TWLS)

Tungareshwar Wildlife Sanctuary is located near Vasai in Maharashtra, covering about **85 square kilometers**. It is a dry deciduous forest with varied flora and fauna, including leopards, deer, and numerous bird species. The sanctuary serves as a wildlife corridor connecting the Sanjay Gandhi National Park to the Western Ghats. It is less frequented by tourists, making it a relatively undisturbed habitat. TWLS was established in **2003** and plays a vital role in regional biodiversity conservation. The sanctuary's rugged terrain includes hills and valleys, supporting species adapted to dry forest conditions.

Why in news?

The leopard census recorded three adult male leopards in TWLS, and a male leopard's 9-kilometer journey from TWLS to Vasai Fort brought into light the species' adaptability in

urbanized landscapes.

Udanti Sitanadi Tiger Reserve

Udanti Sitanadi Tiger Reserve (USTR) spans **1,852 square kilometers** across Chhattisgarh's Dhamtari and Gariaband districts. It is the origin of the Mahanadi, Sitanadi, and Udanti rivers, vital for both Chhattisgarh and Odisha. The reserve acts as a **natural sponge**, storing rainwater and supporting agriculture and wildlife. It serves as a critical tiger corridor linking Maharashtra's Gadchiroli, Chhattisgarh's Indravati Tiger Reserve, and Odisha's Sunabeda Sanctuary. USTR has over **100 villages** within its core and buffer zones and is undergoing habitat restoration, anti-poaching, and community engagement efforts to boost wildlife populations.

Why in news?

Recent camera trap images reveal a resurgence of wildlife, including tigers, leopards, and elephants, denoting USTR's growing success in conservation despite local challenges.

UN Plastics Treaty

The United Nations Plastics Treaty is the first legally binding international agreement aimed at tackling plastic pollution globally. It seeks to regulate the production, use, and disposal of plastics to reduce environmental and human health risks. The treaty negotiations involve representatives from over 190 countries and focus on reducing plastic waste, promoting sustainable alternatives, and managing plastic chemicals like phthalates. It aims to address disproportionate impacts on regions with high plastic consumption and waste. The treaty is expected to influence global plastic industry practices and improve pollution control measures.

Why in news?

The study's findings on health risks from phthalates may inform and strengthen the ongoing negotiations of the UN Plastics Treaty.

Upper Bhavani Dam

The **Upper Bhavani Dam** is a masonry dam located in the Nilgiri Hills of Tamil Nadu. It was constructed primarily for irrigation and hydroelectric power generation. The dam creates the Upper Bhavani Reservoir, which feeds into the Bhavani River, a tributary of the Cauvery River. The area around the dam is ecologically sensitive, part of the Western Ghats biodiversity hotspot. The reservoir supports local agriculture and is a source for pumped storage hydropower projects. The region experiences rainfall during the monsoon, contributing to the dam's water levels. The dam is also near protected areas like Mukurthi National Park.

Why in news?

The dam's waters are proposed to be used for a 1,000 MW pumped hydropower project by NTPC Tamil Nadu Energy Company Limited, requiring environmental clearance due to ecological sensitivity.

Upper Siang District

Upper Siang is a district in Arunachal Pradesh, located in the northeastern part of India,

known for its diverse flora and fauna. It is part of the Eastern Himalayas biodiversity hotspot. The district is named after the Siang River, the local name for the Brahmaputra in this region. Upper Siang has varied terrain including dense forests, river valleys, and high-altitude areas. It is home to several indigenous tribes and hosts many endemic species. The region's ecological significance is brought into light by frequent discoveries of new species like Caliphaea Sinuofurcata.

Why in news?

The district gained attention as the site where the new damselfly species Caliphaea Sinuofurcata was discovered, underscoring its role in biodiversity conservation.

Vaccine-Preventable Disease Outbreaks

Diseases such as measles, meningitis, and yellow fever have seen increased outbreaks globally due to vaccine misinformation and reduced international aid. Measles is highly contagious and can cause serious complications, including death. Meningitis is an inflammation of the brain and spinal cord membranes, often caused by infection. Yellow fever is a viral hemorrhagic disease transmitted by mosquitoes, preventable by vaccination. These outbreaks threaten public health gains made over decades. The resurgence is linked to vaccine hesitancy fueled by misinformation and challenges in vaccine distribution, emphasizing the need for sustained immunization efforts and public trust.

Why in news?

The WHO issued warnings about rising outbreaks of vaccine-preventable diseases amid misinformation and funding cuts, denoting the importance of maintaining vaccination coverage worldwide.

Vembanad-Kol Wetland System

The **Vembanad-Kol wetland system** is a Ramsar site, recognized for its international importance as a wetland. It spans multiple districts in Kerala, including Alappuzha, Kottayam, and Ernakulam. The system is fed by **six major rivers** and covers part of Kerala's surface water resources. It supports diverse flora and fauna, playing important role in floodwater retention, water purification, and sediment transport. The wetland has experienced a **27% reduction in surface area between 1917 and 1990** due to land reclamation and sedimentation. It is also affected by invasive species like water hyacinth, which impact oxygen levels and biodiversity.

Why in news?

The Vembanad-Kol wetland system is central to the ongoing Vembanad Lake Rejuvenation Project aimed at restoring the lake's shrinking area and ecological health, with a ₹188.25 crore five-year plan underway.

Visceral Leishmaniasis (Kala-azar)

Visceral leishmaniasis, also known as kala-azar, is a parasitic disease caused by protozoa of the genus "Leishmania". It primarily affects internal organs such as the spleen, liver, and bone marrow. Symptoms include prolonged fever, weight loss, fatigue, and

enlargement of the spleen and liver. Untreated kala-azar has a fatality rate exceeding 95%. The disease is transmitted by the bite of infected female sandflies. It is classified as a neglected tropical disease (NTD) and predominantly affects poor populations in tropical and subtropical regions, especially in East Africa and South Asia. Treatment options include antimonial drugs, amphotericin B, and emerging oral therapies.

Why in news?

East African countries signed a memorandum of understanding to eliminate visceral leishmaniasis, focusing on increased investment and innovative treatments, during the 78th World Health Assembly in Geneva, May 2025.

Waste to Green Hydrogen (W2GH)

Waste to Green Hydrogen (W2GH) technology converts biogenic waste materials into hydrogen fuel through environmentally friendly processes. This approach supports sustainable energy transitions by producing hydrogen without fossil fuel use, reducing greenhouse gas emissions. W2GH aligns with global clean energy strategies, including the EU Hydrogen Strategy and India's National Green Hydrogen Mission. The technology aims for cost-effective, scalable hydrogen production methods, integrating waste management with renewable energy generation. It contributes to energy security and circular economy principles by valorizing waste streams into high-value clean energy carriers.

Why in news?

W2GH is the second coordinated call area under the India-EU TTC 2025 research initiatives, funded jointly by the EU and India's Ministry of New and Renewable Energy to advance sustainable hydrogen production.

Water Hyacinth

Water hyacinth (**Eichhornia crassipes**) is an invasive aquatic plant native to the Amazon basin. It spreads rapidly in freshwater bodies, forming dense mats that block sunlight and reduce oxygen levels. This leads to increased chemical oxygen demand (COD) and biological oxygen demand (BOD), harming aquatic life. Water hyacinth also disrupts water flow and sediment transport. It is used in some regions for biofuel and handicrafts, but its uncontrolled growth poses ecological threats. In Vembanad Lake, water hyacinth proliferation has contributed to a **66% decline in fish catch over 30 years** and worsened eutrophication.

Why in news?

Water hyacinth removal is a key component of the Vembanad Lake restoration efforts, with recent cleaning drives removing large quantities of the weed to improve water quality and fish yields.

Wildlife Protection Act, 1972

The **Wildlife Protection Act, 1972** is a central Indian legislation aimed at protecting wild animals, birds, and plants. It allows for the creation of protected areas including national parks, wildlife sanctuaries, and community reserves. Community reserves are a category introduced to involve local communities in conservation while recognizing their rights. The

Act prohibits hunting and regulates trade in wildlife products. Amendments over time have expanded its scope to include habitat protection and biodiversity conservation, making it a mainstay of India's wildlife and forest management policies.

WHY IN NEWS?

Oran lands in Rajasthan will be notified as community reserves under this Act to ensure legal protection and community-based conservation following the Supreme Court ruling.

Wildlife Trade as Virus Vector

The global wildlife trade involves the capture, transport, and sale of wild animals for meat, fur, pets, and traditional medicine. It can facilitate zoonotic virus transmission by moving infected animals over long distances quickly, bypassing natural dispersal limits of reservoir species like bats. In China, wildlife markets historically sold species such as palm civets and raccoon dogs, which acted as intermediate hosts during the 2002 SARS outbreak. Similar patterns are now implicated in the spread of SARS-CoV-2. The wildlife trade increases pandemic risk by mixing diverse species in close contact, often under poor sanitary conditions.

WHY IN NEWS?

New research marks wildlife trade as the likely mechanism for the long-distance spread of SARS-CoV-2 from bat reservoirs to humans, supporting zoonotic origin theories over lab-leak hypotheses.

Yala Glacier

The **Yala Glacier** in Langtang, Nepal, is the first glacier in Nepal declared "dead" due to complete melting. It has shrunk by **66%** and retreated **784 meters** since the 1970s. Yala is among only seven glaciers in the Hindu Kush Himalayas monitored annually for over a decade and one of 38 with in-situ measurements, providing critical data on glacier retreat. It was the site of a glacier funeral in May 2025, featuring memorial plaques with inscriptions by authors Andri Snaer Magnason and Manjushree Thapa. The glacier has been a key training site for over 100 glaciologists.

WHY IN NEWS?

Yala Glacier was declared dead in May 2025, marking event in glacier loss in the Hindu Kush Himalayas and denoting the accelerating impact of climate change in the region.

Yamuna Kosh (Yamuna Fund)

The Yamuna Kosh is a proposed dedicated fund aimed at revitalizing the Yamuna river through sustained financial support for pollution control and riverfront development. It is intended to finance wastewater treatment, solid waste management, and infrastructure projects. The fund model draws inspiration from other environmental trusts in India and worldwide, designed to pool resources from government, private sector, and public donations. Yamuna Kosh would specifically target treatment of sewage from major drains before discharge into the river, and support long-term monitoring and enforcement activities. It is expected to enhance accountability and ensure continuous funding for river conservation.

Why in news?

Yamuna Kosh was announced as part of the BJP's 2025 Delhi Assembly election manifesto to support the river's clean-up and sustainable management.

Yellow-billed Chough

The **Yellow-billed Chough** (Pyrrhocorax graculus) is a high-altitude corvid found in the Himalayas and Central Asia. It is distinguished by its glossy black plumage and bright yellow bill and legs. The species inhabits rocky cliffs, alpine meadows, and mountain pastures above 3,000 meters. It feeds on insects, seeds, and small invertebrates, often foraging on the ground. The Yellow-billed Chough is known for its acrobatic flight and complex vocalizations. It nests in crevices or caves, often reusing the same sites annually. Its presence indicates healthy alpine ecosystems.

Why in news?

The Yellow-billed Chough is one of the rare bird species contributing to the biodiversity richness of the newly established Tsarap Chu Conservation Reserve in Himachal Pradesh.

Zographetus dzonguensis

Zographetus dzonguensis is a butterfly species discovered recently and named after the Dzongu region in Sikkim. It belongs to the family Hesperiidae, commonly known as skippers. This species is endemic to northeastern India and represents new additions to scientific knowledge of the area's biodiversity. Its discovery puts stress on Dzongu's ecological uniqueness and the presence of previously undocumented species in the Indo-Myanmar Biodiversity Hotspot. The species' habitat is primarily subtropical hill forests, which support the highest butterfly diversity in the region.

Why in news?

Zographetus dzonguensis is mentioned due to its recent identification in the Dzongu butterfly survey, denoting new species discoveries in Sikkim's biodiversity hotspot.

Zooplankton Salinity Shift

Between 2015 and 2022, Lake Manzala experienced an increase in salinity that altered its zooplankton community. The number of saline zooplankton species rose from **7 to 12**, while freshwater species declined. This change was most pronounced in the northern and central parts of the lake where salinity increased by **73%**. Two new saline zooplankton species emerged during this period. The overall zooplankton population decreased, but saline species expanded, reflecting shifts in the lake's chemical and ecological conditions following dredging operations.

Why in news?

Research published in May 2025 brought into light how dredging and increased salinity in Lake Manzala caused changes in zooplankton diversity, indicating ecological transformation of the lake.

History (India / World) & Culture

Arnala Fort

Arnala Fort is a historic sea fort located on Arnala Island off the coast of Vasai in Maharashtra. Built in the 18th century by the Portuguese, it served as a strategic maritime

defense point controlling the Arabian Sea trade routes. The fort is approximately 1.5 kilometers long and features robust stone walls, bastions, and a freshwater well. Arnala Fort was later captured by the Marathas and played a role in regional naval conflicts. It is accessible only by boat and remains an important cultural heritage site reflecting India's colonial and maritime history.

WHY IN NEWS?

The Indian Navy named its new ASW SWC 'Arnala' after the historic fort, symbolizing India's rich maritime heritage and naval tradition.

Bhartiya Bhasha Samiti

The Bhartiya Bhasha Samiti is an organization focused on the promotion and preservation of Indian languages and literature. Chaired by Chamu Krishna Shastry, it plays a role in linguistic research and cultural preservation. The Samiti engages in advocacy for language education and supports projects related to the documentation and digitization of manuscripts in various Indian languages. It collaborates with academic and cultural institutions to enhance language use and manuscript conservation efforts, contributing expertise to national initiatives like the National Manuscripts Mission.

WHY IN NEWS?

The Bhartiya Bhasha Samiti is part of the expert group advising the revamped National Manuscripts Mission, aiding in the preservation of India's linguistic heritage.

Bodhi Yatra

The **Bodhi Yatra** is a pilgrimage journey focused on Buddhist heritage sites associated with the life of Lord Buddha. It connects key locations where Buddha attained enlightenment, preached, or passed away. The term "Bodhi" means "awakening" or "enlightenment" in Sanskrit. The Yatra traditionally includes visits to places like Bodh Gaya, Kushinagar, Sarnath, and Kapilvastu. It serves both religious and cultural tourism purposes, promoting Buddhist teachings and historical awareness. The Bodhi Yatra also encourages international cultural exchange among Buddhist countries, strengthening ties through shared spiritual heritage and tourism development initiatives.

WHY IN NEWS?

The Bodhi Yatra is being organised from June 2 to 7 by the Uttar Pradesh Tourism Department with ASEAN delegates to promote Buddhist heritage and international tourism cooperation.

Brahma Jinalaya

The Brahma Jinalaya is the oldest temple in Lakkundi, Karnataka, dating to 1007 CE during the Kalyana Chalukya era. It is a Jain temple dedicated to Lord Mahavira and exemplifies early Vesara style architecture. The temple features detailed carvings and a sanctum with a distinctive shikhara (tower). Its construction marks the rise of Jain influence under the Chalukyas. The temple's name combines "Brahma" (creator god in Hinduism) and "Jinalaya" (Jain temple), indicating syncretic cultural influences. It remains an important example of religious coexistence and architectural innovation in medieval Karnataka.

Why in news?

Brahma Jinalaya is included in the group of monuments being considered for UNESCO World Heritage tentative listing for their architectural and historical significance.

Brahui Language

Brahui is a **Dravidian language** spoken in Balochistan, Pakistan, as well as parts of Afghanistan and Iran. It is a linguistic outlier, geographically isolated from other Dravidian languages concentrated in South India. Brahui speakers are often bilingual, using Balochi or Urdu daily. The language is linked to the ancient Mehrgarh civilization (7000–5500 BC), a precursor to the Indus Valley Civilization. The Brahui tribes historically formed a confederation similar to ancient Tamil minor kingships. Despite limited written literature, the University of Balochistan offers degree programs in Brahui up to the doctoral level.

Why in news?

Brahui is in the news due to the translation of the Thirukkural into Brahui by Professor Muhammad Afzal Brohi, underscoring efforts to preserve this isolated Dravidian language.

Ching Kaba Ritual

Ching Kaba is a traditional ritual performed by some communities in Manipur, especially in the hill districts. It involves offerings and prayers conducted on sacred hills, such as the Thangting or Thangjing Hills in Churachandpur district. The ritual is linked to animistic and ancestral worship practices, seeking protection, blessings, and harmony with nature. It is often performed during specific festivals or important community events. The ritual has cultural significance among Kuki and related tribes, and access to ritual sites can be sensitive due to ethnic territorial claims.

Why in news?

Kuki tribal bodies urged Meiteis to avoid visiting the Thangting or Thangjing Hills to perform the Ching Kaba ritual, citing ethnic tensions and territorial sensitivity in Manipur.

Choundi

Choundi is a village in Maharashtra known as the birthplace of **Ahilyabai Holkar**, a prominent 18th-century queen renowned for her administrative skills and social reforms. It is situated in the Ratnagiri district and has since become a site of historical and cultural importance. The village hosts annual celebrations on Ahilyabai's birth anniversary, attracting visitors and officials. Choundi's recognition has increased due to government events and campaigns like the Adishakti Abhiyan, which use the location symbolically to promote women's empowerment and social justice.

Why in news?

Choundi was the venue for the Maharashtra Cabinet meeting announcing the Adishakti Abhiyan, coinciding with the 300th birth anniversary of Ahilyabai Holkar.

Chowmahalla Palace

Chowmahalla Palace is a historic palace complex in Hyderabad, Telangana, built in the 18th century by the Nizams of Hyderabad. It served as the official residence and seat of power for the Asaf Jahi dynasty. The palace features a blend of Persian, Indo-Islamic, and

European architectural styles, with grand courtyards, fountains, and ornate halls. It includes the Khilwat Mubarak, the royal court, and a collection of vintage cars. The palace underwent extensive restoration and is now a museum and cultural venue showcasing the Nizam era's heritage.

Why in news?

Miss World 2025 contestants are scheduled to attend a welcome dinner at Chowmahalla Palace, denoting the palace's role as a cultural and heritage landmark in Hyderabad.

Commemorative Coin and Stamp

Commemorative coins and stamps are specially issued to mark events or anniversaries. The 50 years of Sikkim's statehood are being celebrated with a unique set of coins and stamps issued by the Government of India. These collectibles feature symbols representing Sikkim's cultural heritage, natural beauty, and historical milestones. The coins are made with specific metals and designs that show the state's journey since joining the Indian Union in 1975. Such issues are limited edition and often become valuable for collectors and historians. They serve as a medium to promote awareness about Sikkim's identity.

Why in news?

Prime Minister Modi will release the commemorative coin, souvenir coin, and stamp marking 50 years of Sikkim's statehood during his visit.

Daru Brahma Idols

Daru Brahma refers to the neem wood idols of Lord Jagannath, Balabhadra, and Subhadra in the Puri Temple. According to tradition, the deities are carved from sacred neem wood, symbolizing the divine presence (Brahma) in the wood (Daru). These idols are replaced every 12 or 19 years during the Nabakalebara festival. Stone idols are not used because the tradition holds that the divine essence resides specifically in the neem wood. The ritualistic process of selecting the neem trees and carving the idols follows strict religious protocols.

Why in news?

Servitors of the Puri Temple criticized the Digha temple for installing stone idols instead of the traditional neem wood Daru Brahma idols.

Dravyanamākara Nighaṇṭu

Dravyanamākara Nighaṇṭu, attributed to **Bhisma Vaidya**, is a unique Ayurvedic text serving as an appendix to the Dhanvantari Nighaṇṭu. It focuses exclusively on **homonyms of drug and plant names**, a complex area vital to Ayurveda. The work contains 182 verses and two colophon verses. It has been meticulously edited and commented on by Dr. Sadanand D. Kamat to enhance its scholarly utility, especially for Rasashastra, Bhaishajya Kalpana, and classical Ayurvedic pharmacology research.

Why in news?

The text was recently revived and critically edited by Dr. Kamat, with its publication launched during a CCRAS event in Mumbai, denoting its importance in Ayurvedic studies and pharmacology.

Fort Ghanta

Fort Ghanta, located in Rajasthan, is an ancient fort known for its distinctive bell-shaped tower (Ghanta means bell in Hindi). The fort dates back to the medieval period and was part of the strategic defense system in the region. It served as a watchtower and signaling point for nearby forts and settlements. The architecture combines Rajput military design with local styles. Though lesser-known than other Rajasthan forts, Fort Ghanta played a key role in regional security and communication. Its bell tower was used to alert inhabitants of invasions or emergencies.

Why in news?

Fort Ghanta was lit up in the colors of the Indian flag in May 2025 during the Ek Desh Ek Dhadkan campaign to promote national unity and commemorate the bravery of India's unsung heroes.

Gatka

Gatka is a traditional martial art associated with the Sikh community of Punjab. It primarily uses wooden sticks, swords, and other weapons in its practice and demonstrations. Gatka originated as a combat technique for self-defense and warfare but evolved into a sport and cultural performance. The martial art emphasizes agility, speed, and precision in weapon handling. It is often performed during Sikh festivals and religious events. Gatka training includes physical conditioning, spiritual discipline, and mental focus. The art form has spread beyond India to Sikh diaspora communities worldwide, promoting cultural heritage and physical fitness.

Why in news?

Gatka was included as a traditional sport in the Khelo India Youth Games 2025 to promote rural and indigenous sports among young athletes.

Gundaram Reserve Forest

The **Gundaram Reserve Forest** is located about 10 km from Peddapalli district headquarters in Telangana. It is a protected forest area known for its rich biodiversity and ancient archaeological significance. The forest contains rock shelters and inscriptions dating from the 1st century BCE to the 6th century CE, linked to the Satavahana period. It is managed with the cooperation of the Telangana Forest Department, which aids archaeological surveys. The site includes the notable rock surface called Sitammalodi near Gattusingaram village, where important epigraphical discoveries have been made, providing vital information about early Deccan polity and culture.

Why in news?

Eleven ancient inscriptions were documented in the Gundaram Reserve Forest by the ASI during a recent epigraphical survey, revealing critical historical data from the Satavahana period and earlier eras.

Gunjala Gondi Script

The Gunjala Gondi script is the oldest known script used for the Gondi language, a South-Central Dravidian language spoken by the Gond communities in central India. It was

rediscovered in the early 21st century through manuscripts found in Gunjala village, Telangana. The script is distinct from the Masaram script, which is more widely used in other Gondi-speaking regions. Gunjala Gondi contains **unique characters** and is used primarily for documenting oral traditions like riddles, folk songs, and puzzles. Literacy in Gondi remains low, with only about 2% of speakers able to read and write the language.

WHY IN NEWS?

The Gunjala Gondi script is brought into light as part of the Thirukkural translation project, aiming to enrich the Gondi language and preserve its oral and literary heritage.

Ishtalinga Necklace

The Ishtalinga is a **personal emblem of Lord Shiva** worn as a necklace by adherents of Lingayatism, a religious tradition founded by Basavanna in the 12th century. It symbolizes the individual's direct connection to divinity, bypassing traditional temple worship and priestly mediation. The Ishtalinga is typically made of stone or metal and worn around the neck throughout life. This practice emphasizes **personal devotion and spiritual equality**. The Ishtalinga is central to Lingayat identity and religious practice, distinguishing it from mainstream Shaivism. Its widespread use began in the 12th century and continues among Lingayats.

WHY IN NEWS?

Basaveshwara's promotion of the Ishtalinga necklace was brought into light during the Basava Jayanti celebrations in 2025, underscoring its importance in Lingayat religious practice.

Janjira Fort

Janjira Fort is a historic sea fort located off the coastal region of Maharashtra in the Arabian Sea. Built in the 15th century by the Siddis, it is famous for being an unconquered fort due to its strong fortifications and strategic location. The fort is surrounded by deep waters and connected to the mainland by a narrow causeway. It played role in controlling maritime trade and defense along the western coast of India. Janjira is unique for its blend of African and Indian architectural styles, reflecting the Siddi community's heritage.

WHY IN NEWS?

The ASI aims to begin underwater archaeological explorations near Janjira Fort as part of its expanded operations in Maharashtra's coastal heritage sites.

Jorasanko Thakurbari

Jorasanko Thakurbari is the ancestral home of the Tagore family located in Kolkata. It was built in the 18th century and served as the residence of Rabindranath Tagore and his family. The mansion is a **heritage site** and now houses the Rabindra Bharati University dedicated to arts and culture. The estate contains a museum exhibiting Tagore's personal belongings, manuscripts, and artworks. Jorasanko was a hub for cultural and intellectual activities during the Bengal Renaissance. The name "Jorasanko" means "twin bridges," referring to two small bridges that once connected the neighborhood.

WHY IN NEWS?

Jorasanko Thakurbari is mentioned as the birthplace and childhood home of Rabindranath

Tagore, whose birth anniversary is being celebrated in 2025.

Kaleshwara Mukteshwara Temple

The Kaleshwara Mukteshwara Swamy temple in Kaleshwaram features **twin Shivalingas**—Lord Kaleshwara (Yama) and Lord Mukteshwara (Shiva)—on a single pedestal, a rare architectural and spiritual pairing. Legend states Yama performed penance here to gain Shiva's grace, earning a place beside him. The Mukteshwara lingam uniquely has **two nostrils** through which water poured during abhishekam disappears underground, believed to be the Saraswati river's emergence point. The temple complex also includes shrines for Goddess Saraswati Devi, Shubhananda Devi, Sangameshwara, and Dattatreya, with origins traced to a 1171 CE inscription linked to the Kakatiya dynasty.

Why in news?

The temple is a focal point during the Saraswati Pushkaralu festival, drawing devotees for special rituals like Kalasarpadosha Nivarajana Puja and Navagraha Puja, believed to influence karmic and planetary destinies.

Kalingan Architectural Style

The Kalingan architectural style is a distinct temple architecture originating from the ancient Kalinga region, now Odisha. It features a curvilinear spire (shikhara), intricately carved sandstone walls, and a square sanctum. The style is known for its elaborate ornamentation, including sculptures of deities, floral motifs, and mythological scenes. The Jagannath Temple in Puri is a prime example. Kalingan architecture influenced many temples built between the 7th and 13th centuries. It emphasizes verticality and symmetry, with a focus on the sanctum sanctorum and the assembly hall (jagamohana).

Why in news?

The new Digha Jagannath Temple was constructed in the Kalingan architectural style, replicating the 12th-century Puri Temple's design.

Kalyana Chalukyas

The **Kalyana Chalukyas**, also known as Western Chalukyas, ruled parts of present-day Karnataka from the 10th to 12th centuries CE. They are known for pioneering the Vesara architectural style, a hybrid of Nagara and Dravida temple designs. Their reign marked phase in temple construction, combining intricate carvings and innovative structural techniques. The dynasty's capital was Kalyani (modern Basavakalyan). They patronized Shaivism and Jainism, resulting in diverse religious monuments. Their temples often included large stepwells, some larger than the temples themselves. The dynasty played important role in the cultural and political history of South India during the medieval period.

Why in news?

The Kalyana Chalukya monuments in Karnataka are being considered for UNESCO World Heritage tentative listing, denoting their architectural and historical significance.

Keezhadi Excavation

The Keezhadi site near Madurai, Tamil Nadu, revealed an ancient urban civilization linked

to the Sangam era, dating back to around **200 BCE** based on Accelerator Mass Spectrometry (AMS) carbon dating of charcoal. Excavations began in **2014**, uncovering artifacts indicating a sophisticated settlement along the Vaigai River. The site is notable for its stratigraphy and material culture, offering vital information about early Tamil society. The report on Keezhadi was extensive, spanning **982 pages**, but faced scrutiny over periodization and scientific dating methods by the Archaeological Survey of India (ASI). The site is often referred to as the "Vaigai Valley Civilization."

Why in news?

The ASI requested archaeologist Amarnath Ramakrishna to revise his Keezhadi excavation report after expert reviews suggested corrections to improve authenticity and clarity, delaying the report's official acceptance and publication.

Khanda Sword

The **Khanda** is an indigenous Indian sword dating back to the 9th or 10th century. It features a long, straight, double-edged blade with a distinctive Hindu basket hilt and knuckle guard. Traditionally used by Rajput, Sikh, and Maratha warriors, the Khanda was designed primarily for chopping. Unlike many other swords, it is a purely Indian invention without foreign influence. Firangi variants of the Khanda incorporated imported European steel blades, often from German makers like Solingen. These swords combined European blade technology with Indian hilt designs and were used ceremonially or in battle.

Why in news?

An 18th-century Khanda sword associated with Raghuji Bhonsle I is being auctioned at Sotheby's London, denoting its historical and cultural significance.

Kumbh Mela

Kumbh Mela is a mass Hindu pilgrimage occurring every 12 years at four river-bank sites in India – Prayagraj, Haridwar, Nashik, and Ujjain. It is recognized as the largest peaceful gathering globally, attracting tens of millions of devotees. The festival involves ritual bathing in sacred rivers and spiritual discourses. The 2025 Kumbh Mela was held in Prayagraj, drawing millions and boosting local trade, hotels, and transport sectors. The event's scale requires extensive infrastructure, including temporary tent cities and sanitation facilities. It has been inscribed on UNESCO's Intangible Cultural Heritage list since 2017.

Why in news?

The 2025 Kumbh Mela contributed to increased travel activities and economic momentum in the trade, hotels, and transport segments during Q4 FY25.

Lairai Jatra

The **Lairai Jatra** is an annual religious festival held at the Shree Lairai Devi temple in Shirgaon village, North Goa. It honors **Lairai Devi**, a local deity revered by the community. The festival features a procession attracting thousands of devotees from surrounding areas. The event is marked by traditional rituals, offerings, and cultural performances. Narrow village lanes leading to the temple often become overcrowded during the festival.

The Jatra is for local identity and cultural heritage, reflecting centuries-old customs unique to the Bicholim region in Goa.

Why in news?

The Lairai Jatra procession in Shirgaon village was the site of a fatal stampede in May 2025, causing six deaths and over 70 injuries, prompting a government inquiry and official transfers.

Lodi Dynasty Architecture

The Lodi dynasty ruled parts of northern India from 1451 to 1526 and is known for its distinctive architectural style. Lodi-era structures often feature **elegant arches**, ornate stucco medallions, and **geometric and floral motifs**. The architecture combines Indo-Islamic elements with functional design, as seen in stepwells and tombs. Lodi buildings typically use **lime plaster** and mortar, and emphasize symmetry and simplicity. The dynasty's constructions often served both practical and aesthetic purposes, including water conservation and traveler rest areas.

Why in news?

Restoration of Rajon ki Baoli was guided by historical records to maintain the Lodi-era architectural authenticity of the stepwell.

Madhubani Art

Madhubani art, also known as Mithila painting, originates from the Mithila region of Bihar. It is characterized by geometric patterns, vibrant colors, and themes such as Hindu deities, nature, and social events. Traditionally done by women on walls and floors during festivals and ceremonies, the art uses natural dyes and pigments. Madhubani artists employ five distinct styles – Bharni, Katchni, Tantrik, Godna, and Kohbar. The paintings often include symbolic motifs like fish, peacocks, and lotus. The art form has been recognized by UNESCO and continues to be a cultural emblem of the Mithila region.

Why in news?

Madhubani artists participated in the Kala Utsav Artists in Residence programme at Rashtrapati Bhavan in May 2025, presenting their traditional paintings.

Manipur Megaliths

Manipur's megaliths, including those at Willong Khullen, represent one of the most collections of monoliths in India. These stones are believed to have been erected by tribal communities as part of rituals, territorial markers, or victory celebrations. The monoliths are often irregularly placed, lacking the precise astronomical alignment seen in other megalithic sites worldwide. The construction likely involved sophisticated techniques using ropes and levers, despite the absence of modern machinery. Legends attribute their erection to giants, reflecting the cultural mythology surrounding their origin. The site's megaliths are an important link to the ancient history of Northeast India's tribal societies.

Why in news?

The monoliths of Manipur, especially at Willong Khullen, are being studied and promoted as unique archaeological and cultural heritage sites distinct from better-known megalithic locations like Stonehenge.

Marang Buru

Marang Buru, meaning "Great Mountain," is the supreme animist deity of the Santal tribe, symbolizing nature and justice. The Jug Jaher Than, a sacred grove on Marang Buru, is the most revered religious site for Santals, akin to Mecca for Muslims. It is the center for traditional rituals and the Lo Bir Baisi tribal council convenes here to resolve disputes beyond village-level authority. The Santal Hul rebellion of 1855, led by Sidhu and Kanhu Murmu against British officials and landlords, was resolved through this council. Marang Buru holds both religious and judicial significance in Santal culture.

Why in news?

The Jharkhand High Court enforced a ban on intoxicants on Marang Buru to respect its sacred status shared by Santals and Jains amid ongoing community conflicts.

Mulagandha Kuti Vihar

Mulagandha Kuti Vihar is a Buddhist temple located in Sarnath, near Varanasi. It was built in the 1930s by the Mahabodhi Society under Anagarika Dharmapala's guidance. The temple is renowned for its exquisite frescoes depicting the life of Buddha, painted by artist A. C. Mukherjee. It stands on the site where Buddha is believed to have delivered his first sermon. The temple's name means fragrant sandalwood hut, referring to the original monastery where Buddha stayed. Mulagandha Kuti Vihar is a major pilgrimage site and houses relics of Lord Buddha. It is maintained by the Archaeological Survey of India.

Why in news?

The Holy Relics of Lord Buddha will be enshrined at Mulagandha Kuti Vihar on June 4, 2025, marking the culmination of their international pilgrimage tour from Vietnam to India.

Nagarjuna Konda

Nagarjuna Konda, also known as Sriparvata-Vijayapuri, was the capital of the Ikshvaku dynasty during the 3rd and 4th centuries AD. It is located near the Nagarjuna Sagar Dam in Telangana. The site was a prominent center of **Mahayana Buddhism** and contains archaeological remains including stupas, viharas, and inscriptions. Excavations have revealed vital information about early Buddhist culture and the Ikshvaku dynasty's rule. The area is named after the Buddhist philosopher Nagarjuna, who is believed to have lived and taught there.

Why in news?

The Miss World 2025 contestants visited the region near Nagarjuna Sagar Dam, which derives its name from Nagarjuna Konda, emphasizing the area's historical Buddhist importance.

Nagpur Bhonsle Family

The **Nagpur Bhonsle family** was a prominent royal clan within the Maratha Empire, claiming descent from the Sisodia Rajputs of Udaipur. Known as Hinganikar Bhonsles after rehabilitating the village Beradi near Hingani, they played important role in expanding Maratha influence in central India. Raghuji Bhonsle I, founder of the Nagpur Bhonsle

dynasty, established control over large territories including Berar, Gondwana, Odisha, and parts of Bengal. The family held the title Sena Saheb Subah, a high military rank conferred by the Chhatrapati of Satara. They governed a region of approximately **2.17 lakh sq km** at their peak.

Why in news?

The sword auctioned in London belonged to Raghuji Bhonsle I, founder of the Nagpur Bhonsle family, whose legacy is integral to Maratha history and regional governance.

National Manuscripts Mission (NMM)

The National Manuscripts Mission was established in 2003 under the Indira Gandhi National Centre for Arts to survey, document, and conserve India's ancient manuscripts. It has created metadata for over **52 lakh manuscripts** and digitized around **three lakh titles**. Despite this, only about one-third of digitized manuscripts are accessible online due to the absence of a formal access policy. Approximately **80% of manuscripts** are privately owned, complicating public availability. Over 21 years, NMM has conducted preventive and curative conservation on **nine crore folios**. The mission was allocated ₹60 crore in the 2025 budget, up from ₹3.5 crore.

Why in news?

Prime Minister Narendra Modi is set to launch the revamped and autonomous National Manuscripts Mission, renamed the 'Gyan Bharatam Mission', on June 9, 2025, with increased budget and expanded scope.

National Mission for Manuscripts

The **National Mission for Manuscripts** (NMM), established in 2003, aims to locate, document, conserve, and disseminate India's manuscript heritage. It covers manuscripts in over **23 Indian languages** and various scripts, spanning subjects like literature, science, and philosophy. The mission has developed a comprehensive database called the **National Database of Manuscripts**. It supports manuscript preservation through training, digitisation, and research grants. As of 2025, the NMM is set to become an autonomous body to enhance its operational efficiency and expand its conservation and digitisation activities nationwide.

Why in news?

The National Mission for Manuscripts is being made autonomous to strengthen its role in preserving and digitising India's manuscript heritage, as announced alongside the National Archives digitisation efforts.

Natya Shastra

The **Natya Shastra** is an ancient Indian treatise on performing arts, written by Bharata Muni around 200 BCE to 200 CE. It covers theater, dance, music, and dramatic composition, detailing techniques for expression, stagecraft, and audience engagement. The text is foundational to classical Indian arts and influenced Asian performing traditions. It outlines eight rasas (emotional states) essential for artistic impact. The Natya Shastra integrates spiritual and aesthetic principles, emphasizing art's role in shaping human

emotions and societal values. It remains a key reference for Indian classical dance and theater practitioners worldwide.

Why in news?

Prime Minister Modi referenced the Natya Shastra during the WAVES summit to underline India's rich artistic heritage and the historic importance of art in shaping human experiences.

Naxalbari Rebellion

The **Naxalbari Rebellion** was a peasant uprising that began in 1967 in the Naxalbari village of West Bengal's Siliguri subdivision. It was led by radical communists who opposed landlord exploitation and feudal systems. The rebellion marked the beginning of the Naxalite movement, inspiring Maoist insurgencies across India. The revolt was violently suppressed but laid the foundation for decades of armed struggle by left-wing extremists. The term Naxal derives from this event and is used to describe Maoist insurgents. The rebellion influenced various groups to adopt guerrilla tactics and a rural-based revolutionary strategy.

Why in news?

The Naxalbari Rebellion is referenced as the historical origin of the Maoist insurgency, which the government is currently targeting for eradication by 2026.

Neolithic Revolution

The **Neolithic Revolution** was the gradual transition from hunting-gathering to food production through agriculture and animal domestication, occurring between 10,000 and 5000 BCE globally. It led to permanent settlements, pottery, weaving, and a division of labor by sex. This revolution marked the start of human civilization and the Holocene epoch's cultural transformation. Early crops included wild paddy, wheat, and barley, while goats, sheep, and cattle were domesticated. The Neolithic Revolution happened independently in different regions, including the Fertile Crescent, Indus Valley, Ganges Valley, and China, each with unique cultural features.

Why in news?

The newly discovered site reflects the lifestyle changes brought by the Neolithic Revolution, including settled living, tool advancement, and early domestication practices.

Operation Uranus

Operation Uranus was the Soviet counteroffensive launched on November 19, 1942, during the Battle of Stalingrad. It aimed to encircle the German 6th Army by attacking weak Romanian and Hungarian forces on the flanks. The operation successfully trapped nearly 300,000 Axis troops in Stalingrad. It involved over 1.1 million Soviet soldiers and was one of the largest encirclement battles in history. The success of Operation Uranus marked a turning point in World War II on the Eastern Front, leading to the eventual surrender of German forces in the city by January 1943. It demonstrated effective Soviet strategic planning and coordination.

Why in news?

Operation Uranus is mentioned as the Soviet counterattack that turned the tide in the

Battle of Stalingrad, where Biju Patnaik flew supply missions supporting the Red Army.

Piprahwa Relics

The **Piprahwa Relics** were excavated in **1898** from the Piprahwa Stupa in Uttar Pradesh. These relics are believed to be **associated with Lord Buddha** and include bone fragments and other artifacts. The site gained attention when a stone casket bearing an inscription referencing the Buddha's relics was found. The discovery contributed to understanding the early Buddhist period and the spread of Buddhism in the region. The relics have been subject to various claims and controversies regarding their ownership and authenticity over the years. They remain part of Buddhist heritage and archaeological study.

Why in news?

The Ministry of Culture intervened to prevent the auction of the Piprahwa Relics by Sotheby's Hong Kong, aiming to secure their repatriation to India.

Pushkar Kumbh

The Pushkar Kumbh is a 12-year Hindu festival held at Keshav Prayag in Mana village, distinct from the larger Kumbh Melas in Prayagraj, Haridwar, Nashik, and Ujjain. It occurs when **Jupiter enters the Gemini zodiac sign**. Primarily attended by Vaishnavites from southern India, the festival involves ritual bathing believed to purify the soul and grant **moksha (liberation)**. The event emphasizes spiritual connection between North and South India and has a more intimate scale compared to other Kumbh Melas. It lasts for several weeks, with the 2025 edition concluding on May 26.

Why in news?

The Pushkar Kumbh began in May 2025, drawing thousands of pilgrims to Mana village, with arrangements made by local authorities for safety and smooth conduct.

Qila Rai Pithora

Qila Rai Pithora is the first fortified city of Delhi, built by the Tomar ruler Anangpal II in the 12th century. It was later expanded by Prithviraj Chauhan, also known as Rai Pithora, giving the fort its name. The fortification includes massive stone walls and remnants of ancient gates. It is considered the foundation of medieval Delhi and is located near the Qutub Minar complex. Archaeological excavations have revealed artifacts dating back to the 8th century. Qila Rai Pithora is less visited than other Delhi forts but holds historical importance as Delhi's earliest known fortification.

Why in news?

Qila Rai Pithora was illuminated in the Tricolour as part of the Ek Desh Ek Dhadkan campaign launched by the Ministry of Culture in May 2025 to celebrate national unity and patriotism.

Ramalingalagudem Rock Art

The **Ramalingalagudem rock art** site, located in Nalgonda district, dates back to the Neolithic period (6000-4000 BCE). It features paintings of bulls, stags, dogs, humans, and a man fighting a tiger. The art was created using a **pecking** technique with stone tools. Rock shelters nearby show grooves from sharpening stone axes, indicating temporary

campsites. This site provides rare evidence of prehistoric hunting scenes and human-animal interaction in South India. It is part of a broader network of Neolithic cultural sites in the Indian subcontinent. The site is crucial for understanding early human settlement patterns.

Why in news?

Discovered on May 4, 2025, this prehistoric rock art site offers new vital information about Neolithic life and hunting practices, prompting calls for its preservation by archaeologists.

Ramcharitmanas Chaupai

The "Ramcharitmanas" is a 16th-century Awadhi epic poem by Tulsidas, retelling the Sanskrit "Ramayana". A chaupai (quatrain) quoted during the briefing describes Lord Ram's encounter with the ocean refusing passage to Lanka. Ram initially requests passage politely but later threatens to dry the ocean with an arrow. The ocean relents after three days. The line bhay bin hou na preet means love or respect requires an element of fear or deterrence. This reflects a philosophy that strength underpins peace and respect, emphasizing power as essential for maintaining harmony.

Why in news?

A chaupai from the "Ramcharitmanas" was cited by Air Marshal Bharti to illustrate India's message of deterrence and resolve during the Operation Sindoor briefing.

Ramman Festival

Ramman is a traditional folk festival celebrated in the Salur Dungra village of Uttarakhand's Jyotirmath region. It features a **mask dance** depicting episodes from the **Ramayana** without dialogues, accompanied by songs, drums, and rhythm. The festival uses **18-beat cycles** played on traditional drums called Dhol and Damaun. Performers enact characters like Ram, Sita, Laxman, and Hanuman, and rituals honor the Bhumiyaal Devta deity. The festival lasts 11-13 days and includes various folk dance styles like Mvar-Mvrin, Baniyaan-Baniyaan, and Khyalari. It was declared a UNESCO World Cultural Heritage in 2009.

Why in news?

Ramman festival was celebrated again in May 2025 in Salur Dungra and nearby villages, continuing its tradition of cultural performances and rituals honoring the Ramayana and local deities.

Sendra Festival

Sendra is a three-day hunting festival celebrated annually by the Santal community during the full moon of Baisakh. It marks a ritualistic rebirth for Santal men, who enter the forest to hunt as a rite of survival and cultural identity. The festival is deeply tied to Santal animist beliefs and their connection to Marang Buru. Historically, Sendra has been a flashpoint in conflicts with the Jain community, who follow strict vegetarianism and oppose hunting. Despite legal challenges, the Privy Council upheld Santals' customary hunting rights during Sendra. The festival symbolizes Santal resilience and their traditional way of life.

Why in news?

The Sendra festival was recently celebrated despite a government ban on meat and alcohol near Parasnath/Marang Buru, denoting tensions between Santal customs and Jain sentiments.

Sherpa (Ethnic Group)

The Sherpas are an ethnic group originating from the Himalayan regions of Nepal, Tibet, and India. The term Sherpa means people from the East in Tibetan. They are renowned for their mountaineering skills, especially as guides on Himalayan expeditions. Sherpas possess unique physiological adaptations such as greater lung capacity and efficient oxygen use at high altitudes. Their cultural practices include Tibetan Buddhist traditions and festivals like Dumji. The G20 uses the term Sherpa to denote delegates who prepare summit agreements. Sherpas have played a historic role in Everest climbs, notably assisting Edmund Hillary and Tenzing Norgay in 1953.

Why in news?

27 Sherpas accompanied the Indian Army team led by Kami Rita Sherpa during the 31st Everest ascent in 2025.

Shirgul Maharaj Temple

The Shirgul Maharaj Temple is an ancient religious site located near the summit of Churdhar Peak in Himachal Pradesh. Dedicated to Shri Shirgul Devta, the temple is pilgrimage destination for locals and visitors from neighboring states. The deity is revered as a protector and is associated with several regional legends. The temple is accessible only by trekking through forested areas of the Churdhar Wildlife Sanctuary. It has cultural importance for the Hatti community and other local groups, with annual fairs and rituals held to honor the deity.

Why in news?

The temple's location within the sanctuary caused controversy when a user charge was imposed on visitors, leading to protests from devotees and local communities concerned about access and religious rights.

Shirui Lily Festival

The **Shirui Lily Festival** is an annual cultural event held in Ukhrul district, Manipur, celebrating the Shirui Lily (Lilium mackliniae), the state flower of Manipur. The lily blooms exclusively on Shirui Hill, making the festival tourist attraction. It promotes local Naga culture, traditions, and biodiversity conservation. The festival includes cultural performances, traditional sports, and exhibitions, drawing visitors from across the state and beyond. The event also marks environmental awareness regarding the fragile habitat of the Shirui Lily. Ukhrul district, predominantly inhabited by the Tangkhul Naga tribe, hosts the festival usually in May.

Why in news?

The Shirui Lily Festival scheduled for May 20-24, 2025, is under security scrutiny due to warnings issued by Kuki groups against Meitei visitors traveling through Kuki-majority areas en route to Ukhrul.

Shiva Nataraja Statue

The **Shiva Nataraja Statue** is a 2-meter tall bronze sculpture gifted by India to CERN in 2004. It depicts the Hindu deity Shiva as the cosmic dancer, symbolizing the cosmic dance of creation and destruction. The statue represents the metaphor of subatomic particle interactions as a cosmic dance, a concept popularized by physicist Carl Sagan. It stands near the CERN campus as an artistic and cultural symbol linking ancient Indian philosophy with modern particle physics. A plaque beside it quotes physicist Fritjof Capra, emphasizing the unity of mythology, art, and science.

Why in news?

The statue is mentioned as a symbol of India's long-standing cultural and scientific collaboration with CERN, celebrated alongside India's contributions to the 2025 Breakthrough Prize-winning LHC experiments.

Shri Banke Bihari Temple

The Shri Banke Bihari Temple in Vrindavan is dedicated to Lord Krishna, worshipped as Banke Bihari, a form combining Radha and Krishna. The temple was established in the 19th century by Swami Haridas, a renowned saint and musician. It is famous for its unique deity, which is a composite idol of Radha and Krishna, carved from black stone. The temple follows the Nimbarka Sampradaya tradition of Vaishnavism. The temple's daily rituals involve music and dance, known as "Raaslila," symbolizing the divine love of Radha and Krishna. It attracts thousands of devotees, especially during Janmashtami and Holi festivals.

Why in news?

The Supreme Court approved a Rs 500 crore development plan to improve infrastructure and safety at the Shri Banke Bihari Temple Corridor following a tragic 2022 stampede.

Srikakulam Peasant Uprising

The **Srikakulam Peasant Uprising** took place between 1967 and 1970 in the undivided Andhra Pradesh region. It was a tribal and peasant revolt against feudal landlords and oppressive social structures, inspired by Marxist and Naxalite ideologies. The movement was led by local leaders and supported by student activists, including those who later formed the RSU. The uprising involved armed confrontations and attempts to redistribute land. It was eventually suppressed by state forces but laid the groundwork for later Maoist insurgencies in the region. The revolt is considered early example of armed peasant resistance in India.

Why in news?

The Srikakulam uprising is referenced as a foundational social movement that influenced the Radical Students Union and subsequent Maoist activities in Telangana and Andhra Pradesh.

Suar Mahasuar Nijog

The Suar Mahasuar Nijog is a traditional servitor community in Puri responsible for preparing the bhog (food offerings) for Lord Jagannath at the Jagannath Temple. This

group has hereditary rights and follows strict rituals passed down for centuries. Their role is vital in maintaining the sanctity of the temple's daily worship. The Suar Mahasuar Nijog is distinct from other servitor groups like the Puspalaka Nijog, which dresses the deities. Their opposition to replicating rituals outside Puri stems from a concern for preserving the uniqueness of the original temple's traditions and religious significance.

Why in news?

The Suar Mahasuar Nijog warned against performing traditional rituals at the new Digha Jagannath Temple replica, emphasizing the preservation of Puri's original temple sanctity.

Tanot Mata Temple

The **Tanot Mata Temple** is located near the India-Pakistan border in Jaisalmer, Rajasthan. It is over **1,200 years old** and managed by the Border Security Force (BSF). The temple is famous for surviving heavy bombings during the **1965 Indo-Pak War**, where over 3,000 bombs were dropped nearby but none exploded on or near the temple. It also gained prominence during the **1971 Indo-Pak War**, especially during the Battle of Longewala. The temple is a symbol of faith and resilience for soldiers and locals, with BSF-appointed priests conducting daily rituals even during border tensions.

Why in news?

The Tanot Mata Temple reopened to the public after a temporary closure caused by recent cross-border tensions near the India-Pakistan border.

Thang-Ta

Thang-Ta is a traditional martial art from Manipur, focusing on armed combat with swords (**thang**) and spears (**ta**). It integrates weapon-based fighting techniques with unarmed combat and ritualistic dances. The art emphasizes agility, precision, and spiritual discipline, historically practiced by Manipuri warriors. Thang-Ta is part of the indigenous sports promoted by the Government of India alongside Mallakhamb, Gatka, Yogasana, and Kalarippayattu. It is recognized for its cultural significance and is performed during festivals and martial arts exhibitions.

Why in news?

Thang-Ta is among the five indigenous sports promoted by the Government of India as part of efforts to revive and popularize traditional martial arts and sports in events like the Khelo India Beach Games.

Thazhathupuraykkal Aashari Family

The **Thazhathupuraykkal Aashari family** is a traditional lineage of skilled artisans specializing in crafting wooden and metal structures for Kerala temples. Known for their expertise in making kodimarams (flagpoles) and temple chariots, their craftsmanship follows ancient techniques passed down through generations. The family strictly adheres to Vastu Shastra and ritualistic norms during construction, ensuring spiritual sanctity. Their work is integral to many temple festivals in Kerala, particularly in Thrissur. The artisans use specific local timber and natural materials, avoiding synthetic substances to maintain ritual purity. Their contributions are often uncredited publicly but highly

respected within temple communities.

Why in news?

The Thazhathupuraykkal Aashari family crafted the kodimaram (flagpole) for the ceremonial flag hoisting at the Thiruvambady temple, marking the official start of the Thrissur Pooram festival in May 2025.

Tholu Bommalata

Tholu Bommalata is an ancient shadow puppetry art form from Andhra Pradesh, dating back to the 3rd century. Performers use large, translucent leather puppets to enact stories from Hindu epics like the Ramayana and Mahabharata. Groups of wandering entertainers combine puppetry with ballads, fortune-telling, and acrobatics during all-night performances. The puppets are intricately crafted with movable joints. This art form blends visual storytelling with music and narration. It has traditionally been a rural entertainment medium but is now endangered due to declining audience interest and fewer performers. Preservation efforts focus on cultural festivals and tourism-linked events.

Why in news?

Tholu Bommalata is mentioned among the 80+ folk arts in Andhra Pradesh at risk of extinction due to dwindling patronage.

Udaygiri Caves

The Udaygiri Caves are a group of rock-cut caves located near Vidyanagar in Odisha, dating back to the Gupta period (4th-5th century CE). These caves contain Hindu and Jain sculptures and inscriptions, notably the Varaha panel depicting Lord Vishnu's boar incarnation rescuing the Earth. The site reflects early Indian rock-cut architecture and religious art. Udaygiri is one of the earliest examples of royal patronage for Hindu iconography. The caves were rediscovered in the 19th century and have been subject to archaeological study for their unique blend of religious and historical significance.

Why in news?

Udaygiri Caves were illuminated with the Indian Tricolour in May 2025 as part of a nationwide initiative to honor India's heritage and patriotic spirit under the Ministry of Culture's campaign.

Valiya Paani

Valiya Paani is a traditional ceremonial call performed during temple festivals in Kerala, particularly at Thrissur Pooram. It involves rhythmic drum beats and trumpet-like wind instruments called kombu, producing a distinctive sound that signals the beginning of important rituals or processions. The term "Valiya Paani" translates to "great work" or "grand task," symbolizing the commencement of auspicious activities. This call is performed by specialized musicians trained in temple arts, often belonging to hereditary communities. The sound pattern is unique to each temple, acting as an auditory identifier. It also serves to gather devotees and synchronize festival events.

Why in news?

The Paramekkavu temple started the flag hoisting ceremony during Thrissur Pooram 2025

with the grand Valiya Paani, marking the beginning of festivities.

Varahmihira

Varahmihira was an ancient Indian astronomer, mathematician, and astrologer who lived during the 6th century CE in the court of King Chandragupta Vikramaditya. He authored the encyclopedic "Brihat Samhita," covering astronomy, astrology, and natural phenomena. Varahmihira established an observatory in Ujjain, then a major center of astronomical study. His work influenced both Indian and Islamic astronomy. He was one of the nine jewels (Navaratnas) of Vikramaditya's court, predating the Mughal emperor Akbar's famous Navaratnas. His contributions include theories on planetary motions and eclipses, and his texts remain important references in classical Indian astronomy.

Why in news?

Varahmihira was referenced to emphasize India's rich historical contributions to astronomy and mathematics during a speech celebrating India's ancient scientific heritage.

Science & Technology

Azithromycin-Induced Fatigue

Azithromycin is a commonly prescribed antibiotic used to treat bacterial infections. An uncommon side effect of azithromycin is severe fatigue or tiredness, which can mimic symptoms of other conditions like Chronic Fatigue Syndrome. This fatigue is usually temporary and resolves after discontinuing the medication. The mechanism behind azithromycin-induced fatigue is not well understood but may involve mitochondrial toxicity or immune modulation. Patients on azithromycin should be monitored for unusual tiredness, especially if it persists beyond the treatment period. This side effect is rarely reported in clinical trials but has been noted in clinical practice.

Why in news?

Azithromycin is mentioned as an example of medication-induced fatigue that must be differentiated from CFS during diagnosis.

Boron Alkalinity

Boron alkalinity refers to the capacity of boron-containing compounds, primarily boric acid and borates, to influence the pH and buffering capacity of saline waters. Unlike carbonate alkalinity, which dominates most natural waters, boron alkalinity controls pH in lithium-rich brines from salt pans. Boron exists in different molecular forms whose relative proportions determine whether the solution is neutral or acidic. During evaporation, boric acid breaks down, releasing hydrogen ions that lower pH. This phenomenon is critical in lithium brine chemistry, affecting extraction efficiency and environmental management of mining wastewater.

Why in news?

Research identified boron alkalinity as the dominant factor controlling pH in lithium brines from salt pans, overturning previous assumptions about carbonate's role in these waters.

BRIC-inStem Bangalore

The **BRIC-inStem Bangalore** is a premier research institute under the Department of Biotechnology, focusing on integrative stem cell biology and regenerative medicine. It is part of the Bangalore Life Science Cluster (BRIC) and collaborates with international institutions for cutting-edge biomedical research. BRIC-inStem conducts interdisciplinary research in stem cells, developmental biology, and space biotechnology. It is involved in exploring space biomanufacturing and biotechnology experiments in collaboration with ISRO, aiming to utilize microgravity environments for advanced biological studies. The institute also promotes training and innovation in biotechnology to support India's bioeconomy and space science initiatives.

Why in news?

BRIC-inStem Bangalore is engaged in ISRO-DBT collaborative efforts on space biotechnology and biomanufacturing, discussed during the first ISRO-DBT JWG meeting in May 2025.

Burning Plasma

Burning plasma is a state in which the energy produced by fusion reactions in the plasma is sufficient to sustain the temperature without external heating. In ITER, the goal is to achieve a burning plasma that produces 500 megawatts of power from just 50 megawatts of input, making the reaction self-sustaining. This state is critical for commercial viability, as it demonstrates that fusion energy can be maintained efficiently. Burning plasma replicates conditions found in the sun's core, with temperatures exceeding 150 million degrees Celsius, enabling hydrogen isotopes to fuse and release energy.

Why in news?

ITER aims to create a burning plasma, a self-sustaining fusion reaction, which would be a breakthrough in demonstrating fusion as a viable energy source.

C-band Synthetic Aperture Radar

The **C-band synthetic aperture radar (SAR)** operates in the 4-8 GHz frequency range and is widely used for Earth observation. It can penetrate clouds, rain, and vegetation, providing high-resolution images regardless of weather or lighting conditions. C-band SAR is effective for mapping land use, monitoring deforestation, detecting oil spills, and disaster management. The radar uses microwave pulses to create detailed images by synthesizing a large antenna aperture through the movement of the satellite. It balances resolution and coverage area better than longer wavelength bands like L-band, making it ideal for varied environmental monitoring applications.

Why in news?

EOS-09 satellite is equipped with a C-band SAR, enabling all-weather, day-and-night Earth surface imaging for India.

Cadmium Telluride (CdTe) Solar Technology

Cadmium Telluride (CdTe) is a thin-film solar technology known for its lower production costs and better performance under low-light conditions compared to crystalline silicon.

CdTe modules have efficiency thresholds slightly below silicon, typically around 18-19%. However, CdTe contains **cadmium, a toxic heavy metal**, necessitating strict disposal and recycling protocols to prevent environmental contamination. CdTe panels degrade faster in high-temperature environments but are favored for their lower price and suitability in diffuse sunlight. India's solar policy recognizes CdTe alongside silicon, setting separate efficiency standards in the ALMM, and allowing its use in off-grid solar applications to improve affordability.

Why in news?

The MNRE's 2025 amendment reduced the efficiency requirement for CdTe modules used in off-grid solar projects below 200W from 18% to a uniform 18%, facilitating broader use in rural electrification.

Cartosat-2 Deorbiting

Cartosat-2 was the first Indian Low Earth Orbit (LEO) satellite to be deliberately deorbited at end-of-life, re-entering Earth's atmosphere on February 14, 2024. This mission marked a shift in ISRO's satellite disposal strategy to reduce post-mission orbital life from over 30 years to less than four years, minimizing space debris. Cartosat-2 was part of India's remote sensing satellite series, providing high-resolution earth imagery. Its controlled deorbiting set a precedent for sustainable space operations by actively managing space traffic and reducing long-term collision risks.

Why in news?

Cartosat-2's re-entry in 2024 was reported as part of ISRO's efforts to reduce space debris by shortening the orbital lifetime of defunct satellites.

Central Council for Research in Siddha (CCRS)

The Central Council for Research in Siddha (CCRS) is an autonomous body under the Ministry of Ayush, responsible for coordinating and promoting scientific research in Siddha medicine. Established in 1978, CCRS conducts clinical trials, drug standardization, and pharmacological studies to validate Siddha therapies. It also develops monographs and quality standards for Siddha drugs. CCRS supports digital initiatives like the AyushSuraksha Portal by providing technical expertise. The council operates a national network of research institutes and collaborates with universities and hospitals to integrate Siddha medicine with modern healthcare practices.

Why in news?

CCRS provided technical support for the development of the AyushSuraksha Portal, which was launched to improve pharmacovigilance and regulatory convergence in the Ayush sector.

Central Equipment Identity Register (CEIR)

The Central Equipment Identity Register (CEIR) is a centralized database in India that tracks mobile devices using their International Mobile Equipment Identity (IMEI) numbers. It helps in identifying, blocking, and recovering lost or stolen mobile phones. The CEIR portal integrates with police and telecom networks to facilitate device tracking and

blacklisting. Launched initially in pilot states in September 2022, it expanded nationwide, including Telangana in April 2023. The system aids in curbing mobile theft and counterfeit devices by enabling real-time IMEI verification and reporting through a public portal and police stations.

Why in news?

Telangana leads India in recovering 78,114 stolen or lost mobile phones using the CEIR portal, despite launching 227 days after pilot states, denoting its effectiveness in combating mobile theft.

Chakshu Platform

The **Chakshu platform** is a data analytics and monitoring tool developed by the Department of Telecommunications to track and analyze telecom data for security and regulatory compliance. It aggregates inputs from various sources related to mobile number usage, including suspicious activities and cybercrime reports. Chakshu contributes data to the Financial Fraud Risk Indicator system, enabling multi-dimensional analysis of mobile numbers to assess their risk for financial fraud. It supports the government's efforts to secure the telecom ecosystem by providing actionable intelligence to stakeholders like banks and digital payment providers.

Why in news?

Chakshu platform data is a key input for the Financial Fraud Risk Indicator, which was recently shared with financial institutions to combat cyber fraud in digital payments.

ChlG Gene Deletion

The ChlG gene encodes an enzyme essential for chlorophyll synthesis in plants. A deletion of a DNA segment upstream of ChlG disrupts its function, preventing chlorophyll production and causing yellow pod coloration in pea plants. This mutation explains one of Mendel's previously uncharacterized traits related to pod color. The gene's regulatory region is critical for normal pigment biosynthesis. This deletion is a natural variant found in pea populations and marks how small genetic changes outside coding regions can have visible phenotypic effects. The discovery was made possible by sequencing hundreds of pea plant genomes.

Why in news?

Identification of the ChlG gene deletion explains the genetic basis of yellow pod color, one of Mendel's unresolved traits, from new comprehensive pea genome data.

Circular Photogalvanic Effect

The **circular photogalvanic effect (CPGE)** is a nonlinear optical phenomenon where circularly polarized light generates a photocurrent whose direction depends on the light's handedness. It occurs in materials lacking inversion symmetry and serves as a direct probe of chirality and broken mirror symmetries. CPGE is sensitive to subtle differences between left- and right-handed electronic states and is used to study topological and chiral quantum phases. The effect requires low temperatures and high material purity for clear observation. CPGE measurements provide insight into the electronic structure and

symmetry properties of quantum materials, aiding the development of optoelectronic and photovoltaic technologies.

Why in news?

The observation of CPGE in KV_3Sb_5 confirmed intrinsic chiral charge order in a bulk topological material for the first time, marking a breakthrough in the study of quantum symmetry breaking.

Clonal Fidelity

Clonal fidelity refers to the ability of immune cells, such as T-cells, to produce genetically identical copies of themselves over time. It is measured by tracking T-cell receptor (TCR) sequences as barcodes to identify clones responding to the same antigen. High clonal fidelity indicates stable, long-lasting immune memory and consistent functional responses across repeated infections. In malaria, TR1 cells exhibit high clonal fidelity, maintaining their identity and function through multiple reinfections spanning hundreds of days. This contrasts with other T-cell subsets like TH1 cells, which do not maintain clonal expansion upon reinfection.

Why in news?

Clonal fidelity was a key metric used to demonstrate the long-term memory and stable response of TR1 cells in malaria-infected individuals in the recent study.

Cloud Convection on Titan

Cloud convection on Titan involves the vertical movement of warm air carrying methane vapor upwards, leading to cloud formation and precipitation. Previously observed only in Titan's southern hemisphere, this process is similar to terrestrial convection but occurs in a methane-rich atmosphere at extremely low temperatures. Convection contributes to Titan's active weather system, driving seasonal changes and cloud development. The phenomenon was studied extensively by the Cassini-Huygens mission and is now confirmed in the northern hemisphere by JWST, indicating seasonal atmospheric dynamics linked to Titan's orbit and axial tilt.

Why in news?

JWST's detection of cloud convection in Titan's northern hemisphere during summer is the first of its kind, expanding knowledge of Titan's meteorological cycles.

Collision Avoidance Manoeuvres (CAMs)

Collision Avoidance Manoeuvres (CAMs) are orbital adjustments performed by satellites to prevent potential collisions with other space objects. ISRO has conducted **122 CAMs between 2010 and 2024**, with a peak of 23 CAMs during 2022-2023. In 2024, 10 CAMs were executed, fewer than the previous year due to improved conjunction analysis and more accurate orbital data. CAMs involve revising manoeuvre plans to avoid post-manoeuvre close approaches, especially for Low Earth Orbit (LEO) and Geostationary Earth Orbit (GEO) satellites. These manoeuvres are critical for protecting national space assets from debris, asteroids, and other space hazards.

Why in news?

ISRO's 2024 Space Situational Assessment Report brought into light the successful

execution of 10 CAMs in 2024 to safeguard Indian satellites from collision risks in orbit.

Cosmic Shear

Cosmic shear refers to the weak gravitational lensing effect that slightly distorts the shapes of distant galaxies as their light passes through intervening matter. These distortions map the distribution of dark matter and baryonic matter across the universe. Cosmic shear surveys analyze these shape changes statistically to measure matter clustering and cosmic structure growth. The technique is sensitive to small-scale structures and is a key observational tool for studying dark energy and dark matter. It requires high-precision imaging and large galaxy samples, often using wide-field cameras like the Hyper Suprime-Cam on the Subaru Telescope.

Why in news?

The latest cosmic shear survey using Subaru's Hyper Suprime-Cam has provided new measurements of S8, contributing to the ongoing investigation of the universe's matter distribution.

CRISPR-Based Gene Editing

CRISPR (Clustered Regularly Interspaced Short Palindromic Repeats) is a gene-editing technology derived from a bacterial immune system. It uses the Cas9 enzyme to create targeted double-strand breaks in DNA, allowing precise edits. The system relies on a guide RNA to direct Cas9 to specific DNA sequences. CRISPR has revolutionized genetics due to its efficiency, versatility, and relative simplicity. Beyond research, it is being developed for therapeutic uses in genetic diseases, cancer, and viral infections. Ethical concerns focus on off-target effects and germline editing. First human trials began in the early 2010s.

Why in news?

Scientists employed personalized CRISPR therapy to successfully treat a baby with a rare genetic disorder, demonstrating clinical application of this gene-editing tool.

Cryostat

The **cryostat** is a massive vacuum chamber that houses the entire ITER Tokamak reactor. It measures approximately 30 meters in height and diameter. Its primary function is to provide thermal insulation to maintain the extremely low temperatures needed for the superconducting magnets. The cryostat is designed to minimize heat transfer from the outside environment to the reactor core, which operates near minus 269 degrees Celsius. India designed and manufactured this critical component, which supports the reactor's structure while enabling the superconducting magnets to function efficiently at ultra-cold temperatures.

Why in news?

India's contribution to ITER includes the design and manufacture of the cryostat, a key component for maintaining superconductivity in the reactor.

CSIR–National Physical Laboratory (CSIR-NPL)

The **CSIR–National Physical Laboratory (CSIR-NPL)** is India's national metrology institute, founded in 1947. It specializes in scientific measurement, standardization, and

calibration across physical, chemical, and engineering domains. CSIR-NPL maintains national standards for units of measurement and contributes to international metrology through the International Bureau of Weights and Measures (BIPM). It supports industrial innovation by providing precise measurements critical for technology development. CSIR-NPL also engages in research on quantum standards and measurement techniques, positioning itself as a key player in India's scientific infrastructure and standardization ecosystem.

Why in news?

CSIR-NPL entered a partnership with C-DOT to jointly develop next-generation communication technologies and focus on scientific measurement and standardization in quantum communication.

Dark Energy Spectroscopic Instrument (DESI)

The Dark Energy Spectroscopic Instrument (DESI) is a state-of-the-art spectrograph installed on the Mayall 4-meter telescope in Arizona, designed to measure the redshifts of millions of galaxies and quasars. Its goal is to map the large-scale structure of the universe and study the effects of dark energy on cosmic expansion. DESI's data suggested a weakening of dark energy's influence, implying a possible deceleration of the universe's expansion. This challenges the prevailing assumption of a constant cosmological constant (lambda) in the ΛCDM model and raises the possibility of a future big crunch.

Why in news?

Data from DESI released last year indicated that dark energy may be weakening, suggesting the universe's expansion could slow down or reverse, prompting reconsideration of the standard cosmological model.

De-orbiting Fuel Protocol

The **de-orbiting fuel protocol** involves reserving onboard propellant to lower a satellite's orbit at the end of its mission, ensuring it re-enters Earth's atmosphere and burns up within two years. This protocol reduces space debris by preventing defunct satellites from becoming long-term hazards in orbit. It aligns with international space debris mitigation guidelines, which also recommend removing residual fuel from upper rocket stages to avoid accidental explosions. ISRO's EOS-09 mission follows this protocol, with fuel reserved for controlled de-orbiting and removal of leftover fuel from the launch vehicle's fourth stage to minimize collision risks and debris generation.

Why in news?

EOS-09 mission incorporates fuel reserved for de-orbiting to comply with international debris mitigation standards, aiming for a debris-free mission after its operational life.

Dendrite Growth in Batteries

Dendrites are needle-like lithium metal filaments that form on the anode during battery charging. They grow through the solid electrolyte, potentially piercing it and causing short circuits. This phenomenon resembles hairy roots in plants, where lithium ions accumulate excessively at the anode surface. Dendrite formation is a major cause of failure in lithium

metal and solid-state batteries. Their growth is influenced by mechanical stress and repeated charge-discharge cycles, leading to cracks and voids in the electrolyte. Controlling dendrite growth is key to enhancing battery safety and operational lifetime.

Why in news?

The study observed dendrite formation under operando microscopy, linking their growth to mechanical fatigue in solid-state batteries.

Digital Connectivity Infrastructure (DCI)

Digital Connectivity Infrastructure (DCI) refers to the physical and technological systems installed within properties to enable high-speed digital communication. This includes fiber optic cables, mobile network repeaters, Wi-Fi access points, and other in-building solutions designed to overcome signal attenuation caused by walls and building materials. DCI supports 4G and 5G networks, ensuring seamless data transmission indoors. The development of DCI is now being integrated into property development regulations to encourage future-ready buildings. Effective DCI improves user experience, attracts tenants and buyers, and supports the growing digital economy by enabling reliable connectivity in residential, commercial, and mixed-use properties.

Why in news?

DCI is a key focus in TRAI's new rating framework and draft manual released in May 2025, aimed at standardizing and enhancing digital connectivity within properties.

DRR Dhan 100 (Kamala)

DRR Dhan 100, also called Kamala, is a genome-edited rice variety developed by ICAR-IIRR, Hyderabad, using SDN1 to mutate the Cytokinin Oxidase 2 (CKX2/Gn1a) gene, increasing grain number per panicle. It matures about 20 days earlier than its parent Samba Mahsuri, with improved drought tolerance and nitrogen-use efficiency. Multi-location trials showed a 19% yield increase, averaging 5.37 tonnes/ha and a potential of up to 9 tonnes/ha under optimal conditions. Kamala retains the grain and cooking quality of Samba Mahsuri and is recommended for cultivation in multiple state of Indias across different agro-climatic zones.

Why in news?

Kamala was officially released in May 2025 as one of India's first genome-edited rice varieties, promising higher yields, water conservation, and climate resilience for farmers.

E-Hansa Aircraft

The **Electric Hansa (E-Hansa)** is an indigenously developed two-seater electric trainer aircraft by CSIR-National Aerospace Laboratories (NAL), Bengaluru. It is designed to be a cost-effective alternative to imported trainer aircraft, costing roughly half the price. The E-Hansa is part of the larger **HANSA-3 (NG)** program aimed at pilot training in India. It features electric propulsion, reducing operational costs and emissions. The aircraft supports India's push for self-reliance in aviation technology. Its development integrates modern avionics and sustainable technology, marking milestone in indigenous aerospace innovation.

Why in news?

India announced progress in the development of the Electric Hansa, denoting its affordability and indigenous design as part of the government's self-reliance initiative in aerospace.

GLP-1 Drugs

Glucagon-like peptide-1 (GLP-1) receptor agonists are a class of drugs that mimic the incretin hormone GLP-1, which stimulates insulin secretion and suppresses appetite. Originally developed for type 2 diabetes, these drugs have shown weight loss benefits. Examples include Mounjaro (tirzepatide) by Eli Lilly and Wegovy (semaglutide) by Novo Nordisk. GLP-1 drugs improve glycemic control and reduce cardiovascular risks. They act by slowing gastric emptying and increasing satiety. High costs and limited access restrict their use in many countries. Semaglutide's patent expiry in 2026 will likely enable generic versions, reducing prices and expanding availability.

Why in news?

Mounjaro, a GLP-1 drug, was launched in India in March 2025 for obesity treatment, with sales tripling by April, signaling growing adoption despite high costs.

GPU-based Infrastructure

GPU-based infrastructure uses Graphics Processing Units to handle complex computations faster than traditional CPUs. Originally designed for rendering graphics, GPUs excel at parallel processing, making them ideal for AI, machine learning, and data analytics. This infrastructure supports real-time data processing, live streaming, and AI-powered analytics by accelerating tasks such as neural network training and inference. It is energy-efficient compared to CPU-only systems and critical for high-performance computing environments. GPU clusters enable large-scale simulations, predictive modeling, and advanced data visualization, serving sectors from agriculture to defense.

Why in news?

The Data Center Park in Nava Raipur will feature GPU-based infrastructure to support AI applications and real-time analytics, elevating the region's technological capabilities.

GRAIL Mission

The **Gravity Recovery and Interior Laboratory (GRAIL)** mission consisted of two robotic spacecraft, Ebb and Flow, launched by NASA in 2011. They orbited the Moon to map its gravitational field with unprecedented precision. The mission revealed variations in the Moon's internal structure and crustal thickness. GRAIL's data helped identify differences between the nearside and farside gravity anomalies. The mission ended in 2012 by intentionally crashing both spacecraft onto the lunar surface. GRAIL's findings contributed to understanding lunar formation, volcanic history, and crustal asymmetry, influencing models of planetary differentiation and tidal interactions.

Why in news?

GRAIL data was used in a 2025 NASA study explaining the Moon's nearside-farside differences, linking gravity variations to ancient volcanic activity and internal heat distribution.

Halide Perovskite Semiconductor

Halide perovskites are a class of materials with a crystal structure similar to calcium titanium oxide. They exhibit exceptional light absorption and charge-carrier mobility, making them highly efficient for solar energy conversion. Electronic-grade halide perovskites can be synthesized using locally available chemical resources, reducing dependency on imports. Their main limitation has historically been short operational lifespans, typically less than a few years, due to degradation from heat, light, and electrical stress. Recent advancements have extended their lifespan up to ten years. Unlike traditional silicon cells, perovskites offer potential for lower-cost, high-efficiency tandem solar cells without critical raw material constraints.

Why in news?

IIT Bombay developed a semi-transparent halide perovskite solar cell layered over silicon, enhancing solar cell efficiency to ~30% and extending perovskite lifespan to ten years, enabling commercial viability.

Haloscope

A haloscope is an instrument designed to detect dark matter axions by converting them into photons within a strong magnetic field. It typically consists of a microwave cavity placed inside a powerful magnet, where axions interacting with the field can produce faint electromagnetic signals at microwave frequencies. The concept was first proposed by Pierre Sikivie in the 1980s. Haloscopes scan different frequencies by tuning the cavity to detect axions of varying masses. They are among the primary experimental tools in direct axion detection efforts, with notable examples including the HAYSTAC and ADMX experiments.

Why in news?

The HAYSTAC collaboration reported results from the broadest axion search using a haloscope, employing new quantum measurement techniques to enhance sensitivity in their ongoing dark matter research.

Hyper Suprime-Cam (HSC)

The Hyper Suprime-Cam is a wide-field optical camera mounted on the 8.2-meter Subaru Telescope in Hawaii. It has a 1.77-degree field of view, one of the largest for optical cameras on large telescopes, enabling deep and wide surveys of the sky. HSC is designed to capture faint galaxies and cosmic structures to study dark matter, dark energy, and galaxy evolution. Its high-resolution imaging supports cosmic shear measurements and large-scale structure mapping. The HSC survey is among the deepest wide-area sky surveys, advancing observational cosmology and helping refine parameters like S8.

Why in news?

The Subaru Hyper Suprime-Cam survey team recently published results measuring the S8 parameter, confirming previous findings and denoting ongoing cosmological tensions.

Indian National Space Promotion and Authorisation Center (INSPACe)

INSPACe is an autonomous nodal agency under the Department of Space, established in

2020 to promote and regulate private sector participation in India's space activities. It facilitates access to government-owned space infrastructure for private companies and streamlines approvals for satellite launches, space research, and related activities. INSPACe acts as a single-window regulator and promoter, ensuring compliance with national space policies while encouraging innovation and investment. It aims to boost India's space economy by enabling private firms to develop satellite technology, launch vehicles, and space applications. INSPACe's creation marked shift from exclusive government control to a collaborative ecosystem.

Why in news?

INSPACe is being evaluated as a model for regulatory reforms in the nuclear power sector to enable private sector participation and improve governance.

INSACOG

The Indian SARS-CoV-2 Genomics Consortium (INSACOG) is a network of 28 laboratories across India, established in December 2020 to monitor SARS-CoV-2 variants through genome sequencing. It supports real-time surveillance of virus mutations and informs public health responses. INSACOG collaborates with the Integrated Disease Surveillance Programme (IDSP) and the Indian Council of Medical Research (ICMR). It helped identify and track variants like Delta and Omicron in India. The consortium processes thousands of samples weekly and contributes data to global databases, aiding in understanding virus evolution and vaccine efficacy.

Why in news?

INSACOG sequenced the NB.1.8.1 variant sample from Tamil Nadu and submitted data to global databases amid rising Covid-19 cases in India.

International Space Station Orbit Adjustment

The ISS orbits Earth at approximately 420 kilometers altitude. Recently, it was raised to a slightly higher orbit to avoid collision with debris from a 20-year-old Chinese rocket. This maneuver, called a Debris Avoidance Maneuver (DAM), is routinely performed to protect the station from space junk. The Chinese rocket debris is part of the increasing problem of orbital debris, which poses risks to spacecraft. The ISS orbit adjustment is carefully planned using ground radar and satellite tracking to ensure crew safety and operational continuity.

Why in news?

The ISS was raised to avoid collision with space debris from an old Chinese rocket just before the May 2025 all-female spacewalk mission.

ISRO Propulsion Complex (IRPC)

The **ISRO Propulsion Complex (IRPC)** is located at Mahendragiri in Tirunelveli district, Tamil Nadu. It handles the testing and integration of **earth-storable propellant engines**, **cryogenic engines**, and launch vehicle stages. IRPC is a key R&D hub for developing propulsion technologies critical to satellite launches and space missions. It supports engine testing for various launch vehicles, including GSLV and PSLV. The complex also

develops new propulsion technologies and conducts quality assurance for ISRO's rocket engines. IRPC is one of the few facilities worldwide capable of handling cryogenic propulsion systems, essential for heavy satellite launches.

Why in news?

IRPC is mentioned as part of Tamil Nadu's growing space infrastructure, supporting the new Space Industrial Policy aimed at boosting local space sector development.

Jarosite

Jarosite is a **yellow-brown iron-potassium sulfate mineral** with the chemical formula KFe3(SO4)2(OH)6. It forms in acidic, oxidizing environments, often associated with the weathering of sulfide minerals. Jarosite is stable under a wide range of temperatures, surviving heating up to 450°C without losing luminescence properties. It exhibits **luminescence** due to trapped energy from natural radiation, with emissions at 100°C, 150°C, 300°C, and 350°C. On Mars, jarosite is abundant and can record radiation doses up to 2,600 gray, enabling dating of geological events up to 25,000 years old. It is useful for planetary geology and astrobiology.

Why in news?

Researchers from India studied jarosite samples from Kachchh, Gujarat, to evaluate its luminescence and radiation storage, proposing its use as a natural geological clock for dating recent events on Mars.

JN.1 Variant

The **JN.1 variant** is a sublineage of the Omicron variant of SARS-CoV-2. It has given rise to descendants such as LF.7 and NB.1.8, which are included in new Covid-19 vaccines. These descendants are characterized by mutations that might affect immune escape but have not shown increased transmissibility or severity. JN.1 emerged in late 2023 and has been mainly detected in parts of Asia. Vaccines targeting JN.1 aim to improve protection against currently circulating strains. The variant remains under surveillance for changes in epidemiological behavior and vaccine efficacy.

Why in news?

JN.1 descendants LF.7 and NB.1.8 are circulating in Singapore and are part of the new Covid-19 vaccines, which are not yet available in India.

Ka-band Radar Interferometer (KaRIn)

KaRIn is a dual-frequency radar instrument aboard the SWOT satellite operating in the Ka-band microwave spectrum. It measures water surface elevation by emitting microwaves and timing their return after bouncing off water bodies. KaRIn provides unprecedented spatial resolution for mapping water surface topography, capturing changes in elevation over tens to hundreds of kilometers. Its interferometric design enables detailed 3D mapping of water surfaces, distinguishing features like river waves and flood surges. KaRIn's sensitivity allows detection of subtle changes in water height, supporting hydrological studies and flood monitoring at scales previously unattainable from space.

Why in news?

KaRIn enabled the detection of three distinct river flood waves in the U.S., including a 9.1-

foot wave on the Yellowstone River, demonstrating its capability to monitor dynamic river processes.

Kamala Rice

Kamala is a genetically-edited mutant line of the Samba Mahsuri rice variety developed by ICAR using CRISPR-Cas technology. It modifies the Gn1a gene, reducing its expression to increase cytokinin levels, resulting in 450-500 grains per panicle compared to 200-250 in Samba Mahsuri. Kamala yields 5.37 tonnes per hectare on average, with a potential of 9 tonnes, and matures 15-20 days earlier than its parent. It has more root biomass, enhancing nutrient uptake and reducing the need for urea and phosphate fertilizers. The shorter maturity period also conserves water during cultivation.

Why in news?

Kamala was revealed by ICAR in May 2025 as a breakthrough genetically-edited rice variety offering higher yield, early maturity, and better resource efficiency.

Kodaikanal Solar Observatory

The **Kodaikanal Solar Observatory (KSO)**, established on **1 April 1899**, is located in the **Palani Hills, Tamil Nadu**. It is operated by the **Indian Institute of Astrophysics (IIA)** and is India's longest-running astronomical observatory. KSO maintains one of the world's most extensive and continuous daily records of solar activity, including sunspots, solar flares, prominences, and the solar corona. Its research has advanced the understanding of solar physics and the Sun's influence on Earth. The observatory has contributed to global science for over 125 years.

Why in news?

The Department of Posts released a commemorative postage stamp celebrating 125 years of the Kodaikanal Solar Observatory, recognizing its scientific legacy and contributions to solar research.

Lafora Bodies

Lafora bodies are abnormal, insoluble, glycogen-like polyglucosan inclusions that accumulate in neurons and other tissues in Lafora disease. They consist mainly of poorly branched, hyperphosphorylated glycogen. These inclusions disrupt normal cellular function, leading to neurodegeneration. Lafora bodies can be detected via periodic acid–Schiff (PAS) staining in skin biopsies, especially from sweat glands. Their presence is a hallmark for diagnosing Lafora disease. Unlike normal glycogen, Lafora bodies resist degradation, causing cellular toxicity and contributing to progressive myoclonic epilepsy symptoms. They also accumulate in muscles, liver, and other organs but primarily affect the brain.

Why in news?

Lafora bodies are central to understanding Lafora disease, a rare progressive myoclonic epilepsy discussed in the recent overview of symptoms, diagnosis, and ongoing research into treatment options.

Lagrangian Growth-Advection Model

The Lagrangian growth-advection model is a satellite-derived computational approach that tracks plankton succession and export by following ocean surface currents. Unlike traditional models relying solely on ocean color data, it incorporates the movement (advection) of plankton blooms, zooplankton grazing, and time-space lags between surface productivity and carbon export. This model improves estimates of carbon export by mapping biological hotspots and accounting for physical transport processes. It uses satellite data on ocean currents to simulate how plankton communities evolve and move offshore, enhancing understanding of the biological pump's role in sequestering atmospheric carbon in the deep ocean.

Why in news?

This model was developed by MBARI researchers to improve carbon export predictions from satellite data, addressing limitations of existing ocean color-based algorithms.

Lanthanum

Lanthanum, atomic number 57, is a rare earth metal used mainly in camera and telescope lenses, battery electrodes, and catalytic converters. It improves the performance of nickel-metal hydride batteries and is essential in hydrogen storage alloys. Lanthanum compounds are used in carbon lighting and as catalysts in petroleum refining. It is soft, malleable, and reactive, often found in monazite and bastnäsite ores. Lanthanum is critical in producing high-quality glass and ceramics. Ukraine possesses lanthanum deposits used in TVs and lighting, contributing to its strategic resource portfolio. The metal is less abundant than other rare earths but vital for many modern technologies.

Why in news?

Ukraine's possession of lanthanum was brought into light in the context of critical minerals essential for electronics and green technology in a new U.S.-Ukraine mineral agreement.

Laschamps Excursion

The **Laschamps Excursion** occurred about 41,000 years ago and is a brief geomagnetic event where Earth's magnetic field weakened to approximately **5% of its current strength**. During this period, the magnetic north and south poles temporarily swapped places for a few hundred years. It is classified as an **excursion** because the polarity change lasted less than 100,000 years. This event increased cosmic ray exposure, doubling production of cosmogenic isotopes like beryllium-10. Studies link it to atmospheric ozone changes and climate shifts, though its impact on life, including Neanderthals, remains debated. The event's soundscape was recently recreated as a haunting audio composition.

Why in news?

A haunting soundtrack capturing the Laschamps excursion was released by scientists to illustrate Earth's magnetic field fluctuations 41,000 years ago, denoting geomagnetic phenomena through sound.

Lens Dislocation (Ectopia Lentis)

Lens dislocation, or ectopia lentis, is a condition where the eye's lens shifts from its normal position. It is common in Marfan Syndrome due to weakened connective tissue supporting the lens. This displacement can cause blurred vision, double vision, or increased risk of glaucoma and retinal detachment. Treatment may involve eyeglasses, contact lenses, or surgery if vision is severely affected. Lens dislocation is a key diagnostic sign of Marfan Syndrome and other connective tissue disorders. Early detection is crucial to prevent permanent vision loss, particularly in children.

Why in news?

Lens dislocation is brought into light in recent Marfan Syndrome awareness efforts emphasizing early eye exams to prevent serious vision complications.

LiDAR in Road Construction

Light Detection and Ranging (**LiDAR**) is a remote sensing method using laser pulses to measure distances and create precise topographic maps. In the Shillong-Silchar highway project, LiDAR is used for detailed terrain surveys to aid slope stabilization and landslide prediction. LiDAR data helps design engineering solutions like rock anchors, wire mesh panels, and protection walls. It provides high-resolution elevation data critical for planning infrastructure in hilly and difficult terrain. LiDAR technology improves safety and efficiency in construction by enabling accurate modeling of complex landscapes.

Why in news?

LiDAR technology is employed in the Shillong-Silchar highway project to manage difficult hilly terrain and ensure all-weather connectivity by predicting and preventing landslides.

Luminescence in Minerals

Luminescence in minerals is the emission of light caused by the absorption of energy from radiation. This energy is stored in defects or impurities within the mineral's crystal lattice. When heated or stimulated, the trapped energy is released as visible light. The intensity and wavelength of luminescence can reveal the mineral's radiation history and thermal events. In jarosite, luminescence peaks occur at specific temperatures (100°C, 150°C, 300°C, 350°C), allowing precise thermal and radiation dose measurements. This property enables minerals to act as natural geological clocks, useful in dating geological and planetary processes.

Why in news?

The luminescence behavior of jarosite was analyzed to assess its ability to record radiation doses and withstand rover drilling, supporting its use in Mars exploration.

Magnetar Flares

Magnetars are a type of neutron star with magnetic fields exceeding **10^14 to 10^15 gauss**, making them the most magnetic objects known. Their flares release vast amounts of energy, sometimes equivalent to the sun's yearly output in seconds. The 2004 giant flare from SGR 1806-20 was the brightest observed, saturating detectors on Earth. These flares can produce high-energy gamma rays and are linked to starquakes in the

magnetar's crust. The ejected material during flares can include neutron-rich matter, potentially undergoing rapid neutron capture (r-process) nucleosynthesis, contributing to the formation of heavy elements like gold.

Why in news?

The 2004 magnetar flare provided direct observational evidence of r-process nucleosynthesis, suggesting magnetars contribute to cosmic gold production, challenging previous beliefs that neutron star mergers were the sole source.

Marfan Syndrome

Marfan Syndrome is a **genetic disorder** affecting connective tissue, which supports skin, bones, blood vessels, and organs. It is caused by mutations in the **FBN1 gene** that encodes fibrillin-1, a protein essential for connective tissue strength. Symptoms include a tall, thin body with long limbs, flexible joints, and lens dislocation in the eyes. Cardiovascular risks include **aortic aneurysm** and **mitral valve prolapse**. It affects about **1 in 10,000 people** and can be inherited or arise spontaneously. Diagnosis involves physical exams, echocardiograms, and genetic testing. There is no cure, but management reduces complications.

Why in news?

May 2025 coverage marks advances in early diagnosis and treatment of Marfan Syndrome, emphasizing screening in schools and increased awareness to prevent life-threatening complications.

MeerKAT Radio Array

The MeerKAT radio array is a South African telescope consisting of 64 dishes, designed for high-resolution radio astronomy. It operates mainly in the **0.58 to 14.5 GHz** frequency range and is part of the Square Kilometre Array (SKA) project. MeerKAT's precise imaging capabilities allow detailed studies of cosmic phenomena like pulsars, galaxies, and cosmic magnetic fields. It can detect faint radio emissions from charged particles spiraling along magnetic fields in space. The array's location in the Karoo desert provides low radio interference, enhancing sensitivity. MeerKAT has contributed to discoveries of cosmic structures, including the Snake near the Milky Way's center.

Why in news?

MeerKAT provided critical radio data combined with X-ray observations to reveal the pulsar and explain the fracture in the Snake cosmic structure.

Microburst

A **microburst** is a localized column of sinking air within a thunderstorm, typically less than 4 km in diameter, causing intense wind shear near the surface. These downdrafts can produce wind speeds exceeding 100 mph and last for 5 to 15 minutes. Microbursts are a major hazard for aircraft during takeoff and landing due to sudden changes in wind velocity and direction. They form when rain-cooled air rapidly descends and spreads out upon hitting the ground. The phenomenon was first extensively studied in the 1970s by meteorologist Ted Fujita. Microbursts can cause sudden altitude loss and loss of control

for aircraft caught in them.

Why in news?

The Indigo flight encountered a microburst, causing severe turbulence and sudden altitude changes, contributing to the violent shaking and damage experienced mid-air.

Millisecond Pulsar

A **millisecond pulsar** is a neutron star that rotates at an extremely high speed, completing a rotation in less than 10 milliseconds, or over 100 times per second. These pulsars are believed to be "recycled" by accreting matter from a companion star, which spins them up. Millisecond pulsars emit beams of electromagnetic radiation from their magnetic poles, observed as pulses due to their rapid rotation. They are useful as precise cosmic clocks and can be used to detect gravitational waves. The first millisecond pulsar was discovered in 1982, and they often exist in binary systems.

Why in news?

The newly discovered binary system includes a millisecond pulsar spinning fast enough to qualify as such, with radiation emissions periodically blocked by its companion star.

Miyake Events

Miyake events are sudden, sharp increases in atmospheric radiocarbon levels caused by intense solar particle storms. They are identified in tree rings as distinct isotopic spikes, serving as precise chronological markers in archaeology. The first Miyake event was discovered in AD 775, with others dated to 994 AD, 663 BC, and earlier. These events result from high-energy solar particles interacting with Earth's atmosphere, producing cosmogenic isotopes like radiocarbon (^14C). Miyake events help calibrate floating archaeological chronologies by providing exact calendar years. Their identification requires high-resolution dendrochronology and radiocarbon dating techniques.

Why in news?

The newly discovered colossal solar storm from 12,350 BC is classified as a Miyake event, pushing back the timeline of such phenomena beyond the Holocene and refining ancient solar activity records.

MMR Vaccine Controversy

The MMR vaccine controversy originated from a 1998 study falsely linking the measles, mumps, and rubella vaccine to autism. This study was later discredited and retracted due to serious methodological flaws and ethical violations. Extensive research since then has found no causal relationship between the MMR vaccine and autism. Despite scientific consensus, vaccine skepticism persists in some groups, fueled by misinformation. The controversy has led to decreased vaccination rates in certain areas, resulting in outbreaks of preventable diseases. Public health authorities continue efforts to combat misinformation and promote vaccination to protect community health.

Why in news?

The controversy is referenced as part of ongoing discussions about autism causes, with officials reaffirming that vaccines do not cause autism amid rising autism prevalence and misinformation concerns in 2025.

Monoclonal Antibodies

Monoclonal antibodies are lab-produced molecules designed to mimic the immune system's ability to fight pathogens. They are created by cloning a single type of immune cell, resulting in identical antibodies targeting a specific antigen. Unlike vaccines, they provide immediate but temporary immunity without activating the recipient's immune system. Monoclonal antibodies have been used to treat cancers, autoimmune diseases, and infectious diseases. Nirsevimab is a monoclonal antibody specifically targeting the RSV fusion protein to prevent viral entry into cells.

Why in news?

Nirsevimab, a monoclonal antibody, has been shown effective in real-world settings to prevent RSV-related hospitalizations in infants, marking advance in pediatric infectious disease prevention.

Monsoon Mission Coupled Forecasting System (MMCFS)

Launched in 2012 by the India Meteorological Department, the **Monsoon Mission Coupled Forecasting System (MMCFS)** integrates data from oceans, land, and atmosphere to simulate monsoon behavior. This system marked a shift from traditional statistical models to a dynamical model approach. It uses coupled ocean-atmosphere models to better understand and predict monsoon variability. MMCFS improved seasonal monsoon forecast accuracy compared to earlier models but still faces challenges with extreme weather events. It represents technological advancement in Indian meteorology and is a core part of IMD's current forecasting strategy.

Why in news?

MMCFS is brought into light as part of IMD's recent upgrades to improve monsoon forecasting accuracy amid ongoing public dissatisfaction with weather predictions.

Na□.□V□.□□Al□.□□Nb□.□(PO□)□ Anode

This compound is a mixed-metal phosphate with sodium (Na), vanadium (V), aluminum (Al), niobium (Nb), and phosphate (PO_4) units forming a NASICON-type structure. The specific stoichiometry balances multiple metals to enhance ionic conductivity and structural integrity. Vanadium and niobium contribute to redox activity and stability, while aluminum doping improves electronic conductivity and cycling durability. The nanoscale particle size and carbon coating further accelerate sodium-ion transport and protect the material from degradation. This anode material is designed to overcome the typical slow charging and short lifespan problems of sodium-ion batteries.

Why in news?

Researchers at JNCASR engineered this novel anode material for their fast-charging sodium-ion battery, achieving 80% charge in six minutes and over 3000 charge cycles.

NAAT Labs

NAAT (Nucleic Acid Amplification Testing) labs use molecular techniques to detect TB bacteria by amplifying their genetic material. India has expanded its network to 8,540 NAAT labs, increasing early and accurate TB diagnosis. NAAT is highly sensitive and

specific, detecting TB even in asymptomatic cases and drug-resistant strains. These labs can provide results within hours, enabling timely treatment initiation. NAAT testing is a mainstay of modern TB control strategies, replacing slower culture methods. The technology supports India's goal of TB elimination by improving diagnostic coverage, especially in high-burden districts.

Why in news?

The expansion of NAAT labs was reviewed as part of infrastructure enhancements discussed in the Prime Minister's meeting on the National TB Elimination Programme in May 2025.

Nafithromycin

Nafithromycin is India's first indigenous generation antibiotic developed for monotherapy in bacterial pneumonia. It belongs to the ketolide class of antibiotics and is effective against multi-drug resistant strains of bacteria, including macrolide-resistant pathogens. Nafithromycin was developed with partial support from DBT-BIRAC and represents advancement in India's pharmaceutical R&D. It offers a new treatment option with improved efficacy and safety profiles compared to existing antibiotics. The drug addresses a critical need for novel antimicrobials amid rising antibiotic resistance globally. Clinical trials demonstrated its effectiveness in community-acquired bacterial pneumonia, making it a pioneering product in India's biopharmaceutical sector.

Why in news?

Dr. Jitendra Singh brought into light Nafithromycin's development as part of India's biotechnology achievements during the ICGEB Board Meeting, emphasizing indigenous innovation in combating bacterial pneumonia.

NASA Clean Rooms

NASA clean rooms are ultra-sterile environments designed to prevent contamination of spacecraft and instruments. Despite extreme cleanliness, they have been found to harbor previously unknown bacterial species. In recent studies, 26 novel bacterial species were identified in these facilities. These microbes have adapted to survive in low-nutrient, highly controlled settings, providing vital information about microbial resilience. NASA clean rooms play a key role in planetary protection protocols to avoid forward contamination of other celestial bodies during space missions. The presence of novel bacteria marks the complexity of microbial ecosystems even in highly sanitized environments.

Why in news?

The discovery of 26 new bacterial species in NASA clean rooms was reported alongside the identification of new microbes on space stations, emphasizing microbial diversity in space-related environments.

NASA-ISRO NISAR

The NASA-ISRO Synthetic Aperture Radar (NISAR) satellite is a joint Earth imaging mission between India's ISRO and NASA. It uses dual-frequency radar to provide high-resolution images for monitoring natural resources, hazards, and climate change. NISAR is the

world's most expensive civilian Earth observation satellite, costing approximately $1.5 billion. The satellite is designed to capture data regardless of weather or daylight, enabling consistent global surveillance. It marks collaboration between the two space agencies, combining ISRO's launch capabilities and NASA's radar technology. NISAR's data will support disaster management, agriculture, and forestry applications worldwide.

Why in news?

NISAR is scheduled for launch aboard the GSLV F-16 rocket between June and July 2025, following the PSLV-C61 launch failure.

National Centre of Polar and Ocean Research (NCPOR)

NCPOR, established in 1998, is India's premier institute for polar and ocean research. It manages India's scientific presence in Antarctica (Maitri, Bharati stations) and the Arctic (Himadri station). The center conducts multidisciplinary studies on polar ice, oceanography, and climate change. NCPOR leads the Deep Ocean Mission, focusing on sustainable ocean resource utilization. It operates specialized labs, including sub-zero ice core laboratories and metal-free clean rooms for trace element analysis. The center also develops advanced visualization tools like Science On Sphere (SOS) for climate data. NCPOR's research supports India's policies on polar engagement and ocean geopolitics.

Why in news?

NCPOR inaugurated two new facilities, Polar Bhavan and Sagar Bhavan, enhancing India's capabilities in polar and ocean research, coinciding with its Silver Jubilee celebrations in May 2025.

National Technology Day (India)

National Technology Day in India is observed annually on May 11th. It commemorates the successful nuclear tests conducted in Pokhran, Rajasthan, in 1998 under Prime Minister Atal Bihari Vajpayee's leadership. These tests established India as a nuclear power and showcased its scientific and technological prowess. The day honors the efforts of scientists, engineers, and defense personnel involved in the tests and promotes awareness of technological advancements in India. It is marked by various events celebrating innovation and progress in science and technology across the country.

Why in news?

The inauguration of the BrahMos Aerospace Integration and Testing Facility coincided with National Technology Day, linking the event to India's history of technological achievements in defense.

Natural Experiment (Wales)

The natural experiment in Wales began on September 1, 2013, targeting individuals aged 79-80 for shingles vaccination. Those aged 78 were vaccinated a year later, while those over 80 were excluded, creating a unique cohort with similar age and living conditions but differing vaccine eligibility. This design mimicked a randomized control trial, reducing bias common in observational studies. Analysis over seven years showed a 3.5 percentage point reduction in dementia diagnoses among vaccinated individuals, equating to a 20%

lower relative risk. This approach provided stronger causal evidence linking shingles vaccination to reduced dementia risk.

Why in news?

The Welsh natural experiment was recently published in Nature, confirming that shingles vaccination reduces dementia risk, offering robust evidence beyond observational patient record studies.

NavIC Positioning System

NavIC (Navigation with Indian Constellation) is India's regional satellite navigation system developed by ISRO, operational since 2018. It consists of 7 satellites in geosynchronous orbits providing accurate positioning within India and up to 1,500 km around its borders. NavIC offers two services – Standard Positioning Service (SPS) for civilian use and Restricted Service (RS) for authorized users. It provides accuracy better than 10 meters, superior to GPS in the Indian region. NavIC is integrated into various applications like disaster management, vehicle tracking, and mobile phones. The system enhances India's strategic autonomy in navigation and positioning technology.

Why in news?

The telecom department mandated the use of NavIC-based positioning for satellite communication services as part of new security and operational conditions in India.

Naxtra Sodium-ion Battery

Naxtra is a patented sodium-ion battery technology developed by CATL, the world's largest battery manufacturer. It promises a driving range of up to **500 km on a single charge** for electric vehicles. Naxtra batteries use sodium ions instead of lithium, aiming to reduce costs and dependence on scarce materials. CATL plans to mass-produce these batteries by the end of 2025. The technology addresses challenges of energy density and cycle life traditionally associated with sodium-ion batteries. Naxtra is part of CATL's strategy to diversify battery chemistries amid growing demand for electric vehicles and energy storage solutions.

Why in news?

CATL announced plans to mass-produce its Naxtra sodium-ion battery packs by late 2025, marking advancement in commercial sodium-ion battery technology globally.

NB.1.8.1 Variant

The NB.1.8.1 is a subvariant of SARS-CoV-2 first sampled in India in April 2025, with 518 sequences submitted globally from 22 countries, making up 10.7% of available sequences. It descends from recombinant ancestor XDV.1.5.1 and carries six spike protein mutations compared to LP 8.1 and eight compared to JN.1. Some mutations increase receptor binding affinity, potentially enhancing transmissibility and immune evasion. It is classified by WHO's Technical Advisory Group on Virus Evolution as a "Variant Under Monitoring," indicating viral changes with unclear epidemiological impact. Most cases linked to it are mild and under home care.

Why in news?

NB.1.8.1 was detected in India amid a surge in Covid-19 cases, prompting genome

sequencing efforts and health ministry reviews to monitor its spread and characteristics.

Near-Surface Shear Layer (NSSL)

The **Near-Surface Shear Layer (NSSL)** is a solar region extending about 35,000 km beneath the Sun's surface. It exhibits distinct rotational gradients, with plasma flows reversing direction between its upper and lower boundaries. The NSSL influences the Sun's magnetic fields and varies with the **11-year solar cycle**. It is characterized by complex plasma circulation cells shaped by the Sun's rotation and the Coriolis force. These flows are separate from the deeper torsional oscillations, indicating multiple layers of solar interior dynamics. The NSSL plays important role in linking surface magnetic activity to subsurface plasma motions.

Why in news?

An international team led by the Indian Institute of Astrophysics traced plasma tides in the NSSL, revealing how these flows evolve with the Sun's magnetic cycle and affect solar dynamics and space weather.

Nehru Institute of Mountaineering

The **Nehru Institute of Mountaineering (NIM)**, located in Uttarkashi, was established in 1965. It is one of India's premier mountaineering training centers, named after Jawaharlal Nehru, India's first Prime Minister. NIM offers courses in basic and advanced mountaineering, search and rescue, and winter expeditions. It has trained thousands of climbers and adventure enthusiasts, including military personnel. The institute is known for its rigorous curriculum and emphasis on safety and environmental responsibility in the Himalayas. It is affiliated with the Indian Mountaineering Foundation, which governs mountaineering activities in India.

Why in news?

Vishwanath trained at the Nehru Institute of Mountaineering for five months, which helped him prepare physically and mentally for his 7 Summits challenge.

Nemertea Phylum

Nemertea, or ribbon worms, are a phylum of predatory invertebrates characterized by their use of venom to immobilize prey. They have very few external morphological features, complicating taxonomic classification. Traditional taxonomy based on visible traits is ineffective for Nemerteans. Internal anatomy studies were complex and inconvenient, hindering species identification. Currently, about 1,350 species are described. Molecular techniques, such as DNA sequencing of ribosomal RNA and mitochondrial genes, are now essential for accurate classification within this phylum. Nemerteans inhabit marine environments, often found under rocks in subtidal zones.

Why in news?

The discovery of Pararosa vigarae marks the challenges of Nemertea taxonomy and the use of molecular tools to identify new species.

Neural Ring Attractor Network

The neural ring attractor network is a theoretical neuroscience model describing how

animals integrate directional information to make movement decisions. It consists of neurons arranged in a ring structure, enabling continuous encoding of angular variables such as heading direction. This model explains how locusts and other animals maintain orientation and coordinate movement without centralized control. In locust swarms, the ring attractor network allows individual insects to process multiple visual inputs, weigh options, and choose a direction, leading to emergent coordinated swarm behavior. It contrasts with previous models that treated locusts as simple particles reacting only to neighbors' positions.

Why in news?

Researchers applied the neural ring attractor model to explain new findings on locust swarm coordination, shifting understanding from physical alignment to cognitive decision-making in 2019-2022 outbreaks.

Neuralink Brain-Chip

Neuralink's brain-chip implant contains **1,024 electrodes** designed to detect neural activity from the brain's motor cortex. The signals are wirelessly transmitted to an external computer where AI algorithms decode intended movements in real time. This allows users with neurological impairments to control a cursor or communicate through digital interfaces. The device aims to restore lost functions such as speech in conditions like ALS, stroke, and spinal cord injury. Neuralink was founded in 2016 by Elon Musk with the goal of developing high-bandwidth brain-machine interfaces.

Why in news?

The company announced its chip's expanded application to various neurological disorders and brought into light a patient's successful communication restoration using the implant.

Neurotrophin Peptidomimetics

Neurotrophin peptidomimetics are synthetic compounds designed to imitate neurotrophins, proteins essential for neuron survival and function. Unlike natural neurotrophins, these mimetics have improved stability, enhanced brain permeability, and reduced immunogenicity. They target specific neurotrophin receptors to activate signaling pathways that promote neuronal growth and survival. Their design addresses limitations like rapid degradation and poor bioavailability of natural neurotrophins. Neurotrophin peptidomimetics are being explored as therapeutic agents for neurodegenerative diseases, with potential applications in other conditions like cancer. Research focuses on optimizing receptor specificity and therapeutic efficacy while minimizing side effects.

Why in news?

Neurotrophin peptidomimetics are under investigation as a promising drug class to treat neurodegenerative diseases, offering advantages over natural neurotrophins.

Neutron Spectrometer

A neutron spectrometer is a scientific instrument used to detect and analyze neutrons emitted from planetary surfaces. It helps determine the presence and distribution of hydrogen, often indicating water or ice. The instrument measures neutron energy spectra,

which vary based on elemental composition. Neutron spectrometers are crucial for lunar and planetary missions because neutrons penetrate the surface and provide subsurface information without excavation. NASA is developing neutron spectrometers for the LUPEX mission to complement other instruments in assessing lunar water resources. This technique has been used in missions like Lunar Reconnaissance Orbiter and Mars Odyssey.

Why in news?

NASA's neutron spectrometers are part of the seven instruments selected for the Chandrayaan-5 mission to analyze lunar water content in-situ.

Next-Generation QR Codes

Next-generation QR codes are an advanced form of QR technology designed to hold more data and improve traceability and transparency in supply chains. Unlike traditional QR codes, these codes integrate enhanced security features to protect consumer interests and prevent counterfeiting. They support dual usage alongside traditional barcodes during a transition period. These QR codes enable real-time data sharing between manufacturers, retailers, and consumers, facilitating better product information access. GS1 is testing these codes in three countries, including Australia, to ensure compatibility with existing retail infrastructure before global rollout.

Why in news?

GS1 plans to roll out next-generation QR codes in India by 2027, depending on manufacturer and retailer readiness, to improve product traceability and consumer information.

NGC 6355

NGC 6355 is a **galactic globular cluster** located in the inner regions of the Milky Way, approximately less than 50,000 light-years from Earth. It contains **thousands to millions of stars** tightly bound by mutual gravitational attraction, giving it a roughly spherical shape. Globular clusters like NGC 6355 are among the oldest objects in the galaxy, often used to study the early stages of the Milky Way's formation. NGC 6355's dense star population makes it a key target for understanding stellar evolution and dynamics within dense star systems.

Why in news?

Featured in a recent Hubble Space Telescope image showcasing its scattered stars, denoting its role in understanding the Milky Way's inner regions.

Niallia tiangongensis

Niallia tiangongensis is a newly identified species of aerobic, spore-forming, rod-shaped bacteria discovered on the surface of the Tiangong Space Station. It closely resembles the terrestrial species Niallia circulans but exhibits distinct genetic mutations. These mutations affect two proteins, enhancing the bacterium's biofilm formation, oxidative stress response, and radiation damage repair. It can decompose gelatine, potentially supporting life in nutrient-poor environments. This species represents the first new

microbial isolate found aboard China's Tiangong, offering vital information about microbial adaptation and evolution in low Earth orbit conditions.

Why in news?

Discovered during the Shenzhou 15 mission, Niallia tiangongensis marks microbial evolution and adaptation in space, raising questions about astronaut health and spacecraft contamination control.

Nickel Selenide Catalysts

Nickel selenides are inorganic compounds combining nickel and selenium, with several phases such as NiSe, $NiSe_2$, and Ni_3Se_4, exhibiting metallic conductivity and catalytic properties. They are studied for applications in energy storage, electrocatalysis, and sensors. Nickel selenides possess good electrical conductivity and catalytic activity for oxygen evolution and reduction reactions, which are essential in water splitting and fuel cells. Their performance can be improved by doping with transition metals like iron, which modifies electronic structure and creates additional active sites. Nickel selenide catalysts are cheaper alternatives to precious metal catalysts such as platinum or ruthenium.

Why in news?

CeNS developed iron-doped nickel selenide catalysts that outperform traditional precious metal-based catalysts in oxygen evolution and reduction reactions, promising cost-effective clean energy technologies.

Nicotine as Self-Medication

Nicotine acts on the brain by stimulating nicotinic acetylcholine receptors, leading to the release of neurotransmitters like dopamine and norepinephrine, which can temporarily enhance attention and reduce impulsivity. This pharmacological effect has been hypothesized to explain why some individuals with ADHD use nicotine-containing products to self-medicate. Unlike prescribed stimulant medications, nicotine is addictive and harmful, with short-lived cognitive benefits. The self-medication hypothesis suggests that nicotine use may be an attempt to manage ADHD symptoms, despite its health risks. This phenomenon is supported by epidemiological data showing higher tobacco use in ADHD populations.

Why in news?

The study cited nicotine's transient focus-enhancing effects as a possible reason why youths with multiple ADHD symptoms have increased tobacco and vaping usage.

Nirsevimab

Nirsevimab is a **monoclonal antibody** developed to prevent severe respiratory syncytial virus (RSV) infection in infants. It was **approved in 2023** by the US Food and Drug Administration and European Medicines Agency. Unlike vaccines, nirsevimab provides passive immunity by directly supplying antibodies rather than stimulating the immune system to produce them. Clinical trials and real-world studies show it reduces RSV-related hospitalizations by **83%** and intensive care admissions by **81%**. It is administered via injection, mainly targeting infants under 12 months, with higher efficacy observed in

those older than three months.

Why in news?

Recent research published in The Lancet Child and Adolescent Health confirms nirsevimab's real-world effectiveness in preventing severe RSV outcomes in infants across multiple countries during the 2023-2024 RSV season.

Noori (Pashmina Goat)

Noori was the first cloned Pashmina goat in India, created in 2012 by a team at SKUAST-Kashmir. The Pashmina goat is native to the high-altitude regions of Kashmir and produces fine cashmere wool known as Pashmina. Noori lived for 11 years, passing away in 2023, and represented a milestone in Indian animal cloning and biotechnology. The cloning process aimed to preserve and improve the genetic stock of Pashmina goats, which are economically important for the region's textile industry. Noori's creation demonstrated the feasibility of advanced reproductive technologies in India's livestock sector.

Why in news?

Dr Riyaz Ahmad Shah, who led the gene-edited lamb project, was also responsible for cloning Noori, India's first Pashmina goat, denoting ongoing advancements in animal biotechnology at SKUAST-Kashmir.

Nuclear Power Corporation of India Ltd

The **Nuclear Power Corporation of India Ltd (NPCIL)** was established in 1987 as a government-owned corporation responsible for the design, construction, operation, and maintenance of nuclear power plants in India. NPCIL operates under the Department of Atomic Energy and has been instrumental in expanding India's nuclear power capacity. It manages all operational nuclear reactors in the country and spearheads the construction of new units. NPCIL's mission includes ensuring safe, economical, and sustainable nuclear power generation. It has played a central role in promoting self-reliance in nuclear technology and energy security for India.

Why in news?

Dr M.R. Srinivasan was the founding Chairman of NPCIL, shaping India's civilian nuclear power infrastructure and policy during a critical phase of expansion and geopolitical challenges.

One Nation, One Time

The **One Nation, One Time** initiative is a project under India's Draft IST (Indian Standard Time) Rules, 2025, aimed at delivering highly precise time synchronization nationwide. It uses five Regional Reference Standard Laboratories (RRSLs) to provide millisecond-level accuracy in IST dissemination. Accurate timekeeping is critical for sectors like telecommunications, banking, transportation, and digital transactions. The project replaces fragmented time sources, ensuring uniformity across India's vast geography. This initiative supports national infrastructure, cybersecurity, and regulatory compliance by standardizing time references. It represents upgrade in India's time dissemination system,

aligning it with global best practices.

Why in news?

The government launched the One Nation, One Time initiative in 2025, enhancing precision timekeeping critical for economic and technological sectors.

Ornithomimus edmontonicus

Ornithomimus edmontonicus was a toothless, beaked theropod dinosaur resembling modern emus. It belonged to a group that independently evolved beaks at least six times among theropods. This species had a stretched snout forming a beak adapted for its diet, replacing teeth. It lived during the Late Cretaceous period in what is now North America. Ornithomimus is notable for its bird-like features and fast-running adaptations, making it an important example of convergent evolution between dinosaurs and modern birds.

Why in news?

Ornithomimus edmontonicus exemplifies one of the multiple independent evolutions of beaks in theropods, supporting findings about beak development and the power cascade rule.

Panchakarma

Panchakarma is a classical Ayurvedic detoxification and rejuvenation therapy involving five main procedures – Vamana (emesis), Virechana (purgation), Basti (enema), Nasya (nasal administration), and Raktamokshana (bloodletting). It aims to cleanse the body of toxins (ama) and balance the doshas (biological energies). Panchakarma is traditionally preceded by preparatory therapies like oleation and fomentation. It is used for chronic diseases, stress relief, and immune enhancement. The therapy requires specialized training and is performed under strict clinical supervision. Panchakarma's inclusion in international health classifications will standardize its practice and documentation globally.

Why in news?

Panchakarma, among other traditional therapies, will be formally recognized and coded in the WHO's new traditional medicine module under ICHI.

Polar Satellite Launch Vehicle (PSLV)

The **Polar Satellite Launch Vehicle (PSLV)** is an Indian expendable launch system developed and operated by ISRO. It was first launched in 1993 and has become the workhorse for India's satellite launches. PSLV is known for its versatility, capable of launching satellites into polar, geosynchronous, and sun-synchronous orbits. It has completed over 50 successful missions by 2025. The rocket uses a four-stage configuration with alternating solid and liquid propulsion. It has launched India's Mars Orbiter Mission and numerous foreign satellites. PSLV's reliability and cost-effectiveness have made it popular in the global commercial launch market.

Why in news?

PSLV is in the news for launching the EOS-09 satellite on May 18, 2025, enhancing India's Earth observation capabilities.

Pontocerebellar Hypoplasia Type 1 (PCH1)

Pontocerebellar hypoplasia type 1 (PCH1) is a rare neurodevelopmental disorder

characterized by underdevelopment of the pons and cerebellum. It presents at birth with symptoms like muscle weakness, delayed motor skills, and intellectual disability. Most affected infants do not survive beyond early childhood. PCH1 type B is associated with mutations in the EXOSC3 gene, encoding a protein of the RNA exosome complex. This discovery linked RNA exosome dysfunction to human disease. PCH1 exemplifies how defects in RNA processing can cause severe brain malformations and early mortality.

Why in news?

PCH1-related mutations in the EXOSC3 gene were modeled in yeast to study disease mechanisms and test potential treatments.

PSLV-C39 Heat Shield

The heat shield on the PSLV-C39 mission is a protective cover that shields satellites from extreme aerodynamic heating during launch through Earth's atmosphere. It is designed to separate once the vehicle reaches about **120 km altitude**, allowing satellite deployment. On the 2017 PSLV-C39 mission, the heat shield failed to separate, which caused the rocket to lose velocity and prevented the satellite IRNSS-1H from entering orbit. The heat shield is critical for satellite safety during ascent but must detach cleanly to avoid mission failure. Models of this heat shield are displayed at the HAL Aerospace Museum in Bengaluru.

Why in news?

The heat shield failure caused the PSLV-C39 mission to fail in 2017, marking the second failure in PSLV's history and denoting the importance of heat shield separation mechanisms.

Pusa DST Rice 1

Pusa DST Rice 1 is a genome-edited rice variety developed by ICAR-IARI, New Delhi, targeting the Drought and Salt Tolerance (DST) gene using SDN1 technology. It enhances resilience to drought, saline, and alkaline soil conditions without foreign DNA insertion. Field trials showed yield improvements of 9.7% in inland salinity, 14.7% in alkaline soils, and 30.4% in coastal salinity compared to its parent variety MTU 1010. It is suitable for cultivation in major rice-growing states and helps improve productivity in stress-prone environments, supporting sustainable agriculture in saline-affected areas.

Why in news?

Pusa DST Rice 1 was released alongside Kamala in May 2025, marking a milestone in India's adoption of genome-edited crops to address climate challenges and soil salinity issues.

Pyranometer

A pyranometer is an instrument that measures solar irradiance on a planar surface, capturing both direct sunlight and diffuse sky radiation. It typically consists of a thermopile sensor beneath a glass dome, converting thermal energy into electrical signals proportional to solar power density. Pyranometers are calibrated against reference standards and used in meteorology, climatology, and photovoltaic testing. They provide data in watts per square meter (W/m^2), essential for evaluating solar panel performance.

Different types include thermopile and photodiode pyranometers, varying in sensitivity and spectral response. Pyranometers are critical for precise solar energy measurements, especially in controlled laboratory simulations.

Why in news?

The researchers employed a pyranometer to measure illuminance on submerged silicon solar cells under simulated sunlight, enabling accurate calibration of underwater photovoltaic efficiency.

Radio Frequency Identification (RFID) Chip

An **RFID chip** is a small electronic device that uses radio waves to identify and track objects automatically. It contains a microchip and an antenna, enabling wireless communication with RFID readers. These chips can store data such as biometric details, personal identification, or inventory information. RFID technology was first patented in the 1970s and is widely used in passports, inventory management, animal tracking, and contactless payments. The chips operate at various frequency bands, with the high-frequency (13.56 MHz) band commonly used in e-passports. Security protocols like Basic Access Control (BAC) protect data stored on RFID chips from unauthorized access.

Why in news?

India has introduced chip-based e-passports containing RFID chips nationwide to enhance security and efficiency in international travel, following a pilot rollout in April 2024.

Raman Research Institute

The Raman Research Institute (RRI), located in Bengaluru, was founded in 1948 by Nobel laureate C.V. Raman. It focuses on fundamental research in physics and astronomy. RRI operates autonomously under the Department of Science and Technology. The institute has contributed to condensed matter physics, quantum optics, and astrophysics. It houses specialized laboratories for experimental and theoretical research. RRI is named after C.V. Raman, known for the Raman Effect, a phenomenon in light scattering. The institute collaborates internationally and supports doctoral research programs. It played a key role in developing scientific infrastructure in post-independence India.

Why in news?

Scientists at RRI developed a novel method using the spectral function to detect hidden quantum properties in topological materials, advancing research in quantum computing and next-generation electronics.

Shingrix Vaccine

Shingrix is a recombinant subunit vaccine for shingles, containing glycoprotein E from the varicella-zoster virus combined with an adjuvant to enhance immune response. It does not contain live virus, making it safer for immunocompromised individuals. Approved in 2017, Shingrix requires two doses administered 2 to 6 months apart. Clinical trials showed over 90% efficacy in preventing shingles across all age groups, with longer-lasting protection than Zostavax. A 2024 study of US health records found a 17% reduction in dementia diagnoses within six years post-vaccination with Shingrix. It is more expensive

but preferred due to higher efficacy and safety.

Why in news?

Recent research from Oxford University linked Shingrix vaccination to reduced dementia risk, supporting findings from the older Zostavax vaccine study.

Shiv Shakti Point

Shiv Shakti Point is the designated landing site of India's Chandrayaan-3 mission, located near the lunar South Pole within the South Pole-Aitken (SPA) basin. It offers access to primitive mantle materials excavated during the SPA basin's formation about **4.3 billion years ago**. The site shows anomalous depletion of sodium and potassium and enrichment of sulfur in lunar soils compared to previous lunar highland samples. It lacks the KREEP (potassium, rare earth elements, phosphorus) signature found in other lunar regions. These unique geochemical characteristics make it valuable for studying the Moon's early geological evolution and mantle composition.

Why in news?

Shiv Shakti Point was brought into light following Chandrayaan-3's successful landing and subsequent scientific analysis revealing unique elemental abundances, indicating the presence of primitive lunar mantle materials.

Site Directed Nuclease 1 (SDN1)

Site Directed Nuclease 1 (SDN1) is a genome editing technique that induces precise mutations by creating double-strand breaks at specific DNA sequences without inserting foreign DNA. It uses engineered nucleases like CRISPR-Cas9 to target and modify native genes. The resulting organisms are genetically indistinguishable from naturally occurring mutants or those developed via conventional breeding. In India, SDN1-edited crops are exempt from stringent biosafety regulations under the Environment (Protection) Act, 1986, streamlining their approval. SDN1 is widely applied in crop improvement for traits like drought tolerance and yield enhancement, enabling faster breeding cycles and regulatory acceptance.

Why in news?

SDN1 technology was used to develop two new genome-edited rice varieties, Kamala and Pusa DST Rice 1, which were recently released by the Indian Agriculture Minister for cultivation across major rice-growing states.

Solar Photosphere Helium Abundance

The solar photosphere is the visible surface layer of the sun where light escapes. Helium abundance in this layer is difficult to measure directly because helium does not produce detectable spectral lines in visible light. Traditionally, helium levels were inferred from hotter stars, the solar corona, solar wind, or helioseismology. The new approach uses spectral lines of neutral magnesium and carbon atoms, along with hydrogenated molecules of these elements, to indirectly constrain helium abundance. This method provides a more accurate and direct estimation of helium in the photosphere, crucial for understanding solar opacity and elemental composition.

Why in news?

A new study by IIA researchers successfully applied this technique to accurately estimate helium abundance in the sun's photosphere for the first time.

Solar Plasma Tides

Solar plasma tides refer to the giant flows of ionized gas beneath the sun's surface, influenced by magnetic pulses and rotation. These tides create complex circulation patterns, with plasma flowing inward near the surface and outward deeper in the NSSL. The tides are shaped by the sun's rotation and the Coriolis force, affecting magnetic field distribution and the solar cycle. Plasma tides modulate space weather by impacting solar wind and magnetic storms that reach Earth. Their dynamics are linked to sunspot activity and contribute to the sun's global magnetic behavior.

Why in news?

The discovery of plasma tides beneath the sun's surface helps explain the sun's magnetic activity cycle and its influence on space weather affecting Earth.

Sowa-Rigpa

Sowa-Rigpa is a traditional Tibetan system of medicine practiced mainly in the Himalayan regions including Ladakh, Himachal Pradesh, and Arunachal Pradesh. It integrates Ayurveda, Chinese, and Greek medicinal knowledge, focusing on balancing three bodily humors – rLung (wind), mKhris-pa (bile), and Bad-kan (phlegm). The system uses herbal medicines, diet, and lifestyle adjustments alongside spiritual practices. Sowa-Rigpa has its own university in India, the Central Institute of Buddhist Studies in Leh, and is recognized by the Ministry of Ayush. It includes unique diagnostic techniques such as pulse reading and urine analysis.

Why in news?

Sowa-Rigpa is one of the traditional medicine systems featured at the NAM Conclave 2025, denoting its role in India's integrative healthcare framework.

Space Activities Policy 2023

The Space Activities Policy 2023 is a government framework designed to liberalize and promote private sector participation in India's space sector. It outlines guidelines for private companies to engage in satellite manufacturing, launch services, space-based applications, and in-orbit operations. The policy encourages public-private partnerships, international collaborations, and innovation-driven growth. It provides regulatory clarity and streamlines approvals through agencies like In-SPACe. The policy aims to increase India's share in the global space economy, create jobs, and enhance technological capabilities. It marks a shift from a primarily government-driven space program to a more inclusive ecosystem involving startups and private enterprises.

Why in news?

The policy's introduction was cited as a key factor in the rapid expansion of India's space startups and the growing economic contribution of the space sector.

Space Traffic Management (STM)

Space Traffic Management (STM) refers to the set of policies, procedures, and

technologies used to monitor and control the movement of satellites and debris in Earth's orbit. STM aims to prevent collisions, manage orbital congestion, and ensure sustainable use of space. It involves data sharing, conjunction analysis, and coordination among international space agencies and private operators. STM is increasingly vital due to the rise in satellite launches and rideshare missions, which increase traffic in congested orbits like Low Earth Orbit (LEO). There is no single global STM authority yet; efforts focus on cooperative frameworks among spacefaring nations.

Why in news?

ISRO emphasized the need for an active STM system in response to rising space congestion and the increase in close approach alerts for its satellites in 2024.

Space-Air-Ground-Ocean (SAGO) Communication

Space-Air-Ground-Ocean (SAGO) communication integrates multiple communication environments—satellites (space), aerial platforms (air), terrestrial networks (ground), and maritime systems (ocean)—to provide seamless connectivity across diverse and challenging terrains. It supports uninterrupted data transmission for applications like disaster management, military operations, and remote sensing. SAGO systems require complex coordination of heterogeneous networks and frequency bands to maintain quality and reliability. China controls 31% of global patents in this area, reflecting its strategic emphasis on multi-domain communication networks. SAGO is critical for future 6G networks aiming to connect all environments in a unified system.

Why in news?

SAGO communication is brought into light as a key technological niche where China dominates patents, and India aims to increase its patent filings in this domain as part of its 6G research focus.

Spadex Experiment

Spadex (Space Docking Experiment) is an autonomous satellite docking test conducted by ISRO in early 2025. It demonstrated the ability of two satellites moving at high relative speeds to dock in orbit, a critical technology for future space missions. The experiment used only half the initially supplied fuel, indicating high efficiency and potential for multiple uses. Spadex's success supports the development of India's Bharatiya Antariksh Station and future docking operations with the International Space Station. It also has applications in satellite repair, refueling, and strategic defense capabilities.

Why in news?

Spadex's success was announced as a milestone enabling ISRO's plans for modular space stations and manned lunar missions, including Chandrayaan-4 and future docking missions.

Spectral Function

The spectral function is a mathematical tool used in quantum physics to describe how electrons or quasiparticles behave in materials. It provides information about the density of states and energy dispersion of particles as a function of momentum and energy.

Traditionally, it has been used to analyze electron interactions and lifetimes in solids. The spectral function can be experimentally accessed through techniques like Angle-Resolved Photoemission Spectroscopy (ARPES). Recent research demonstrates that the spectral function also reveals topological characteristics of materials, serving as a "quantum fingerprint" to identify exotic electronic phases.

Why in news?

Researchers at RRI showed that the spectral function contains signatures of topological invariants, offering a new and accessible method to study topological materials beyond conventional techniques.

Sub-Geosynchronous Transfer Orbit (Sub-GTO)

A Sub-Geosynchronous Transfer Orbit (Sub-GTO) is an intermediate elliptical orbit used to place satellites before they reach their final geosynchronous or geostationary orbit. Satellites launched into Sub-GTO use onboard propulsion to reach their operational orbit. This method reduces the payload energy requirement from the launch vehicle. Sub-GTO orbits typically have lower apogees than standard Geosynchronous Transfer Orbits (GTO) and are part of multi-step orbital insertion processes. The European Space Agency recognizes Sub-GTO as a practical staging orbit for navigation satellites like those in the Indian Regional Navigation Satellite System (IRNSS).

Why in news?

The PSLV-C39 mission in 2017 aimed to place the IRNSS-1H satellite into a Sub-GTO, but failed due to heat shield separation issues, preventing proper satellite deployment.

Sun-Synchronous Polar Orbit

A **Sun-synchronous polar orbit** is a near-polar orbit where a satellite passes over the same part of Earth at roughly the same local solar time each day. This orbit maintains consistent lighting conditions for imaging satellites, aiding in earth observation and environmental monitoring. It typically has an altitude between 600 to 800 km and an inclination near 98 degrees. The orbit precesses approximately one degree per day to keep pace with the Earth's revolution around the Sun. This orbit is favored for remote sensing satellites like EOS-09 due to its ability to provide frequent, consistent coverage of the Earth's surface.

Why in news?

EOS-09 satellite was injected into a Sun-synchronous polar orbit to enable regular earth imaging in consistent lighting conditions.

Supercapacitor Electrochemical Window

The electrochemical window of a supercapacitor refers to the voltage range within which the device operates safely without electrolyte decomposition. A wider electrochemical window allows higher energy storage capacity and improved performance. Conventional supercapacitors typically have windows below 2V, while the aminated graphene supercapacitors developed at Nagaland University achieve about 2.2V. This improvement contributes to increased energy density and device longevity. Maintaining stability over

thousands of charge-discharge cycles within this window is critical for practical applications, including electric vehicles and renewable energy grids.

Why in news?

The aminated graphene supercapacitors demonstrate an impressive 2.2V electrochemical window, surpassing traditional devices, contributing to their higher energy density and durability, key factors in advancing energy storage technologies.

Swiss 1.2-meter Leonhard Euler Telescope

The Swiss 1.2-meter Leonhard Euler Telescope is an optical telescope located at La Silla Observatory. It was inaugurated in 1998 and is operated by the Geneva Observatory. Primarily designed for exoplanet hunting and stellar monitoring, it uses high-precision photometry and spectroscopy. The telescope contributed to the discovery of several exoplanets using the radial velocity method. It is named after Leonhard Euler, an 18th-century Swiss mathematician and physicist. The Euler Telescope is notable for its automation capabilities, allowing efficient long-term observation campaigns with minimal human intervention.

Why in news?

The Euler Telescope is visible in the airglow image from La Silla Observatory and is mentioned as part of the trio of telescopes captured in the photograph.

Technology Readiness Level (TRL) 6

Technology Readiness Level (**TRL**) is a scale from 1 to 9 used to assess the maturity of a technology. TRL 6 indicates a technology demonstrated in a relevant environment, often through prototype system testing. It bridges lab validation (TRL 4-5) and system demonstration in operational conditions (TRL 7+). TRL 6 requires integration of components into a model or prototype close to expected final form. It is a critical milestone for securing funding and moving toward commercialization or deployment. TRL frameworks originated from NASA and are widely adopted by governments and industries worldwide.

Why in news?

The drone-based QKD project targets achieving TRL 6 or higher, signaling progress toward operational quantum-secure communication systems for India's telecom sector.

Thermoluminescence Dating

Thermoluminescence dating measures the accumulated radiation dose in crystalline minerals, determining the time elapsed since the material was last heated or exposed to sunlight. It is widely used to date archaeological artefacts like pottery, burnt flints, and sediments. The technique is effective for dating objects from a few hundred to several hundred thousand years old. Thermoluminescence provides an alternative to radiocarbon dating, especially for older sites where organic material is absent. The method requires careful calibration and sample preparation to avoid contamination and ensure accuracy.

Why in news?

Researchers plan to use thermoluminescence dating on the Lower Palaeolithic tools found in Mangar Bani to establish their precise age and confirm their prehistoric origin.

Tiangong Space Station

The Tiangong Space Station is China's modular low Earth orbit space station, consisting of three main modules launched and assembled since 2021. It supports long-term human habitation and scientific research in microgravity. Tiangong means "Heavenly Palace" in Chinese. It serves as a platform for experiments across various disciplines, including biology, materials science, and space medicine. Unlike the International Space Station, Tiangong is operated solely by China and is expected to function through the late 2020s. Its design allows for the docking of multiple spacecraft, including cargo and crew vehicles, enabling continuous presence in orbit.

Why in news?

The station was the site where the new bacterium Niallia tiangongensis was discovered during surface sampling after the Shenzhou 15 mission.

Topological Invariant

A **topological invariant** is a property of a topological space that remains unchanged under continuous deformations such as stretching or bending, but not tearing or gluing. Examples include the number of holes in an object, like the genus of a surface. These invariants classify spaces into equivalence classes, helping distinguish shapes that cannot be transformed into each other without cutting. In quantum materials, topological invariants like winding numbers and Chern numbers dictate electronic behavior and phases. They are crucial in understanding phenomena in topological insulators and superconductors, influencing particle transport and robustness against defects.

Why in news?

Researchers at the Raman Research Institute developed a new method to detect topological invariants in quantum materials using spectral functions, enhancing the study of exotic electronic properties without direct observation.

Torino Scale

The **Torino Scale** is a method for categorizing the impact hazard of near-Earth objects (NEOs) based on their collision probability and potential damage. It ranges from 0 (no hazard) to 10 (certain global catastrophe). Developed in 1999 by astronomers Richard P. Binzel and Clark Chapman, it combines impact probability and kinetic energy to communicate risk to the public and scientists. The scale helps prioritize monitoring and response efforts. Objects rated 1-4 indicate routine close approaches with low-to-moderate concern, while 5-7 suggest threats requiring attention. No object has ever reached a rating above 4.

Why in news?

Asteroid 2024 YR4 received a Torino rating of 3 before being downgraded, marking NASA's highest alert level to date for an asteroid.

Torsional Oscillations

Torsional oscillations are large-scale, alternating bands of faster and slower rotational velocity within the Sun's interior. These oscillations migrate in latitude over the solar cycle

and are linked to the Sun's magnetic activity. Unlike near-surface plasma flows, torsional oscillations originate deeper in the solar interior and influence the Sun's differential rotation. They appear as subtle velocity variations in the Sun's rotation profile and are important for understanding solar dynamo processes. Their power source remains less understood but is distinct from the shallow flows observed in the near-surface shear layer.

Why in news?

The study found that near-surface plasma flows do not drive torsional oscillations, suggesting deeper, unknown mechanisms power these global solar rotational patterns.

Transcutaneous CO Measurement

Transcutaneous CO_2 measurement detects carbon dioxide levels diffusing through the skin surface, reflecting underlying physiological and metabolic conditions. It is used clinically to monitor respiratory function and tissue perfusion noninvasively. The skin's permeability allows CO_2 to pass through, providing a proxy for blood gas levels. This method is important in neonatal care, critical care, and wound healing assessment. It helps detect hypoxia or hypercapnia without invasive blood sampling. The technology requires sensors sensitive enough to measure low CO_2 concentrations through the skin barrier, often integrated into wearable devices.

Why in news?

The new wearable device measures transcutaneous CO_2 flux non-contactly, offering continuous monitoring of skin and systemic health, particularly useful in diabetes-related wound healing.

Van der Waals Interaction

Van der Waals interactions are weak forces between molecules or layers, arising from transient electric dipoles. In layered materials like graphene, these interactions hold sheets together without strong chemical bonds, allowing layers to be peeled apart easily. These forces are much weaker than covalent or ionic bonds but crucial for the structural stability of 2D materials. Van der Waals interactions enable the stacking of different 2D materials to create heterostructures with novel properties. Such weak bonding also allows for mechanical exfoliation techniques, like using cellophane tape to isolate graphene layers from graphite.

Why in news?

Van der Waals forces are central to the fabrication of atomically thin 2D metals, where layers are sandwiched and separated without chemical bonding, enabling new 2D material synthesis.

Varicella-Zoster Virus

The varicella-zoster virus (VZV) causes both chickenpox and shingles. After initial chickenpox infection, VZV remains dormant in nerve cells for life. Reactivation, often due to weakened immunity, causes shingles, characterized by painful rashes along nerve paths. VZV can also cause complications including vision loss, facial paralysis, and brain inflammation. The virus spreads through direct contact with rash fluid or airborne

particles. Vaccines target VZV to prevent reactivation. VZV's role in long-term cognitive effects and its possible link to dementia is under study, with vaccination potentially reducing these neurological risks.

Why in news?

VZV is central to the discussion on shingles vaccine benefits, including protection against dementia and cardiovascular conditions, based on recent research findings.

Voyager 1

Launched in 1977, **Voyager 1** is the farthest human-made spacecraft from Earth, currently over 25 billion km away, in the outer edge of the solar system. It was the first spacecraft to enter interstellar space in 2012. Voyager 1 carries the Golden Record, a phonograph record containing sounds and images representing Earth's diversity. Its mission has provided valuable data on outer planets and the heliosphere. The spacecraft operates on radioisotope thermoelectric generators, allowing it to function beyond the reach of solar power. Communication delays now exceed 20 hours due to the immense distance.

Why in news?

Voyager 1's distance marks a milestone in human space exploration, inspiring future human spaceflight missions to its region and denoting challenges like astronaut thermoregulation in microgravity.

Zostavax Vaccine

Zostavax is a live, weakened varicella-zoster virus vaccine approved for shingles prevention. It was the first shingles vaccine introduced, primarily recommended for individuals over 50 years old. Unlike recombinant vaccines, Zostavax uses a live attenuated virus, which can induce immunity by mimicking natural infection without causing disease. It was the vaccine used in the Welsh natural experiment. Protection duration typically lasts around 5 years, and it is less effective in immunocompromised individuals. Zostavax is administered as a single-dose subcutaneous injection. Its efficacy decreases with age, prompting development of newer vaccines like Shingrix.

Why in news?

The Welsh study on shingles vaccination and dementia risk was based on recipients of the Zostavax vaccine, denoting its role in reducing dementia incidence.

International Relations & Organizations

Arctic Circle India Forum

The Arctic Circle India Forum is a platform established to discuss Arctic-related issues from an Indian perspective, focusing on climate change, scientific research, and geopolitical interests. It aims to encourage dialogue among policymakers, scientists, and business leaders about India's Arctic policy and its strategic partnerships. The forum addresses the global impact of Arctic changes, including rising sea levels and climate patterns affecting India. It marks India's role as an observer in the Arctic Council and its increasing engagement in Arctic affairs. The forum is held periodically in New Delhi and involves collaboration with international Arctic stakeholders.

Why in news?

The 2025 edition of the Arctic Circle India Forum featured remarks by External Affairs Minister Dr. S Jaishankar on India's Arctic policy and global significance of the Arctic.

Belt and Road Initiative (BRI)

The **Belt and Road Initiative (BRI)** is a global infrastructure development strategy adopted by China in 2013 to enhance regional connectivity and economic integration. It includes the Silk Road Economic Belt and the 21st Century Maritime Silk Road, spanning over 140 countries. The BRI funds projects like ports, railways, highways, and energy pipelines. It aims to boost trade and investment but has faced criticism over debt sustainability and geopolitical influence. By 2025, more than two-thirds of Latin American countries had joined, making the region focus for China's expansion of economic and political influence.

Why in news?

Colombia formally joined the BRI in May 2025, marking a key expansion of China's infrastructure initiative in Latin America amid growing U.S.-China rivalry in the region.

Chagos Archipelago

The **Chagos Archipelago** is a group of over 60 small islands in the Indian Ocean, located about 500 kilometers south of the Maldives. It was a British Overseas Territory until the UK agreed to transfer sovereignty to Mauritius. The archipelago includes the Diego Garcia atoll, which hosts a major US military base. The indigenous Chagossian people were forcibly removed in the 1960s and 1970s to allow military development. The sovereignty dispute has involved international legal rulings, including a 2019 advisory opinion by the International Court of Justice favoring Mauritius's claim over the islands.

Why in news?

The UK agreed to transfer sovereignty of the Chagos Archipelago, including Diego Garcia, to Mauritius under a historic treaty after over 50 years of dispute.

Combined Space Operations Center (CSpOC)

The **Combined Space Operations Center (CSpOC)** is a multinational command center led by the United States, responsible for monitoring and coordinating space traffic and debris management. Established in 2015, it integrates data from various allied nations to provide situational awareness and collision warnings for satellites and space objects. Its network includes radar, telescopes, and satellite tracking systems globally. CSpOC supports over 60 countries and commercial entities by issuing conjunction alerts, enabling timely collision avoidance maneuvers. It plays important role in Space Traffic Management (STM) by sharing orbital data and maintaining operational safety in congested orbits like LEO and GEO.

Why in news?

CSpOC issued over 53,000 alerts to ISRO in 2024, helping avoid 10 potential satellite collisions through coordinated collision avoidance maneuvers.

Common But Differentiated Responsibilities (CBDR)

The **Common But Differentiated Responsibilities** principle is a key concept in

international climate agreements. It acknowledges that while all countries must address climate change, their obligations differ based on economic development levels. Developed nations bear greater responsibility for emissions reductions and financial support, while developing countries receive more leniency and assistance. CBDR is embedded in agreements like the UN Framework Convention on Climate Change (UNFCCC) and influences debates on carbon taxes and trade measures. India cites CBDR to argue against CBAM, claiming it violates this principle by imposing equal carbon costs on countries with different development stages.

Why in news?

India challenges the UK's CBAM as violating the CBDR principle, asserting that carbon taxes should reflect differing responsibilities of developed and developing countries in climate action.

Diamer-Bhasha Dam

The **Diamer-Bhasha Dam** is a proposed large-scale hydroelectric dam on the Indus River in Pakistan-occupied Kashmir with an estimated annual generation capacity of 18,097 GWh. China Power owns 70% and Pakistan's Frontier Works Organisation 30% of the consortium building it. Initiated in 2020, the project faced funding and local protest issues, including demands for land rehabilitation and free electricity. It is designed to improve water storage and power generation but is controversial due to its location in disputed territory. The dam is part of China-Pakistan Economic Corridor projects under the Belt and Road Initiative.

Why in news?

The Diamer-Bhasha Dam project recently saw local protests and remains a focal point of geopolitical tension between India, Pakistan, and China.

Diego Garcia

Diego Garcia is the largest island of the Chagos Archipelago, hosting a strategic US military base established in the 1970s. The base supports operations across the Indian Ocean, Middle East, and Asia-Pacific regions. It includes an airfield, naval facilities, and intelligence installations. The island is uninhabited except for military personnel, following the forced removal of the local Chagossian population. Diego Garcia's location provides critical logistical support for US and allied military operations, making it a key asset in regional security and maritime control.

Why in news?

The UK retains responsibility for security of Diego Garcia even as sovereignty over the Chagos Archipelago is transferred to Mauritius.

Economic and Social Council

The **Economic and Social Council (ECOSOC)** is one of the six principal organs of the United Nations, established in 1945. It serves as the central platform for discussing international economic, social, and environmental issues and formulating policy recommendations. ECOSOC coordinates the work of 15 specialized UN agencies,

functional commissions, and regional commissions. It holds annual meetings and special sessions to address global challenges. ECOSOC was responsible for endorsing the recommendation to establish the International Day of Families. It also oversees the implementation of the 2030 Sustainable Development Goals through its various subsidiary bodies.

WHY IN NEWS?

ECOSOC endorsed the resolution establishing the International Day of Families, emphasizing family-oriented policies as part of the sustainable development agenda in 2025.

Golan Heights Druze

The Druze population in the Golan Heights numbers about 25,000, with roughly 25% holding Israeli citizenship. The Golan Heights were captured by Israel from Syria in 1967 and annexed in 1981, but the Druze community has largely remained in their villages. They maintain a unique position, balancing cultural and political ties between Syria and Israel. During Syria's civil war, Israel reportedly supported Druze groups in southern Syria. The Golan Druze often face complex identity and loyalty challenges due to the region's contested political status and ongoing conflict.

WHY IN NEWS?

Israeli airstrikes in Syria aimed at protecting the Druze community show the strategic and humanitarian significance of the Druze in the contested Golan Heights during escalating regional violence.

Indian Ocean Rim Association (IORA)

The **Indian Ocean Rim Association (IORA)** is an intergovernmental organization established in 1997 to promote regional cooperation and sustainable development among countries bordering the Indian Ocean. It has 22 Member States and 12 Dialogue Partners. IORA focuses on maritime security, trade facilitation, fisheries management, disaster risk reduction, and academic collaboration. Its leadership rotates every two years, with a **Troika system** involving the current Chair, immediate past Chair, and incoming Chair. The Secretariat is based in Mauritius. IORA plays a key role in encouraging diplomatic and economic ties across the Indian Ocean littoral.

WHY IN NEWS?

The 24th IORA Council of Ministers meeting was held virtually, with India as Vice-Chair and set to assume Chairship for 2025-2027, focusing on sustainable development and regional cooperation.

Indus Waters Treaty

The **Indus Waters Treaty**, signed in 1960 between India and Pakistan with the World Bank as a signatory, allocates water usage rights of the Indus River system. The treaty divides rivers into eastern and western categories, granting Pakistan unrestricted use of western rivers (Chenab, Jhelum, and Indus) while India can use them for non-consumptive purposes like hydroelectricity and agriculture. The treaty includes provisions for dispute

resolution via the World Bank and arbitration courts. It has survived multiple conflicts, but recent events have led India to suspend it temporarily in response to cross-border terrorism.

Why in news?

India suspended the Indus Waters Treaty after the Pahalgam terror attack, affecting water flows and escalating tensions with Pakistan.

International Hydrographic Organisation

The **International Hydrographic Organisation (IHO)** was established in 1921 to ensure uniformity in nautical charts and documents worldwide. It currently has 98 member states and sets standards for naming seas, oceans, and coastal features. The IHO maintains the **Limits of Oceans and Seas** publication, which is the primary reference for marine geographic names. Despite its authority, individual countries sometimes use different names on their maps due to political or cultural reasons. The IHO's decisions are based on scientific and historical data, but it lacks enforcement power over national naming conventions.

Why in news?

The IHO is relevant as the US considers officially switching from Persian Gulf to Arabian Gulf, a change that conflicts with internationally recognized naming standards endorsed by the IHO.

Kerem Shalom Crossing

The **Kerem Shalom crossing** is a key commercial and humanitarian border point between Israel and the Gaza Strip. It serves as the primary conduit for goods, including food, fuel, and medical supplies entering Gaza. The crossing is jointly monitored by Israel, Egypt, and the United Nations. It has frequently been closed or restricted during escalations in the Israeli-Palestinian conflict, causing humanitarian challenges. The crossing's name means "Vineyard of Peace" in Hebrew. Its strategic importance lies in controlling the flow of supplies into Gaza, impacting civilian life and the delivery of aid during crises.

Why in news?

The Kerem Shalom crossing was partially reopened in May 2025 after 11 weeks of closure, allowing some aid deliveries into Gaza amid a worsening humanitarian crisis.

Line of Control (LoC)

The Line of Control (LoC) is the de facto military control line between Indian-administered and Pakistani-administered Kashmir, established after the 1947-48 Indo-Pak war. It is approximately 740 kilometers long and heavily militarized with frequent ceasefire violations. The LoC is not an internationally recognized border but serves as a practical boundary. It divides the Kashmir region, which is claimed in full by both countries. The area along the LoC is mountainous and sparsely populated, with numerous bunkers and military posts. Civilians often face displacement during escalations, and the region has witnessed multiple wars and insurgencies since 1947.

Why in news?

The LoC has seen nightly gunfire exchanges in May 2025 amid heightened tensions

following a deadly attack in Indian-administered Kashmir and missile tests by Pakistan.

Marshall Islands

The **Marshall Islands** are a group of over 1,000 coral and volcanic islands in the central Pacific Ocean. They are located between Hawaii and the Philippines and form part of the larger island group of Micronesia. The islands were a major site of U.S. nuclear testing during the Cold War, including the famous Castle Bravo test. The Republic of the Marshall Islands is an independent nation with a Compact of Free Association with the United States, allowing U.S. military access and assistance. The islands have strategic importance due to their location and are used for missile testing and tracking.

Why in news?

The Marshall Islands hosted the impact of the recent Minuteman III missile test, denoting their ongoing role in U.S. missile defense operations.

Mekong-Ganga Cooperation

The **Mekong-Ganga Cooperation (MGC)** is a sub-regional initiative launched in 2000 involving six countries – India, Thailand, Myanmar, Cambodia, Laos, and Vietnam. It aims to enhance cooperation in tourism, culture, education, and transportation. The name refers to the Mekong River in Southeast Asia and the Ganga River in India, symbolizing cultural and historical links. The MGC Action Plan (2019-2024) includes projects to promote Buddhist tourism and cultural exchange. It facilitates joint efforts to preserve heritage sites, improve connectivity, and boost economic development through sustainable tourism and people-to-people contacts among member states.

Why in news?

The Bodhi Yatra is organised under the Mekong-Ganga Cooperation Action Plan (2019-2024), involving delegates from five ASEAN countries to strengthen cultural and tourism ties.

Missile Technology Control Regime (MTCR)

The Missile Technology Control Regime (MTCR) is an informal political understanding among 35 member countries aimed at limiting the proliferation of missiles capable of carrying a 500 kg payload at least 300 km. Established in 1987, it restricts the export of missile technology and components. India joined MTCR in June 2016, which allowed it to extend the range of its BrahMos missile from 290 km to 450 km legally. The regime influences missile development globally by imposing technology transfer restrictions and export controls to prevent missile proliferation to unstable regions.

Why in news?

India's membership in MTCR has enabled the development of extended-range BrahMos missiles, including ongoing work to increase the range to 800 km, enhancing India's strategic strike capabilities.

Non-Permanent UNSC Members

The United Nations Security Council (UNSC) consists of 15 members – 5 permanent and 10 non-permanent. Non-permanent members serve two-year terms, elected by the General

Assembly. Latvia, Democratic Republic of Congo, Bahrain, Liberia, and Colombia will serve from 2026 to 2027. These countries rotate to ensure regional representation. Non-permanent members have voting rights on all substantive matters, influencing international peace and security decisions. Pakistan is a non-permanent member for 2025-2026. Non-permanent members often use their seat to raise regional issues or influence global diplomacy during their tenure.

Why in news?

These countries will join the UNSC in 2026-2027, during which India is intensifying diplomatic efforts to counter Pakistan's influence on the council.

Rakhine State Ethnic Conflict

Rakhine State in Myanmar is home to the Arakan (Rakhine) ethnic group and has been a conflict zone since Myanmar's independence in 1948. The Arakan Army, designated a terrorist group by Myanmar's government, controls much of the region. The state is part of a broader civil war with the Tatmadaw (military) controlling only about 21% of the country. The conflict has stalled infrastructure projects like the KMMTTP. The Arakan Army claims to provide security for the Kaladan corridor project since 2021, despite ongoing violence. Rakhine remains one of Myanmar's most underdeveloped and unstable areas.

Why in news?

Ethnic conflict in Rakhine State is a key obstacle delaying the completion of the Kaladan corridor, which is vital for India's strategic connectivity to its Northeast.

Uranium Enrichment Suspension

The concept of uranium enrichment suspension involves halting the process of increasing uranium-235 concentration, which is critical for nuclear fuel and weapons. Temporary suspension is often proposed in negotiations to build trust and prevent weaponization. Iran's uranium enrichment program has been central to international disputes, with demands for suspension linked to non-proliferation efforts. Enrichment suspension can vary in duration and scope, affecting Iran's ability to produce nuclear fuel. Past agreements, such as the JCPOA, included limits on enrichment levels and stockpiles. Suspension debates impact sanctions, regional security, and diplomatic relations.

Why in news?

Iran refused to consider temporarily suspending uranium enrichment as part of nuclear deal talks with the United States in May 2025.

Vaccine Maitri Initiative

Vaccine Maitri is India's global vaccine diplomacy program launched in 2021 to provide COVID-19 vaccines to low- and middle-income countries. It involved the export and donation of millions of vaccine doses, including the world's first DNA-based vaccine developed in India. The initiative aimed to promote global health equity and strengthen international cooperation during the pandemic. Vaccine Maitri leveraged India's position as the largest vaccine producer globally. It included collaborations with COVAX and bilateral agreements with over 100 countries. The program enhanced India's soft power

and showcased its biotech manufacturing capabilities. It also supported capacity building in recipient countries through technology transfer and training.

Why in news?

The initiative was mentioned in the ICGEB meeting as a demonstration of India's commitment to global health equity through biotechnology and vaccine innovation.

Vision MAHASAGAR

Vision MAHASAGAR stands for **Mutual and Holistic Advancement for Security and Growth Across Regions**, an Indian strategic framework focusing on maritime security and regional cooperation. It emphasizes strengthening maritime partnerships with neighboring countries to ensure security, economic growth, and sustainable development in the Indian Ocean region. The initiative includes collaborative efforts in areas such as maritime domain awareness, disaster response, and infrastructure development. It aligns with India's 'Neighbourhood First' policy, aiming to enhance connectivity and economic integration with Indian Ocean littoral states, including the Maldives, Sri Lanka, and Mauritius, encouraging stability and shared prosperity.

Why in news?

India's continued support to the Maldives through financial assistance and defence cooperation is part of its Vision MAHASAGAR strategy to strengthen ties with key maritime neighbors.

World Health Assembly

The World Health Assembly (WHA) is the decision-making body of the World Health Organization, composed of representatives from all 194 member states. It convenes annually in Geneva to set global health policies, approve budgets, and review WHO's work. Established in 1948, the WHA addresses pressing health issues, including disease control, health emergencies, and policy frameworks. The Assembly's resolutions influence international health regulations and national health strategies. The 78th WHA in 2025 focused on trans fat elimination among other health priorities, awarding countries for leadership in this area. The WHA also facilitates collaboration between governments and health organizations worldwide.

Why in news?

The 78th World Health Assembly in Geneva was the venue for WHO's announcement recognizing countries for eliminating industrially produced trans fats.

Social Development & Government Schemes

Ayushman Arogya Mandir

Ayushman Arogya Mandir (AAM) is a healthcare facility model under the National Ayush Mission, designed to provide comprehensive Ayush services at the grassroots level. Launched as part of the Ayushman Bharat scheme, AAM centers offer treatment in Ayurveda, Yoga, Unani, Siddha, Sowa-Rigpa, and Homeopathy. These centers focus on preventive, promotive, and curative care, integrating traditional medicine with modern diagnostics and therapies. The AAM initiative aims to increase accessibility in rural and

underserved areas, improve quality standards, and facilitate insurance coverage for Ayush treatments.

Why in news?

Ayushman Arogya Mandir is a key component of the National Ayush Mission, with expansion and integration discussed at the NAM Conclave 2025.

Central Consumer Protection Authority (CCPA)

The **Central Consumer Protection Authority (CCPA)** was established under the Consumer Protection Act, 2019 in India to enforce consumer rights and investigate violations. It has powers to conduct inquiries, order recalls, impose penalties, and initiate class-action suits. The CCPA focuses on unfair trade practices, misleading advertisements, and violations of consumer rights in digital and physical marketplaces. It operates through regional offices and collaborates with other regulatory bodies. The authority can impose fines up to ₹10 lakh and imprisonment for up to three years for violations. It aims to enhance consumer protection in the rapidly growing e-commerce sector.

Why in news?

The CCPA recently issued a notice to an online ticket booking platform for using a dark pattern called basket sneaking, charging ₹1 for a non-governmental organisation donation without clear consent.

Chenchu Tribe

The **Chenchu** are a primitive tribal group primarily inhabiting the forest regions of Andhra Pradesh and Telangana. Traditionally hunter-gatherers, they rely heavily on forest produce and maintain a symbiotic relationship with their environment. The Chenchu language belongs to the Dravidian family. They have distinct customs, including unique hunting techniques and animistic religious beliefs. The tribe is recognized as a Particularly Vulnerable Tribal Group (PVTG) by the Government of India. Their population is scattered across several Integrated Tribal Development Agency (ITDA) areas, where development programs aim to improve their socio-economic conditions without disrupting their traditional lifestyle.

Why in news?

The government sanctioned 10,000 Indiramma houses specifically for Chenchu tribal families under ITDA areas to provide permanent housing and improve living conditions.

Chicory Products of Etah

Chicory is a root vegetable used as a coffee substitute and additive. Etah district in Uttar Pradesh is known for its distinctive chicory cultivation and processing. The region's climate and soil conditions favor the growth of high-quality chicory roots. The processing involves drying, roasting, and grinding the roots into a powder used in beverages and food products. Chicory from Etah has gained recognition for its unique flavor profile and nutritional benefits, including inulin content, which aids digestion. It is also used in herbal remedies and as an ingredient in traditional sweets and snacks in the region.

Why in news?

Etah's chicory products were newly added to the ODOP scheme portfolio, denoting their

growing importance in Uttar Pradesh's district-specific industrial development.

Common Service Centres (CSCs)

CSCs are digital access points established under the Government of India's Digital India initiative to provide e-governance services to rural and remote areas. They enable citizens to submit applications for government schemes, pay bills, and access various online services. CSCs are operated by local entrepreneurs who facilitate digital transactions and government interactions. They have played a critical role in increasing digital literacy and service delivery but have also faced challenges like misuse and fraud, especially when verifying documents or submitting applications on behalf of others. CSCs are key to bridging the digital divide in India.

Why in news?

CSCs in Maharashtra were implicated in submitting thousands of bogus crop insurance claims, leading to blacklisting of 140 CSC operator IDs and criminal proceedings to curb fraud under the Re 1 insurance scheme.

Denotified Tribes (DNTs)

De-notified Tribes (DNTs) are communities that were once listed under the Criminal Tribes Act during British colonial rule in India and were "de-notified" after independence in 1952. Despite legal removal from this stigmatized classification, many DNT communities continue to face social exclusion and economic marginalization. They are distinct from Scheduled Tribes and Scheduled Castes and often lack formal recognition in affirmative action policies. The DNT population is estimated to be around 60 million, spread across multiple states. Their traditional occupations include itinerant trading, craft-making, and seasonal labor, many of which have declined due to modernization and urbanization.

Why in news?

The Union Minister of Social Justice and Empowerment visited Tisgaon Tanda village to review welfare schemes targeted at DNTs, focusing on the implementation of the SEED programme for their economic empowerment.

Dongria Kondh

The **Dongria Kondh** are a Particularly Vulnerable Tribal Group (PVTG) primarily residing in the **Niyamgiri Hills** of Odisha. They depend on the forest for sustenance and have a unique socio-cultural system revolving around the sacred Niyam Raja mountain. Their traditional lifestyle includes shifting cultivation and forest gathering. The Dongria Kondh strongly oppose mining activities on their sacred hills, asserting their rights under the Forest Rights Act. Their population is estimated at around 10,000 families. They have historically faced marginalization, with limited access to education, healthcare, and infrastructure. Their struggle has drawn national and international attention for indigenous rights.

Why in news?

The NHRC sought an Action Taken Report from Odisha's Chief Secretary regarding the poor living conditions and lack of basic amenities for the Dongria Kondh community in

Kalahandi and Rayagada districts.

Farmer Producer Organizations (FPOs)

Farmer Producer Organizations (FPOs) are collectives of farmers in India formed to improve their bargaining power, access to inputs, technology, credit, and markets. FPOs operate as legal entities, often cooperatives or companies, enabling smallholders to aggregate produce and reduce costs. They focus on value addition, crop diversification, and sustainable farming. The government supports FPOs through funding, capacity building, and linking them with research institutions. FPOs help farmers participate in modern supply chains and enhance income stability.

Why in news?

FPOs are key stakeholders in the Viksit Krishi Sankalp Abhiyan, collaborating with scientists and government bodies to implement modern agricultural practices at scale.

First Stage Units (FSUs)

First Stage Units (FSUs) are primary sampling units used in the PLFS to select households for survey. They typically represent villages in rural areas or urban blocks in cities. The 2025 PLFS revamp increased FSUs from 12,800 to 22,692 annually, with 12,504 in rural and 10,188 in urban areas. Each FSU includes 12 surveyed households, totaling around 272,304 households annually. FSUs are crucial for ensuring representative sampling and reliable labour market estimates across India's diverse regions. The two-year panel design allows tracking changes over time within the same units.

Why in news?

The PLFS sampling design was revamped in 2025 with a larger number of FSUs to improve precision and coverage of employment data released in May 2025.

GOBAR-Dhan Programme

The **GOBAR-Dhan (Galvanizing Organic Bio-Agro Resources Dhan) programme** is an Government of India initiative promoting the conversion of cattle dung and other organic waste into biogas and organic manure. Launched under the Swachh Bharat Mission, it aims to improve rural sanitation, generate clean energy, and reduce methane emissions from organic waste decomposition. GOBAR-Dhan incentivizes rural households and farmers to adopt biogas technology, reducing reliance on fossil fuels and improving soil health with organic manure. It supports sustainable agriculture and rural livelihoods while mitigating greenhouse gas emissions linked to unmanaged organic waste in villages.

Why in news?

GOBAR-Dhan was referenced in the context of India's methane mitigation efforts focused on reducing emissions from organic waste and livestock sectors without compromising rural incomes and food security.

Gobardhan Yojana

The **Gobardhan Yojana** is an Government of India scheme promoting the use of cattle dung and agricultural waste for biogas and organic manure production. It aims to generate income from non-milking cattle while improving rural sanitation and energy

access. The scheme supports farmers by converting waste into renewable energy and organic fertilizers, reducing dependence on chemical inputs. It also helps manage cattle waste efficiently, lowering environmental pollution. The program is linked to sustainable farming and rural development goals, encouraging circular economy practices in agriculture.

WHY IN NEWS?

PM Modi referenced the Gobardhan Yojana during the Viksit Krishi Sankalp Abhiyan to emphasize income generation from non-traditional sources and promote eco-friendly agricultural practices.

Hatti Samiti

Hatti Samiti is a principal organization representing over 300,000 Hattis, indigenous people living in the Trans Giri area of Sirmaur district, Himachal Pradesh. The Hattis have a distinct cultural identity, traditionally engaged in agriculture and livestock rearing. The Samiti acts as a social and political voice for the community, advocating for their rights and interests, especially related to land, cultural heritage, and local governance. The organization has actively opposed policies perceived to affect their access to religious and communal sites, such as the proposed user charges for visiting the Churdhar temple.

WHY IN NEWS?

Hatti Samiti strongly opposed the imposition of entry fees on devotees visiting the ancient Shirgul Maharaj temple, demanding exemption for pilgrims and influencing the suspension of the user charge order.

Immunisation Agenda 2030

The **Immunisation Agenda 2030** is a global strategy endorsed by WHO member states in 2020 to extend the benefits of vaccines to everyone, everywhere by 2030. It aims to reduce vaccine-preventable deaths by improving vaccine coverage, equity, and innovation. The agenda focuses on strengthening health systems, combating misinformation, and ensuring sustainable financing for immunisation programs. It aligns with the Sustainable Development Goals (SDGs) and targets diseases such as measles, polio, and tuberculosis. Gavi and other partners support the agenda through funding and technical assistance. The Immunisation Agenda 2030 emphasizes political commitment and community engagement for sustained vaccine access.

WHY IN NEWS?

The agenda is in focus as global health leaders urge countries to honor commitments and as Gavi's 2025 pledging summit seeks $9 billion to fund vaccine programs aligned with this strategy.

International Day for Women in Maritime

The **International Day for Women in Maritime** is observed globally to recognize and promote the role of women in the maritime industry. Celebrated annually on May 18, it aligns with International Maritime Organization (IMO) efforts to enhance gender equality. The 2025 theme was Women in Maritime – Leading Transformation and Sustainability,

coinciding with IMO's An Ocean of Opportunities for Women and World Maritime Day's Our Ocean, Our Obligation, Our Opportunity. The day includes events like panel discussions, awards, and awareness campaigns to boost women's recruitment, retention, and leadership in maritime sectors worldwide.

Why in news?

The inaugural International Day for Women in Maritime was celebrated in Mumbai in May 2025, denoting India's commitment to gender inclusion in maritime through policy and recognition of women seafarers.

Irula Tribe

The **Irula** are an indigenous tribal community primarily found in Tamil Nadu and Kerala, classified as a Particularly Vulnerable Tribal Group (PVTG). Traditionally, they are known for their skills in snake catching and honey gathering. The Irulas speak a Dravidian language closely related to Tamil and Telugu. Their traditional livelihood includes agriculture labor, forest produce collection, and craftsmanship. The community has faced historical marginalization, land dispossession, and lack of access to basic services. Despite legal protections, many Irula families lack formal land ownership (pattas), affecting their access to infrastructure like electricity and housing.

Why in news?

Irula families in Kunnapattu and surrounding areas face land ownership disputes and displacement pressures amid urbanization in Tamil Nadu, leading to petitions and government interventions regarding their land rights and housing.

Kamgar Kalyan Smart Cards

Kamgar Kalyan Smart Cards are issued to unorganized sector workers in India to facilitate access to welfare benefits such as health insurance, skill development, and social security schemes. These cards are part of digital initiatives to streamline identification and benefit delivery for laborers lacking formal employment documentation. They enable portability of benefits across states and sectors and are linked to biometric and Aadhaar databases for verification. The cardholders can avail services like medical treatment, maternity benefits, and pension schemes under various government programs. The scheme promotes financial inclusion and social protection for vulnerable workers in informal economies.

Why in news?

During the minister's visit, Kamgar Kalyan Smart Cards were distributed to eligible members of the DNT communities as part of welfare entitlements.

Karta-Dharta

The term **karta-dharta** originates from Sanskrit, meaning the **true stewards or doers**. It traditionally refers to the primary decision-makers and managers of a family or agricultural household in India. In the context of agriculture, **karta-dharta** emphasizes the role of farmers as the active agents responsible for managing land, resources, and crop production. This concept puts stress on the importance of involving farmers directly

in policy decisions affecting agricultural practices. The term is rarely used in modern policy discourse but remains in cultural and legal contexts relating to family and land management in rural India.

Why in news?

The term is used to show the need to engage farmers as key stakeholders in transitioning from paddy to millet cultivation in India's sustainable agriculture policies.

Kartavya Bodh

Kartavya Bodh is a cultural concept emphasizing the **sense of duty** and responsibility towards community and nation. It is deeply rooted in Indian ethos and often invoked to inspire collective action and social commitment. In Mizoram's literacy campaign, Kartavya Bodh motivated **292 volunteer teachers** including students, educators, and officials to actively participate in educating non-literate citizens. This cultural pride and duty-driven approach contributed to the state's educational success, reinforcing the role of traditional values in modern social initiatives.

Why in news?

The concept of Kartavya Bodh was brought into light as a key motivational factor behind the volunteer-driven literacy campaign that helped Mizoram achieve full literacy status.

Manasvi Programme

The **Manasvi Programme** is a STEM mentorship initiative launched by IIT Delhi aimed at high school girls to encourage their participation in Science, Technology, Engineering, and Mathematics fields. It focuses on addressing the gender disparity in STEM by providing mentorship, skill development, and confidence building. The programme offers a platform for girls to express themselves and gain exposure beyond academics, including workshops, interactive sessions, and career guidance. It is part of IIT Delhi's Academic Outreach and New Initiatives Office efforts to encourage inclusive education and empower young females in traditionally male-dominated disciplines.

Why in news?

IIT Delhi hosted the Manasvi STEM Mentorship Programme to inspire and support high school girls in pursuing STEM careers, denoting ongoing efforts to improve gender balance in these fields.

Manual Scavengers

Manual scavengers are individuals engaged in the hazardous task of manually cleaning, carrying, disposing, or handling human excreta from dry latrines, sewers, or septic tanks. The practice is illegal under the Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013. Despite bans, manual scavenging persists in some regions due to socio-economic factors. SECC 2011 collected data on manual scavenger households to identify and rehabilitate them through government schemes. These communities face severe health risks and social stigma. Rehabilitation programs include skill training and alternative employment support.

Why in news?

SECC 2011 included questions on manual scavengers to facilitate their identification and

rehabilitation, denoting ongoing efforts to eradicate this practice before the upcoming Census 2021.

Maternal Mortality Ratio (MMR)

Maternal Mortality Ratio (MMR) measures the number of maternal deaths per 100,000 live births during pregnancy or within 42 days of termination of pregnancy. It reflects the quality and accessibility of healthcare during childbirth. MMR is a critical indicator for maternal health and is used globally to assess progress in reducing preventable maternal deaths. India's MMR dropped from **130 (2014–16) to 93 (2019–21)**. The WHO classifies MMR below 70 as a target for developed nations. MMR reduction is influenced by skilled birth attendance, emergency obstetric care, and antenatal interventions.

Why in news?

India's MMR decline reported in the SRS 2021 indicates progress toward Sustainable Development Goal (SDG) 2030 targets for maternal health.

Ministry of Ayush

The Ministry of Ayush, established by the Government of India in 2014, oversees education, research, and promotion of traditional Indian medicine systems – Ayurveda, Yoga & Naturopathy, Unani, Siddha, and Homeopathy. It formulates policies, regulates institutions, and promotes integration of these systems into national healthcare. The ministry supports scientific validation and standardization of traditional therapies. It also facilitates international cooperation and public awareness campaigns. The name Ayush is an acronym representing all five traditional systems under its jurisdiction. The ministry launched initiatives such as the National Ayush Mission and digital platforms to increase accessibility and global reach.

Why in news?

The Ministry of Ayush signed a landmark MoU with WHO to include traditional medicine in the International Classification of Health Interventions, enhancing global recognition of these systems.

Mission Vatsalya

Mission Vatsalya is a centrally sponsored scheme launched by the Government of India aimed at the holistic development and protection of children in difficult circumstances. It focuses on child protection services including care and rehabilitation of vulnerable children, adoption, and support for children in conflict with law. The scheme integrates various child welfare programs under one umbrella to ensure better coordination and resource utilization. It supports institutional and non-institutional care, capacity building of stakeholders, and awareness generation. The program also emphasizes the role of state governments in implementing child protection laws and policies effectively.

Why in news?

Mission Vatsalya is mentioned as part of Assam's budget utilization strategy to fund the new policy combating human trafficking and witch-hunting, focusing on protecting vulnerable women and children.

Mobile Medical Units (MMUs)

Mobile Medical Units (MMUs) are specially equipped vehicles designed to deliver healthcare services to remote and underserved areas, especially tribal regions. MMUs provide primary healthcare, routine check-ups, immunizations, and health education. They often use technology such as GPS for tracking and efficient service delivery. MMUs bridge healthcare access gaps where permanent facilities are unavailable or difficult to reach. They play a vital role in monitoring health indicators and responding to outbreaks. Under PM-JANMAN, MMUs are being strengthened with enhanced monitoring and technological tools to improve healthcare outcomes for tribal populations.

Why in news?

The Ministry of Tribal Affairs brought into light the strengthening of healthcare monitoring through MMUs using GPS and other technologies during the PM-JANMAN progress review meeting.

MSME Turnover Classification Revision

Recently, the Government of India revised the turnover classification for MSMEs, doubling the threshold from Rs 250 crore to Rs 500 crore. This change expanded the MSME definition to include larger enterprises, making them eligible for various government schemes, including credit guarantee programs. The revision also increased the investment limit for MSMEs by 2.5 times. This reclassification aims to address the credit gap in the sector, which stands at Rs 30 lakh crore, by broadening the scope of enterprises that can access government support and credit facilities.

Why in news?

The revised MSME turnover classification was announced in the 2025 budget to enhance credit access and eligibility for government schemes for a wider range of enterprises in the MSME sector.

National Academy of Medical Sciences (NAMS)

The **National Academy of Medical Sciences (NAMS)** was established in 1961 in India as an autonomous body to promote medical sciences. It functions as an advisory body to the Central government on health policy and medical education. NAMS awards fellowships and diplomas, and organizes scientific conferences. It is involved in research and development in various medical fields and contributes to national health planning. The academy has a task force system to address specific health challenges, such as cancer care. NAMS collaborates with other institutions for policy formulation and implementation of health programs in India.

Why in news?

NAMS released a task force report denoting critical gaps in breast cancer diagnosis and care in India, emphasizing the need for improved early detection and treatment strategies.

National Action Plan for Mechanized Sanitation Ecosystem (NAMASTE)

The **National Action Plan for Mechanized Sanitation Ecosystem (NAMASTE)** is an

initiative by the Union Ministry of Social Justice and Empowerment aimed at mechanizing sanitation work to improve safety and dignity for sanitation workers. It focuses on replacing manual scavenging with mechanized cleaning methods. The plan includes providing personal protective equipment (PPE), health benefits, and livelihood support such as sewing machines for skill development. NAMASTE also emphasizes profiling sanitation workers to ensure targeted assistance and social security. It is part of broader efforts to empower marginalized communities engaged in hazardous sanitation tasks and eradicate manual scavenging in India.

Why in news?

NAMASTE was brought into light during a program held on May 16, 2025, in Bareilly, Uttar Pradesh, where sanitation workers were honored, and PPE kits, Ayushman cards, and sewing machines were distributed.

National Food Security Act (NFSA)

The **National Food Security Act, 2013**, aims to provide subsidized food grains to approximately 75% of India's rural population and 50% of the urban population. It guarantees **5 kg of food grains per person per month** at highly subsidized rates. The Act divides beneficiaries into Priority Households and Antyodaya Anna Yojana beneficiaries. It mandates state governments to identify eligible households based on poverty and other criteria. The NFSA also includes provisions for nutritional support to pregnant women and children. It is one of the world's largest food security programs by population coverage.

Why in news?

Uttar Pradesh government has abolished the district-wise quota of NFSA beneficiaries to redistribute food grain entitlements more equitably across districts.

National Health Authority

The **National Health Authority** (NHA) is the apex body responsible for implementing India's flagship health insurance schemes, including Ayushman Bharat. It functions under the Ministry of Health and Family Welfare and coordinates between hospitals, insurance companies, and government agencies. The NHA manages digital health records, claim settlements, and beneficiary identification through technology platforms. It also plays a critical role in integrating health services across states and Union Territories. The NHA was established in 2018 and has since expanded its role to include emergency health schemes like the new road accident cashless treatment program.

Why in news?

The NHA is the implementing agency coordinating the cashless treatment scheme for road accident victims, ensuring smooth execution and claim settlement.

National Health Workforce Accounts

The **National Health Workforce Accounts (NHWA)** is a standardized global system developed by the World Health Organization to collect, analyze, and report data on health workforce trends. It integrates data from multiple national sources to provide comprehensive workforce statistics, including numbers, distribution, and demographics of

health workers. The NHWA framework supports health workforce planning, policy-making, and monitoring progress towards universal health coverage. As of 2025, 194 countries contribute data to NHWA, showing a 33% increase in reporting since 2020. It enables comparisons across countries and regions, denoting disparities and workforce challenges worldwide.

Why in news?

The 2025 WHO nursing report is based on data collected from 194 countries via the National Health Workforce Accounts portal, reflecting increased global participation and improved data quality since 2020.

National Pharmacovigilance Program (Ayush)

The National Pharmacovigilance Program for Ayush is a government initiative aimed at monitoring the safety and efficacy of traditional medicine products, including Ayurveda, Yoga, Unani, Siddha, and Homeopathy. It collects data on adverse drug reactions (ADRs) through a network of centers across India. The program facilitates reporting by healthcare professionals and consumers to improve drug safety and public health. It also promotes research on drug interactions and side effects specific to traditional medicines. The program is integrated with the Central Drugs Standard Control Organization (CDSCO) and supports regulatory actions based on collected data.

Why in news?

The National Pharmacovigilance Program is integrated into the newly launched AyushSuraksha Portal, enabling systematic analysis and reporting of adverse drug reactions in the Ayush sector.

National Safai Karamcharis Finance and Development Corporation (NSKFDC)

The **National Safai Karamcharis Finance and Development Corporation (NSKFDC)** was established in 1997 under the Ministry of Social Justice and Empowerment. Its primary objective is to provide financial assistance and skill development to Safai Karamcharis, manual scavengers, and their dependents. NSKFDC offers loans for self-employment ventures, education, and housing. It operates through State Channelizing Agencies (SCAs) to implement its schemes. The corporation also supports capacity-building programs and promotes entrepreneurship among marginalized sanitation workers. NSKFDC is unique in focusing exclusively on improving the socio-economic status of sanitation workers, a group often excluded from mainstream financial services.

Why in news?

NSKFDC's Managing Director was present at the signing of the Letter of Agreement between MoSJE and UNDP, supporting wastepicker inclusion under the NAMASTE Scheme.

National Skill Development Corporation (NSDC)

The **National Skill Development Corporation (NSDC)** is a public-private partnership under the Ministry of Skill Development and Entrepreneurship in India. It aims to train and upgrade the skills of approximately 150 million people by collaborating with industries. Established in 2008, NSDC acts as a catalyst in skill development by funding private

training initiatives and promoting vocational education. It supports sector skill councils and facilitates the creation of large-scale, quality vocational training institutions. NSDC also plays a role in policy advocacy and certification frameworks. Its governance includes a Board of Directors with nominees from both government and private sectors.

Why in news?

The NSDC terminated its officiating CEO Ved Mani Tewari in May 2025 following complaints and controversies related to governance and appointments within the organization.

National Sports Repository System (NSRS)

The National Sports Repository System (NSRS) is a digital platform launched by the Indian Ministry of Youth Affairs and Sports for talent identification and scouting. It allows anyone to upload videos of athletes' performances, enabling nationwide talent searches. The Sports Authority of India (SAI) uses this system to deploy scouts who assess athletes and recommend them for induction into Khelo India Centres or National Centres of Excellence. The NSRS aims to democratize talent scouting by leveraging technology, ensuring wider reach and inclusion from remote areas across India.

Why in news?

The Sports Ministry announced the launch of a massive talent identification drive using the NSRS portal to scout athletes from across India, with a special focus on the Northeast region.

Nayi Disha Initiative

Launched by Delhi Police, Nayi Disha is a community outreach program aimed at reducing school dropout rates by reintegrating out-of-school children into the education system. Police personnel visit homes of dropouts to identify causes of leaving school and encourage return. The program includes coordination with schools, NGOs, and social workers to provide admissions, counseling, and academic support. It emphasizes mentorship and trust-building beyond traditional policing. The initiative addresses issues like financial constraints and domestic problems, offering a holistic approach to education reintegration. It plans expansion to other districts based on initial success.

Why in news?

Delhi Police launched the Nayi Disha initiative in May 2025 to combat school dropouts by directly engaging with affected children and families, marking a shift in policing toward empowerment.

Nehru Yuva Kendra Sangathan (NYKS)

Nehru Yuva Kendra Sangathan (NYKS) is the largest youth organization in India, established in 1972 under the Ministry of Youth Affairs and Sports. It operates through district-level Kendras promoting rural youth development, leadership, and community service. NYKS engages in national integration, disaster response, and social awareness programs. It mobilizes young volunteers for government initiatives, including emergency preparedness drills. NYKS runs skill development, cultural, and health awareness

activities, encouraging youth participation in nation-building. It collaborates with other youth bodies like NCC and NSS to enhance outreach and effectiveness in social and civic engagement.

Why in news?

NYKS is participating in Haryana's Operation Shield drill, mobilizing youth volunteers to support civil defence and emergency response activities during the exercise.

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Why in news?

NYKS members are being involved in civil defense exercises organized by the government as part of nationwide drills to enhance civilian preparedness against emerging security threats.

Ni-kshay Mitras

Ni-kshay Mitras are community volunteers supporting tuberculosis (TB) patients in India under the National TB Elimination Programme. They assist patients by ensuring treatment adherence, providing nutritional support, and facilitating access to healthcare services. Over 2.55 lakh Ni-kshay Mitras have distributed approximately 29.4 lakh food baskets to TB patients. The initiative leverages technology for patient engagement and education. Ni-kshay Mitras play important role in linking patients to care, reducing stigma, and improving treatment outcomes. The program has expanded rapidly, with over 1 lakh new volunteers joining during the 100-Day TB Mukt Bharat Abhiyaan campaign in 2024.

Why in news?

The Ni-kshay Mitra initiative was brought into light during a high-level meeting chaired by Prime Minister Narendra Modi, reviewing the success of the 100-Day TB Mukt Bharat Abhiyaan and the role of volunteers in TB elimination efforts.

Ni-kshay Poshan Yojana

Ni-kshay Poshan Yojana is a direct benefit transfer (DBT) nutrition support scheme for TB patients in India, launched to improve treatment outcomes by addressing malnutrition. Since 2018, over 1.28 crore TB patients have received financial assistance under the scheme. The incentive was increased to ₹1,000 in 2024 to better support patients' dietary needs during treatment. The scheme is integrated with the Ni-kshay platform, which tracks patient treatment and facilitates timely payments. Nutritional support under this scheme is critical in enhancing immunity and reducing TB mortality and morbidity.

Why in news?

The enhancement and impact of the Ni-kshay Poshan Yojana were discussed during the

Prime Minister's review meeting on TB elimination, emphasizing its role in patient care and treatment adherence.

One District One Product Initiative

The One District One Product (ODOP) initiative focuses on promoting and branding a unique product from each district in India to boost local economies. It supports artisans, craftsmen, and entrepreneurs by providing marketing, skill development, and infrastructure support. ODOP aims to enhance employment and preserve traditional crafts while integrating them into modern supply chains. The program encourages cluster-based development to improve product quality and competitiveness. It also aligns with government schemes promoting MSMEs and rural entrepreneurship, helping districts gain national and international recognition for their unique products.

Why in news?

The ODOP initiative was mentioned as a key component to encourage business opportunities for local artisans and entrepreneurs in connection with the Jal Marg Vikas Project's cruise tourism development.

Open Network for Digital Commerce (ONDC)

The **Open Network for Digital Commerce (ONDC)** is a government-backed initiative in India aimed at democratizing digital commerce by creating an open, interoperable network connecting buyers, sellers, and logistics providers. Launched in 2022, ONDC seeks to reduce dependency on dominant e-commerce platforms by enabling smaller merchants to participate on equal footing. It operates on open protocols, allowing diverse applications to interact seamlessly. ONDC supports multiple sectors, including food services, retail, and logistics. The network promotes transparency, equitable growth, and digital empowerment of small and medium enterprises across India. It is governed by a multi-stakeholder council including government, industry, and civil society representatives.

Why in news?

ONDC is in the news for continuing its collaboration with the National Restaurant Association of India (NRAI) to develop a scalable and inclusive digital commerce framework for food businesses.

Operation Sadbhawana

Operation Sadbhawana is an Indian Army initiative focused on **winning hearts and minds** in conflict-affected and border areas through community engagement and development activities. It includes projects in education, healthcare, infrastructure, and cultural promotion to encourage goodwill between the army and civilians. The operation supports initiatives like community radio stations, vocational training, and public welfare schemes. It aims to counter hostile narratives and misinformation by building trust and cooperation in sensitive regions. Operation Sadbhawana has been active in Jammu & Kashmir and other border areas to improve civil-military relations.

Why in news?

Panchshul Pulse, the community radio station launched in Pithoragarh, is operated under the Indian Army's Operation Sadbhawana to promote goodwill and communication in border communities.

Padyatra

Padyatra is a traditional Indian practice involving long-distance walking journeys, often for social, political, or religious purposes. In contemporary usage, it is revived as a grassroots mobilization tool to connect with rural populations and raise awareness on issues like development, health, and governance. Padyatras are used by government programs and political leaders to engage citizens directly. The practice has historical roots in India's independence movement, notably used by Mahatma Gandhi. Modern padyatras focus on youth participation, promoting physical endurance and community interaction. They symbolize commitment to social causes and encourage a spirit of volunteerism.

Why in news?

The Union Minister mentioned Padyatra as one of the programs promoted to involve youths in nation-building efforts and connect them with grassroots realities.

Panchshul Pulse

Panchshul Pulse is a community radio station broadcasting at **88.4 FM** in the Kumaon sector of Uttarakhand's Pithoragarh district. It serves border communities by airing programs in local dialects focused on weather updates, cultural heritage, village stories, and government welfare schemes. The station acts as a communication bridge between the Indian Army, civil administration, and remote Himalayan villages, covering a **12 km radius**. It promotes local traditions, folk music, and oral histories while providing real-time information to counter misinformation. The station is named after the Panchshul mountain range, symbolizing the region's resilience and identity.

Why in news?

Panchshul Pulse was launched by the Indian Army as part of the Vibrant Villages Programme to enhance communication, cultural preservation, and awareness in the border district of Pithoragarh, Uttarakhand.

Parameswaran Iyer

Parameswaran Iyer is an Indian civil servant known for leading the Swachh Bharat Mission, a massive sanitation campaign launched in 2014 to eliminate open defecation. He has served in various capacities within the Government of India and international organizations. Iyer holds a degree from the Indian Institute of Technology (IIT) Kanpur and has worked with the World Bank. His expertise spans public administration, sanitation, and water management. He was appointed as India's Executive Director at the World Bank before being nominated to the IMF board, reflecting his growing role in international financial institutions.

Why in news?

Iyer was appointed as India's nominee director on the IMF board, replacing K V Subramanian, ahead of a critical IMF Executive Board meeting in May 2025.

Parivar Pehchan Patra (PPP)

The **Parivar Pehchan Patra** (PPP) is a unique family identification document issued by the Haryana government to streamline welfare schemes. It contains detailed demographic data of family members, including age, income, and residency status, verified through government records. PPP facilitates direct benefit transfers and eligibility verification for various social welfare programs. It acts as a single source of truth for family data, reducing duplication and fraud. The document is mandatory for accessing many state schemes, including pensions and subsidies. Haryana was among the first state of Indias to implement such a comprehensive digital family identification system.

Why in news?

PPP is used to verify age and income criteria for applicants under the Haryana government's new artist honorarium scheme, ensuring targeted financial support.

Particularly Vulnerable Tribal Groups (PVTGs)

Particularly Vulnerable Tribal Groups (PVTGs) are a sub-category of Scheduled Tribes in India identified based on characteristics like pre-agricultural level of technology, stagnant or declining population, low literacy, and subsistence-based economy. There are 75 such groups across India, with 13 recognized in Odisha. PVTGs receive targeted government interventions including special welfare schemes, development programs, and legal protections. The term replaced the earlier designation Primitive Tribal Groups to emphasize vulnerability and need for focused development. Despite these efforts, many PVTGs continue to experience poverty, poor health, and limited access to education and infrastructure.

Why in news?

The NHRC brought into light the failure of Odisha government schemes to improve conditions for PVTGs, including the Dongria Kondh, prompting demands for accountability and better implementation.

Periodic Labour Force Survey (PLFS)

The **Periodic Labour Force Survey (PLFS)** is an annual survey conducted by the National Sample Survey Office (NSSO), Ministry of Statistics and Programme Implementation. Initiated in 2017, it provides quarterly estimates of employment and unemployment at the national and state levels. PLFS replaced the quinquennial Employment-Unemployment Surveys and uses a rotating panel design to track labor market dynamics. It collects data on workforce participation, employment type, sector, and workforce characteristics including vocational training and education. PLFS data is crucial for policy formulation, especially for understanding informal employment trends and skill gaps in sectors like MSMEs.

Why in news?

NITI Aayog's report on MSME competitiveness uses firm-level data and PLFS to analyze workforce skill shortages and labor market challenges affecting MSMEs in India.

Pink Police Booths

Pink Police Booths are specialized police stations established to address crimes against women and ensure their safety. Uttar Pradesh's Mission Shakti has set up **100 pink police booths** as part of its infrastructure expansion. These booths provide a women-friendly environment for reporting crimes and receiving support. They are staffed by trained personnel to handle cases of domestic violence, sexual harassment, and abuse. The concept originated to improve accessibility and responsiveness in law enforcement for women, providing a dedicated space separate from regular police stations.

Why in news?

The UP government reported the establishment of 100 pink police booths under Mission Shakti to improve women's safety and law enforcement responsiveness.

PM E-Drive Initiative

The **PM E-Drive initiative** is a government scheme launched in 2024 to deploy 14,028 electric buses across nine major Indian cities by 2026. It has a budget allocation of ₹10,900 crore and focuses on enhancing urban public transport with electric vehicles. The initiative includes development of supporting infrastructure such as charging stations, bus depots, and maintenance facilities. It aims to reduce pollution and promote sustainable mobility. The rollout is phased and prioritized, ensuring efficient implementation through collaboration between the Ministry of Heavy Industries and state governments.

Why in news?

The initiative is in the news for its ongoing phased allocation of electric buses to Karnataka and other states under the government's push for cleaner public transport.

PM-JANMAN

Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM-JANMAN) is a flagship government initiative launched in 2023 targeting the comprehensive development of **Particularly Vulnerable Tribal Groups (PVTGs)** in India. It involves coordinated efforts from **9 ministries and State Governments** to ensure physical infrastructure completion and service delivery. The scheme focuses on achieving **100% saturation** of interventions like housing, healthcare, education, and connectivity in tribal villages. Monthly high-level review meetings monitor progress. It aims to create **Vikasit Gaon, Viksit Bharat** by integrating welfare and infrastructure development for marginalized tribal communities.

Why in news?

The Ministry of Tribal Affairs held a high-level review meeting in New Delhi to assess and accelerate the physical completion and operationalization of PM-JANMAN interventions across 18 States and UTs.

POCSO Act 2012

The Protection of Children from Sexual Offences (POCSO) Act, enacted in 2012, is a comprehensive law to protect children under 18 from sexual abuse, assault, harassment, and exploitation. It defines various offenses, including penetrative and non-penetrative sexual assault, child pornography, and sexual harassment. The Act mandates child-

friendly procedures such as special courts, in-camera trials, and video-recorded testimonies to minimize trauma. It is gender-neutral, presuming all minors incapable of consent. POCSO prescribes strict penalties and time-bound trials to ensure swift justice. The Act aims to close legislative gaps and prioritize victim protection and rehabilitation.

WHY IN NEWS?

The Act's application and interpretation were central to a controversial case involving a minor's marriage and sexual relationship, leading to Supreme Court intervention and calls for legislative clarity.

Rangarajan Committee

The Rangarajan Committee, officially the Expert Group to Review the Methodology for Measurement of Poverty, was constituted by the Government of India in 2012. It revised poverty lines using consumption expenditure data, setting new thresholds for rural and urban poverty based on caloric intake, nutritional requirements, and expenditure patterns. The committee recommended **monthly per capita consumption expenditure poverty lines** of Rs 972 for rural and Rs 1,407 for urban areas in 2011-12, which were later updated in subsequent surveys. Its methodology is widely used for poverty estimation in India, influencing policy and welfare programs. The committee emphasized multidimensional poverty aspects beyond income alone.

WHY IN NEWS?

The poverty lines for 2022-23 and 2023-24 in India are based on the Rangarajan Committee's methodology, underpinning recent poverty and inequality estimates released by the National Statistics Office.

SHAKTI Scheme

The **Scheme for Harnessing and Allocating Koyala Transparently in India (SHAKTI)** is a coal allocation policy aimed at ensuring transparent, efficient distribution of coal to power producers. It divides coal linkages into two windows – coal at notified price for central and state power plants, and coal at a premium price for other producers via auction. SHAKTI allows states to use coal linkages for their generating companies or Independent Power Producers (IPPs) identified via Tariff-Based Competitive Bidding (TBCB). The scheme supports both short-term (up to 12 months) and long-term (up to 25 years) coal supply contracts, promoting competitive coal procurement.

WHY IN NEWS?

The Cabinet Committee on Economic Affairs approved the revised SHAKTI scheme in May 2025 to simplify coal linkage allocation and meet the long-term and short-term coal demands of the power sector.

Shompen Tribe

The **Shompen** are one of the most isolated indigenous tribes inhabiting the interior of Great Nicobar Island, with a population of around 200. They are classified as a Particularly Vulnerable Tribal Group (PVTG) in India. The Shompen maintain a hunter-gatherer lifestyle and have limited contact with outsiders. Their immune systems are considered vulnerable

to common diseases. They speak a language isolate, unrelated to other Nicobarese languages. The Shompen culture is highly sensitive to external influences, and infrastructure projects risk disrupting their traditional way of life and ancestral lands.

Why in news?

The Shompen are central to concerns about the social and environmental impact of the Great Nicobar Holistic Development Project, which includes road construction and land acquisition on Great Nicobar Island.

Sleep Poverty

Sleep Poverty refers to reduced sleep quality and quantity caused by adverse living conditions such as noise pollution, overcrowding, and environmental stressors. It is distinct from voluntary sleep deprivation and is often linked to socioeconomic status and urban living environments. Sleep poverty contributes to chronic sleep deprivation and associated health problems like cardiovascular disease, obesity, and impaired cognitive function. It disproportionately affects disadvantaged populations, exacerbating health disparities. The term is increasingly used in public health to emphasize social determinants of sleep health beyond individual behavior.

Why in news?

Sleep poverty is brought into light in UK surveys where 30% of people with chronic sleep problems attribute it to poor living conditions and noise pollution.

Socio Economic and Caste Census (SECC) 2011

The **Socio Economic and Caste Census (SECC) 2011** was a comprehensive nationwide survey conducted between 2011 and 2013, covering both rural and urban households. It collected detailed data on socio-economic status, including caste, housing, assets, income sources, and disabilities. The census enumerated about **24 lakh blocks**, each containing roughly 125 households. Unlike the population Census, SECC gathered disaggregated caste data and detailed economic conditions. It was administered by the Ministry of Rural Development with administrative control by the Ministry of Home Affairs through the Registrar General of India. The data aimed to inform policy and welfare programs but caste data publication was restricted.

Why in news?

SECC 2011 data on caste populations, except totals for Scheduled Castes and Tribes, was not publicly released. The government plans to collect caste data again in the delayed Census 2021, making SECC 2011 a key reference point.

Soil Health Card

The Soil Health Card (SHC) scheme was launched by the Government of India in 2015 to provide farmers with detailed information on the nutrient status of their soil. The card includes data on macro and micronutrients, pH levels, and recommendations for balanced fertilizer application. Over **14 crore Soil Health Cards** have been issued nationwide. The SHC aims to reduce the indiscriminate use of chemical fertilizers, improve soil fertility, and increase crop yield sustainably. Testing is conducted at designated soil testing labs, and

the card is valid for three years. The scheme is integrated with digital platforms for easy access and updates.

Why in news?

The 'Viksit Krishi Sankalp Abhiyan' campaign will educate farmers on using Soil Health Cards effectively to optimize fertilizer use and improve crop production during the upcoming Kharif season.

Sonhani Honey

Sonhani honey is a type of pure organic honey produced in the Korea district of Chhattisgarh. It is made exclusively from nectar collected from forest flowers, ensuring a unique floral profile. The honey is harvested by tribal farmers trained under government programs, including training in Kurukshetra. The Sonhani project is funded by the District Mineral Fund and aims to promote sustainable forest-based livelihoods. This honey is known for its distinct taste and is tied to the region's biodiversity. It contributes to rural income and preserves traditional beekeeping practices among indigenous communities.

Why in news?

Sonhani honey was cited by Prime Minister Modi as a success story in organic beekeeping during his Mann Ki Baat program, denoting its production by tribal farmers in Chhattisgarh's Korea district.

State Disaster Response Fund (SDRF)

The State Disaster Response Fund (SDRF) is a financial mechanism in India established in 2005 to provide immediate relief to states during natural and man-made disasters. Funded jointly by the central and state governments, the SDRF supports emergency response, rescue operations, and rehabilitation efforts. It covers activities like medical aid, transportation, and infrastructure restoration during crises. The fund's utilization is governed by guidelines from the Ministry of Home Affairs and is crucial for managing disaster preparedness and response at the state level. SDRF plays a key role in funding civil defence exercises and addressing gaps identified in drills.

Why in news?

The Home Ministry arranged funding support through the SDRF to address shortcomings in civil defence preparedness identified after the first Operation Shield drill in May 2025.

Sugar Boards in Schools

Sugar Boards are newly introduced regulatory bodies within schools mandated by the Central Board of Secondary Education (CBSE) to monitor and reduce sugar consumption among students. These boards oversee the availability of sugary foods and beverages on school premises, promote awareness about the health risks of excess sugar, and encourage healthier dietary habits. The initiative aims to curb childhood obesity and related health issues by involving students, teachers, and parents in active decision-making. Sugar Boards also coordinate with local health authorities and FSSAI guidelines to implement school-level nutritional policies effectively across India.

Why in news?

The FSSAI brought into light the implementation of Sugar Boards during the May 27, 2025,

CAC meeting to address rising obesity rates and promote healthier eating habits among schoolchildren.

SVAMITVA Scheme

The **SVAMITVA (Survey of Villages and Mapping with Improvised Technology in Village Areas)** scheme is an Government of India initiative launched in 2020 to digitally map rural land parcels using drone technology and geospatial tools. It issues property cards to villagers, establishing legal ownership and enabling financial access. By May 2025, it covered over **1.6 lakh villages** and mapped more than **100 million property parcels**. The scheme has unlocked an estimated **USD 1.162 trillion** in land value, supporting rural development and formalizing land tenure in India's villages. It integrates a nationwide CORS network for **5 cm mapping accuracy**.

Why in news?

SVAMITVA is being brought into light at the World Bank Land Conference in Washington DC for its role in secure land tenure, climate action, and rural development using advanced geospatial technology.

Swachh Survekshan Grameen (SSG)

Swachh Survekshan Grameen (SSG) is an annual rural sanitation survey conducted by the Department of Drinking Water and Sanitation (DDWS) under the Ministry of Jal Shakti. It assesses sanitation progress in villages using a structured framework aligned with the Swachh Bharat Mission-Gramin (SBM-G) Phase II guidelines. Key parameters include Open Defecation Free (ODF) Plus Model status, Plastic Waste Management Units, Faecal Sludge Management plants, and citizen feedback. The survey employs geo-fencing technology and mobile apps for data integrity and public engagement. Results rank states and districts based on quantitative and qualitative sanitation performance.

Why in news?

SSG 2025 was launched in Delhi by Union Minister C R Patil to evaluate rural sanitation progress and rank state of Indias and districts on sanitation indicators under SBM-G Phase II.

Sweet Revolution

The **Sweet Revolution** is an Indian agricultural initiative focused on expanding beekeeping to increase honey production and support pollination. It aims to improve farmers' incomes by promoting apiculture as an additional source of revenue. The program encourages integrating beekeeping with crop farming, enhancing crop yields through natural pollination. The Sweet Revolution also emphasizes sustainable practices and rural employment generation. It supports the development of honey processing and marketing infrastructure to boost the honey industry. This initiative is part of broader efforts to diversify agriculture and increase value addition in farm products.

Why in news?

PM Modi brought into light the Sweet Revolution during the Viksit Krishi Sankalp Abhiyan launch as a key income diversification strategy for farmers beyond traditional crop

cultivation.

Thalassemia Bal Sewa Yojana (TBSY)

The **Thalassemia Bal Sewa Yojana** is a flagship CSR initiative by Coal India Limited aimed at providing free bone marrow transplants to children suffering from **thalassemia** and **aplastic anemia**. Since inception, it has facilitated over **700 life-saving transplants**. The scheme partners with **17 premier hospitals** across India and offers financial assistance up to ₹10 lakh per child. It includes an online portal for real-time application tracking and extensive awareness campaigns targeting rural populations. The program focuses on early screening, genetic counseling, and aims for the One State, One Hospital model to enhance accessibility nationwide.

Why in news?

TBSY was brought into light during World Thalassemia Day 2025 in New Delhi, showcasing its success and announcing plans for expansion to provide better bone marrow transplant access across state of Indias.

Thalassemics India

Thalassemics India is a non-governmental organization focused on supporting patients with thalassemia, a genetic blood disorder. It provides awareness, counseling, and advocacy for better healthcare access. The organization collaborates with hospitals and government bodies to facilitate treatment, including bone marrow transplants. It plays a key role in promoting early screening and genetic counseling to reduce thalassemia incidence. Thalassemics India also organizes blood donation drives and patient support groups. The NGO has been instrumental in policy advocacy and improving infrastructure for thalassemia care in India.

Why in news?

Thalassemics India partnered with Coal India Limited's TBSY scheme to ensure successful implementation and wider reach of free bone marrow transplants for children with thalassemia.

Thirumani Village Road Roko

Thirumani village is located in Vellore district, Tamil Nadu. Recently, residents staged a **road roko** protest, blocking traffic to demand the release of overdue wages under MGNREGS. Road roko is a form of non-violent protest common in India, involving obstructing roads to draw attention to grievances. Thirumani's protest brought into light rural distress due to delayed government payments. Vellore district has a mixed economy with agriculture and small industries. The village's involvement in such protests reflects grassroots mobilization in rural Tamil Nadu, often driven by local governance issues and wage-related disputes.

Why in news?

Thirumani village residents protested via road roko against non-payment of MGNREGS wages, amplifying pressure on the government to release pending funds to rural workers.

Total Fertility Rate (TFR)

Total Fertility Rate (**TFR**) measures the average number of children a woman is expected to have during her reproductive years, defined as ages 15 to 49. It is calculated using age-specific fertility rates, which estimate fertility for specific age groups and are combined through a formula. A TFR of 2.1 is considered the replacement level, necessary to maintain a stable population. India's overall TFR has declined to 2.0, below replacement level, with variation by state. TFR data helps track demographic shifts and informs social and health policy decisions.

Why in news?

India's 2021 TFR data shows a national average of 2.0, with Bihar recording the highest at 3.0 and West Bengal and Delhi the lowest at 1.4, indicating regional disparities in fertility trends.

Universal Immunization Programme (UIP)

India's **Universal Immunization Programme (UIP)** is one of the world's largest public health initiatives, launched in 1985. It provides free vaccines to millions of newborns and pregnant women annually, targeting diseases like measles, polio, tuberculosis, and more recently COVID-19. UIP has contributed to India's certification as polio-free in 2014 and elimination of maternal and neonatal tetanus in 2015. It has introduced vaccines such as Measles-Rubella, Pneumococcal Conjugate Vaccine (PCV), and Rotavirus Vaccine (RVV). UIP conducts over 13 million immunisation sessions yearly, reaching approximately 26 million newborns and 34 million pregnant women. Full immunisation coverage stands at 76.1% as per NFHS-5.

Why in news?

UIP is cited due to India's immunisation progress and challenges, with a quarter of children still missing essential vaccines amid global disruptions and funding cuts.

Van Dhan Vikas Kendras

Van Dhan Vikas Kendras (VDVKs) are tribal entrepreneurship centers established to promote sustainable forest-based livelihoods by processing and marketing non-timber forest produce (NTFP). These centers empower tribal communities through skill development, value addition, and direct market linkages. VDVKs operate under the Ministry of Tribal Affairs and aim to enhance income for tribal gatherers by reducing dependency on middlemen. The Kendras facilitate training, capacity building, and business activities, including packaging and branding of forest products. They are critical for economic upliftment and sustainable resource management in tribal areas.

Why in news?

The review meeting emphasized the commencement of business activities in all Van Dhan Vikas Kendras as part of PM-JANMAN's mission to boost tribal livelihoods and economic development.

WASH Financing

WASH financing refers to funding projects related to **Water, Sanitation, and Hygiene**. It

supports infrastructure such as toilets, water filtration units, and waste management systems, especially in rural and semi-urban areas. WASH financing improves public health, reduces disease, and enhances quality of life. It often targets self-help groups (SHGs) and micro-enterprises engaged in sanitation and clean water supply. WASH initiatives align with Sustainable Development Goals, particularly SDG 6 (Clean Water and Sanitation). Financing mechanisms include loans, grants, and subsidies, often supported by government schemes and impact investors.

Why in news?

The Sa-Dhan and Bank of India MoU includes WASH financing to support micro and small enterprises focused on sanitation, hygiene, and clean water access in underserved areas.

Defence

Akashteer Missile System

The **Akashteer** is an Indian surface-to-air missile system designed to intercept enemy aircraft, drones, and missiles at medium ranges. It is an evolution of the Akash missile but incorporates advanced radar and guidance systems to improve accuracy and response time. Akashteer is mobile and can engage multiple targets simultaneously. It is known for its ability to operate in diverse weather conditions and has been developed to counter aerial threats from neighboring adversaries. The missile system has been described as deterrent in South Asian air defense scenarios.

Why in news?

Akashteer was mentioned in the context of regional missile defense developments and is noted for its reputation as a challenging threat to Pakistan's air operations.

Army Strategic Forces Command

The Army Strategic Forces Command (ASFC) is a specialized branch of Pakistan's military responsible for managing and operating the country's nuclear-capable missile systems. Established to maintain strategic deterrence, the ASFC oversees ballistic and cruise missile arsenals, including the Abdali, Ghaznavi, Ghauri, and Babur missile systems. It ensures missile readiness, conduct tests, and manages command and control protocols for nuclear weapons. The ASFC plays a critical role in Pakistan's defense strategy and nuclear doctrine, maintaining operational security and coordination between conventional and strategic forces.

Why in news?

The ASFC was involved in the recent operational user trial and test launch of the Abdali missile during Exercise Indus, underscoring Pakistan's strategic missile capabilities.

Bhargavastra Weapon System

The **Bhargavastra** is an indigenous Indian low-cost anti-drone weapon system developed to counter swarms of hostile drones. It integrates electronic warfare capabilities with directed energy and kinetic interception methods to disable or destroy unmanned aerial vehicles. Designed for deployment with infantry and mechanized units, it can operate in diverse terrains and weather conditions. The system employs advanced radar and electro-

optical sensors to detect and track multiple small, fast-moving aerial targets simultaneously. Its modular architecture allows quick upgrades, and it is named after the mythical weapon of sage Bhargava, symbolizing precision and lethality.

Why in news?

Bhargavastra was brought into light during Exercise Teesta Prahar for its potential to thwart drone swarm attacks, particularly from adversaries using Turkish-made drones.

Central Armed Police Forces (CAPFs)

The **Central Armed Police Forces (CAPFs)** are a group of seven security forces in India under the Ministry of Home Affairs, including the Border Security Force (BSF), Central Reserve Police Force (CRPF), and Indo-Tibetan Border Police (ITBP). Established primarily for internal security, counter-insurgency, and border guarding, CAPFs operate across India and in conflict zones. CAPFs personnel serve in diverse roles, from riot control to anti-terror operations. The forces follow a paramilitary structure, and their personnel ranks range from Constable to Commandant. The Assam Rifles, though older, is administratively under MHA but operationally linked to the Indian Army.

Why in news?

CAPFs personnel retiring from ranks Constable to Sub-Inspector will receive an honorary promotion one rank higher on retirement, aiming to boost morale and pride without financial benefits.

Central Industrial Security Force (CISF)

The **Central Industrial Security Force (CISF)** is a paramilitary force in India established in 1969 to provide security to critical infrastructure. It guards airports, nuclear power plants, seaports, and government installations. The force has approximately 200,000 personnel. CISF also provides consultancy to private industries for security management. It operates under the Ministry of Home Affairs. CISF has specialized units for disaster management, fire protection, and cyber security. It is one of the seven Central Armed Police Forces (CAPFs) of India, known for its role in industrial and infrastructure security rather than traditional combat operations.

Why in news?

Sub Inspector Geeta Samota from CISF became the first personnel of the force to summit Mount Everest, denoting the force's expanding role beyond security duties into adventure sports and mountaineering.

Chhatru Village

Chhatru is a remote village located in the Kishtwar district of Jammu and Kashmir. It lies in a mountainous area within the Chenab Valley and is known for its difficult accessibility and sparse population. The village has gained attention due to increased militant activity in recent years, making it a focus for Indian security operations. The terrain around Chhatru includes dense forests and steep slopes, complicating military and police actions. The local economy is primarily agrarian, with limited infrastructure development. Chhatru's strategic significance arises from its use as a hideout by militants in the region.

Why in news?

Chhatru is the site of a recent anti-terror operation involving Indian Army and J&K police forces targeting terrorists in the area.

Chief of Integrated Defence Staff (CISC)

The Chief of Integrated Defence Staff (CISC) is a senior military appointment in India responsible for coordinating jointness among the Army, Navy, and Air Force. Established to improve synergy between the services, the post oversees agencies like the Defence Cyber Agency and Defence Space Agency. The CISC acts as the principal military advisor to the Chairman of the Chiefs of Staff Committee. The position was created to support integrated planning and execution of operations, reforms, and modernization efforts. It plays important role in inter-service communication, defense diplomacy, and encouraging cooperation with defense industries and academia.

Why in news?

Lt Gen J P Mathew retired from the position of CISC in April 2025 after nearly four decades of service, marking the end of his impactful tenure promoting jointness among the Indian armed forces.

Civil Defence Districts

Civil Defence Districts are specific areas designated by the Government of India for implementing civil defence programmes. These districts are identified based on strategic vulnerability, proximity to borders, and presence of critical infrastructure like nuclear plants, military bases, refineries, and ports. As of 2010, there are 259 such districts divided into three categories – Category I (full implementation), Category II, and Category III (partial implementation). The maximum number of districts is in West Bengal (32), followed by Rajasthan (28), Assam (20), Punjab (20), and Jammu & Kashmir (20). The Ministry of Defence recommends these demarcations. These districts are focal points for civil defence drills and preparedness.

Why in news?

The Union Home Ministry ordered civil defence mock drills on May 7, 2025, across 244 civil defence districts to enhance readiness amid rising India-Pakistan tensions following the Pahalgam attack.

Civil Defence Drills

Civil Defence Drills in India involve coordinated exercises to prepare civilians for emergencies, including hostile attacks. These drills include air raid siren tests, training civilians and students on safety protocols, crash blackout measures to reduce visibility of key installations, camouflage techniques, and evacuation rehearsals. The drills aim to enhance public awareness, improve response times, and minimize casualties during crises. They are conducted regularly but intensified following security threats. Civil Defence is managed by the Ministry of Home Affairs and local authorities, integrating military and civilian efforts for comprehensive national security preparedness.

Why in news?

Following the Pahalgam terrorist attack and rising cross-border tensions, the Ministry of

Home Affairs ordered civil defence drills across several states on May 7, 2025.

Defence Cyber Agency

The Defence Cyber Agency (DCA) is a tri-service agency of the Indian Armed Forces focused on cyber warfare and cybersecurity. Established in 2019, it integrates cyber capabilities from the Army, Navy, and Air Force to defend against cyber threats and conduct offensive cyber operations. The DCA works to protect critical military networks and infrastructure and develop cyber warfare strategies. It collaborates with national cybersecurity agencies and defense research institutions. The agency plays a vital role in India's national security by addressing emerging cyber challenges and ensuring operational readiness in the digital domain.

Why in news?

Lt Gen J P Mathew contributed to the expansion and strengthening of the Defence Cyber Agency during his tenure as Chief of Integrated Defence Staff.

Defence Materials Stores and Research & Development Establishment (DMSRDE)

DMSRDE, located in Kanpur, is a DRDO laboratory specializing in materials research for defense applications. It focuses on developing advanced materials, including polymers, composites, and metals, for military equipment. Established in 1960, DMSRDE supports Indian armed forces by providing innovative solutions for durability, corrosion resistance, and operational efficiency. The lab has contributed to indigenous development of materials for missiles, armored vehicles, and naval vessels. It collaborates with other DRDO labs and defense production units to transition technologies from research to deployment. DMSRDE also works on environmental resilience of materials under extreme conditions.

Why in news?

DMSRDE developed the nanoporous polymeric membrane for seawater desalination on Indian Coast Guard ships, completing the project rapidly and conducting technical trials on Offshore Patrolling Vessels.

Ground-to-Air Missile (GTAM)

A Ground-to-Air Missile (GTAM) is a surface-launched missile designed to intercept and destroy airborne threats such as aircraft, missiles, or drones. GTAMs vary in range from short to long distances and are guided by radar, infrared, or other targeting systems. Unlike bombs, GTAMs have their own propulsion and guidance systems, enabling precise interception mid-flight. They are key components of air defense systems worldwide, used to protect strategic locations and military units. Modern GTAMs can target not only aircraft but also incoming munitions like bombs and missiles, often destroying them at high altitudes before debris reaches the ground.

Why in news?

The Indian Armed Forces reportedly used GTAMs as part of their air defense response to Pakistani air strikes targeting Northern and Western India in May 2025.

Group Captain Subhash Shukla

Group Captain Subhash Shukla is an Indian Air Force officer selected for participation in the Axiom Space Mission to the International Space Station (ISS). He will conduct seven microgravity experiments during his visit, contributing to India's space science research. Shukla's involvement marks a milestone in India's human spaceflight ambitions, linking military aviation expertise with space exploration. His selection reflects collaboration between ISRO, Axiom Space, and the Indian defense sector, enhancing India's presence in international space missions. This mission aims to boost scientific knowledge and strengthen India's role in global space research.

Why in news?

Group Captain Subhash Shukla's upcoming ISS mission with Axiom Space includes microgravity experiments, denoting India's expanding footprint in human spaceflight and space science.

HAMMER Missile

The HAMMER (Highly Agile Modular Munition Extended Range) is an air-to-surface precision-guided munition developed for targeting ground threats with high accuracy. It is **modular**, allowing different warheads and guidance systems for varied mission profiles. HAMMER uses a **GPS/INS guidance system** combined with an imaging infrared seeker for terminal phase targeting. It has a range that allows for stand-off precision strikes while keeping the launch platform safe from enemy air defenses. The missile is designed to be launched from various aircraft and is optimized for use against fortified and mobile targets.

Why in news?

HAMMER was reportedly used alongside BrahMos in recent Indian retaliatory strikes on Pakistani military bases in May 2025.

HAROP Loitering Munition

The HAROP is an Israeli loitering munition developed by Israeli Aerospace Industries (IAI), combining UAV and missile features. It can loiter in the air for up to **nine hours**, equipped with an electro-optical sensor for target acquisition and identification. It is launched from canisters mounted on trucks or naval vessels and is capable of attacking targets autonomously by crashing into them with an explosive payload. The system is resistant to GNSS jamming and can engage targets from any direction with shallow or steep dives. It evolved from the earlier HARPY drone, replacing RF seekers with advanced electro-optical sensors.

Why in news?

India reportedly used HAROP drones during Operation Sindoor to strike multiple air defense systems in Pakistan, including a successful hit near Lahore.

HARPY Drone

The HARPY, introduced by Israeli Aerospace Industries in the 1980s, was the first loitering munition developed for battlefield use. It featured a Radio Frequency (RF) seeker to

autonomously identify and attack radar emissions from enemy air defense systems. HARPY was a "fire and forget" weapon, launched without prior target location data, capable of loitering until it detected a target. It was designed primarily for suppression of enemy air defenses (SEAD). The HARPY laid the foundation for newer loitering munitions like the HAROP, which replaced the RF seeker with electro-optical sensors for enhanced target identification.

WHY IN NEWS?

The HAROP drone used by India is a newer version of the HARPY, featuring upgraded sensors and capabilities, brought into light during recent India-Pakistan military confrontations.

INS Arnala

INS Arnala is the first of eight anti-submarine warfare (ASW) shallow water crafts built by Garden Reach Shipbuilders and Engineers (GRSE) for the Indian Navy. It measures **77.6 meters in length and 10.5 meters in width**. The vessel is capable of **full-scale sub-surface surveillance, search, and attack operations in coastal waters**. It supports **coordinated anti-submarine operations with aircraft**. Named after an island with a historic fort off the Maharashtra coast, INS Arnala has **approximately 88% indigenous content**. It was designed under a public-private partnership involving L&T Kattupalli shipyard.

WHY IN NEWS?

INS Arnala was delivered in May 2025 as the first of eight ASW shallow water crafts to enhance the Indian Navy's coastal defense capabilities.

INS Brahmaputra (F31)

INS Brahmaputra is a **guided missile frigate** of the Indian Navy, commissioned in 2000 and built by **Garden Reach Shipbuilders and Engineers (GRSE)**. It displaces 3,850 tonnes and belongs to the Brahmaputra-class, designed for anti-submarine and anti-aircraft warfare. The ship is equipped with missile systems, torpedoes, and a helicopter deck. It suffered extensive damage in a **dockyard accident in July 2024** involving a fire and subsequent flooding, leading to destabilization. The frigate is expected to regain seaworthiness by the end of 2025 and full combat readiness by mid-2026.

WHY IN NEWS?

INS Brahmaputra is undergoing repairs after a fire and flooding incident at Mumbai Naval Dockyard in July 2024, with restoration milestones set for 2025-2026.

INS Kiltan

INS Kiltan is a **Kamorta-class anti-submarine warfare corvette** of the Indian Navy, commissioned in 2017. It is named after Kiltan Island in the Lakshadweep archipelago. The ship features **stealth technology** and is equipped with advanced sonar systems and torpedoes for submarine detection and combat. It is powered by four diesel engines and has a displacement of around 3,300 tons. INS Kiltan is one of the first Indian warships to use **composite superstructures** to reduce radar cross-section. The vessel participates in

various naval exercises to enhance maritime security in the Indian Ocean region.

Why in news?

INS Kiltan arrived in Singapore to participate in IMDEX Asia 2025, engaging in bilateral and multilateral naval activities to strengthen cooperation between India and Singapore.

INS Sharda

INS Sharda is an Indian Navy vessel primarily used for coastal patrol, surveillance, and humanitarian missions. It belongs to the Shardul-class amphibious warfare ships, designed for rapid deployment of troops and equipment. Commissioned in the early 2000s, it supports amphibious operations and disaster relief efforts. The ship is equipped with advanced communication systems, enabling coordination with various defense and civilian agencies. It has participated in multiple international exercises to enhance regional cooperation. The vessel's capabilities include troop transport, medical assistance, and logistical support during emergencies, making it a critical asset for India's maritime security and humanitarian missions.

Why in news?

INS Sharda arrived at Maafilaafushi Atoll for a joint Humanitarian Assistance and Disaster Relief exercise with the Maldives from 04 to 10 May 2025, enhancing bilateral maritime cooperation.

INS Tarangini

INS Tarangini is a sail training ship of the Indian Navy, commissioned in 1997 and built by Goa Shipyard Ltd. It is a three-masted barque used to train naval cadets in navigation, sailing, and seamanship. The ship has completed multiple goodwill voyages, including a circumnavigation of the globe in 2003-04. Tarangini encourages international cooperation through joint exercises, such as the 2024 sail exercise with the Italian training ship Amerigo Vespucci. Its primary mission is to develop character, professionalism, and teamwork among trainees, emphasizing traditional sailing skills in an era dominated by electronic navigation.

Why in news?

INS Tarangini was mentioned in the context of modern navies retaining sail training ships for cadet training and international cooperation.

INS Vikramaditya

INS Vikramaditya is a modified Kiev-class aircraft carrier acquired from Russia and commissioned into the Indian Navy in 2013. Originally named Admiral Gorshkov, it underwent extensive refitting in Russia before delivery. The carrier displaces around 45,000 tonnes and can carry up to 30 aircraft, including MiG-29K fighters. It features a ski-jump ramp for short takeoff and arrested recovery (STOBAR) operations. Vikramaditya serves as the flagship of the Indian Navy and enhances India's blue-water naval capabilities. The refit cost was approximately $2.35 billion, and the carrier has a crew strength of about 1,600 personnel.

Why in news?

INS Vikramaditya was mentioned as the other aircraft carrier alongside INS Vikrant,

emphasizing India's growing naval aviation strength.

Karregutta Hills

The **Karregutta Hills** stretch approximately 60 km along the Chhattisgarh-Telangana border. Known for their steep slopes, rocky terrain, and numerous caves, they provide natural cover and tactical advantage. The hills experience a mix of hot humid summers and thunderstorms. Freshwater springs in the area supply water to inhabitants. The terrain's undulating surface and interstate border security vacuum make it a preferred hideout for Maoist insurgents. The hills are strategically important due to their difficult access and natural barriers, complicating military operations against insurgent groups like the PLGA.

Why in news?

The Karregutta Hills are the focus of Mission Sankalp, a large-scale anti-Maoist operation by 24,000 security personnel aiming to eliminate Left-Wing Extremism in Bastar.

Keller Forest Region

The **Keller** forest region is a dense, mountainous forest area located in the Shopian district of Jammu and Kashmir. It is known for its challenging terrain, making it a strategic hideout for militant groups. The dense vegetation and rugged landscape provide cover and complicate military operations. Keller has been a hotspot for counter-terrorism operations due to frequent militant infiltration attempts. The forest is part of the Pir Panjal range, contributing to its ecological diversity. It also plays a role in local livelihoods through forestry and limited agriculture. Security forces regularly conduct search operations in this region.

Why in news?

The Indian Army launched 'Operation Keller' in the Keller forest area of Shopian district, resulting in the elimination of three Lashkar-e-Taiba terrorists.

Kurraguttalu Hills (KGH)

The **Kurraguttalu Hills** lie on the border between Chhattisgarh and Telangana states in India. This region is known for dense forest cover and difficult terrain, making it a strategic stronghold for Naxalite groups. It served as a unified headquarters for several major Naxal organizations, including the **PLGA Battalion 1**, **DKSZC**, **TSC**, and **CRC**. The hills have been a site for Naxal training, weapons development, and planning of insurgency activities. The area covers approximately **1200 square kilometers**, making security operations challenging.

Why in news?

Kurraguttalu Hills were the site of the largest anti-Naxal operation in India, where security forces eliminated 31 Naxalites in May 2025.

Laser Beam-Riding VSHORADS

Laser beam-riding VSHORADS are a new generation of short-range air defense missiles that use a laser guidance system instead of traditional infrared or radar seekers. The missile rides a laser beam aimed at the target, providing high accuracy and resistance to

electronic countermeasures. This technology reduces susceptibility to infrared jamming and improves target tracking in complex environments. These systems are portable and intended for rapid deployment in frontline units. Several countries are developing or acquiring laser beam-riding VSHORADS to counter low-altitude aerial threats including drones, helicopters, and aircraft.

WHY IN NEWS?

India is planning to acquire new versions of laser beam-riding VSHORADS to upgrade its air defense capabilities on the western border.

Maratha Light Infantry

The **Maratha Light Infantry** is one of the oldest infantry regiments of the Indian Army, established in 1768. It primarily recruits soldiers from the Maratha community. Known for its rapid mobility and versatility, it has participated in major conflicts including both World Wars, the Indo-Pak wars, and counter-insurgency operations. The regiment has a distinctive insignia featuring crossed swords and a bugle horn. It has been awarded numerous battle honors and gallantry awards. The Maratha Light Infantry maintains traditional Maratha customs and martial heritage, including the celebration of Shivaji Jayanti.

WHY IN NEWS?

Major Malla Rama Gopal Naidu of the Maratha Light Infantry was posthumously awarded the Kirti Chakra during the Defence Investiture Ceremony-2025.

Mission Sankalp

Mission Sankalp is a large-scale anti-Maoist operation launched on April 21, 2025, targeting Left-Wing Extremism in Bastar and surrounding areas. It involves around 24,000 security personnel and aims to end six decades of insurgency by the March 2026 deadline set by the Union Home Ministry. The mission focuses on clearing Maoist strongholds like the Karregutta Hills, overcoming difficult terrain, and minimizing civilian casualties. It emphasizes strategic military engagement, including countering IED threats and sniper attacks, and seeks to restore government control over affected regions.

WHY IN NEWS?

Mission Sankalp is currently underway to eliminate Maoist influence in the Karregutta Hills and achieve milestone in India's anti-Naxal campaign.

Multi Agency Centre (MAC)

The **Multi Agency Centre (MAC)** was established in 2001 after the Kargil war as a counter-terrorism coordination platform under the Intelligence Bureau (IB). It links all police districts in India through a secured network, enabling real-time intelligence sharing among 28 organizations, including RAW and armed forces. The revamped MAC, costing ₹500 crore, incorporates Artificial Intelligence, Machine Learning, and Geographic Information System (GIS) services for advanced data analytics. It supports trend analysis, hotspot mapping, and timeline analysis to predict and counter terrorism, extremism, organized crime, and cyber attacks. It aims to integrate diverse databases for enhanced

national security.

Why in news?

Union Home Minister Amit Shah inaugurated the revamped MAC in May 2025, denoting its upgraded capabilities and role in strengthening India's counter-terrorism and security infrastructure.

Multi-Influence Ground Mine (MIGM)

The **Multi-Influence Ground Mine (MIGM)** is an indigenously developed naval mine by DRDO designed to counter modern stealth ships and submarines. It uses multiple sensors to detect targets, including acoustic, magnetic, and pressure influences, enhancing its effectiveness underwater. The mine can differentiate between friend and foe vessels, minimizing collateral damage. Its deployment improves undersea warfare capabilities by providing a strategic deterrent and area denial against enemy naval forces. The MIGM is compact, easy to deploy, and can operate autonomously for extended periods. It represents step in India's indigenous maritime defense technology.

Why in news?

The MIGM was successfully test-fired by DRDO and the Indian Navy on May 5, 2025, amid rising India-Pakistan tensions following the Pahalgam terrorist attack.

Multi-Influence Ground Mines

Multi-influence ground mines are underwater mines designed to detect and engage enemy submarines and stealth warships. They function using multiple sensor inputs, including acoustic, magnetic, and pressure influences, to trigger detonation. These mines are developed for enhanced precision and reduced collateral damage by using **reduced explosives** during combat firing tests. Their deployment improves undersea warfare capabilities by denying hostile vessels access to strategic maritime zones. The mines are indigenously developed by India's Defence Research and Development Organisation (DRDO), reflecting advancements in naval mine technology.

Why in news?

The Indian Navy and DRDO successfully conducted combat firing trials of these multi-influence ground mines to boost undersea warfare capabilities amid rising maritime security challenges.

Naval Aviation Roles

Naval aviation encompasses a wide range of roles including fleet air defense, which provides air cover beyond land-based aircraft range; strategic power projection, enabling air power deployment without land bases; anti-surface warfare, attacking enemy ships with air-launched missiles; supporting amphibious warfare, aiding marine landings; and mine countermeasures, detecting and clearing naval mines. It includes fixed-wing carrier aircraft, helicopters, maritime patrol aircraft, and remotely piloted aircraft. These roles are essential for sea control, supporting naval and ground forces, and extending military reach over vast oceanic areas.

Why in news?

The Indian Navy's acquisition of Rafale M fighters enhances its naval aviation capabilities,

which perform multiple critical roles in maritime security and warfare.

Nomadic Elephant Exercise

Exercise **NOMADIC ELEPHANT** is a biennial joint military exercise between India and Mongolia, initiated in 2003. It alternates location between India and Mongolia, focusing on semi-conventional operations in mountainous and semi-urban terrain. The exercise includes platoon-level field training, endurance drills, reflex shooting, room intervention, and rock craft training. It aims to enhance interoperability under a United Nations mandate and incorporates evolving aspects like cyber warfare since recent editions. The exercise symbolizes strategic cooperation and cultural exchange, strengthening bilateral defense ties and regional security. It also allows the sharing of operational experience between the two militaries.

Why in news?

The 17th edition of Exercise NOMADIC ELEPHANT is scheduled in Ulaanbaatar, Mongolia, from May 31 to June 13, 2025, with expanded cyber warfare components.

Operation Abhyaas

Operation Abhyaas is a large-scale civil defence mock drill conducted in Hyderabad to test emergency preparedness. It involves coordination between multiple agencies including the police, fire services, National Disaster Response Force (NDRF), and medical teams. The exercise simulates scenarios like bomb blasts and mass evacuations, with residents participating as victims. It emphasizes real-time communication through platforms like WhatsApp and the Integrated Command Control Centre (ICCC). The drill also includes setting up temporary medical camps and rapid mobilization of disaster response teams across multiple city locations to assess readiness for large-scale emergencies.

Why in news?

Operation Abhyaas was recently conducted in Hyderabad as the city's biggest civil defence mock drill, testing emergency response across multiple sites despite confusion caused by fake news about its cancellation.

Operation Pawan

Operation Pawan was the code name for the Indian Peace Keeping Force's (IPKF) military intervention in Sri Lanka from 1987 to 1990. The operation aimed to enforce the Indo-Sri Lanka Accord and disarm Tamil militant groups, primarily the LTTE. It involved intense jungle warfare and counter-insurgency operations in difficult terrain. The IPKF suffered casualties and faced political controversy, leading to withdrawal in 1990. Operation Pawan remains example of India's external military engagement in South Asia and shaped India's future peacekeeping and counter-insurgency doctrines.

Why in news?

The Territorial Army's historical involvement includes participation in Operation Pawan, denoting its role in external military operations.

Operation Rakshak

Operation Rakshak was an Indian Army counter-insurgency campaign initiated in the 1980s, primarily targeting Sikh militancy in Punjab and later Pakistan-backed militants in Jammu & Kashmir. The Territorial Army played a key role by conducting patrols, manning checkpoints, and protecting infrastructure. It was among the first large-scale internal security operations where the TA was actively deployed alongside regular forces. The operation involved intelligence gathering, area domination, and civil-military cooperation to restore law and order in troubled regions. Operation Rakshak continued for decades, adapting to evolving insurgency threats in northern India.

Why in news?

The Territorial Army's role in counter-insurgency, including Operation Rakshak, marks its contribution beyond conventional warfare, relevant in current security dynamics.

Operation Shakti

Operation Shakti was a series of five nuclear bomb test explosions conducted by India on 11th and 13th May 1998 at the Pokhran Test Range in Rajasthan. These tests included three thermonuclear devices and two fission bombs, marking India's entry into the group of declared nuclear weapons states. The operation was led by the Defence Research and Development Organisation (DRDO) and the Atomic Energy Commission. Operation Shakti demonstrated India's strategic nuclear capability, contributing to national security and geopolitical stature. The tests were named Shakti, meaning power, symbolizing India's technological and defense strength.

Why in news?

National Technology Day commemorates the successful nuclear tests conducted under Operation Shakti on 11th May 1998, marking a very important moment in India's scientific history.

Operation Shield

Operation Shield is a civil defence exercise conducted by the Haryana government to test emergency preparedness across all 22 districts. It simulates wartime scenarios including air raids and drone attacks, involving Civil Defence Wardens, volunteers, and youth organizations. The drill includes activation of air raid sirens, communication with the Indian Air Force, and a controlled blackout near vital installations. It aims to improve coordination between civil administration, defence forces, and local communities. The exercise aligns with the Incident Response System (IRS) under the Disaster Management Act, 2005, and requires detailed reporting to the Ministry of Home Affairs.

Why in news?

Operation Shield is scheduled for May 29, 2025, to vet Haryana's emergency preparedness amid rising national security concerns, involving large-scale mobilisation and simulated aerial threat responses.

Operation Trashi

Operation Trashi is a codename used by Indian security forces for a counter-terrorism

operation conducted in the Kishtwar district of Jammu and Kashmir. The operation involves joint efforts by the Indian Army and Jammu & Kashmir Police to neutralize militants hiding in remote areas. The name "Trashi" is derived from local terminology but is not widely publicized. Such operations typically include cordon and search, intelligence gathering, and armed engagement. These operations are part of broader security measures to curb insurgency and maintain law and order in regions with militant presence.

Why in news?

Operation Trashi was launched on May 22, 2025, targeting terrorists in Kishtwar's Chhatru area, resulting in a prolonged gunfight and casualties.

Otradne

Otradne is a village situated westward along the 1,000-kilometer frontline in the Donetsk region of Ukraine. It plays a role in the Donbas conflict due to its position near contested territories. The village serves as a tactical point for military operations and supply routes. Otradne has experienced repeated assaults and defensive actions by Ukrainian forces resisting Russian advances. Despite claims of capture by Russian sources, Ukrainian military reports have denied losing control over it, denoting the fluidity of frontline control. Otradne's status often reflects the broader shifts in the conflict within Donetsk Oblast.

Why in news?

Otradne was claimed captured by Russian forces in May 2025, but Ukrainian military sources denied this, underscoring ongoing contested control in the Donetsk frontline area.

Pokhran-II Nuclear Tests

The **Pokhran-II nuclear tests** were a series of five nuclear bomb test explosions conducted by India in May 1998 at the Pokhran Test Range in Rajasthan. These tests marked India's second nuclear weapons test after the 1974 Smiling Buddha test. The operation was led by scientists including Dr. A.P.J. Abdul Kalam, who played a very important role in the development and execution of the tests. Pokhran-II established India as a nuclear weapons state, impacting regional security and global geopolitics. The tests included both fission and fusion devices, demonstrating advanced nuclear technology capabilities.

Why in news?

Dr. Kalam's private papers, now archived, include detailed accounts of his involvement in the 1998 Pokhran-II nuclear tests, denoting his scientific legacy.

Poonch Brigade

The Poonch Brigade is a key Indian Army formation operating in the Poonch sector of Jammu and Kashmir, specializing in counter-infiltration and counter-terrorism along the Line of Control. It played a central role in Operation Sindoor by engaging in continuous and intense operations against terror locations. The brigade's area of responsibility

includes rugged terrain and strategic border points, making it crucial for border security. Under Brigadier Mudit Mahajan's command in 2025, the brigade demonstrated rapid response capabilities and coordinated use of armor and air defense systems. The Poonch Brigade's actions impacted enemy morale and operational capability during recent conflicts.

Why in news?

The Poonch Brigade was brought into light in news reports for its very important role in neutralizing six terror locations during Operation Sindoor amid escalating tensions with Pakistan in May 2025.

Seaward Firing Range, Gopalpur

The Seaward Firing Range in Gopalpur, Odisha, is a coastal military testing facility used for live-fire exercises and weapons testing. It supports trials for various defense systems, including missiles, rockets, and artillery. The range offers a controlled maritime environment with ample safety buffers for testing advanced weaponry. Its location on the eastern coast of India provides strategic access for the Indian Navy and Air Force. The facility is equipped with tracking radars, observation posts, and telemetry equipment to monitor weapon performance during tests.

Why in news?

On May 13, 2025, the Seaward Firing Range was the site for successful tests of the Bhargavastra counter-drone system, validating its operational effectiveness.

Sheopur Trial Site

Sheopur, located in Madhya Pradesh, is a designated test site for defense research and development activities, particularly for aerial platforms and missile testing. The region's geographic and climatic conditions provide an ideal environment for high-altitude flight trials. The site includes facilities for launching, monitoring, and recovering experimental airborne systems. It has been used for testing various DRDO projects, including missile systems and aerial delivery technologies. Sheopur's strategic location supports secure and controlled testing away from civilian populations, facilitating classified defense experiments.

Why in news?

The maiden flight trial of India's stratospheric airship platform was successfully conducted at the Sheopur test site on May 3, 2025, under DRDO supervision.

Solar Defence and Aerospace Limited (SDAL)

Solar Defence and Aerospace Limited (SDAL) is an Indian defense company specializing in advanced aerospace and defense technologies. It focuses on indigenous development of cutting-edge systems like drone countermeasures and missile technology. SDAL played a key role in creating Bhargavastra, India's first low-cost, layered counter-drone system. The company emphasizes modular designs adaptable to various military branches and terrains. SDAL integrates radar, infrared, and electronic warfare technologies such as jammers and spoofers into its products. It supports the "Make in India" initiative by

producing world-class defense hardware domestically.

Why in news?

SDAL developed Bhargavastra, which was tested successfully in May 2025, marking advancement in India's indigenous defense capabilities against drone threats.

STOBAR Launch System

The STOBAR (Short Take-Off But Arrested Recovery) system is a method used by aircraft carriers to launch and recover fixed-wing aircraft. It combines a ski-jump ramp for takeoff with arrestor wires to recover aircraft. Unlike CATOBAR systems, STOBAR does not use catapults, relying on aircraft power for takeoff. This system is less complex and cheaper to maintain but limits the maximum takeoff weight of aircraft. STOBAR is used by carriers such as INS Vikrant and Russia's Admiral Kuznetsov. It allows operations of carrier-based fighters like the MiG-29K with relatively simple deck infrastructure.

Why in news?

INS Vikrant's STOBAR system enables it to launch airstrikes during the current India-Pakistan naval standoff in the Arabian Sea.

SU-30 MKI

The **SU-30 MKI** is a twinjet multirole air superiority fighter developed by Russia's Sukhoi and customized for India by Hindustan Aeronautics Limited (HAL). It features thrust vectoring engines, canards, and advanced avionics, making it highly maneuverable. It is capable of carrying nuclear weapons and has a combat range of around 1,500 km. The SU-30 MKI is the backbone of the Indian Air Force with over 270 units in service. It also supports air-to-air refueling and can operate in all weather conditions, day or night.

Why in news?

The SU-30 MKI participated in the Ganga Expressway airstrip trial, demonstrating its ability to use alternative runways for emergency operations.

Surface-to-Surface Missile (120 km range)

A surface-to-surface missile with a 120 km range is a tactical ballistic missile designed for short-range strikes against land targets. Such missiles typically use solid or liquid fuel and have advanced navigation systems, including GPS or inertial guidance, for improved accuracy. They are deployed for battlefield support, targeting enemy installations, and troop concentrations. Countries often test these missiles to validate operational readiness and technical parameters like accuracy and propulsion. Pakistan's missile tests in 2025 included this missile, which enhances its tactical capabilities without reaching strategic targets, fitting within regional conflict scenarios.

Why in news?

Pakistan conducted a test of a 120 km range surface-to-surface missile on May 5, 2025, as part of military readiness amid escalating tensions with India over Kashmir.

Tarang Shakti Exercise

The **Tarang Shakti Exercise** is a joint military air exercise conducted between the Indian Air Force and the German Air Force. Named "Tarang Shakti," meaning "wave power," it focuses on enhancing interoperability, tactical coordination, and aerial combat skills. The

exercise includes complex air maneuvers, combined air defense drills, and live simulation scenarios. It is held at Indian Air Force stations such as Sulur in Tamil Nadu and involves participation from fighter pilots and support personnel. The event symbolizes growing defense cooperation and strategic trust between the two nations, marking step in bilateral military relations in the Indo-Pacific region.

WHY IN NEWS?

The Tarang Shakti Exercise (2024) is mentioned as a vivid example of strengthened defense cooperation during the 25-year celebration of India-Germany strategic partnership.

Teesta Field Firing Range

The **Teesta Field Firing Range** is a specialized military training area located in the northeastern state of Sikkim. It features challenging **riverine and mountainous terrain** ideal for testing infantry and mechanized units under realistic battlefield conditions. The range supports live-fire exercises and integrated combat drills, including artillery and armored maneuvers. Its proximity to the sensitive Indo-China border enhances its strategic importance. The range is equipped with modern instrumentation for monitoring ballistic trajectories and troop movements during exercises, making it a critical asset for validating joint operational readiness in difficult environments.

WHY IN NEWS?

The Teesta Field Firing Range was the site of the recent large-scale Exercise Teesta Prahar, validating the Indian Army's combat effectiveness and joint force integration in riverine terrain.

Vidur Vakta

Vidur Vakta is the Indian Army's indigenous name for the red teaming concept, inspired by Vidura, the advisor to the Pandavas in the Mahabharata. It involves a group of officers critically assessing military plans by simulating enemy reactions and challenging the robustness of strategies. The concept was formally introduced after the 2024 Army Commanders' Conference, with 15 officers undergoing specialized training. Trials were conducted across various commands to refine the approach before operational deployment. The program aims to build internal expertise and reduce reliance on foreign trainers, with a roadmap for expansion over two years.

WHY IN NEWS?

Vidur Vakta gained attention as it was implemented for the first time during Operation Sindoor, marking a new phase in Indian military strategic planning.

Village Defence Guards (VDGs)

The Village Defence Guards (VDGs) are civilian volunteers trained to assist security forces in protecting border villages, especially in Jammu's border areas. The VDG system was originally established in the 1990s but was discontinued for over 20 years before being revived in 2022 due to increased terrorist threats. VDG members receive arms training from the Border Security Force (BSF) and act as the "second line of defence" against

infiltration and attacks. VDGs are primarily deployed in vulnerable rural regions along the India-Pakistan border in Jammu to supplement formal security forces. Their role includes local intelligence gathering and rapid response during emergencies.

WHY IN NEWS?

The Border Security Force has restarted arms training for VDGs along the Jammu border to strengthen civilian defense amid rising terrorist infiltration and attacks in the region.

ZSU-23-4 Schilka

The **ZSU-23-4 Schilka** is a Russian-made, tracked anti-aircraft system armed with four 23mm autocannons. It has a firing rate of 4,000 rounds per minute and a radar detection range of **20 km**. Modern upgrades include advanced fire-control systems and **proximity-fuse ammunition** that improve precision against drones, helicopters, and lightly armored ground vehicles. Originally designed during the Cold War, the Schilka remains effective for short-range air defense and is widely used by several countries, including India, where it protects static and mobile military assets.

WHY IN NEWS?

India has deployed upgraded Schilka systems to counter increased drone threats from Pakistan in ongoing border conflicts and air defense operations.

Awards, Honours, Personalities, Books, Sports etc.

7 Summits Challenge

The **7 Summits challenge** involves climbing the highest peak on each of the seven continents – Everest (Asia), Aconcagua (South America), Denali (North America), Kilimanjaro (Africa), Elbrus (Europe), Vinson (Antarctica), and Kosciuszko (Australia). It was first completed by Richard Bass in 1985. The challenge tests endurance, adaptability, and mountaineering skills across diverse climates and altitudes. The order of climbs varies by climber, with some including Carstensz Pyramid instead of Kosciuszko for the Australian continent. Completing all seven is considered one of the most prestigious feats in global mountaineering.

WHY IN NEWS?

Vishwanath Karthikey Padakanti, a 16-year-old from Hyderabad, became the youngest Indian and second youngest globally to complete the 7 Summits challenge by summiting Everest on May 27, 2025.

Jagadguru Rambhadracharya

Jagadguru Rambhadracharya (**born 1950**) is a Sanskrit scholar, poet, and religious leader who is blind since infancy. He is one of the few individuals to have mastered **all four Vedas** by memory. He founded the **Jagadguru Rambhadracharya Handicapped University** in Chitrakoot, specializing in education for disabled students. He has authored over **100 books** in Sanskrit, Hindi, and other languages, including epic poems and commentaries on Hindu scriptures. He holds the title "Jagadguru," a rare honor given to spiritual leaders. His work integrates scholarship, social service, and religious leadership.

WHY IN NEWS?

Jagadguru Rambhadracharya received the 58th Jnanpith Award for his outstanding

contributions to Sanskrit literature and social service, recognized in a ceremony held on May 16, 2025.

Military Gender Advocate Award

The Military Gender Advocate of the Year Award is presented annually by the United Nations to recognize outstanding military personnel who promote gender equality and the empowerment of women in peacekeeping missions. Established in 2016, the award marks efforts to integrate gender perspectives in military operations and improve the protection of women and girls in conflict zones. Recipients demonstrate leadership in implementing UN Security Council Resolution 1325 on Women, Peace, and Security. The award is open to military members of all ranks and nationalities serving in UN peace operations.

Why in news?

Squadron Leader Sharon Mwinsote Syme from Ghana won the 2024 Military Gender Advocate of the Year Award.

Param Vishisht Seva Medal

The Param Vishisht Seva Medal (PVSM) is a prestigious military award in India given for distinguished service of the most exceptional order. Instituted in 1960, it is awarded to all ranks of the armed forces for exceptional leadership, devotion, and service during peacetime. The medal is circular, made of gold gilt, and features the Indian national emblem. Recipients of the PVSM are entitled to use the post-nominal letters “PVSM.” The award ranks above the Ati Vishisht Seva Medal and is one of the highest non-gallantry honors in the Indian military.

Why in news?

Lt Gen J P Mathew was conferred the Param Vishisht Seva Medal in recognition of his distinguished service during his nearly 40-year military career.