

ABHYAS

COMPLETE COVERAGE OF MONTHLY CURRENT AFFAIRS

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India's First Epigraphic Reference to Halley's Comet

History, Art and Culture

Context

- A copper plate inscription from 1456 CE found at the Mallikarjun swamy Temple in Srisailem is India's first epigraphic reference to Halley's Comet. The temple is located in Andhra Pradesh on the Nallamala Hills and is the only temple in India that is both a Jyotirlinga and a Shakti Peetha. Halley's Comet has an orbital period of approximately 76 years and was last seen in 1986.



INS Kaundinya and Tankai Method

History, Art and Culture

Context

- The Indian Navy formally inducted and named the Ancient Stitched ship as INSV Kaundinya, built using the Tankai method.

About INS Kaundinya:

- It is based on a 5th-century CE ship depicted in the paintings of Ajanta Caves.
- The project was initiated through a tripartite agreement between the Ministry of Culture, the Indian Navy, and M/s Hodi Innovations.

About the Tankai Method:

- It is a 2000-year-old technique of shipbuilding known as the 'stitched shipbuilding method'.
- It involves stitching wooden planks together rather than using nails, offering flexibility and durability.



Significance

- It reflects India's glorious maritime heritage and is part of the government's initiatives, such as the National Maritime Heritage Complex at Lothal and Project Mausam, which aim to reclaim its naval legacy.

Simhachalam Temple

History, Art and Culture

- The Varaha Lakshmi Narasimha Swamy Temple in Visakhapatnam, Andhra Pradesh, is experiencing structural issues due to age. Its architecture is a blend of Kalinga and Chalukya styles. Historical evidence shows endowments from Kulottunga Chola I in 1087 and renovations by Narasimha I of the Eastern Ganga dynasty in the 13th century. The deity is covered in sandal paste and is uncovered only once a year on Chandanyatra or Chandanotsavam.

Belum Caves

History, Art and Culture

- Located in Andhra Pradesh's Nandyal district, the Belum Caves have been designated a Geo-Heritage Site by the Geological Survey of India (GSI). They are the second-longest natural underground cave system in India. Formed from black limestone, they feature stalactites and stalagmites. Artifacts found there date back 4,500 years, indicating pre-Buddhist habitation. India's longest natural underground cave is Krem Liat Prah in Meghalaya.



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Constitutional Provisions

- The Eighth Schedule of the Indian Constitution officially recognizes 22 languages. Initially, it listed 14 languages, with more added through various constitutional amendments. Inclusion in the schedule grants a language state support, symbolic prestige, and visibility in Parliament and media. There are no formal criteria for a language's inclusion, although committees have tried to define them. English is widely used but has never been included in the Eighth Schedule. Part XVII of the Constitution (Articles 343-351) deals with official languages, establishing Hindi in Devanagari script as the official language of the Union and providing for the continued use of English. The Constitution does not specify a "national language".

Classical Languages:

- A new category of "classical languages" was created in 2004 to honour India's cultural heritage. The status is granted based on criteria such as high antiquity (1500-2000 years), a body of ancient literature, and distinctness from later forms. Initially, Tamil became the first to receive this status in 2004. **The list has expanded to 11 languages, including Marathi, Pali, Prakrit, Assamese, and Bengali, which were recently recommended and granted the status.**

11 Classical Languages of India

01. Tamil (2004)	07. Marathi (2024)
02. Sanskrit (2005)	08. Pali (2024)
03. Telugu (2008)	09. Prakrit (2024)
04. Kannada (2008)	10. Assamese (2024)
05. Malayalam (2013)	11. Bengali (2024)
06. Odia (2014)	

Endangered Languages

- A language is considered endangered when its speakers cease to use or transmit it to the next generation. In India, languages spoken by fewer than 10,000 people are treated by the state as "not worthy of mention" and by UNESCO as "potentially endangered". According to a survey by Ganesh Narayan Devy, about 600 out of India's roughly 780 languages are potentially endangered. The Scheme for Protection and Preservation of Endangered Languages (SPPEL), run by the Ministry of Education, aims to document and archive these languages. The Constitution, under Article 29, also provides citizens the right to conserve their distinct language, script, or culture.

Buddhism: The Path to Nirvana**Origin and Teachings**

- Buddhism originated in the 6th century BCE as a response to the ritualistic and hierarchical aspects of Brahmanical tradition. It was founded by Siddhartha, who was born into the Sakya clan and later became the Buddha, or the Enlightened One, after renouncing his royal life and performing austerities.

Four Noble Truths

- At the core of Buddha's teachings are the Four Noble Truths:
 - The world is full of suffering (dukkha).
 - Suffering arises from desire (samudaya).
 - Suffering can be overcome (nirodha).
- The path to overcoming suffering is the
 - Eight-fold Path (Atthanga-magga).

Nirvana

- Achieving nibbāna (nirvana) is the final stage in Buddhism, described as the end of desire, greed, and the idea of the self. It implies escaping the cycle of life, death, and rebirth. The term parinibbana specifically refers to the death of the Buddha.

Social Hierarchy

- Buddhism challenged the divine origin of the varna system, reordering the hierarchy by placing Kshatriyas before Brahmanas. While it did not completely abolish social differences, it was more inclusive than the Brahmanical tradition. The Buddha emphasized that a person should be judged by their actions, not their birth, and that a wise person (Brahmana) can be born into any family.

Emblems and Names (Prevention of Improper Use) Act, 1950

History, Art and Culture

- **Context:** Recently, the Supreme Court dismissed a plea with respect to honouring legacy of a freedom fighter under Emblems and Names (Prevention of Improper Use) Act, 1950.

About Emblems Act:

- **Aim:** Prevents misuse of certain emblems and names for professional and commercial purposes or for trade mark, or patents without Central Government permission.
- **Defines Emblems:** Emblem Includes any emblem, seal, flag, insignia, coat-of-arms or pictorial representation specified in act.
- **Scope:** Applies across India and to Indian citizens abroad.

Nonia Rebellion

History, Art and Culture

Context

- Minister for Agriculture, Farmers' Welfare paid tributes to freedom fighter Buddhu Nonia (who participated in the Salt Satyagraha) at his centenary celebrations & hailed Nonia community for Noni Rebellion.
 - The 'Nonia Rebellion' in Bihar took place between 1778 and 1800. The most affected districts during the rebellion were Saran, Vaishali, and Purnia.
 - The Nonia (also known as Lavanakar or Lavankars), historically a skilled and prosperous community, were known for their expertise in producing salt, saltpetre (shora), and khadi. Shora was made to make gunpowder. The British referred to it as "white gold."
 - They held a monopoly over these products due to their unique knowledge of extracting these materials from saline soil (reh).
 - After the Battle of Plassey (1757) and the Battle of Buxar (1764), the British got a monopoly over the salt and saltpetre trade in Bihar.
 - Resisting the forced sale of their products at low prices and the loss of trade freedom, they began defying British orders, which resulted in the Nonia Re-bellion.
 - The British responded with brutal suppression, crushing the uprising and systematically marginalizing the community.

Kumbakonam Vetrilai and Thovalai Maanikka Maalai

History, Art and Culture

Context

- Kumbakonam vetrilai and Thovalai maanikka maalai from Tamil Nadu were recently granted a Geographical Indication (GI) tag.

About Kumbakonam Vetrilai:

- It is a betel (pan) leaf.
- It is grown in Thanjavur's fertile Cauvery River basin.
- It is known for its high antioxidant and anti-inflammatory properties, due to the presence of chavicol.



About Thovalai maanikka maalai:

- It is a special type of garland that is made only in Thovalai.
- The flowers are carefully folded and arranged in precise patterns to create the appearance of gems (especially rubies) in a geometrically manner.

About the GI tag

- It is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin.
- Administered by the Geographical Indications of Goods (Registration and Protection) Act of 1999.
 - The Geographical Indications Registry has been established in Chennai to administer the Act.
- They are part of the intellectual property rights under the Paris Convention for the Protection of Industrial Property.
 - They are also covered under the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement.
- Department for Promotion of Industry and Internal Trade, Ministry of Commerce and Industry, awards GIs.
- The registration of a GI tag shall be for ten years (can be renewed)
- Uttar Pradesh holds the highest number of GI tags.

India-Canada Collaboration on Critical Minerals

Geography

- India and Canada are renewing negotiations on a Free Trade Agreement (FTA) with a focus on critical minerals. Canada has reserves of over 31 critical minerals and is known for its ESG-compliant mining practices. India needs these minerals for its clean energy and technology sectors and is currently heavily dependent on China for them. India is planning a Rs 5,000 crore scheme to promote domestic production of rare earth minerals and magnets.

India Plans Rs 5,000 Crore Scheme for Rare Earth Self-Reliance

Geography

- A scheme worth Rs 3,500–Rs 5,000 crore is being prepared to incentivize domestic production of rare earth minerals and magnets.
- At least five Indian companies have expressed interest in participating in this initiative.
- The Ministry of Science and Technology has provided funding to Midwest Advanced Materials Pvt. Ltd., Hyderabad, to start commercial-scale production of rare earth permanent magnets.
- The govt plans to amend the Mines and Minerals (Development and Regulation) Act, which will:
 - Facilitate easier exploration and mining of rare earths.
 - Attract private sector investments.
 - Speed up project clearances and regulatory approvals.

The Importance of Oceans

Geography

- Context:** Oceans cover 70% of the Earth's surface and hold 97% of its water, playing a critical role in climate regulation by absorbing about 23% of CO₂. India's "Blue Economy" contributes around 4% to its GDP. Threats to oceans include warming (the Indian Ocean is heating faster than others), acidification, rising sea levels, and pollution from plastic waste. Government initiatives include the Indian National Centre for Ocean Information Services (INCOIS), the SAGAR initiative, and the Coalition for Disaster Resilient Infrastructure (CDRI).

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'Real Feel' Temperature

Environment

- Also known as the heat index, this is a calculated value that combines the actual air temperature with relative humidity to indicate how hot it feels to the human body. While the India Meteorological Department (IMD) acknowledges it, it is not officially used in weather bulletins. A heat index of 51.9°C falls under the 'extreme danger' category, where heat stroke and exhaustion are very likely.

Climate Change Performance Index (CCPI) 2025

Environment

Context

- The CCPI 2025, published by Germanwatch, Climate Action Network (CAN) International, and New Climate Institute, assesses climate action in 63 countries and the EU. No country ranked in the top three, indicating that none are on track to meet the 1.5°C target. India ranked 10th, slipping two spots but remaining in the top 10. India was rated high in GHG emissions and energy use, medium in climate policy, and low in renewable energy.



Role of AI in Combating Climate Change

Environment

- AI offers scalable solutions to fight climate change by enhancing climate simulations, optimizing renewable energy systems, and improving resource management. However, AI poses challenges due to its significant carbon footprint from training large models and the high energy and water consumption of data centers.

State of the Climate in Asia 2024 Report

Environment

- Published by the World Meteorological Organisation (WMO), this report tracks key climate indicators in Asia. It found that 2024 was the warmest year on record in Asia, and the warming rate from 1991 to 2024 was double that of the 1961-1990 period. Sea surface temperatures and sea levels are rising faster than the global average, and 23 of 24 monitored Himalayan and Tian Shan glaciers lost mass.

Temperature Standardization for ACs

Environment

- New proposed guidelines in India would require new air conditioners to operate in a fixed temperature range of 20°C to 28°C. This initiative aims to reduce electricity consumption, ease pressure on the power grid, and save money.
- Weather Disruptions and Urban Vulnerabilities: The first half of 2025 saw multiple weather anomalies across India, highlighting the vulnerability of cities to climate change. Cities are more vulnerable due to high population density, heat-retaining materials like asphalt and concrete, and the Urban Heat Island Effect.

Revised Roadmap for Green India Mission

Environment

- The Centre released a revised roadmap for the Green India Mission (GIM), one of the eight missions under India's National Action Plan on Climate Change (NAPCC). The revised mission, with a total cost of ₹12,190 crores and a 10-year period (2021-30), will focus on restoration in the Aravalli ranges, Western Ghats, Himalayas, and mangroves.

Sustainable Development Report 2025

Environment

- Released by the UN Sustainable Development Solutions Network (UN SDSN), this report ranks 193 UN member states on their progress toward the 17 SDGs. India ranked 99th, marking its first-ever entry into the top 100, with gains in electricity access and child health.



United Nations Oceans Conference (UNOC3)

Environment

- Held in Nice, France, the third UNOC aimed to strengthen global ocean governance under SDG-14 (Life Below Water). The conference launched the Blue NDC Challenge, urging countries to include ocean-focused measures in their Nationally Determined Contributions (NDCs). It also resulted in the "Nice Wake-up Call," a push for a legally binding global plastics treaty. India is not a signatory to the 'Nice Wake-Up Call'.

Environmental Fallout of Global Wars

Environment

- Global militaries contribute about 5.5% of total GHG emissions, more than civil aviation and shipping combined. The Russia-Ukraine and Gaza conflicts have released millions of tonnes of CO₂ equivalent, and attacks on nuclear infrastructure risk radioactive contamination. A key issue is that military emissions are not mandatorily reported under international climate treaties like the Kyoto Protocol, making accountability difficult.

Overtourism

Environment

- The Louvre Museum in Paris, along with other global destinations like Venice and Mount Everest, has seen an unsustainable surge in tourism, leading to overtourism. This is driven by post-COVID revenge travel and a lack of planning. The consequences include environmental degradation, cultural erosion, and overburdened infrastructure.



India's Just Energy Transition & Reliance on Coal

Environment

- Coal supplies about 55% of India's primary energy, and 70% of it is used for thermal power. This reliance on coal poses challenges like pollution, high economic costs, and supply-demand mismatches. A just energy transition to renewables is needed to meet India's climate goals and improve public health. However, challenges include the economic dependence of states like Jharkhand and Odisha on coal, as well as employment impacts and technological gaps.

Wind Energy in India

Environment

- India has the fourth-largest installed wind power capacity in the world, with a total cumulative capacity of 50.04 GW as of April 2025. Gujarat and Tamil Nadu account for about half of this capacity. The Ministry of New and Renewable Energy has released a draft amendment mandating that all operational wind turbine data must be stored in India and that foreign entities are prohibited from remotely accessing or controlling Indian wind farms.



Global Drought Outlook 2025

Environment

- Released by the OECD, this report found that the global land area affected by drought has doubled between 1900 and 2020. It also noted that 37% of the land has seen a significant drop in soil moisture since 1980. India-specific findings include rising flash drought hotspots, and a drying of over 60% of Indian soils between 1980 and 2023.

AviList: 1st checklist of bird species

Environment

- AviList is the first-ever unified global checklist of bird species, covering 11,131 species. Developed by a working group of major ornithological organizations, it replaces existing lists, providing a single standardized reference for conservation, research, and policy.



Context

- The Government issued new Model Rules to promote agroforestry by simplifying the felling of trees on agricultural land.

Definition

- Integrating trees and shrubs on farmlands to enhance productivity and sustainability.
- **Significance:** It helps achieve sustained agricultural growth, provides fuelwood and fodder, and contributes to carbon sequestration and soil health.
- Challenges Include Restrictive regulations, a lack of information on suitable trees, and underutilization of the National Transit Pass System (NTPS).

International Conference on Disaster Resilient Infrastructure (ICDRI)

Context

- Recently, the African Union joined India's Coalition for Disaster Resilient Infrastructure at the 7th International Conference on Disaster Resilient Infrastructure (ICDRI) in France.

More on News:

- ICDRI 2025 has launched a call to action for coastal resilience in SIDS (Small Island Developing States).
 - ICDRI is a platform under the Coalition of Disaster Resilient Infrastructure (CDRI) to drive discussions and actions on climate adaptation, coastal resilience, and sustainable development.
- This year's conference is the first to be held in Europe and is being co-hosted by the CDRI and the Government of France.
 - The theme of the conference is shaping a Resilient Future for Coastal Regions."

CDRI

- A global partnership launched by India in 2019 to promote infrastructure resilience to climate and disaster risks.

Indian Initiatives for Coastal Resilience:

- **Vulnerability of Coastal Regions:**
 - Risk to Human life and Property: Coastal regions globally are highly vulnerable to hazards, with over 60% of the world's population and two-thirds of its large cities located in coastal zones.
 - Nearly 250 million people live within the area of 50 km from the coastline of India.
 - Climate change: It is projected to increase threats in coastal regions by increasing the intensity and frequency of hazards like sea level rise, floods, and storms.
 - Economic losses: E.g., Cyclone Fani caused ~US\$1.2 billion power infrastructure damages in Odisha (2019). (Global Assessment Report (GAR), 2025).
 - Threat to Ecosystems and biodiversity: For example, half of the world's mangroves could face severe risks by 2100 due to increased cyclone frequency and sea level rise, according to risk index for mangroves.
 - Social Vulnerability: Coastal hazards are expected to worsen existing inequities for socially vulnerable populations in coastal areas, including the elderly, Indigenous fishing communities, etc.
- **The Severe coastal hazards are:**
 - Tsunamis: For example, the 2004 Indian Ocean Tsunami claimed over 230,000 lives, displaced millions, and devastated coastal regions across 14 countries, including India.
 - Cyclones: For example, Cyclone Remal struck India and Bangladesh in 2024.
 - Storm Surges: For example, an estimated storm surge of height 2-2.5 m above astronomical tide inundated the low-lying areas of Kutch and Morbi districts in 2023. (IMD)
 - Coastal Erosion: For example, 33.6% of India's coastline is threatened by erosion (MoEFCC).

Indian Initiatives for Mitigating Coastal Vulnerabilities:

- Coastal Regulation Zone (CRZ) Notification (2019): It aims to conserve and protect coastal stretches, marine areas and to ensure livelihood security to the fisher and other local communities.

- **Integrated Coastal Zone Management Project (ICZMP):** Implemented in states like Odisha and West Bengal, and aims to protect and conserve coastal and marine environments through sustainable practices.
- **Coastal Vulnerability Index (CVI):** The Indian National Centre for Ocean Information Services (INCOIS) has developed the CVI to assess and map the vulnerability of different coastal regions based on various parameters.
- **Multi-Hazard Vulnerability Maps:** INCOIS has developed detailed maps to identify areas vulnerable to coastal hazards.
- **Coastal Management Information System (CMIS):** It is a data collection activity carried out to collect near-shore coastal data, which can be used in planning, design, and construction of site-specific coastal protection structures.
- **National Action Plan on Climate Change (NAPCC):** The plan includes missions like the National Water Mission, which indirectly supports coastal resilience by promoting sustainable water and forestry management practices.

DRR Financing

Environment

Context

- The UN Office for Disaster Risk Reduction (UNDRR) released a report on DRR financing. India showcased its financing system at a global platform.

DRR

- Steps taken to prevent, reduce, and manage disaster risks.
- Challenges in Financing: Limited aid for DRR (only 2%), mounting economic burden, and a lack of dedicated international financial mechanisms.

India's Approach

- A pre-determined, rule-based allocation system from national to state and district levels, supported by the Disaster Management Act, 2005.

Maritime Disasters

- **Context:** India has urged the International Maritime Organisation (IMO) to conduct a comprehensive investigation into recent maritime incidents, including ship fires and sinkings off the Indian coast.
- **Reason:** The incidents raised concerns about container safety, hazardous materials (e.g., plastic pellets), and the need for stricter cargo declaration regulations.
- **IMO's Role:** The IMO is a UN agency that sets global standards for maritime safety and pollution prevention through conventions like SOLAS and MARPOL.

Crowd Disaster Management

- **Context:** A stampede outside Chinnaswamy Stadium in Bengaluru led to fatalities and injuries.
- **Triggers:** Overcrowding, lack of stakeholder coordination, and panic.
- **Solutions:** The National Disaster Management Authority (NDMA) guidelines, combined with the use of technology such as RFID, IoT, and AI-driven CCTV, facilitate real-time crowd monitoring and management.

Methane Emissions and Climate Action

Environment

Methane as a GHG

- Methane is the second most potent greenhouse gas after carbon dioxide, responsible for approximately 30% of global warming. It has a shorter lifespan than CO₂ but is more efficient at trapping heat. Anthropogenic sources of methane include agriculture (40%), the fossil fuel sector (35%), and waste management (20%).

Global Efforts

- The Global Methane Pledge (GMP) was launched at COP 26 as a voluntary initiative to reduce global methane emissions by at least 30% from 2020 levels by 2030. Other initiatives include the International Methane Emission Observatory (IMEO) and the Methane Alert and Response System (MARS).

India's Stance

- India has not signed the Global Methane Pledge. This is because India's major methane sources are from agriculture and livestock, which are linked to the subsistence of small and marginal farmers. These are considered "survival emissions" rather than "luxury emissions". India is, however, taking measures to reduce methane, such as promoting sustainable agriculture practices under the National Mission for Sustainable Agriculture (NMSA) and incentivizing biogas production through the GOBAR-Dhan program.

Hydrogen Fuel Cell Vehicles

Environment

How they work

- Hydrogen Fuel Cells (HFCs) generate electricity by converting the chemical energy of hydrogen into electrical energy. Hydrogen gas is passed through the anode and split into protons and electrons. The protons pass through a Proton Exchange Membrane (PEM) to the cathode, while the electrons flow through an external circuit, generating electricity. At the cathode, oxygen from the air reacts with the protons and electrons to produce water, which is the only byproduct.

Benefits

- HFCVs, which use these fuel cells, are classified as Electric Vehicles (Evs). They have zero tailpipe emissions, helping to prevent localized air pollution. They also offer rapid refueling and extended driving ranges, addressing the primary drawbacks of battery EVs. The high energy-to-weight ratio of hydrogen makes HFCVs ideal for larger vehicles like buses and trucks.

Challenges

- The widespread adoption of HFCVs is hindered by a lack of hydrogen refueling infrastructure in India, as well as the high costs of producing, compressing, transporting, and storing hydrogen. For HFCVs to be truly clean, they must be powered by Green Hydrogen, which is produced via the electrolysis of water using renewable energy.

Carbon Capture Usage and Storage (CCUS)

Environment

What is CCUS?

- CCUS is a set of technologies designed to capture carbon dioxide (CO₂) emissions from large sources, such as power plants and factories. The captured CO₂ is then either reused for industrial applications or stored underground in geological formations.
- Three Stages:**
 - Capture:** Involves using different technologies to capture CO₂ from gas streams, depending on the concentration of the gas.
 - Utilization:** The captured carbon is converted into value-added products like green urea, dry ice, and chemicals.
 - Storage:** The CO₂ is permanently stored in places like saline aquifers or depleted oil and gas fields.
 - Feasibility:** A NITI Aayog report from November 2022 highlights CCUS's potential for decarbonizing hard-to-abate industrial sectors in India, such as coal, steel, and cement. However, the technology is in a relatively early stage, with challenges including high costs and risks, a lack of success stories to replicate, and the absence of a well-defined strategy for permanent storage in India.

Bharat Forecast System (BFS)

Environment

Context

- The Ministry of Earth Sciences unveils Bharat Forecast System (BFS), one of the world's first indigenously developed high-resolution weather forecast systems.

About Bharat Forecast System

- Developed by:** Indian Institute of Tropical Meteorology (IITM), Pune, an autonomous institute of the Ministry of Earth Sciences.
- Role:** It enhances India's weather prediction resolution from 12 km to 6 km, enabling every village in India to access more precise and location-specific forecasts.



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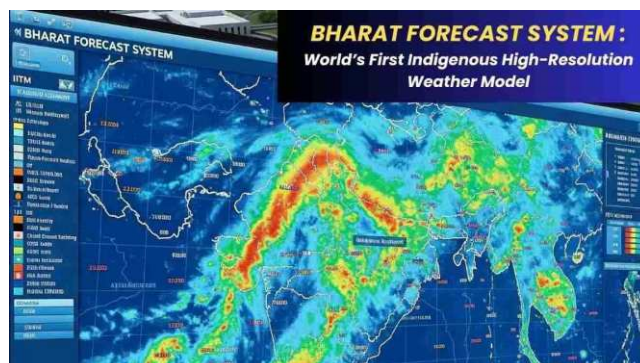
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- **Data Sources:** Integrates real-time inputs from 40 Doppler Weather Radars, improving accuracy of localised forecasts and nowcasts.
- Doppler Radar is a specific type of radar that uses the doppler effect (Change in frequency of wave emitted by a source moving relative to the observer) to gather velocity data from particles that are being measured.

Significance of BFS:

- Improved accuracy and speed: Delivers 64% better accuracy in high-risk zones and produces forecasts within 4–6 hours, especially for extreme events like heavy rainfall and cyclones.
- Earlier weather forecasting models required around 12 to 14 hours to produce predictions for a specific area.
- Global Leadership: Positions India ahead of countries like the US, UK, and EU by achieving 6 km resolution (compared to 9–14 km in global models).



Support for Disaster Management & Agriculture:

- Enables tailored short-range and nowcasts at village and block level.
- Assists farmers, coastal communities, and disaster management agencies in crop planning, irrigation scheduling, and early warning.
- Economic Benefits: Helps reduce climate-related losses in sectors such as agriculture, infrastructure, and water management.
- It was Powered by High-Performance Computing (HPC) systems – Arka (IITM Pune) and Arunika (National Centre for Medium Range Weather Forecasting, Delhi) – to deliver faster simulations
- Regional Forecast: It allows for more accurate forecasting of tropical disturbances, including monsoons, cyclones, and extreme rainfall events hazards that disproportionately impact low- and middle-income countries.

Global Ocean Darkening

Environment

Context

- A study done by researchers from a UK University found that 21 per cent of the global ocean had become darker between 2003 and 2022, especially in the Arctic, Antarctic, and Gulf Stream region.

What is the Darkening of the Ocean:

- It refers to a reduction in light penetration into the global oceans, shrinking the photic zone.
- The photic zone is the sunlit layer (about 200 meters in depth) where most marine life (nearly 90%) thrives.
- As per the study, the current darkening of the oceans could be due to ecological shifts, potentially driven by phytoplankton and zooplankton blooms.

Reasons behind darkening of the Ocean:

- **In Coastal Oceans:** Combination of nutrient, organic material and sediment loading near the coasts, caused by factors such as agricultural runoff and increased rainfall.
- **In Open Oceans:** Driven by warming of the surface oceans (leading to algal bloom) and climate-driven changes in the ocean circulation patterns.

Impact of the Ocean Darkening:

- **Marine ecology and productivity:** Ocean darkening limits light-dependent processes such as growth, communication, reproduction, photosynthesis, etc., thus, limiting ocean productivity.
- **Fisheries industry:** Fish stocks decline due to habitat compression and disrupted reproductive cycles.
- **Regulation of climate:** hampers carbon absorption and oxygen production, affecting climate regulation.

Blue NDC Challenge

Environment

- Launched by Brazil and France, this initiative calls on countries to prioritise ocean health in their Nationally Determined Contributions (NDCs) ahead of COP30.

New Ramsar Sites in Rajasthan

Environment

Context

- Khichan and Menar wetlands in Rajasthan were declared Ramsar Sites on world environment day 2025, raising India's total count to 91.
- World Environment Day is celebrated annually on 5th June (Since 1973) led by the UN Environment Programme. The theme for 2025 is Beat Plastic Pollution.
- With the addition of these wetlands, Rajasthan now has four Ramsar sites, including Sambhar Salt Lake and Keoladeo Ghana National Park in Bharatpur.

Greater Flamingo Sanctuary

Environment

Context

- Tamil Nadu notified Greater Flamingo Sanctuary at Dhanushkodi to preserve a critical stopover point along the Central Asian Flyway for thousands of migratory wetland birds.

About Greater Flamingo (*Phoenicopterus roseus*):

- IUCN Status: Least Concern
- Distribution: Africa, western Asia (India), and southern Europe.
- Habitat: Breeds in shallow wetlands that are either saline or alkaline.
- Features: This species has a great dispersal capacity outside of the breeding season, but it is highly philopatric (to return to or remain near a particular site or area).
- The Kachchh Desert Wildlife Sanctuary in the Great Rann of Kachchh (GRK) in Gujarat State, is a unique Protected Area, that supports South Asia's only breeding ground of Greater Flamingos, internationally renowned as the "Flamingo City".

International Big Cat Alliance (IBCA)

Environment

Context

- The 1st assembly of the IBCA convened in New Delhi, endorsed the India's Union Minister of Environment, Forest & Climate Change, Shri Bhupender Yadav, as the President of IBCA.
- The Assembly of the IBCA serves as its apex decision-making body and is convened annually/biannually.

About IBCA:

- It is a multi-country, multi-agency coalition of 95 big cat range countries, non-range countries with an interest in big cat conservation.
- These Big Cats include Tiger, Lion, Leopard, Snow Leopard, Cheetah, Jaguar & Puma.**
- It was Launched in April 2023 (occasion of 50 years of India's Project Tiger)
- Main Goal: To foster collaboration and synergy by establishing a platform dedicated to sharing best practices in big cat conservation.
- Founding Members (16): Armenia, Bangladesh, Bhutan, Cambodia, Egypt, Ethiopia, Ecuador, India, Kenya, Malaysia, Mongolia, Nepal, Nigeria, Peru, Suriname, & Uganda.
- India is the host country & Secretariat for the IBCA.



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Context

- World Economic Forum (WEF) recently released Energy Transition Index (ETI), 2025.

Key Findings

- Sweden ranked first followed by Finland, Denmark and Norway
- India's rank dropped from rank 63 in 2024 to rank 71 in 2025.

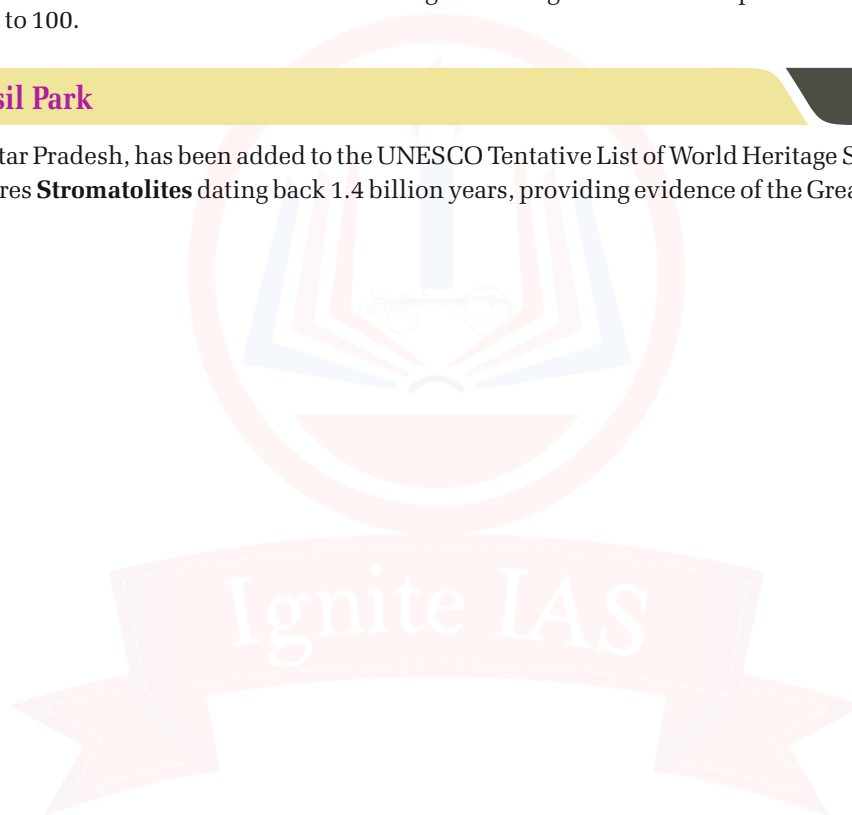
About Energy Transition Index (ETI):

- It ranks countries on their progress towards energy transition from fossil fuels to clean energy.
- It takes into account two main aspects to put together the Index:
 - System Performance (energy security, equity & sustainability)
 - Transition Readiness (regulation, infrastructure, investment etc.)
- The Index uses 43 indicators under these broad categories using data from multiple sources and scores countries on a scale of 0 to 100.

Salkhan Fossil Park

Environment

- Located in Uttar Pradesh, has been added to the UNESCO Tentative List of World Heritage Sites.
- The site features **Stromatolites** dating back 1.4 billion years, providing evidence of the Great Oxidation Event.



Bihar Becomes 1st State to Adopt E-Voting System

Polity & Governance

- Bihar has become the first state to adopt an Android-based mobile e-voting system for municipal and urban local body elections. Developed by the Centre for Development of Advanced Computing (C-DAC), the system uses blockchain, liveness detection, and face matching to ensure a tamper-proof process. This system aims to improve voter turnout and accessibility, especially for marginalized groups like migrant laborers and persons with disabilities.

Role of AI in Criminal Justice

Polity & Governance

- **Role of AI in Criminal Justice:** India is using AI-based tools like CCTNS, ICJS, and AFRS to modernize policing and justice delivery. These systems, however, risk deepening existing social biases as they are often trained on skewed datasets that reflect caste, class, and gender inequalities. The absence of a dedicated AI law in India and the lack of public oversight are major challenges.

Estimates Committee

Polity & Governance

- A standing financial committee of Parliament, the Estimates Committee marked its 75th anniversary in 2025. It consists of 30 members from the Lok Sabha only, and no minister can be a member. The committee reviews budget estimates to suggest economies and policy alternatives. Its recommendations are advisory in nature and not binding on the government.

50 years of Emergency

Polity & Governance

- The 50th anniversary of the Emergency, imposed on June 25, 1975, was marked in 2025. It was declared by Prime Minister Indira Gandhi following a judicial blow that invalidated her election. The Emergency led to the centralization of power, the suppression of civil liberties, the jailing of journalists and opposition leaders under draconian laws, and a coercive family planning drive. After the Emergency, the 44th Constitutional Amendment (1978) was enacted, replacing "internal disturbance" with "armed rebellion" as a ground for Emergency and making Article 21 (Right to Life and Liberty) non-suspendable.

Post-Emergency Reforms:

- Shah Commission established in May 1977 to probe abuses like sterilisations, government employees forcibly retired, Censorship of courts & Parliament, etc.
- Changes brought after Internal Emergency through 44th Amendment Act (1978):

Changes under Article 352:

- Changed ground for imposing emergency to "armed rebellion" to prevent further misuse on ground of "internal disturbance" which has wider connotation.
- Added safeguards like 'Union Cabinet to communicate to President in writing' to prevent hasty decisions in future.
- Mandatory Parliamentary approval within a month by special majority for Emergency Proclamations.
 - Fundamental Rights: Restricted scope of Article 359 i.e. Right to protection in respect of conviction for offences (Article 20) and right to life and personal liberty (Article 21) remain enforceable during emergency.
 - It omitted right to property as a fundamental right and made it a constitutional right under Article 300A.
 - Removal of Article 257A: It allowed Government of India to deploy any armed force of Union or any other force to deal with any grave situation of law and order in any State.
 - Term of Lok Sabha: Back to 5 years from 6 years by amending Articles 83 and 172.
 - Restored judicial review: Amendment restored the power of the judiciary to review election disputes concerning President and Vice-President.



Context

- The Delhi High Court protected the personality rights of a public figure from misuse via AI-generated deepfakes and voice clones.
- Definition: The right of an individual to control the unauthorised use of personal attributes like name, image, voice, and likeness.

Components:

- Right to publicity: Protection from commercial exploitation without permission.
- Right to privacy: Governed under Article 21 of the Constitution.
- Legal Framework: No specific statute exists in India; protection is largely derived from judicial pronouncements and indirect statutes like the Trademarks Act, 1999.

Important Judicial pronouncements on Personality rights in India:

- ICC Development (International) Ltd. vs. Arvee Enterprises, 2003 (Delhi HC): Any effort to take away publicity right from the individuals would be violative of Articles 19 and 21.
- Arun Jaitley vs Network Solutions Private Limited and Ors case, 2011 (Delhi HC): Popularity or fame of an individual will be no different on the internet than in reality.
- Rajinikanth v. Varsha Productions (Madras HC, 2015): Madras HC ruled that using a celebrity's name, image, or style without consent violates personality rights.

Constitutional Validity of Narco Tests

Polity & Governance

Context

- The Supreme Court recently overturned the Patna High Court's order which allowed narco-tests on all accused and witnesses.
- The judgement was based on supreme courts observation on Selvi v. State of Karnataka 2010 case wherein constitutional validity narco-analysis tests and other tests including polygraph was considered

About narco-analysis test:

- It is an interrogation method whereby a suspect of a crime is injected with a psychoactive drug under controlled conditions to suppress their reasoning power or the ability to determine what is good/bad for themselves.
- The drug used for this test is sodium pentothal, which is also used in higher dosages for inducing general anaesthesia in surgeries.

Key Highlights of the Judgement:

- Involuntary Narco Test Contravenes Constitution:
 - Such tests violate Articles 20(3) (right against self-incrimination) and 21 (right to personal liberty).
 - Forced narco-tests are strictly illegal under all circumstances.
 - Any information obtained from an involuntary test is not admissible in court.

Voluntary Narco-Test Cannot Be Sole Basis for Conviction:

- Even if done voluntarily and with safeguards, narco-analysis reports cannot be used directly as evidence.
- This is because subject does not exercise conscious control over the responses during the administration of the test.
- However, new information discovered through the test can be admitted under the Indian Evidence Act, 1872.
- In addition to selvi case this has also been reiterated by the Supreme court in Vinobhai v. State of Kerala and Manoj Kumar Soni v. State of M.P. cases.

Limited Right to Voluntarily Undergo the Narco-Test:

- The accused does not have an absolute right to undergo narco-analysis.
- However, the accused can undergo a voluntary narcoanalysis test at an appropriate stage i.e., when the accused is exercising his right to lead evidence in a trial.

Context:

- The Minister of State for Commerce and Industry inaugurated the new unified headquarters of the Quality Council of India (QCI) at the World Trade Centre in New Delhi.

About Quality Council of India:

- Genesis: Established as a National body for Accreditation in 1996.
- Mission: To lead nationwide quality movement in India.
- Non-Profit Organization (NPO): It is an NPO registered under the Societies Registration Act of 1860
- PPP Model: Supported by the Government of India and three premier industry associations - ASSOCHAM, CII, and FICCI.
 - DPIIT (Ministry of Commerce) was made the nodal agency for all matters connected with quality and QCI.
- Chairman: Chairman of QCI is appointed by the Prime Minister on the recommendations of the industry to the Government.
- Role in Swachh Bharat Mission (SBM): Serves as the implementing agency for Swachh Survekshan survey to assess and rank cities on sanitation and cleanliness parameters.
- The World Accreditation Day (June 9), a global initiative by International Laboratory Accreditation Cooperation (ILAC) and the International Accreditation Forum (IAF), is celebrated to promote the value of accreditation.

ECINET APP**Polity & Governance****Context**

- The Election Commission of India (ECI) used the new ECINET digital platform during recent bye-elections in five Assembly constituencies across Kerala, Gujarat, Punjab, and West Bengal.

About ECINET app:

- ECINET is a new one-stop platform for timely voter turnout reporting.
- Under the Conduct of Elections Rules, 1961, the Presiding Officers are required to furnish Form 17C to booth-level agents nominated by political parties, who are present at the polling station at the close of polls.

Key Features:

- Near Real-Time Voter Turnout Update:
- Presiding officers now update voter turnout every two hours on polling day through the app, reducing delays.
- Data Accuracy Ensured: Only designated EC officials can enter data to ensure accuracy.
- Faster Index Card Publication: Most fields in the Index Card are auto-filled, this allows the card to be published within 72 hours of results, instead of taking weeks or months earlier.
- The Index Card is a non-statutory post-election report that shares detailed constituency-level election data for all stakeholders, including researchers, academics, and policymakers.

About Form 17C

- Its 1st part provides information related to the number of:
 - Total number of electors assigned to the Polling Station
 - Total number of voters as entered in the Register for Voters (Form 17A)
 - Number of voters deciding not to record votes
 - Number of voters not allowed to vote
- Its 2nd part contains information like the name of the candidate and the total votes they received.

Nodal Agency

- The Ministry of Tribal Affairs launched the Adi Karmyogi Programme.

About the Adi Karmyogi Programme:

- Aim: Building a cadre of highly motivated officers and change makers dedicated to grassroots transformation.

Objective:

- To take capacity-building to about 20 lakh field-level stakeholders by creating a batch of trainers and master trainers at the State, district, and block levels.
 - It seeks to bring a fundamental shift in the attitude and motivation of field-level officials, emphasizing citizen-centric ideation and delivery.
 - Target: Reaching 1 lakh tribal villages and habitations.

Caste and Census in India

Polity & Governance

Constitutional Basis

- The census is a constitutional mandate in India, listed as item 69 on the Union List. It is the process of collecting and analysing demographic, social, and economic data about all individuals in the country.

History of Caste Census:

- The first census in India was non-synchronous and conducted in 1872. The first synchronous census was in 1881. Every census until 1931 had data on caste. Since 1951, the census has only included data for Scheduled Castes (SCs) and Scheduled Tribes (Sts), but not for Other Backward Classes (OBCs) or other caste groups. The Cabinet Committee on Political Affairs (CCPA) recently approved the inclusion of caste data in the upcoming census, reviving the long-standing debate.

Debate:

- Arguments Against: Critics worry a caste census could entrench identities, aggravate social divisions, and fracture India's social fabric. They argue it could derail the movement toward a casteless society and that many young people, especially in urban areas, do not identify by caste anymore.
- Arguments For: Proponents argue it would empower marginalized sections by providing a "data-driven basis for policy and politics". They believe it will help confront caste as a "living structure of power" and provide quantifiable data that courts have repeatedly requested for extending or fine-tuning reservations.

NITI Aayog's Role in Indian Governance

Polity & Governance

Formation and Mandate

- The NITI (National Institution for Transforming India) Aayog was established in January 2015 to replace the Planning Commission. It operates with a twin mandate of promoting cooperative and competitive federalism. It adopts a "bottom-up" approach, unlike the Planning Commission's "top-down" model, and does not have financial powers.

Key Initiatives

- NITI Aayog's activities are classified into four areas: policy framework, cooperative federalism, monitoring and evaluation, and acting as a think tank.

SDG India Index

- Introduced to track and promote competition among states on their performance toward the UN Sustainable Development Goals (SDGs). India's composite score improved from 66 in 2020-21 to 71 in 2023-24.

Aspirational Districts Programme

- Launched in 2018 to improve human development indicators in 112 districts based on the three C's: collaboration, convergence, and competition.

Aspirational Blocks Programme

- Launched in 2023 to develop 500 underdeveloped blocks.

Atal Innovation Mission (AIM)

- Launched in 2016 to foster an innovation ecosystem in India. The program has engaged 1.1 crore students and created nearly 32,000 jobs through various labs and incubation centers.

The Cashless Treatment of Road Accident Victims Scheme, 2025

Polity & Governance

- The government of India recently notified the Cashless Treatment of Road Accident Victims. The accident victims are entitled to cashless treatment for an amount up to Rs 1.5 lakh at any designated hospital under the scheme, which came into force on May 5, 2025.
- The victim shall be entitled to cashless treatment at any designated hospital for an amount up to Rs 1,50,000 per victim for a maximum period of seven days from the date of such accident. It also says that the designated hospital has to administer medical treatment to the victim immediately after the victim is brought to the hospital.
- **Nodal Agency:** The State Road Safety Council has been designated as the nodal agency for the implementation of the scheme.
- According to MoRTH data, in 2023 over 4.80 lakh road accidents took place in the country which resulted in over 1.72 lakh people fatalities

DIGIPIN

Polity & Governance

- The Department of Posts, in collaboration with IIT Hyderabad and NRSC, ISRO, launched DIGIPIN, a new geo-coded digital addressing system. It assigns a unique 10-character alphanumeric code to every 4m x 4m grid in India. The system aims to provide standardized addresses for seamless delivery of services and to improve response times for emergency services and logistics. It can also be used offline.

Evaluation of Central Schemes

Polity & Governance

- The government has introduced a "Sunset Clause" approach to evaluate all Central Sector and Centrally Sponsored Schemes. Schemes will now have a predefined validity of 3 to 5 years, and their continuation will depend on outcome-based performance evaluations. The Development Monitoring and Evaluation Organisation (DMEO) of NITI Aayog will assess Centrally Sponsored Schemes, while third-party agencies will evaluate Central Sector Schemes.

Draft Registration Bill, 2025

Polity & Governance

- The Ministry of Rural Development released this draft bill to replace the outdated Registration Act of 1908. It aims to streamline land registration, promote transparency, and digitize records. The bill allows for both online and offline registration, expands the list of compulsory documents, and introduces new posts like Additional and Assistant Inspector Generals of Registration.

Inclusive Pension System for India

Polity & Governance

- With the old-age dependency ratio expected to reach 30% by 2050, India needs an inclusive pension system. Currently, only about 12% of the workforce is covered by formal pension schemes, leaving the vast informal sector largely excluded. Initiatives like the Pradhan Mantri Shram Yogi Maandhan and the Atal Pension Yojana aim to address this, but challenges remain, such as fragmentation, low awareness, and low uptake of voluntary schemes.

City Accelerator Programme

Policies & Schemes

- This program was launched under the PM Surya Ghar Muft Bijli Yojana (MSGMBY) to accelerate rooftop solar adoption in Indian cities. It provides technical assistance to Urban Local Bodies (ULBs) and DISCOMS. The umbrella scheme, MSGMBY, launched in 2024, aims to install rooftop solar in 1 crore residential households by 2026-27, providing up to 300 units of free electricity per month.

CROPIC Initiative

Policies & Schemes

- The Ministry of Agriculture and Farmers Welfare is launching the Collection of Real-Time Observations & Photo of Crops (CROPIC) initiative under the Pradhan Mantri Fasal Bima Yojana. This digital initiative will use a mobile app for farmers and officials to upload geo-tagged, time-stamped photographs of crops. An AI-based cloud platform will analyse the images to monitor crop health and estimate crop losses, leading to faster and more transparent insurance compensation.

Market Intervention Scheme (MIS)

Policies & Schemes

- A component of the Pradhan Mantri Annadata Aay Sanrakshan Abhiyan (PM-AASHA), the MIS protects farmers from distress sales of perishable and horticultural crops not covered under MSP. It is triggered when prices drop by 10% or production increases by 10% and is implemented at the request of State/UT governments, with the Centre and States sharing the losses.

Smart Cities Mission (10 Years)

Policies & Schemes

- Launched in 2015, the Smart Cities Mission (SCM) aims to improve the quality of life in 100 cities. It is a Centrally Sponsored Scheme with a total outlay of ₹48,000 crore over five years. The mission follows a two-pronged approach:
- Area-Based Development (ABD) and Pan-City Initiatives. A key achievement is the establishment of Integrated Command and Control Centres (ICCCs) in all 100 cities for real-time urban service monitoring.

Pradhan Mantri Gram Sadak Yojana (PMGSY)

Policies & Schemes

- Launched in 2000, PMGSY is a Centrally Sponsored Scheme to provide all-weather connectivity to unconnected rural habitations. The Ministry of Rural Development (MoRD) is the nodal ministry. The MoRD has mandated the use of QR codes on roads built under the scheme to enhance maintenance by allowing citizens to submit geo-tagged images of road issues.

PM SHRI

Policies & Schemes

- The Centre has stopped funding for the umbrella program for school education in three opposition-ruled states that have refused to implement its PM SHRI scheme.
- The scheme was approved in 2022. It seeks to develop 14,500 schools to "showcase" the National Education Policy (NEP), 2020, and be "exemplars" for other schools in their region.
- The scheme is for existing elementary, secondary, and senior secondary schools run by the central government and state and local governments around the country.

The India Semiconductor Mission (ISM)

Policies & Schemes

- The India Semiconductor Mission is a specialized and independent business division under the Ministry of Electronics and Information Technology (MeitY). Launched in December 2021 with a total financial outlay of ₹76,000 crore, the ISM is the nodal agency for the Semicon India Programme. The mission's primary goal is to build a strong semiconductor and display ecosystem in India, positioning the country as a global hub for electronics manufacturing and design.



Key Objectives & Initiatives

- **Fiscal Support:** The ISM offers financial incentives to companies investing in semiconductor manufacturing, display fabs, and design ecosystems. For example, the Scheme for setting up of Semiconductor Fabs in India provides fiscal support of up to 50% of the project cost.
- **Manufacturing and Packaging:** The mission aims to promote a comprehensive ecosystem covering semiconductor fabs, display fabrication, and packaging. As of September 2025, 10 semiconductor projects with a cumulative investment of more than Rs 1.6 lakh crore have been approved across six states.
- **Indigenous Design:** The Design Linked Incentive (DLI) Scheme offers financial support and infrastructure to encourage indigenous semiconductor design for various products like Integrated Circuits (ICs), Chipsets, and System on Chips (SoCs). Recently, India's first fully indigenous 32-bit microprocessor, Vikram, was unveiled. Developed by ISRO's Semiconductor Laboratory, it's designed to withstand harsh space conditions.
- **Workforce Development:** India has a strong base of talent, with about 20% of the world's chip design engineers located in the country. Initiatives like the "Chips to Startup" program aim to train 85,000 engineers in VLSI and embedded system design to meet future demands.
- **International Collaborations:** The ISM has signed various Memoranda of Understanding (MoUs) with international entities, including Singapore, the EU, Japan, Lam Research, and Purdue University, to foster collaboration, research, and supply chain partnerships.

Impact & Future Outlook

- The India Semiconductor Mission has been described as a strategic initiative to transform India from a semiconductor consumer to a global creator and manufacturing hub. This push is seen as a way to achieve economic security and technological self-reliance. The government is also preparing to launch ISM 2.0, which will broaden its support to cover the entire semiconductor value chain, including capital equipment and materials.

Urban Challenge Fund

Policies & Schemes

- In the Union Budget 2025, the government has announced the Rs 1 Lakh Crore "Urban Challenge Fund" to implement the proposals for 'Cities as Growth Hubs', 'Creative Redevelopment of Cities', and 'Water and Sanitation.'
- Urbanisation is the process of transformation that occurs as a society evolves from predominantly rural to predominantly urban areas. It involves the increase in the proportion of a country's population residing in urban areas, leading to the expansion and growth of cities and towns.

Scheme to Promote Manufacturing of Electric Passenger Cars

Policies & Schemes

Objective

- To attract investment from global EV manufacturers and promote India as a manufacturing destination.

Eligibility

- Global automotive manufacturers with a revenue of at least ₹10,000 crore and an investment commitment of at least ₹4,150 crore in India over three years.

Benefits

- Allows the import of Completely Built-in Units (CBUs) of e-4W at a reduced customs duty of 15% for five years, capped at 8,000 cars per year.

Performance Grading Index (PGI) 2.0 Report

Society, Health and Education

- The Ministry of Education released the PGI 2.0 report for 2022-23 and 2023-24. The index evaluates the status of school education in States and UTs across 73 indicators grouped under two categories: Outcomes and Governance & Management. The report revealed that while 24 States/UTs improved their scores, 12 saw a decline. No State or UT made it into the top four bands (761-1,000).

International Day of Yoga, 2025

Society, Health and Education

- The 11th International Day of Yoga will be celebrated on June 21 with the theme "**Yoga for One Earth, One Health**". The date was chosen to coincide with the summer solstice, the longest day of the year, and because it is believed that Lord Shiva began teaching yoga to the Saptarishis on this day. Yoga was inscribed on the UNESCO Intangible Cultural Heritage list in 2016.
- Mental Healthcare in India: Mental health issues affect 15% of India's adult population, with a lifetime prevalence of 13.7%. The country faces a significant treatment gap, a shortage of professionals (only 0.75 psychiatrists per 1 lakh population), and deep-rooted social stigma. The government has introduced initiatives like the Mental Healthcare Act, 2017, and the Tele MANAS platform to address these issues.

International Yoga Day 2025 Theme:
What is 'Yoga for One Earth, One Health?'



WHA's Landmark Resolution on Skin Diseases:

Society, Health and Education

Context

- The 78th World Health Assembly (WHA) unanimously adopted a resolution titled "**Skin Diseases as a Global Public Health Priority**," recognizing skin conditions as a critical component of global public health for the first time. The resolution calls for a Global Action Plan to focus on prevention, early detection, and equitable access to care. Skin diseases affect 1.9 billion people globally and are among the top 10 causes of non-fatal disease burden in India.



Cultural Appropriation

Society, Health and Education

Context

- An Italian luxury brand was accused of culturally appropriating India's GI-tagged Kolhapuri chappals.
- Definition:** The act of adopting elements from a marginalised culture by a dominant group in a disrespectful or exploitative manner.
- Ethical Concerns:** Lack of legal protection for collective heritage, economic exploitation of artisans, and disrespect for traditional knowledge.

Tier-2 Influencers

Society, Health and Education

Context

- The rise of digital influencers from smaller towns is redefining "cultural capital" in India.

Impact:

- Decentralisation:** Shifts cultural influence from metropolitan areas to regional centres.
- Vernacular Power:** Promotes content in regional languages, appealing to a vast audience.
- Democratisation of Aspiration: Success is redefined as authenticity rather than elite sophistication.
- Challenges include the Digital divide, algorithmic bias, and the commodification of culture.

Context

- The United Nations Population Fund (UNFPA)'s 2025 State of World Population (SOWP) Report, titled 'The Real Fertility Crisis', was re-leased.

Key Findings

- Population:** World population stands at 8.2 billion, with disparities between high-income & low-income countries.
- India's population is estimated to reach 1.46 billion in 2025, making it the most populous country.
- Reproductive Rights:** Real crisis is unmet fertility goals – not underpopulation and overpopulation.
- Women and girls continue to struggle to exercise autonomy over preventing pregnancy. Roughly half of all pregnancies are unintended.
- Barriers for Reproductive Freedom:** Economic precarity, gender discrimination, lack of support from partners and communities, low-quality sexual and reproductive healthcare, lack of access to services like affordable childcare or education.
- Marginalized Sections:** Despite significant advances in sexual and reproductive health and rights, the most marginalized people have experienced the fewest gains.

Recommendations:

- Secure reproductive health and rights for all, including accurate information about fertility.
- Promoting gender-equal partnerships in which women are not disproportionately responsible for childcare, and in which men experience the rewards of caretaking.
- Recognize immigration to address declines in economic productivity and workforce shortages.

Findings about India:

- Fertility Rate & Demographic Information**
 - Total Fertility Rate (TFR): Declined to 1.9 births per woman (from nearly 5 children per woman (1970)), falling below the replacement level (2.1).
 - State-wise Fertility Disparity creating "high fertility & low fertility duality", which reflects differences in economic opportunities, access to healthcare, education levels, & prevailing gender and social norms.
 - Fertility has fallen below the replacement level (2.1) in 31 States/UTs, but remains high in Bihar (3.0), Meghalaya (2.9), and Uttar Pradesh (2.7).
 - Adolescent fertility rate remains high at 14.1 per 1,000 women aged 15–19 (China (6.6), Sri Lanka (7.3), and Thailand (8.3)).
 - Age distribution: 68% of the population is of working age (15-64 years). Elderly population (65 and older) stands at 7%. Life expectancy at birth is projected to be 71 years for men and 74 for women.

News in Shorts

Society, Health and Education

- QS World University Rankings 2026:** India has seen a significant improvement, with 54 institutions featured, making it the fourth most represented country.
- Manosphere:** UN Women warned about this online network that promotes misogynistic and anti-feminist ideologies, posing a threat to gender equality.
- Women in Armed Forces:** The first batch of 17 female cadets graduated from the NDA. This promotes gender equality, enhances the talent pool, and breaks gender stereotypes.
- Global Tobacco Epidemic 2025:** A WHO report highlights the success of MPOWER measures and extensive graphic health warnings on cigarette packages.
- Performance Grade Index (PGI) 2.0:** A Ministry of Education report that holistically assesses the performance of school education systems across states. Chandigarh was the top performer.

SDG 4 Scorecard

Society, Health and Education

- The UNESCO Global Education Monitoring (GEM) team released the SDG 4 Scorecard, which tracks progress toward the global education goal. The report found that India's pre-primary access is at 91% and primary completion at 94%, but upper secondary completion lags at 51%, below the target of 84%.

Global Gender Gap Index 2025

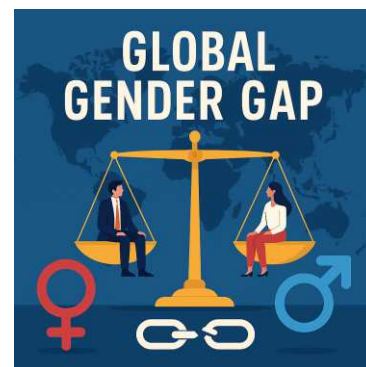
Society, Health and Education

Context

- The World Economic Forum (WEF) re-leased the 19th edition of the Global Gender Gap Index 2025 covering 148 economies.
- The Global Gender Gap Index is an annual report (since 2016) produced by the WEF that measures gender-based gaps in access to resources and opportunities in countries around the world.

It measures gender parity across four key dimensions:

- Economic participation and opportunity
- Educational attainment
- Health and survival
- Political empowerment
- It ranks countries on a scale from 0 to 1, with a score of 1 indicating that a country has achieved complete gender equality, while a score of 0 indicates a complete lack of equality.



Key Findings

- Global Gender Gap:** The global gender gap has closed to 68.8%, marking the strongest annual advancement since the COVID-19 pandemic. Yet full parity remains 123 years away at current rates.
- The Health and Survival gender gap has closed by 96.2%, the Educational Attainment gap by 95.1%, the Economic Participation and Opportunity gap by 61.0%, & Political Empowerment gap by 22.9%.
- Despite women representing 41.2% of the global workforce, a stark leadership gap persists with women holding only 28.8% of top leadership positions.
- Ranking:** Iceland leads the rankings for the 16th year running, followed by Finland, Norway, the United Kingdom and New Zealand.
- Closing 92.6% of the gender gap, Iceland is the only economy to reach 90% parity.
- South Asia:** Bangladesh emerged as the best per-former in South Asia, jumping 75 ranks to rank 24 globally. Nepal ranked 125, Sri Lanka 130, Bhutan 119, Maldives 138 and Pakistan 148.

India Specific Findings:

- Rank:** India has ranked 131 out of 148 countries, slipping two places from its position last year.
- With a parity score of just 64.1%, India is among the lowest-ranked countries in South Asia.
- Economic Participation and Opportunity:** Score improves by +.9 percentage points to 40.7%.
- Census and PwDs:** India's 2027 Census must address the chronic undercounting of Persons with Disabilities (PwDs). The 2027 Census aims to include all 21 types of disabilities as per the Rights of Persons with Disabilities (RPwD) Act, 2016. Undercounting weakens the foundation of disability welfare schemes and affects social justice.
- AI & Women's Employment:** Women are underrepresented in the AI workforce, making up only 22% globally and 26% in India despite high STEM graduation rates. While AI can create new job opportunities and enable remote work, it also poses risks like automation, bias in AI systems, and increased time poverty for women due to unpaid domestic work.
- Maternity Benefits integral to Right to Life:** A recent Supreme Court ruling affirmed maternity leave as a constitutional right protected under Article 21. India's Maternity Benefit (Amendment) Act, 2017, provides 26 weeks of paid maternity leave for the first two children. The policy, however, has coverage gaps, with most women in the informal sector excluded.



Urban Migration and Women:

- **Redefining Womanhood:** The migration of educated, working women from middle and upper classes to cities is redefining traditional notions of womanhood, freedom, and kinship. This movement is driven by "pull" factors like aspiration and opportunity, unlike the migration of lower-caste and tribal women who move due to "dire compulsion" like agrarian crises.
- **Social Impact:** Migration has led to a rise in female labor force participation, especially in urban areas, which reached 28% in 2023-24. This has fostered a more assertive sense of femininity and reconceptualized marriage as a mutual agreement, leading to trends like rising marital age and inter-caste marriages. The NFHS-5 (2019-21) data showing a drop in India's total fertility rate to the replacement level (2.0) is also linked to this trend.
- **Challenges:** Despite these positive changes, there are unintended consequences, including a rise in the crime rate against women, particularly in metropolitan cities. Moral policing and harassment are also concerns, with women's choices regarding appearance and clothing often questioned.



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Stablecoins

Economy

- The US Senate passed the GENIUS Act Bill to regulate stablecoins, which are cryptocurrencies pegged to an asset like a fiat currency to maintain a stable price. Stablecoins' main purpose is to reduce the high volatility seen in other cryptocurrencies like Bitcoin, making them more suitable for transactions.

Hortoki-Sairang line

Economy

Context

- The Commission of Railway Safety (CRS) has cleared the final Hortoki–Sairang section, enabling rail connectivity to Aizawl, Mizoram's capital, for the first time.
- The 51.38 km Bairabi–Sairang rail line features 48 tunnels (12.8 km total) and 55 major bridges; Bridge No. 196 is 104 metres tall—higher than the Qutub Minar.
- The route is divided into four parts:
 - Bairabi–Hortoki
 - Hortoki–Kawnpui
 - Kawnpui–Mualkhang
 - Mualkhang–Sairang.
- The last stretch (Hortoki–Sairang, 33.86 km) connects Aizawl (about 20 km from Sairang) to the Indian Railways network for the first time.
- Mizoram indeed becomes the fourth northeastern state—after Assam (Guwahati), Tripura (Agartala), and Arunachal Pradesh (Itanagar/Naharlagun)—to have its capital directly connected to the national railway network.



India's Economy amid Global Shifts

Economy

- With rising trade wars and geopolitical tensions, India is facing increasing external pressure. India is strategically responding by negotiating bilateral trade agreements (BTAs) and expanding FTAs with partners like the UK and EU. Domestically, the strategy involves strengthening anti-dumping frameworks, increasing public capital expenditure, and expanding Production-Linked Incentive (PLI) schemes to attract global firms and drive manufacturing.

Mismatch between Industry & Academia

Economy

- India faces a growing disconnect between academic education and job market demands. Key factors include outdated curricula, rigid governance structures, and weak industry collaboration. Only 46% of Indian graduates are considered employable, and unemployment among graduates is at 13%.

FDI Inflows in India

Economy

- Net foreign direct investment (FDI) inflow into India has sharply declined by over 96% to just \$353 million in 2024-25, down from \$10.1 billion the previous year. This decline is attributed to rising repatriations by foreign companies, an increase in outward investments by Indian firms, and global economic uncertainty.

Reverse Flipping

Economy

- SEBI has introduced regulatory changes to facilitate reverse flipping, which is the process of a startup relocating its legal domicile back to its country of origin, reversing an earlier outward shift. This move is driven by factors like rising capital access, tax relief, and simplified compliance under initiatives like Startup India and Make in India.



Context

- The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) scheme has completed a decade since its launch.

About AMRUT:

- Ministry:** Ministry of Housing and Urban Affairs
- Type:** Centrally Sponsored Scheme
- About:** Launched in selected 500 cities and towns, focusing on the development of basic infrastructure in the sectors of Water supply, Sewerage and septage management, Storm water drainage, green spaces and parks, and non-motorised urban transport.
- AMRUT was subsumed in AMRUT 2.0 in 2021, with the urban transport component excluded from its scope.

AMRUT 2.0:

- AMRUT 2.0 focuses only on water and sewerage and aims to provide tap water to all households in statutory towns and improve sewerage management in 500 AMRUT cities.

Major Components:

- Pey Jal Survekshan:** It is a challenge-based assessment in cities to evaluate service level benchmarks for water supply, reuse, sewerage, and water body conservation.
- Behaviour Change Communication:** To promote water conservation and improve water use efficiency.
- Technology Sub-Mission:** Promotes start-up ideas and private entrepreneurship through expert-screened pilot projects.

Other Features:

- Public Private Partnership (PPP) projects:** Mandatory in cities with over 1 million people.
- Outcome-Based Funding:** Cities must submit roadmap to achieve set targets.
- Community Participation:** with emphasis on women's self-help groups
- Promote circular economy of water:** By focusing on recycle/reuse of treated sewage, rejuvenation of water bodies and water conservation.

Monitoring:

- National Level:** An Apex Committee (AC) chaired by the Secretary, MoHUA.
- State Level:** State High Powered Steering Committee (SHPSC) chaired by Chief Secretary of State.

SEBI's Verified UPI Framework and SEBI Check Tool

Economy

Context

- To combat digital payment fraud, SEBI will implement a Verified UPI Framework and SEBI Check tool. The framework will mandate that SEBI-registered intermediaries use a uniform, verified UPI ID, which will be issued and verified by the NPCI. The SEBI Check tool will allow investors to verify these UPI IDs before making payments.

India's Global Integration

Economy

Context

- India's economic growth is linked to its global integration through trade, investment, and technology flows. Strengths include its geo-strategic location, a young workforce, and a strong IT and services sector. However, weaknesses include an underdeveloped manufacturing sector and a low R&D spending.

India's Trade Strategy Needs a China Reset

Economy

Context

- India's trade push, which includes new trade agreements, needs a coherent strategy for dealing with China, especially since India's trade deficit with China has widened despite India's exit from RCEP. China's centrality in global production, especially in components and rare earths, makes disengagement difficult.

National Time Release Study (NTRS)

Economy

Context

- The Union Finance Minister released the 5th edition of NTRS, a tool that measures the time taken for cargo release at various ports. The study found that the average release time for imports has declined across seaports, air cargo complexes (ACCs), and integrated check posts (ICPs).

NHAI Releases 1st Ever Asset Monetisation Strategy

Economy

Context

- The National Highways Authority of India (NHAI) released its first-ever strategy for asset monetization, which is the process of generating revenue by unlocking the economic value of underutilized public assets. NHAI monetizes its assets through three modes: Toll-Operate-Transfer (ToT), Infrastructure Investment Trusts (InvIT), and Securitisation.

Digital Payment Intelligence Platform (DPIP)

Economy

Context:

- The Digital Payment Intelligent Platform will be developed as a Digital Public Infrastructure (DPI) under the supervision and guidance of the RBI.
- The DPI refers to foundational digital systems that are accessible, secure, and interoperable, supporting essential public services e.g., Aadhaar, Unified Payment Interface (UPI) etc.

About DPIP

- It seeks to bolster fraud risk management by facilitating real intelligence sharing and gathering by harnessing advanced technologies.
- It will also strengthen existing fraud detection systems by enabling coordination among banks.
- A committee under Chairman Shri A.P. Hota constituted to examine various aspects of setting up of DPIP.
- The Reserve Bank Innovation Hub (RBIH) has been assigned to build a prototype of DPIP in consultation with 5-10 banks.
- Both Private and Public banks will be consulted.

Need of DPIP

- As per RBI's annual report, fraud cases in the banking sector saw a significant increase.
- The total value of frauds jumped to ₹36,014 crore in FY25, compared to ₹12,230 crore in FY24.

Rural India's Consumer Market

Economy

Context

- Rural demand is growing faster than urban demand, making rural India a new engine of consumption.
- Key Data:** The average estimated Monthly Per Capita Consumption Expenditure (MPCE) in rural India rose by 9.2% in 2023-24, surpassing the 8.3% rise in urban areas.

Growth Drivers:

- Rising disposable incomes from non-farm activities and government schemes (e.g., MGNREGA, PM-KISAN).
- Reduced rural poverty to below 5% for the first time.



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- Enhanced physical and digital infrastructure (BharatNet).
- Financial inclusion through initiatives like PM-Jan Dhan Yojana.
- Challenges Include Intra-Rural inequality, infrastructure gaps, the digital divide, and climate vulnerabilities.

Quick Commerce in India

- Definition: Rapid delivery of goods within an hour or less.
- Growth Drivers: Increased internet and smartphone penetration, the COVID-19 pandemic, and consumer demand for instant gratification.

Unintended Consequences:

- Social Security raises ethical concerns about the safety of gig workers with "10-minute delivery" promises.
- Environmental: Increased congestion and carbon footprint from delivery vehicles.
- Impact on Retail: Poses a threat to small local shops and supermarkets.

Aviation Safety

Economy

Context

- A preliminary report on a plane crash in Ahmedabad highlighted the role of the Aircraft Accident Investigation Bureau (AAIB) and the importance of "black boxes."
- Status of Indian Aviation: India is the third-largest aviation market globally. 15% of pilots in India are women, significantly higher than the global average.

Institutional Frameworks

- Directorate General of Civil Aviation (DGCA): The main regulatory body for safety.
- Airports Economic Regulatory Authority of India (AERA): Regulates tariffs for aeronautical services.
- Bureau of Civil Aviation Security (BCAS): Lays down aviation security standards.
- Aircraft Accident Investigation Bureau (AAIB): Investigates major aircraft accidents and incidents.
- Parliamentary Recommendations: A committee recommended addressing manpower shortages, imbalanced capital allocation, and regulatory oversight to improve aviation security.

Asset Monetization

Economy

Context

- NHAI is monetising assets to unlock value and increase public-private participation.
- Definition: A process of generating new revenue by unlocking the economic value of underutilised public assets without transferring ownership.

Models:

- Toll-Operate-Transfer (ToT): Attracts private capital for managing completed assets.
- Infrastructure Investment Trusts (InvITs): Pooled investment vehicles regulated by SEBI.

Key Initiatives:

- National Monetisation Pipeline (NMP): Aims to generate Rs. 6 lakh crores from public infrastructure assets between 2022 and 2025.
- National Land Monetisation Corporation (NLMC): A government-owned company to monetise non-core assets of Central Public Sector Enterprises (CPSEs).



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Context

- The New Rule were issued by the Reserve Bank of India under Section 22(1) of the Banking Regulation Act, 1949.

Key Change in PSL Requirements for SFBs:

- Earlier Rule:**
 - Small Finance Banks had to lend 75% of ANBC to Priority Sector Lending (PSL) sectors.
 - 40%: Mandatory allocation to PSL sectors (e.g., agriculture, microenterprises).
 - 35%: Flexible allocation (could choose PSL sectors of competitive advantage).
- New Rule (Effective FY 2025-26):**
 - Total PSL reduced to 60% of ANBC.
 - 40%: Still mandatory for PSL sectors.
 - 20%: Flexible (can now be used for non-PSL secured loans)
- About Priority Sector Lending (PSL)**
 - Established: In the 1970s.
 - Concept: PSL framework, initiated by RBI, mandates banks to allocate a specific percentage of their Adjusted Net Bank Credit ("ANBC") to priority sectors.
 - ANBC Comprises: Net Bank Credit (NBC), Bank's investments in non-statutory liquidity ratio (non-SLR) bonds, etc.

Categories under Priority Sector:

- Agriculture
- Micro, Small and Medium Enterprises;
- Export Credit
- Education
- Housing
- Social Infrastructure
- Renewable Energy; Others

Applicability:

- Commercial Bank [including Regional Rural Bank (RRB),
- Small Finance Bank (SFB),
- Local Area Bank (LAB)] and
- Primary (Urban) Cooperative Bank (UCB) other than Salary Earners' Bank.

Indigenous Polar Research Vessel (PRV)

Economy

Context

- India is aiming to build first indigenous Polar Research Vehicle (PRV).
- To achieve this, an MoU was signed between Garden Reach Shipbuilders and Engineers Limited (GRSE) and Norway's Kongsberg Oslo marking an important milestone for India's shipbuilding sector.
- GRSE (Kolkata), is a premier Warship building Mini Ratna Category I company under Ministry of Defence.

Polar Research Vehicle (PRV):

- About:** It is a ship that serves as a platform for research in the polar regions (around the North and South Poles).
- Purpose:** Equipped with the latest scientific equipment, enabling exploration of the oceans' depths and study of marine ecosystems.

Significance of the Indigenous PRV for India:

- Indigenous Needs:** PRV would serve the requirements of National Centre for Polar and Ocean Research (NCPOR), Goa, who will use it for research activities.

- **Support Existing Scientific Missions:** In Antarctica (Maitri [1989] and Bharati [2011] and in the Arctic (Himadri, 2008).
- Cater to Geo-political and Geo-economic dynamics of the region: Significant for India to assert its presence and interests in the region.
- **Complements Existing Maritime Visions:**
 - SAGAR (Security and Growth for All in the Region) that leverages India's vast coastline, strategic location, and maritime heritage and MAHASAGAR (Mutual and Holistic Advancement for Security Across the Regions) for holistic maritime engagement.
 - Sagarmala 2.0, Under Ministry of Ports, Shipping and Waterways, which is a key pillar of the Maritime Amrit Kaal Vision 2047 (MAKV),
- MAKV seeks to place India among the top five shipbuilding nations by 2047.
 - **Others:** Climate research, oceanography, and polar logistics.

Foreign Direct Investment (FDI)

Economy

Context

- RBI data shows a 96% fall in net FDI inflows in FY25, despite a rise in gross inflows.

FDI Concepts:

- **Gross FDI:** Total investment into India.
- **Net FDI:** Gross FDI minus repatriation by foreign firms and outward FDI by Indian firms.
- **Reasons for the Fall in Net FDI:** Rising outward Indian investment, liberalised ODI guidelines, and an increase in repatriation by foreign investors.
- **Initiatives to Boost FDI:** Sectoral reforms (e.g., raising the FDI cap in insurance to 100%), promotion agreements (BITs, TEPA), and schemes like the Production Linked Incentive (PLI).

Digital Payment Intelligence Platform (DPIP)

Economy

- An RBI-led initiative to combat bank fraud by enabling real-time intelligence sharing. It is a Digital Public Infrastructure (DPI).

Sagarmala Finance Corporation Limited (SMFCL)

Economy

Context

- Sagarmala Finance Corporation Limited (SMFCL) is India's first Non-Banking Financial Company (NBFC) in the maritime sector.
- It was Formerly known as Sagarmala Development Company Limited, SMFCL is a Mini Ratna, Category-I, Central Public Sector Enterprise (under Ministry of Ports, Shipping and Waterways).
- It is now formally registered as an NBFC with the Reserve Bank of India (RBI).
- It will offer tailored financial products to a diverse range of stakeholders, such as port authorities and shipping companies.
- It will also support strategic sectors like shipbuilding, renewable energy, cruise tourism, and maritime education.

National Turmeric Board

Economy

Context

- The Headquarters of National Turmeric Board was inaugurated in Nizamabad, Telangana.

About the National Turmeric Board:

- **Aim:** To provide leadership on turmeric related matters, augment the efforts, and facilitate greater coordination with Spices Board and other Government agencies in development and growth of the turmeric sector.
- **Ministry:** Ministry of Commerce & Industry

Composition:

- Chairperson to be appointed by the Central Government
- Members from the Ministry of AYUSH, Departments of Pharmaceuticals, Agriculture & Farmers Welfare etc.
- Senior State Government representatives from three states (on rotation basis),
- Select national/state institutions involved in research & representatives of turmeric farmers & exporters
- A Secretary to be appointed by the Department of Commerce.
- Role: Promotes R&D, value addition for exports, awareness of turmeric's benefits, yield improvement, and supply chain enhancement to expand markets.

Turmeric production in India:

- India is the largest producer, consumer & exporter of turmeric.
- About 30 varieties of Turmeric are grown in over 20 states in the country.
- **Production:** 70% of global turmeric production.
- Telangana, Maharashtra, Tamil Nadu, & Andhra Pradesh together contribute 63.4% of domestic production.
- **Export:** More than 62% share of world trade.
- The leading export markets for India are Bangladesh, UAE, USA & Malaysia.

Turmeric in India with GI Tag:

- Sangli Turmeric & Waigaon Turmeric (Maharashtra);
- Erode Manjal/Turmeric (Tamil Nadu);
- Lakadong Turmeric (Meghalaya).

Nano Fertilisers

Economy

Context

- Indian Farmers Fertilizer Cooperative Limited (IFFCO) to set up its first overseas nano fertiliser plant in Brazil.
- The IFFCO had launched world's first 'Nano Liquid Urea' fertiliser in 2021 & then Nano-DAP in 2023.

About Nano Fertilizers:

- Nano fertilizers are nutrients that are encapsulated or coated within nanomaterial (measuring 100 nanometres or less).
- It enables controlled release and its subsequent slow diffusion into the soil. Benefits
- Promotes sustainable farming: Reduces soil and water contamination.
- Cost Effectiveness: Improves nutrient absorption, reduce nutrient wastage and lower application frequency provide, etc.

Fiscal Balancing in India

Economy

- **Fiscal Deficit:** It occurs when the government's total expenditure exceeds its total revenue (excluding borrowings) in a financial year. It reflects the total borrowing requirements of the government. A high fiscal deficit can lead to inflation and higher interest rates, which can hinder economic growth. However, a moderate fiscal deficit is not necessarily bad, as it can be a sign of productive government spending on infrastructure and development projects that may boost future growth.
- **Management:** The government finances its fiscal deficit mainly by borrowing from the bond market. It aims to bring the fiscal deficit below 4.5% of GDP by 2025-26. Managing the deficit is important for maintaining fiscal stability and preventing excessive debt from fuelling inflation. The Union Budget 2025 emphasizes this balanced fiscal discipline. The government uses deficit financing to stimulate economic growth, support social welfare programs, and address emergencies.
- **Types of Deficits:** Other types of deficits include revenue deficit (revenue expenditure exceeding revenue receipt) and primary deficit (fiscal deficit minus interest payments on previous borrowings).

Most Favoured Nations

Economy

- Donald Trump has said that he would introduce a "most favoured nation" (MFN) policy whereby the US pays "the same price as the nation that pays the lowest price anywhere in the World".
- Under the WTO agreements, countries following the MFN status cannot discriminate among their trading partners or grant one country "a special favour" such a lower customs duty on one of their products, without extending the same to other WTO members.

Stablecoins

Economy

Context

- The US Senate passed the GENIUS (Guiding and Establishing National Innovation for U.S. Stablecoins Act) Act Bill in a major boost for stablecoins.
- The Stablecoins are a type of cryptocurrency whose value is pegged to another asset, such as a fiat currency or gold, to maintain a stable price.
- Fiat Currency is a government-issued currency that's not backed by a physical commodity such as gold or silver. It's backed by the government that issues it.
- The primary goal of stablecoins is to provide an alternative to the high volatility of popular cryptocurrencies like Bitcoin, which can make these digital as-sets less suitable for common transactions.

Types of Stablecoins:

- Fiat-collateralized Stablecoins: These are pegged to a specific asset, such as a fiat currency.
- The entity behind the stablecoin maintains a re-serve of the asset or assets backing the stable-coin, supporting the value of the digital currency.
- Non-collateralized (algorithmic) Stablecoins: They use software algorithms to automatically adjust the supply of the stablecoin based on demand, aiming to maintain a stable price.
- Crypto-Backed Stablecoins: They are collateralized by other cryptocurrencies.

Mismatch between Industry & Academia

Economy

Context

- India faces a growing disconnect between academic education and the skills demanded by the job market, risking its demographic dividend.

Status of Unemployment in India

- Unemployment rate in India stands at 3.2% in 2022–23 (6.1% in 2017–18). (PLFS)
- Unemployment rate among graduates is 13% in 2022–23.
- Share of graduates in India's labour force stands at 15% in 2022–23. Nearly 1 in 8 graduates remains unemployed.
- Only 46% of Indian graduates are employable due to soft skill gaps (India Skills Report, 2024)

Factors Responsible for Mismatch

- **Outdated Curriculum:** Most universities revise syllabi every 5–10 years. Critical skills in AI, data science, green energy & fintech are absent from core courses.
- **Rigid Governance Structure:** Regulatory bodies like UGC/AICTE/NAAC create bureaucratic hurdles, limiting academic innovation & autonomy.
 - E.g. Only 20 Institutes of Eminence (IoEs) have full curriculum autonomy out of 45,000+ institutions.
- **Weak Industry Collaboration:** Over 70% of Indian colleges lack formal MoUs with industries, leading to poor exposure to real-world applications.
- Only 36% of students had internship experience before graduation.
- **Degree-Focused Education:** Focus remains on rote learning and exam scores over skills like critical thinking or innovation.
- **Untrained Faculty:** A 2022 AICTE audit revealed that 40% of engineering faculty lack hands-on industry experience or exposure to modern digital tools.



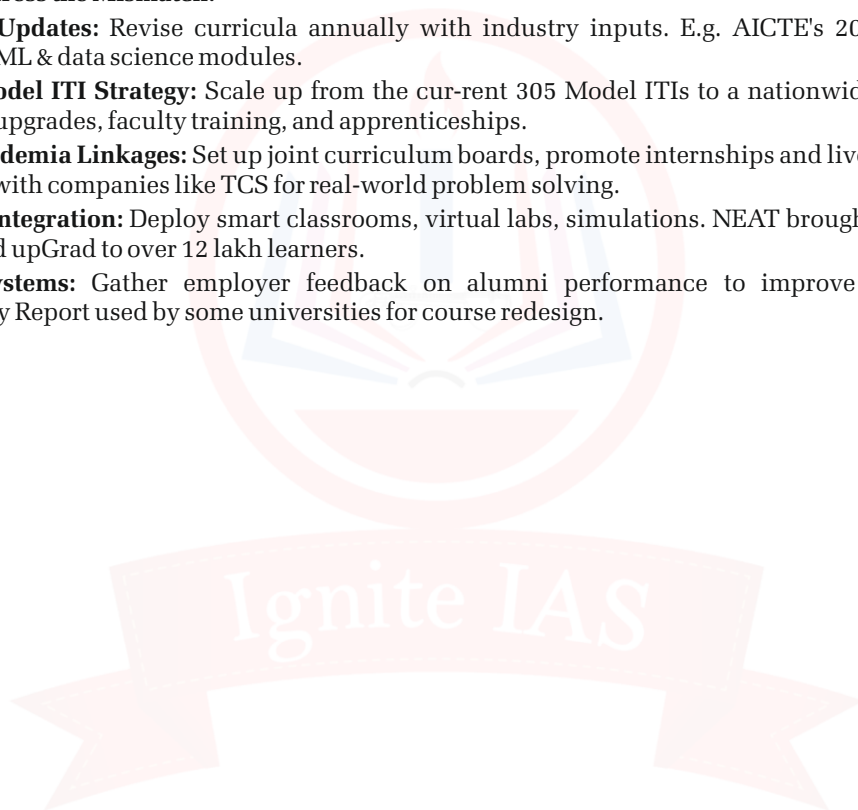
- **Low Transition to Emerging Fields:** Despite 90 lakh new jobs projected in digital sectors by 2030, only <20% of students are pursuing these fields.

Government Initiatives:

- **Scheme for Promotion of Academic and Research Collaboration (SPARC):** Promotes joint research with top global universities in frontier science and technology areas.
- **Education Quality Upgradation and Inclusion Pro-gramme (EQUIP):** A 5-year vision plan to overhaul higher education by enhancing access, equity, quality, and graduate employability.
- **Technical Education Quality Improvement Pro-gramme (TEQIP):** A World Bank supported project to strengthen engineering institutions via infrastructure, faculty development, and accreditation.
- **Institutes of Eminence (IoE):** Grants autonomy and Rs 1,000 crore funding to 10 public institutions for global competitiveness in research and innovation.
- **National Education Alliance for Technology (NEAT):** Uses AI-driven edtech platforms to offer personalized, industry-aligned learning content to students.

Measures to Address the Mismatch:

- **Curriculum Updates:** Revise curricula annually with industry inputs. E.g. AICTE's 2023 syllabus revision included AI, ML & data science modules.
- **Pan-India Model ITI Strategy:** Scale up from the current 305 Model ITIs to a nationwide standard. Use CSR funds for ITI upgrades, faculty training, and apprenticeships.
- **Industry-Academia Linkages:** Set up joint curriculum boards, promote internships and live projects. IIT Madras collaborates with companies like TCS for real-world problem solving.
- **Technology Integration:** Deploy smart classrooms, virtual labs, simulations. NEAT brought AI-based platforms like GUVI and upGrad to over 12 lakh learners.
- **Feedback Systems:** Gather employer feedback on alumni performance to improve pedagogy. National Employability Report used by some universities for course redesign.



Report on Value of Output from Agriculture and Allied Sectors (2011-12 To 2023-24)

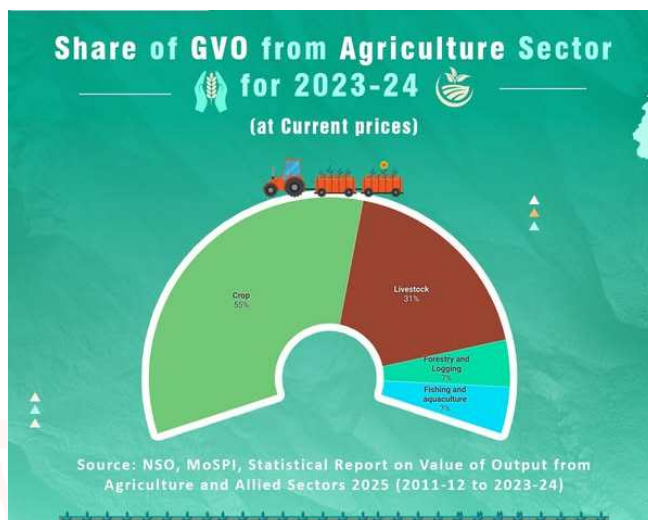
Agriculture

Context

- The National Statistics Office (NSO) released a report offering a comprehensive overview of India's agricultural performance over the past decade.

Key Highlights

- Gross Value Added (GVA) in agriculture and allied sectors rose by ~225% (current prices), while Gross Value of Output (GVO) grew by 54.6% (constant prices) from 2011-12 to 2023-24.
- Crop sector**
 - Largest contributor to total agriculture GVO in 2023-24 with 54.1%.
 - Uttar Pradesh is the top cereal-producing state.
 - Paddy & wheat constitute approximately 85% of GVO of all cereals in 2023-24.
- Floriculture**
 - GVO nearly doubled from 2011-12 to ₹28.1 thousand crore in 2023-24.
- Condiments & Spices**
 - Madhya Pradesh (19.2%) is the top contributor, followed by Karnataka (16.6%) & Gujarat (15.5%).
- Fishing & Aquaculture**
 - Contribution increased from 4.2% in 2011-12 to 7.0% in 2023-24.
 - The share of inland fish has decreased to 50.2%, whereas the share of marine fish has increased from 2011-12 to 2023-24.



Importance of Agriculture and Allied Sector

- Contribution to GDP: 16% of the country's GDP for FY24 (Economic Survey 2024-25).
- Livelihood: It supports 46.0 percent of the population.
- Challenges: Low Agricultural productivity per unit of land, low farmer income, Overexploitation of Water Resources, climate change, & extreme weather events, etc.

About Agriculture sector

- Agriculture sector employs over 46 percent of the workforce, with Agri-exports inching up to \$52 billion in FY25 from \$48.9 billion a year earlier, registering a modest 6.3 per cent increase. The top agricultural export from India in FY25 is Rice. The country exported 20.2 million metric tonnes (MMT), worth \$12.5 billion, nearly a fourth of all Agri-exports.
- In terms of imports, India's Agri imports rose by 16.5 per cent in FY25, from \$32.8 billion in FY24 to \$38.2 billion in FY25. Edible oils dominate the import basket, comprising \$17.3 billion for 16.4 MMT, accounting for 45.4 per cent of total Agri-imports.

Punjab's Persistent Paddy Paradox

Agriculture

- Despite diversification efforts, Punjab continues to see a near-record area under paddy cultivation, primarily due to the guaranteed Minimum Support Price (MSP), free electricity, and a lack of market support for alternative crops. This over-reliance on paddy is causing environmental concerns like soil degradation, groundwater depletion, and stubble burning.

Rice Yellow Mottle Virus

Agriculture

- This virus, a member of the genus Sobemovirus, has been affecting rice crops in Africa. It is transmitted by beetles, grasshoppers, and animals and can cause yield losses ranging from 25% to 100%.



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Rising Imports

Agriculture

- India faces a dual challenge of rising imports of pulses and edible oils while domestic farmers receive low returns. In 2024-25, India's imports of pulses and vegetable oil hit record highs, driven by weather shocks like El Niño and policy moves like cuts in import duties. This trend threatens the incomes of domestic farmers and raises concerns about food security.

Bio Stimulants

Agriculture

- These are natural or biologically derived substances that enhance plant growth and resilience to stress. The Ministry of Agriculture and Farmers Welfare has notified 34 bio stimulants to boost bio-input manufacturing. They are regulated under the Fertiliser Control Order (FCO), 1985, and are key to climate-smart farming as they reduce dependency on chemical inputs.

Empowering women in agriculture for food security

Agriculture

- The year 2026 has been declared the International Year of the Woman Farmer.** Women constitute 76.95% of rural women engaged in agriculture in India, yet only own 12.8% of operational land holdings. Climate change disproportionately impacts women through reduced crop yields and increased water scarcity. Government initiatives like the **Mahila Kisan Sashaktikaran Pariyojana (MKSP)** and the Green Agriculture Project aim to address these issues.

India-US Trade Talks

Agriculture

- As India and the U.S. negotiate a bilateral trade deal, concerns are rising in India's sugar and oilseed sectors. The U.S. is pushing for greater market access for its corn, ethanol, and soyabean exports, which could disrupt India's domestic agro-industries. The Indian sugar industry fears that allowing ethanol imports, largely from maize, will marginalize their role as ethanol suppliers.

Monsoon & Wildlife Induced Losses in Agriculture

Agriculture

- Erratic monsoons and wildlife raids are causing significant farm losses, leading to financial distress and a decline in crop diversity. The government has initiatives like the Pradhan Mantri Fasal Bima Yojana (PMFBY) and the National Mission on Sustainable Agriculture (NMSA) to address these issues.

Revisiting the Food & Fertilizer Subsidies

Agriculture

- With India's growing economy, there is a debate on rationalizing food and fertilizer subsidies. In FY25, these subsidies accounted for over 50% of the Union Budget's rural and agriculture spending. Challenges include leakages in the Public Distribution System (PDS) and nutrient imbalance due to the overuse of urea, which is heavily subsidized.

Regulatory Framework of Global Shipping

International Relations

- Recent maritime incidents have raised concerns about safety and environmental risks. The International Maritime Organization (IMO) sets global standards for shipping. Countries inspect foreign ships in their ports under a system called Port State Enforcement. India's maritime authority is the Directorate General of Shipping, which implements IMO conventions. Flags of Convenience (FOC) allow ships to register in foreign countries with lax regulations, raising concerns about oversight.

Group of Seven (G7)

International Relations

Context

- India had participated as an Outreach Country in 51st G7 Summit (2025) held in Kananaskis, Canada.
- On the sidelines of the Summit, India-Canada revived their bilateral relation by deciding on early return of High Commissioners; and resuming negotiations on Early Progress Trade Agreement (EPTA)- potentially setting the stage for a full Comprehensive Economic Partnership Agreement (CEPA).

Key Outcomes of 51st G7 Summit (2025) Summit:

- Kananaskis Wildfire Charter: Adopted a "whole of society" approach, including Indigenous knowledge, sustainable forest management, and awareness campaigns (endorsed by India).
- G7 Critical Minerals Action Plan: Secure sustainable and resilient supply chains for critical minerals.
- Key Initiatives on Artificial Intelligence (AI): G7 GovAI Grand Challenge and a shared G7 AI Network (GAIN).



Background: About Group of Seven (G7)

- Genesis: 1975 in response to economic and financial cooperation due to energy crisis.
- An informal bloc of industrialized democracies comprising: France, Germany, Italy, the United Kingdom, Japan, the United States, and Canada. And later Russia was a member from 1998 to 2014, during which the forum was called the G8.

Russia's annexation of Crimea in March 2014 led to its suspension from the G7 group.

- Purpose and Agenda: Meets annually to deliberate on key global issues such as: Global economic governance, international security. Energy policy, etc.

India's Strategic Interests at the G7

- Strategically Balancing the West and the Global South: India positions itself as a bridge between the industrialized West (G7) and the Global South.
- Economic & Technological Cooperation: E.g., India has been a strong proponent of initiatives like the G7's PGII, which aims to invest in infrastructure in developing countries.
- Democracy & Strategic Weight: India's democratic credentials and economic growth (4th largest economy) make its voice influential within G7 dialogues.
- Platform for Bilateral talks: E.g., Indian PM met Canadian PM to reset the deteriorating relations.

India's Balancing Act in the Bay of Bengal

International Relations

- The Bay of Bengal is a vital maritime corridor for India's trade, energy security, and geopolitical influence. Challenges include China's growing maritime presence, maritime threats like piracy and smuggling, and policy inconsistencies. India's strategy involves strengthening its security architecture with commands like the Eastern Naval Command, engaging economically through its Act East Policy and SAGAR Initiative, and participating in regional groupings like BIMSTEC and IORA.

- **India-Canada ties:** India and Canada are working to reset their strained relations, which were impacted by issues like Khalistani extremism in Canada and a lack of security cooperation. This has led to stalled agreements, such as the Comprehensive Economic Partnership Agreement (CEPA), and affected the Indian diaspora and students in Canada. Despite the challenges, both nations share a strategic alignment on a rules-based Indo-Pacific order and have strong trade and investment flows.

India-France Relations

International Relations

- **India-France Relations:** India and France have a long-standing strategic partnership launched in 1998. This partnership covers key areas like defense, space, and civilian nuclear energy. Joint defense exercises like Varuna (Naval) and Shakti (Army) is a key component. Both countries also collaborate on space missions like TRISHNA and the International Solar Alliance (ISA). Challenges include low bilateral trade and concerns over limited technology transfer.

PM's Croatia visit

International Relations

- The Prime Minister's visit to Croatia, the first by an Indian PM, highlighted the country's significance as a gateway to Central and Eastern Europe and a potential partner in the India-Middle East-Europe Economic Corridor (IMEC). Croatia's neutral geopolitical stance and low reliance on China align with India's global outlook. The visit resulted in agreements on defense, cyber cooperation, and strategic MoUs in agriculture and science.

International Organization for Marine Aids to Navigation (IALA)

International Relations

- India is participating in the IALA Council as Vice President and will host its General Assembly and Conference in Mumbai. IALA is a global intergovernmental body that standardizes marine navigation aids to ensure safety. India has been a founding member since its inception.

South Asia's Economic Integration Gap

International Relations

- South Asia is one of the least economically integrated regions in the world, with intra-regional trade accounting for only 5-7% of its total trade. This is in stark contrast to the EU (45%) and ASEAN (22%). The main issues are political tensions, high trade costs, and weak implementation of the South Asian Free Trade Area (SAFTA).

Iran Moves to Block Strait of Hormuz

International Relations

Context

- Following U.S. airstrikes, Iran's Parliament has proposed closing the Strait of Hormuz. This strait, located between Oman and Iran, is a critical chokepoint for global oil and liquefied natural gas trade, with about 20% of the world's supply passing through it. Its closure would cause global oil supply disruptions, spike energy prices, and severely impact India, which imports approximately 40% of its oil through this route.



Iran's Nuclear Programme

- The IAEA Board has censured Iran for breaching its nuclear non-proliferation commitments. Iran has enough 60% enriched uranium to make nine nuclear bombs. The Joint Comprehensive Plan of Action (JCPOA), a 2015 deal, aimed to curb Iran's nuclear capabilities in exchange for sanctions relief. The U.S. withdrew from the deal in 2018, and Iran has since gradually breached its restrictions.

Iran-Israel conflict & Impact on India

- The escalating conflict between Iran and Israel has raised concerns about its economic impact on India. India's energy security is at risk, as it imports a significant amount of oil through the Strait of Hormuz, and the conflict has already caused a spike in crude oil prices. Strategic projects like the Chabahar Port, IMEC, and INSTC also face delays and funding challenges due to regional tensions.

USA's Operation Midnight Hammer on Iran

- The U.S. launched coordinated strikes on three key Iranian nuclear sites: Natanz, Isfahan, and Fordow. These sites are central to Iran's nuclear program, and the strikes were conducted using weapons like the B-2 Stealth Bomber and GBU-57 Massive Ordnance Penetrator (MOP) Bombs. This operation may strengthen U.S.-Israel relations, but it also carries the risk of regional escalation and global security concerns.

India and the Shanghai Cooperation Organisation (SCO)

International Relations

Context

- India refused to sign a joint declaration at the SCO Defence Ministers' meeting due to the document's "double standard" on terrorism, specifically its failure to condemn the Pahalgam attack.
- India's Stance: India prioritises its strategic national interests and maintains that peace and terrorism cannot coexist. It uses the SCO as a platform for dialogue on regional connectivity (e.g., INSTC) and engagement with Central Asian Republics.
- SCO Membership: India was granted full membership in 2017. The group now has 10 members with the recent addition of Iran (2023) and Belarus (2024).

China-led Trilateral Nexus

- Context: China, Pakistan, and Bangladesh held their first-ever trilateral meeting. This is seen as a strategic move by China to expand its influence in India's neighbourhood.

Implications for India:

- Geostrategic Encirclement: The 'String of Pearls' strategy poses a threat.
- Undermining Regional Platforms: This could diminish the influence of India-backed groups, such as BIMSTEC.
- Connectivity Initiatives: Promotes the Belt and Road Initiative (BRI), which competes with India-led projects like BBIN and IMEC.
- India's Strategy: Counterbalance through partnerships (QUAD), accelerate domestic developmental projects in neighbouring countries, and leverage existing frameworks.

Israel-US-Iran Conflict

International Relations

Context

- Escalating conflict following Israel's "Operation Rising Lion" and Iran's retaliation. The US launched "Operation Midnight Hammer."

Global Implications:

- Nuclear Tensions: Iran is considering withdrawing from the NPT, increasing nuclear proliferation risk.
- Threat to Energy Security: The potential closure of the Strait of Hormuz could disrupt 35% of global seaborne oil.

Implications for India:

- Economic: Decline in bilateral trade with both Iran and Israel due to regional tensions.
- Strategically, India needs to carefully balance its relationships, as Israel is a key defence partner and Iran is crucial for energy security and connectivity projects, such as the Chabahar Port and the INSTC.
- Humanitarian: India launched Operation Sindhu to evacuate its nationals from the conflict zones.

Indo-Saudi Strategic Partnership

International Relations

- Evolving Relationship: Prime Minister Narendra Modi's visit to Saudi Arabia in April 2025 gave a new direction to their bilateral relations, moving beyond conventional areas like trade and energy into a multifaceted strategic partnership. This partnership holds strategic significance for regional and global stability, especially amid international geopolitical uncertainties.
- **Emerging Areas of Cooperation:** Key unconventional areas of collaboration highlighted during the visit include:
- **Environment and Food Security:** Discussions on long-term agreements for food security, mutual investments, and joint projects. Cooperation in green hydrogen production and solar energy was also discussed.

Defense and Security

- Military-to-military ties, training, and joint exercises are growing. The two countries have committed to developing cooperation in cybersecurity, border security, and combating transnational crime. A Ministerial Committee on Defense Cooperation has been added under the Strategic Partnership Council. Both sides also condemned cross-border terrorism, with a veiled reference to Pakistan.

Cultural Ties

- The relationship is expanding beyond Hajj and Umrah pilgrimages and the employment of Indians to include tourism, sports, and entertainment. A Ministerial Committee on Tourism and Cultural Cooperation was also formed.

Golden 'Trump Card'

International Relations

Context

- The Trump Card offers U.S. residency to wealthy foreigners, aiming to replace EB-5 visa.
- Introduced by President Trump, the Gold Card offers U.S. citizenship & residency for a \$5 million payment, replacing the EB-5 visa.
- Difference with EB-5: Unlike EB-5, it does not re-quire job creation or business investment, making it a passive route to immigration.

Benefits

- Aims to attract ultra-rich individuals, boost luxury & real estate sectors.
- Impact on Indians: With 1+ million Indians already in visa backlogs, it may worsen wait times for others

News in Shorts

International Relations

- **UNSC:** Five non-permanent members were elected. India advocates for reforms through the G4 Nations (India, Brazil, Germany, Japan) to expand membership and reflect current global realities.
- **UN Economic and Social Council (ECOSOC):** India was elected for the 2026-2028 term under the Asia-Pacific group.
- **US Pulls Funding from Gavi:** The U.S. withdrew funding from Gavi, the Vaccine Alliance, raising concerns about the future of multilateralism and global health funding.
- **International Organisation for Mediation (IOMed):** China established IOMed as a non-Western alternative to traditional international dispute resolution bodies, such as the ICJ.
- **India-Kyrgyzstan Bilateral Investment Treaty (BIT):** A new BIT has come into force, which removes the Most Favoured Nation (MFN) clause and requires investors to exhaust local remedies before seeking international arbitration.
- **IALA:** India participated in the 2nd session of the IALA Council as its Vice President and will host the 3rd General Assembly in Mumbai.
- **Zangezur Corridor:** Türkiye is pushing for this transport route, which would connect Azerbaijan and Turkey through Armenia. It could undermine India's investments in the Chabahar Port and INSTC.
- **E-Passport:** The Ministry of External Affairs has introduced e-Passports equipped with an RFID chip and a Public Key Infrastructure (PKI) solution for enhanced security.

AI in Biomanufacturing:

Science & Technology

- India is leveraging AI for biotechnology innovation through initiatives like the BioE3 Policy and the India AI Mission. AI can be used for real-time monitoring, predictive maintenance, and process optimization in biomanufacturing. However, challenges exist due to outdated regulatory frameworks, data representation issues, and the absence of context-specific risk assessment mechanisms.

Battery Technology

Science & Technology

Context

- Indian battery technology is advancing with a focus on developing alternatives to conventional lithium-ion batteries, particularly with sodium-ion and new solar cell innovations. This aligns with the country's goal of achieving energy independence and technological self-reliance, especially as it reduces its reliance on geopolitically-constrained materials like lithium.

Sodium-ion Batteries:

- Researchers at the Bengaluru-based Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) have developed a super-fast charging sodium-ion battery. This innovation addresses key limitations of current sodium-ion technology, offering a viable alternative to lithium-ion batteries for India's energy needs.

Key Features:

- Fast Charging:** The battery can charge up to 80% in just six minutes.
- Durability:** It can last for more than 3,000 charge cycles, with a performance that holds over 80% of its initial capacity after thousands of cycles.
- Abundance of Materials:** It uses sodium, which is abundant and widely available in India (it can be extracted from seawater), making it a more cost-effective and sustainable option than lithium.
- Safety:** Sodium-ion batteries are safer as they have a lower risk of thermal runaway and can be transported at zero volts, reducing fire hazards.
- Technological Breakthrough:** The JNCASR team enhanced the battery's performance by optimizing its anode material using three key strategies: nanosizing, carbon coating, and aluminum doping.
- While sodium-ion batteries have a lower energy density compared to lithium-ion, making them less suitable for certain electric vehicles (EVs) where weight is a primary concern, their low cost, safety, and wide temperature tolerance make them promising for applications like grid-scale energy storage, electric two-wheelers, drones, and rural electrification systems.

Perovskite Solar Cell Technology

Science & Technology

- New solar cell technologies are also contributing to India's energy storage landscape. A start-up from IIT Bombay has successfully engineered a tandem solar cell by layering a semi-transparent perovskite solar cell (PSC) over a traditional silicon-based solar cell.

Tandem Structure

- This tandem structure, known as a 4-terminal (4T) tandem, allows each layer to capture different wavelengths of sunlight, boosting overall efficiency by 25-30% over conventional silicon solar cells.

Cost and Efficiency

- This new technology has the potential to significantly reduce the cost of solar power, potentially to around ₹1 per kilowatt-hour, compared to the current rate of ₹2.5-4 per unit.

Challenges

- A major hurdle for perovskite materials has been their stability, particularly their vulnerability to heat, moisture, and electrical stress. The IIT Bombay team addressed this by using a novel 4T tandem configuration, which allows the two layers to operate independently and efficiently under varying conditions.
- The broader adoption of technologies like perovskite solar cells is expected to complement India's renewable energy goals by making solar power more efficient and affordable.

Context

- Also known as DNA profiling, this process is used to identify individuals from biological samples. It is the gold standard for identifying human remains after mass fatality events. Key methods of DNA analysis include Short Tandem Repeat (STR) Analysis, Mitochondrial DNA (mtDNA) Analysis, Y Chromosome Analysis, and Single Nucleotide Polymorphisms (SNPs) Analysis.

CRISPR-Cas9:

- Introduction:** CRISPR-Cas9 is a powerful gene-editing technology that allows scientists to make precise changes to an organism's DNA. It's essentially a simplified version of a natural immune system found in bacteria that defends against invading viruses.

How It Works:

- The CRISPR-Cas9 system has two main components:
- Cas9 enzyme:** This acts as "molecular scissors" that can cut the two strands of DNA at a specific, targeted location.
- Guide RNA (gRNA):** A small, customizable piece of RNA that directs the Cas9 enzyme to the exact DNA sequence that needs to be cut.
- When the system is introduced into a cell, the gRNA binds to the target DNA sequence, and the Cas9 enzyme then makes a precise cut. The cell's natural DNA repair mechanisms are then harnessed to make the desired changes, such as adding, deleting, or altering a piece of genetic material.
- This process is often compared to the "find-and-replace" functionality in a computer program, making it a highly efficient and accurate method for genetic manipulation.

Applications and Significance:

- CRISPR-Cas9 has revolutionized biomedical research due to its speed, low cost, and accuracy compared to previous gene-editing methods.
- Human Health:** It holds immense promise for preventing and treating a wide range of diseases. Research is underway to use it for single-gene disorders like cystic fibrosis, hemophilia, and sickle cell disease. It is also being explored for treating more complex conditions, including cancer and HIV infection. For instance, a personalized treatment based on a new version of the technology, called "base editing," was used to treat a patient with a rare genetic disorder causing toxic levels of ammonia to accumulate in their blood.
- Agriculture:** The technology is also being used to develop improved crop varieties. India has successfully developed its first genome-edited (GE) rice varieties, DRR Dhan 100 (Kamala) and Pusa DST Rice 1, which have superior yields and enhanced tolerance to drought and salinity. Unlike genetically modified (GM) crops, GE crops only involve editing genes that are naturally present in the plant, without introducing foreign genes. This makes GE crops exempt from the strict biosafety regulations that apply to GM crops in India.

India's first gene-edited sheep

Science & Technology

Context

- A team of researchers from the Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST) in Srinagar has successfully produced India's first gene-edited sheep. The project, which took four years of research and was sponsored by the Indian Council of Agricultural Research (ICAR), is considered a major breakthrough in animal biotechnology in the country.

**Key Details of the Research**

- Technology Used:** The researchers used the CRISPR-Cas9 gene-editing tool to modify the sheep's DNA. This technology allows for precise changes to be made within an organism's own genes, without introducing foreign DNA. This is a key distinction from traditional genetic modification and is expected to facilitate regulatory approval.



- **Gene Edited:** The team targeted the myostatin gene, which is a natural regulator of muscle growth in sheep. By disrupting this gene, the researchers were able to enhance the animal's muscle mass by an expected 30%. This trait is naturally present in some European breeds like the Texel sheep but is absent in Indian breeds.
- **Outcomes:** The gene-edited lamb, which belongs to the local 'Kashmir merino' breed, was born in late December 2024 and was distinctly heavier than a non-edited lamb within three months. While the wool count is expected to remain the same, the increased muscle mass will result in more meat, offering a potential economic boost for livestock farmers.

Significance and Future Applications

- This achievement places India on the global map of advanced genome-editing technologies. Scientists hope to use this technology to develop livestock that are more resilient to diseases and environmental stresses brought on by climate change. The researchers are also exploring other applications, such as increasing twin births in animals.

Tianwen-2 Mission

Science & Technology

Context

- The Tianwen-2 mission is a Chinese asteroid sample return and comet exploration mission launched on May 28, 2025. It's China's first mission of its kind and a key part of its long-term deep space exploration program, following the successful Tianwen-1 Mars mission. The mission has a planned duration of 10 years and involves multiple destinations.

Mission Objectives and Targets:

- **Primary Target:** The mission's first destination is the near-Earth asteroid 469219 Kamo'oalewa, which is a quasi-satellite of Earth. This means it orbits the Sun but is gravitationally influenced by Earth, giving the illusion that it orbits our planet. The asteroid is particularly intriguing to scientists because its reflected light spectrum is similar to lunar rocks, leading to the hypothesis that it may be a fragment of the Moon ejected by an ancient collision.
- **Sample Collection:** The spacecraft will rendezvous with Kamo'oalewa in July 2026, where it will spend several months studying the asteroid. The main goal is to collect a sample of at least 100 grams of regolith (asteroid material) and return it to Earth in November 2027. The mission will use a combination of "touch-and-go" and a unique "anchor-and-attach" method for sample collection.
- **Secondary Target:** After dropping off the sample capsule on Earth, the main spacecraft will use a gravity assist manoeuvre to travel to its second destination: the main-belt comet 311P/PANSTARRS. The spacecraft is expected to arrive at the comet around 2035 and will conduct a year of observations, potentially shedding light on the origins of water and life in the solar system.

Scientific and Technological Significance:

- The mission marks China as the third nation, after Japan and the United States, to successfully conduct an asteroid sample-return mission. The scientific goals extend to understanding planetary origins, developing new technologies, and enhancing planetary defence capabilities by studying near-Earth objects.

Chandrayaan-5 Lunar Polar Exploration Mission (LUPEX)

Science & Technology

Context

- The Chandrayaan-5 Lunar Polar Exploration Mission (LUPEX) is a planned joint lunar mission between the Indian Space Research Organisation (ISRO) and the Japan Aerospace Exploration Agency (JAXA). The mission is a follow-up to the successful Chandrayaan-3 mission, and it aims to conduct a deeper exploration of the Moon's south polar region.

Mission Objectives

- The primary objective of LUPEX is to investigate the presence of water and other volatile materials in the permanently shadowed regions (PSRs) of the lunar south pole. This is crucial for understanding the Moon's environment and paving the way for future human space exploration and the establishment of sustainable lunar bases. The mission will



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assess both the quantity and quality of water on the Moon, utilizing a drill to collect subsurface samples for analysis.

Roles and Responsibilities

- The mission is a collaborative effort with specific roles for each agency:
 - **Launch Vehicle:** The mission will be launched aboard JAXA's H3-24L rocket.
 - **Lander:** ISRO is responsible for developing the lunar lander. ISRO is developing a new, higher-capacity lander engine for this mission, which will also be used in future crewed lunar landing missions.
 - **Rover:** JAXA will build a rover, which is larger than the Chandrayaan-3's Pragyan rover, enabling it to carry more scientific instruments for sophisticated analysis.
 - **Scientific Instruments:** The mission will carry several scientific instruments contributed by ISRO and JAXA, as well as the European Space Agency (ESA) and NASA. These instruments are designed for in-situ analysis of volatile compounds and mapping lunar water presence.

Timeline and Significance

- The LUPEX mission is currently scheduled for a launch no earlier than 2028. It's envisioned as a major step in India's long-term lunar roadmap, which includes the goal of an Indian astronaut landing on the Moon by 2040. This mission is a significant milestone that highlights the growing strategic partnership between India and Japan, demonstrating how international cooperation can advance human knowledge and innovation.

ISRO's 101st Space Mission

Science & Technology

Context:

- ISRO's 101st space mission, launched on May 18, 2025, failed to accomplish its objective after a glitch in the rocket's third stage. The mission, designated PSLV-C61, was intended to deploy the Earth Observation Satellite EOS-09 into a Sun Synchronous Polar Orbit (SSPO).

Mission Overview

- **Launch Vehicle:** The mission used a Polar Satellite Launch Vehicle (PSLV), specifically the PSLV-C61, which was the 63rd flight of the PSLV and the 27th using its heavy-payload XL configuration.
- **Satellite:** The EOS-09, also known as RISAT-1B, was an advanced Earth observation satellite weighing 1,696.24 kg. It was equipped with a Synthetic Aperture Radar (SAR) payload, which is capable of capturing high-resolution images of the Earth's surface under all weather conditions, day or night. The satellite was intended to provide remote sensing data for applications like agriculture, disaster management, and security.
- **Sustainability:** The mission adhered to ISRO's commitment to responsible space operations by including de-orbiting fuel to ensure the satellite would safely decay in Earth's atmosphere within two years after its five-year mission life.



Failure and Investigation

- The PSLV-C61 performed normally through its first two stages. However, a malfunction occurred during the third stage when there was a drop in the chamber pressure of the motor. This anomaly prevented the mission from being accomplished. An investigation by a Failure Analysis Committee (FAC) is underway to determine the cause.

In Vivo CAR T-Cell Therapy

Science & Technology

- Recent advancements in this therapy offer the potential to simplify and expand access to immunotherapy for cancers and autoimmune diseases. The therapy uses lipid nanoparticles to deliver mRNA directly into T cells inside the body, avoiding the need to extract and modify cells in a lab. It is faster, has a lower genetic risk, and does not require lymphodepleting chemotherapy.



Step-and-Shoot Spot-Scanning Proton Arc Therapy (SPArc)

Science & Technology

- This is a radiation therapy that uses protons for precise tumor targeting with minimal damage to surrounding tissues. It was used to treat a patient with adenoid cystic carcinoma (ACC) in the U.S. Its advantages include high precision and reduced side effects, but it is an expensive technology.

'Achal' Fast Patrol Vessel

Science & Technology

- The fifth Adamy-class FPV, 'Achal', was launched for the Indian Coast Guard. Built by Goa Shipyard Ltd., it features over 60% indigenous components and is fitted with a CRN-91 30 mm naval gun. Its primary roles include EEZ patrol, anti-smuggling, and piracy control.

Drones as the New Face of Warfare

Science & Technology

- Drones, or Unmanned Aerial Vehicles (UAVs), are playing a growing role in modern warfare. They are used for surveillance, combat operations, logistics, and electronic warfare. India has initiatives like the Production Linked Incentive (PLI) scheme for drones and the Innovations for Defence Excellence (IDEX) program to boost domestic manufacturing and innovation.

Extended Trajectory-Long Duration Hypersonic Cruise Missile (ET-LDHCM)

S & T

- India is set to test this missile, which is being developed under DRDO's Project Vishnu. The missile is powered by an advanced scramjet engine, can travel at a speed of Mach 8 (11,000 km/h), and has a range of 1,500 km. Its ability to travel at low altitudes and maneuver in mid-flight makes it a potential game-changer in the Asian military balance.



INS Nilgiri

Science & Technology

- **INS Nilgiri:** The first stealth frigate under the indigenously developed Project 17A, INS Nilgiri, has joined the Eastern Naval Command. It is a multi-role frigate with anti-surface, anti-air, and anti-submarine warfare capabilities.

Rudrastra Drone

Science & Technology

- The Indian Army has conducted successful trials of the indigenous Rudrastra VTOL drone, which has autonomous strike capability. Developed by Solar Defence and Aerospace, it has a mission radius of 50 km and is equipped with an 8-kilogram airburst munition.

SIPRI Yearbook 2025

Science & Technology

- The Stockholm International Peace Research Institute (SIPRI) released its 2025 yearbook, which warns about a growing nuclear arms race. The report found that nearly all of the nine nuclear-armed states are continuing intensive modernization programs. It stated that India's nuclear arsenal has slightly expanded, and the country is developing new delivery systems.

Radiological Mines

Science & Technology

- This conceptual term refers to civilian nuclear sites that, if attacked, could release radiation and function as unintended radiological weapons. The Non-Nuclear Aggression Agreement between India and Pakistan prohibits attacks on each other's declared civilian nuclear installations, but it does not cover undeclared or dual-use facilities.



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Hiv Prevention Drug 'Lenacapavir' Approved

Science & Technology

Context

- US Food and Drug Administration (FDA) approves new HIV prevention drug Lenacapavir
- FDA approval also paves the way for WHO prequalification, which can accelerate national regulatory approvals.
- WHO Prequalification of Medicines Programme (PQP) helps ensure that medicines supplied by procurement agencies meet acceptable standards of quality, safety and efficacy.

About Lenacapavir:

- Lenacapavir is an antiretroviral medicine that is used for HIV prevention as a Pre-Exposure Prophylaxis or PrEP.
- PrEP is a medication that can reduce the risk of HIV infection for individuals who are HIV-negative but are at risk of contracting the virus.
- WHO currently recommends oral PrEP, the dapivirine vaginal ring, and long-acting injectable cabotegravir (CAB-LA) as options for HIV PrEP.

About HIV:

- Human Immunodeficiency Virus (HIV) is a virus that attacks the body's immune system.
- Mechanism: HIV damages the immune system by infecting and destroying CD4 cells (CD4 T lymphocytes), a type of white blood cells.
- Transmission: HIV is spread from the body fluids of an infected person, including blood, breast milk, semen and vaginal fluids.
 - It can also spread from a mother to her baby.
- Treatment: HIV can be prevented and treated with antiretroviral therapy (ART).
 - Untreated HIV can progress to acquired immunodeficiency syndrome (AIDS).
- According to HIV Estimations 2023 report, over 2.5 million people are living with HIV in India

Axiom-4 Mission

Science & Technology

Context

- India is returning to human spaceflight with the Axiom-4 Mission, its first since 1984. This private astronaut mission to the ISS is a partnership between Axiom Space, NASA, and SpaceX. The mission will send the first Indian astronaut to the ISS and will involve scientific experiments in space biology, material science, and microgravity impact.

Significance for India:

- Provides valuable inputs for the upcoming Gaganyaan mission (India's first human spaceflight).
- Promotes space diplomacy and encourages STEM careers.
- Aids in the development of India's space ecosystem, including the planned Bharatiya Antariksh Station (BAS).



KATRIN Observes Upper Limit of Neutrino Mass

Science & Technology

- The Karlsruhe Tritium Neutrino Experiment (KATRIN) collaboration has set a new upper limit on the mass of neutrinos. Neutrinos are tiny, neutral "ghost particles" with very little mass, and they are the most abundant particles with mass in the universe. Measuring their mass is challenging due to their low mass and weak interactions with matter.

Scientists find Universe's Missing Matter

Science & Technology

- Scientists have located the universe's missing ordinary matter, which is hidden as diffuse gas in intergalactic space, by using Fast Radio Bursts (FRBs). FRBs acted as "cosmic flashlights," and by measuring the dispersion of their radio waves, researchers were able to estimate matter density.



Quantum Communication

Science & Technology

- IIT-Delhi and DRDO demonstrated quantum communication by showcasing Quantum Key Distribution (QKD) over a distance of more than 1 km. Quantum communication uses quantum physics, especially entanglement, to create a secure, leak-proof communication channel. QKD provides unbreakable encryption keys by encoding data in photon states, and any eavesdropping attempt instantly alters the quantum state, alerting the parties.

Solar-Powered Thermal Battery

Science & Technology

- Researchers at IIT Bombay have developed a solar-powered thermal battery that can store summer heat for use in Himalayan winters. The battery is based on Thermochemical Energy Storage (TCES) technology and uses strontium bromide to store solar energy chemically through a reversible dehydration reaction. In winter, a rehydration reaction releases the stored heat for space heating.

Genome Editing Rice Verities

Science & Technology

Context

- India has developed and released its first genome-edited (GE) rice varieties: DRR Dhan 100 (Kamala) and Pusa DST Rice 1. This is considered a major breakthrough for Indian agriculture, offering a path to climate-resilient and sustainable farming.

Genome-Edited vs. Genetically-Modified

- Genome-edited (GE) crops are different from genetically-modified (GM) crops in their core process.
- Genome Editing involves making precise, targeted changes to a plant's existing DNA without introducing foreign genetic material from other species. This is achieved using technologies like CRISPR-Cas9, and the resulting changes are similar to what could occur through natural mutations or conventional breeding, but the process is faster and more efficient.
- Genetic Modification typically involves inserting foreign genes from unrelated species into a plant's genome. For example, the gene from a soil bacterium might be inserted into a cotton plant to make it resistant to a pest like bollworm.
- The Indian government has exempted certain types of genome-edited crops (SDN1 and SDN2) from the strict biosafety regulations that apply to GM crops under the Environment (Protection) Act, 1986.

Key Traits of the New Rice Varieties

- Developed by the Indian Council of Agricultural Research (ICAR), these varieties aim to address agricultural challenges like low yields, water scarcity, and soil degradation.

DRR Dhan 100 (Kamala)

Science & Technology

- **Origin:** An improved version of the popular 'Samba Mahsuri' variety.
- **Benefits:** Offers a higher average yield of 5.37 tonnes per hectare (a 19% increase over its parent variety), is drought-tolerant, and has high nitrogen-use efficiency. It also matures 15-20 days earlier, which helps save water and reduces methane emissions.

Pusa DST Rice 1:

- **Origin:** Developed by the ICAR-Indian Agricultural Research Institute (IARI) from the 'MTU1010' parent variety.
- **Benefits:** Engineered for enhanced drought and salinity tolerance. It has shown significantly higher yields in saline and alkaline soils, with an increase of up to 30.4% in coastal salinity conditions.

Impact and Future Outlook

- The release of these two GE rice varieties marks a significant step toward improving food security and promoting sustainable agriculture in India. It is estimated that cultivating these varieties over five million hectares could produce an additional 4.5 million tons of paddy, save a minimum of 7,500 million cubic meters of irrigation water, and reduce greenhouse gas emissions by 20%. The ICAR is also applying this technology to other crops, including oilseeds and pulses.



Fifth-Generation Fighter Jet AMCA

Defence & Security

Context

- The Defence Minister approved an execution model for the indigenous Advanced Medium Combat Aircraft (AMCA).

Key Features

- It is a twin-engine jet with stealth capabilities, advanced avionics, and integrated computer systems.

Strategic Importance

- It will fill a critical capability gap for the Indian Air Force (IAF), counter regional threats from China and Pakistan, and boost the 'Atmanirbhar Bharat' push for defence autonomy.

ILO Convention on Biological Hazards

Defence & Security

Context

- International Labour Organization's (ILO) member states have adopted the first ever international convention on biological hazards at work.

About the Convention (ILO Convention 192)

- It calls on Member States to formulate national policies and adopt measures on occupational safety and health that include–
 - the prevention and protection against biological hazards, and
 - the development of preparedness and response measures to deal with accidents and emergencies.

India's Concerns

- The blanket application across all sectors and enterprise sizes, regardless of exposure level, may place greater burden on MSMEs and informal enterprises in developing countries.
- The Concerns about the definitions used in the instrument as they are too broad, possibly leading to their application outside the actual workplace, leading to over-regulation.

Other Key Highlights of the Conference

- First standard-setting discussion on decent work in the platform economy:
- Related to fundamental principles and rights at work, fair remuneration, social security, occupational safety and health etc.
- The platform economy refers to economic activities that occur on digital platforms, which are online marketplaces connecting suppliers and consumers eg. Uber, Amazon etc.
- Adopted a Resolution to reduce informality and support the transition to formal work.
 - It calls for urgent action to improve working conditions, extend social protection, and create decent jobs.
- Amendments to the Code of the Maritime Labour Convention, 2006 (MLC, 2006).
 - To address violence and harassment on board, reinforce the right to shore leave and repatriation, and call for recognizing seafarers as key workers.

Silver Notice

Defence & Security

- INTERPOL issued its first "Silver Notice" on India's request to track the global assets of a fugitive in a visa fraud case.

Rudrastra

Defence & Security

- A successful trial of the hybrid vertical take-off and landing (VTOL) Unmanned Aerial Vehicle (UAV) named Rudrastra was conducted, demonstrating its capabilities in surveillance and target engagement.

Context

- In response to a terrorist attack in Pahalgam, Jammu and Kashmir, that killed 26 tourists, India launched a coordinated precision strike campaign called Operation Sindoor on May 7, 2025. The operation was a punitive and targeted effort to dismantle terrorist infrastructure across the Line of Control and deeper within Pakistan.

Key Features of Operation Sindoor

- Targets**
 - India struck nine locations identified as terrorist infrastructure in Pakistan and Pakistan-occupied Kashmir (PoK). The strikes were described as "focused, measured, and non-escalatory," with Indian officials asserting that no Pakistani military or civilian facilities were targeted.
- Military Coordination**
 - The operation was a tri-service response involving the Indian Army, Air Force, and Navy, demonstrating seamless synergy across land, air, and sea.
 - The Indian Air Force (IAF) conducted precision strikes against terror infrastructure.
 - The Indian Army worked in tandem with the IAF, deploying air defense systems to counter drones and loitering munitions launched by Pakistan.
 - The Indian Navy asserted maritime dominance by deploying its Carrier Battle Group for surveillance and threat identification.
- Indigenous Technology**
 - India's indigenous Integrated Air Command and Control System (IACCS) played a crucial role in neutralizing retaliatory attacks from Pakistan. The President of India, Droupadi Murmu, praised the indigenous Akashteer Air Defence Control and Reporting System, calling Operation Sindoor a "golden chapter in humanity's victory against terrorism".
- Aftermath**
 - Pakistan responded with retaliatory drone and missile attacks on Indian military targets, but these were largely neutralized by India's air defense systems. The conflict led to a ceasefire, which took effect on May 10, 2025, after direct communication between military commanders.



India's past military operations with Pakistan

- Operation Riddle and Operation Ablaze (1965 Indo-Pak War)**
 - Op Riddle was the Indian military's response skirmishes along the India-Pakistan border, particularly in the Rann of Kutch area.
- Operation Cactus Lily, Operations Trident and Python (1971 Indo-Pak War)**
 - Operation Cactus Lily, also known as The Meghna Heli Bridge or the Crossing of the Meghna, was an air assault operation conducted in December 1971 during the Bangladesh Liberation War. Operations Trident and Python was also in the context of the Indo-Pak War of 1971.
- Operation Meghdoot**
 - The Indian Army launched Operation Meghdoot in April 1984 to secure strategic heights on Siachen with the deployment of troops.
- Operation Vijay**
 - It was the codename for the Indian military operation launched in May 1999 to reclaim areas occupied by Pakistani forces during the Kargil War.
- Operation Bandar**
 - The Balakot airstrike after the Pulwama terror attack by the Jaish-e-Mohammed on a CRPF convoy in February 2019, leading to the killing of 40 soldiers, was codenamed 'Operation Bandar'.

Defence systems used by India to thwart Pakistan's attempted attacks:

- A day after India hit terror bases in Pakistan and Pakistan-occupied Kashmir (PoK) under Operation Sindoor, its defence systems thwarted Pakistan's attempted attacks on military targets in northern & western India on May 8.

- **HAROP**

- It is understood that Israeli HAROPs, a type of unmanned combat aerial vehicle, were used to neutralise the attempt. HAROP is a kind of loitering munition. This category of weapons is named so because they loiter in the air close to the designated target. They cause destruction by crashing into their targets with the explosive payload that

- **HAMMER**

- The Highly Agile and Manoeuvrable Munition Extended Range (HAMMER) air-to-ground precision- various guided systems.

- **SCALP**

- This is an air-launched cruise missile with stealth features, designed for long-range deep strikes. SCALPEG (Système de Croisière Autonome à Longue Portée — Emploi Général), known as Storm Shadow in Britain, can be operated at night and in all weather conditions.

- **BRAHMOS**

- These supersonic cruise missiles are operationalised in all three defence services. It is built by BrahMos Aerospace, a joint venture between India's Defence Research and Development Organisation (DRDO) and on its way to the target.

- **S400 Triumph**

- The S-400 is considered one of the most advanced and potent air defence systems in the world. It was developed by Russia's Almaz central Design Bureau. It is a long-range surface-to-air missile system.

Integrated Air Command and Control System (IACCS)

Defence & Security

Context

- The Integrated Air Command and Control System (IACCS) is an automated command and control system of the Indian Air Force (IAF) designed to integrate all of India's air defense assets into a single network. Developed by Bharat Electronics Limited (BEL), a public sector aerospace and defense electronics company, IACCS is a crucial component of India's air defense system and a key part of its network-centric warfare strategy.

Key Features and Functions

- **Data Integration:** The system receives and integrates data from various sources, including ground-based military and civilian radars, airborne sensors, mobile observation posts, and other command centers of the IAF. This provides a consolidated, real-time picture of the airspace, enhancing situational awareness for military commanders at various levels.
- **Network-Centric Warfare:** IACCS is built on a secure wide-area network called AFNET. By providing a unified air situation picture, it enables a central command to coordinate a decentralized execution of air defense operations. This capability significantly reduces reaction time, allowing for faster decision-making in identifying, assessing, and neutralizing aerial threats.
- **Multi-Service Coordination:** IACCS facilitates seamless information sharing and coordination between the Indian Army, Navy, and Air Force. It is designed to work with other systems like the Indian Army's Akashteer and the Indian Navy's TRIGUN, creating a robust, tri-service defense grid that minimizes the chances of friendly fire.

Akashteer

- Akashteer is an AI-enabled, fully automated Air Defence Control and Reporting System developed by BEL for the Indian Army. It is specifically designed for tactical command and control, enabling the monitoring of low-level airspace over battle areas and the effective control of ground-based air defense weapon systems. Akashteer operates on a smaller scale compared to IACCS, but it is in the process of being integrated with IACCS to ensure effective coordination between the Army and Air Force.

Mission Sankalp

Defence & Security

- The operation, Mission Sankalp, began on April 21 and involves the mobilisation of 24,000 troops, including those from the Indian Air Force (IAF), to the inter-state border. It is still underway.
- "Mission Sankalp will bring an end to the six-decade-long menace of Left-Wing Extremism in Bastar and other parts of the country," said Sundarraj P, Inspector General of Police for the Bastar Range in Chhattisgarh. Under this mission, some 24,000 security personnel have surrounded the Karregutta hills along the Chhattisgarh-Telangana border to "end the menace of Left-Wing Extremism" in Bastar.
- The Karregutta hills run for almost 60 km along the Chhattisgarh-Telangana border. They have particularly steep

Human Development Report 2025

Reports & Indices

Context:

- Recently, the United Nations Development Programme (UNDP) released its latest Human Development Report (HDR) titled UNDP published the following indices: and Planetary pressures-adjusted Human Development Index.
- HDI is composite index that measures average achievement in human development taking into account four indicators: life expectancy at birth (Sustainable Development Goal 3); expected years of schooling (SDG 4.3); mean years of schooling (SDG 4.4); and gross national income (GNI) per capita (2017 PPP\$) (SDG 8.5).
- India shows steady upward movement in the HDI rankings, ranking 130 in the 2025 UNDP report. The country's HDI value rose from 0.676 in 2022 to 0.685 in 2023, placing India in the medium human development category and

The Global Space Exploration Conference 2025

Reports & Indices

- It is jointly organised by the International Astronautical Federation (IAF), the Indian Space Research Organisation (ISRO) as the host, and the Astronautical Society of India (ASI) as the co-host.
- GLEX 2025 is designed to encourage the sharing of programmatic, technical, and policy information, as well as collaborative solutions, challenges, lessons learned, and paths forward among all nations that desire to explore space. On the sidelines of GLEX, the Indian Space Research Organisation (ISRO) and European Space Agency (ESA) inked a Joint Statement of Intent on Human Space Exploration.

World Investment Report 2025

Reports & Indices

Context:

- The World Investment Report 2025 was released by UNCTAD sheds light on key ships & emerging patterns in global foreign direct investment (FDI).
- World Investment Report is an annual flagship re-port analysing global trends in Foreign Direct Investment (FDI) & international production.
- **Published by:** United Nations Conference on Trade and Development (UNCTAD).

Objective

- To monitor global FDI flows & patterns.
- To guide policymakers & investors on promoting investment.
- To support progress on SDGs & the Global Digital Compact by tracking investments.

Key Findings

- Decline in FDI: Global FDI fell by 11% in 2024 to \$1.5 trillion, with declines in most developing economies.
- India ranked 16th, while the US remained the top recipient.
- Uneven Growth: FDI surged 75% in Africa, while Latin America & the Caribbean saw a 12% decline.
- Stagnation in Job-Creation: Investment in vital sectors like infrastructure, energy & employment generating industries remained weak.
- Decline in SDG-Critical Sectors: Sharp fall in renewable energy (-31%), water & sanitation (-30%) threatening SDG progress.
- Investment Gap: Achieving SDGs in developing nations requires \$4–5 trillion annually, highlighting the need for sustainable investments.

Recommendations:

- Boost digital infrastructure through public-private investment in broadband & data centres.
- Align digital policies with national industrial & sustainability goals.
- Data governance to foster innovation & investor confidence.
- Promote regional integration via trade agreements to counter global fragmentation.

Indian Specific Findings:

- India remained South Asia's largest FDI recipient, accounting for 80% of regional inflows. It moved up from 16th to 15th place globally in FDI inflows.
- **Greenfield Project:** India ranked 4th globally with manufacturing momentum.
- **Project Finance:** India featured among top 5 economies in international project finance deals with 97 projects.



- **FDI Outflows:** India moved up to 18th rank globally in outward FDI, with \$24 billion, up from \$14 billion.
- **Manufacturing sector:** Surge in investments in semiconductors, EV components & digital infrastructure positioned India as a beneficiary of global supply chain shifts

Sikkim Day

Reports & Indices

- Sikkim Day is annually celebrated on May 16, recalling the history of the former kingdom's integration with India in 1975.
- History: The kingdom of Sikkim was established in 1642, when, according to one account, three Tibetan lamas maintained for the next 333 years, until its integration with India in 1975.
- Sikkim signed a formal protectorate with the British through the Treaty of Tumlong in 1861, meaning the British and political advantages in Sikkim. The Calcutta Convention of 1890 demarcated the border between Sikkim and
- In 1950, the Indo-Sikkim Treaty was signed, making Sikkim an Indian protectorate. It would not be sovereign.
- Anti-monarchy protests grew in Sikkim in 1973, where the monarch was left with no choice but to ask New Delhi to send assistance. This led to the signing of a tripartite agreement between the chogyal, the Indian government, and three major political parties, so that major political reforms could be introduced. was held in Sikkim in 1975, where two-thirds of eligible voters took part. Here, 59,637 votes were cast in favour of abolishing the monarchy and joining India, with 1,496 voting against. the Lok Sabha to recognise Sikkim as a state in the Union of India. This was passed in the Parliament and assented to the Lok Sabha to recognise Sikkim as a state in the Union of India.

Mission Sankalp & Anti-Naxal Operation in Chhattisgarh:

Reports & Indices

- This version of Mission Sankalp is a major joint anti-Naxal campaign that began in April 2025 in the Karregutta hills along the Chhattisgarh-Telangana border. The operation is a coordinated effort by the Chhattisgarh Police, Telangana Police, CRPF, and CoBRA, involving approximately 24,000 security personnel.
- The primary goal is to eliminate top Maoist leaders and dismantle their strongholds and logistical bases in the Bastar region. The mission is a decisive step toward the government's goal of completely eliminating Left-Wing Extremism (LWE) by March 2026. It is considered a strategic victory as it aims to reclaim territories long under Maoist control and pave the way for infrastructure development and governance in previously inaccessible areas.

Shirui Lily Festival

Reports & Indices

Context

- The Shirui Lily Festival is an annual cultural state festival in Manipur, India, organized by the Department of Tourism, Government of Manipur. It's a vibrant celebration of culture and nature, and its main purpose is to raise awareness about the endangered Shirui Lily flower and to promote tourism in the Ukhrul district, the flower's native habitat.

Key Details of the Festival

- Location: The festival is held in the Ukhrul district of Manipur, home to the Tangkhul Naga community.
- Timing: It takes place during May, coinciding with the peak blooming season of the Shirui Lily.
- Activities: The festival features a mix of cultural and adventure activities, including:
- Cultural performances, folk music, and traditional dances.
- A rock music competition called "ShiRock".
- Indigenous games, arts, and food stalls.
- Adventure activities like trekking, camping, and biking.

Significance

- The festival aims to bring various communities and tribes together to celebrate Manipur's rich biodiversity and cultural heritage. It is also a major tourism festival, second only to the Sangai festival. The 2025 festival was particularly significant as it marked the event's return after a two-year hiatus due to a long-running conflict in the state.

The Shirui Lily (*Lilium mackliniae*):

- The festival is named after the Shirui Lily, a rare and endangered flower species endemic to the Shirui Hills. It was discovered in 1946 by botanist Frank Kingdon-Ward and named after his wife, Jean Macklin. The flower has received international recognition and was designated as the state flower of Manipur in 1989.
- Threats to the flower include climate change, human interference, and illegal plucking, which is why conservation efforts and raising awareness are central to the festival's mission. The flower is listed as Endangered on the IUCN Red List.

Context

- India commemorated the centenary of the historic conversation between Sree Narayana Guru and Mahatma Gandhi.

Key Discussions

- Focused on social reform, religious conversions, non-violence, and the upliftment of the downtrodden.

Sree Narayana Guru

- Proclaimed the message of "One Caste, One Religion and One God." Advocated for education as the supreme panacea for social evils.

Mahatma Gandhi

- Opposed untouchability but believed in the Vamashrama system. Emphasised all religions as equal paths to truth and promoted the Nai Talim scheme for basic education.

Integral Humanism (Ekatm Manavvad)

Ethics

Context

- A philosophy introduced by Pandit Deendayal Upadhyaya in the mid-1960s.

Core Tenets

- It strives for a dignified life for every human being by striking a balance between the needs of the individual and society. It is based on the concept of Purusharthas and rejects both capitalist individualism and rigid Marxist socialism.

Relevance

- The philosophy's core tenets of cultural nationalism, social harmony, and Antyodaya (upliftment of the last person) are relevant in contemporary governance.

Patriotism

Ethics

- Patriotism is defined as a love for one's country, a concern for its well-being, and a willingness to promote actions that benefit it. In India, patriotism is often associated with the armed forces, who are trained to defend the nation and are prepared to sacrifice their lives. However, the patriotism of civilians is equally intense, though it may be expressed differently. The real spirit of patriotism is a collective sense of duty rooted in love and integrity for the country and fellow citizens. Swami Vivekananda defined patriotism as serving the motherland from the heart.

Unity

Ethics

- The meaning of unity is explored in the context of a world shaken by terrorism and conflicts. The document highlights examples of shattered unity, such as the Pahalgam terror attack in India, the Israel-Gaza conflict, and the Russia-Ukraine war. It emphasizes the importance of India's cultural heritage, known as Ganga-Jamuni tehzeeb, and the need to remain vigilant against forces that weaken it. Indian philosophy and the Constitution place importance on collective welfare, human dignity, and the ideal of Bahujana sukhaya, bahujana hitaya (happiness and welfare for the many).

Pope Leo XIV

Awards, Persons & Places

- Pope Leo XIV, born Robert Francis Prevost, was elected the 267th head of the Catholic Church and sovereign of the Vatican City State on May 8, 2025, during a papal conclave. He is the first person from the United States and North America to hold this position.
- He was born in Chicago, Illinois, in 1955. Before his election, he was a member of the Augustinian religious order and had spent extensive time as a missionary in Peru. He also served as the prior general of the worldwide Augustinian order from 2001 to 2013. In 2023, he was made a cardinal by his predecessor, Pope Francis.
- Pope Leo XIV chose his papal name in honor of Pope Leo XIII, who was known for modernizing Catholic social teaching. He also sees the current era, with its challenges from artificial intelligence and a new industrial revolution, as a time for significant cultural shifts within the Church. He is expected to continue with Pope Francis's agenda for church reform.



Justice Bhushan Ramakrishnan Gavai (Justice B R Gavai)

Awards, Persons & Places

Context

- Justice Bhushan Ramakrishnan Gavai was sworn in as the 52nd Chief Justice of India (CJI) on May 14, 2025, succeeding Justice Sanjiv Khanna. He is notable for being the first Buddhist to hold this position and the second Dalit to become the CJI, after Justice K.G. Balakrishnan. His tenure as CJI is scheduled to last for six months, concluding on November 23, 2025.



Background and Career

- **Early Life:** Born on November 24, 1960, in Amravati, Maharashtra, Justice Gavai is the son of R.S. Gavai, a prominent Ambedkarite leader and former Governor of Bihar, Sikkim, and Kerala.
- **Legal Journey:** After earning a law degree from Nagpur University, he enrolled as an advocate in 1985. He practiced independently at the Bombay High Court and later served as an Assistant Government Pleader and Public Prosecutor for the Nagpur Bench.
- **Judicial Appointments:** He was appointed as an Additional Judge of the Bombay High Court in 2003 and became a permanent judge in 2005. He was elevated to the Supreme Court of India on May 24, 2019, where he was part of approximately 700 benches and authored around 300 judgments.

Notable Judgments and Contributions

- Justice Gavai has been part of several landmark rulings in the Supreme Court, often reflecting a commitment to social justice and constitutional values.
- **Abrogation of Article 370:** He was a member of the five-judge Constitution Bench that upheld the abrogation of Article 370, which removed the special status of Jammu and Kashmir.
- **Electoral Bonds Scheme:** He was part of the bench that unanimously struck down the Electoral Bonds Scheme, citing it as a violation of citizens' right to information.
- **Demonetization:** He wrote the majority opinion upholding the Union Government's 2016 demonetization scheme.
- **Rights of Marginalized Communities:** In his concurring opinion in a case concerning sub-classification among Scheduled Castes, he supported the idea of sub-classification for more equitable affirmative action. He has also condemned government-sanctioned bulldozer demolitions without due process.



Opal Suchata Chuangsri

Awards, Persons & Places

- Opal Suchata Chuangsri from Thailand was crowned Miss World 2025 at the grand finale in Hyderabad, India, on May 31, 2025. This made her the first woman from her country to win the Miss World title. The 72nd Miss World pageant was held with 108 contestants from around the world.
- Opal, who is a political science student with a focus on international relations at Thammasat University, is fluent in Thai, English, and Chinese. Her personal experience with a benign breast lump at the age of 16, which required surgery, led her to launch the "Opal For Her" campaign. This initiative advocates for breast health awareness and early detection, and it served as her "Beauty with a Purpose" project during the pageant.
- Prior to winning Miss World, Opal had competed in Miss Universe 2024, where she finished as the third runner-up.



Karni Mata Temple

Awards, Persons & Places

- The Karni Mata Temple is a prominent Hindu temple located in the town of Deshnok, Rajasthan, approximately 30 kilometers from Bikaner. It is dedicated to Karni Mata, who is believed to be an incarnation of the Hindu goddess Durga and is the tutelary deity of the Charan and Rajput clans. The temple is often referred to as the "Temple of Rats" due to the large population of rats, or *kābā*, that live within its complex and are revered by devotees.



Unique Features and Beliefs

- The Sacred Rats:** The temple is home to thousands of rats that are considered sacred. It is believed that the souls of deceased members of the Charan community, to which Karni Mata belonged, are reincarnated as these rats.
- White Rats:** Among the thousands of rats, a few are white, and their sighting is considered particularly auspicious as they are believed to be the reincarnations of Karni Mata herself and her four sons.
- Auspicious Interactions:** Devotees and tourists believe that if a rat runs over their feet, it brings good fortune. Food, sweets, and milk are offered to the rats, and consuming food that has been nibbled on by them is considered a holy practice.
- Penance for Harm:** It is a sin to harm or kill a rat, even by accident. As a penance, the person who kills a rat must donate a solid silver or gold rat idol to the temple.
- Absence of Plague:** Despite the large population of rodents, the temple and its surrounding area have never experienced an outbreak of plague, which devotees consider a miracle.

History and Architecture

- The current structure of the temple was largely completed in the early 20th century in the Rajput style with some Mughal influences by Maharaja Ganga Singh of Bikaner. The main temple is built of marble and features silver doors that are ornately carved with depictions of the goddess's legends. The inner sanctum houses a 75 cm tall idol of Karni Mata, holding a trident and flanked by idols of her sisters.

Other Information:

- The temple is managed by the Karni Mandir Nij Pranyas trust, and the priests who perform the rituals are descendants of Karni Mata from the Depawat lineage of the Charan community.
- A major fair is held twice a year during the Navratras in the months of Ashwina (March-April) and Chaitra (September-October).
- Karni Mata is also credited with laying the foundation stones for the Mehrangarh Fort in Jodhpur and the Junagarh Fort in Bikaner.



Context

- In 2025, the International Booker Prize was awarded to Indian author Banu Mushtaq for her short story collection, Heart Lamp. This marks the first time that a Kannada-language work has won the prestigious award and the first time the prize has been awarded to a collection of short stories. The prize money of £50,000 is shared equally between the author and the translator, Deepa Bhasthi.

About Banu Mushtaq

- An Indian writer, activist, and lawyer from Karnataka, Banu Mushtaq began her writing career in the 1970s and 80s as part of the Bandaya Sahitya movement, or "protest literature". This movement was critical of the caste and class system and aimed to give a voice to marginalized communities. Her work often focuses on the experiences of Muslim women in southern India, exploring themes of women's rights, resistance to patriarchal systems, and social injustice. She draws inspiration from her legal work, which, she says, "sows the seeds of [her] stories".

**About "Heart Lamp"**

- Heart Lamp, a collection of 12 short stories, was praised by the judges for its "witty, vivid, colloquial, moving and excoriating" storytelling. The stories portray the everyday lives of women and girls in Muslim communities and reflect Mushtaq's decades-long engagement with social issues, women's rights, and religious oppression.

Pulitzer Prize

Awards, Persons & Places

- The Pulitzer Prize is an annual award presented by Columbia University in New York City for achievements in journalism, arts, and letters in the United States. Established in 1917 by the will of newspaper publisher Joseph Pulitzer, the awards are considered the highest honor in American journalism and literature.

Award Categories & Eligibility

- The prizes are awarded in 23 categories that span across journalism, books, drama, and music.
- Journalism:** There are 15 journalism categories, which include prizes for Public Service, Breaking News Reporting, Investigative Reporting, Explanatory Reporting, and Feature Writing, among others.
- Letters and Music:** There are seven categories for letters, including Fiction, History, and Biography, as well as one prize for Music.
- To be eligible, works of journalism must be published by a U.S.-based newspaper, magazine, or news organization that publishes regularly. For the book, drama, and music categories, the authors must be U.S. citizens, permanent residents, or consider the U.S. their primary home.

Recent Winners and Indian-Origin Recipients

- In 2025, Reuters won the Pulitzer Prize in investigative reporting for a series of stories on the international trade in chemicals used to make fentanyl. Other winners in 2025 included The New York Times and The New Yorker magazine, for their coverage of overseas wars.

Several people of Indian origin have also been awarded the Pulitzer Prize.

- Gobind Behari Lal** became the first person of Indian origin to win the prize in 1937 for his journalism.
- Jhumpa Lahiri** won the Fiction prize in 2000 for her debut short story collection, Interpreter of Maladies.
- Geeta Anand** was part of a team from the Wall Street Journal that won in 2003 for reporting on corporate corruption.
- Siddhartha Mukherjee** won the General Non-Fiction prize in 2011 for his book, The Emperor of All Maladies: A Biography of Cancer.
- Vijay Seshadri** won the Poetry prize in 2014 for his collection, 3 Sections.
- A team of photographers from Reuters, including Danish Siddiqui, Adnan Abidi, Sanna Irshad Mattoo, and Amit Dave, won in 2022 for their coverage of the COVID-19 pandemic in India.



Context

- At the Doha Diamond League 2025, Neeraj Chopra finished in second place in the men's javelin throw event. He achieved a throw of 90.23 meters, breaking his own national record and surpassing the 90-meter mark for the first time in his career. Despite this milestone, he was beaten by Germany's Julian Weber, who secured first place with a throw of 91.06 meters in his final attempt.

Performance Breakdown

- Neeraj Chopra started with a strong throw of 88.44 meters, which was a world-leading mark at the time. His third attempt was the record-breaking 90.23-meter throw.
- Julian Weber finished first with a throw of 91.06 meters. This was also the first time he had broken the 90-meter mark.
- Anderson Peters of Grenada, the 2024 Doha Diamond League winner, finished third with a throw of 85.64 meters.
- The event also included another Indian javelin thrower, Kishore Jena, who finished eighth with a throw of 78.60 meters.

Significance of the 90-Meter Mark

- For Neeraj Chopra, the 90-meter mark had long been a symbolic goal, an "Everest" that was just out of reach. For years, he had recorded throws tantalizingly close in the 88m and 89m ranges, with a previous personal best of 89.94 meters. By achieving this throw, Chopra became the 25th man in history and the third Asian to join the elite group of 90-meter-plus javelin throwers, after Pakistan's Arshad Nadeem and Chinese Taipei's Chao-Tsun Cheng.



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Context

- Sahitya Akademi announced the winners of Yuva Puraskar and Bal Sahitya Puraskar.
- Yuva Puraskar encourages young writers (<35 years); Bal Sahitya Puraskar honours contributions to children's literature.
- Awards given in
 - 23 Indian languages for Yuva Puraskar
 - in 24 languages for Bal Puraskar.
- Each awardee will receive an engraved copper plaque and cash prize of ₹50,000.

Sahitya Akademi:

- Established in 1954, the Sahitya Akademi is India's apex body for literary dialogue and promotion.
- Mandate:** It is the only institution that carries out literary work in 24 Indian languages (22 languages enumerated in the IC + English + Rajasthani), and organizes literary festivals, workshops, and translation projects across the country.
- Legal Status:** Registered as a society under the Societies Registration Act, 1860.
- Head Office:** New Delhi.
- Nodal Ministry:** Ministry of Culture.
- It is India's National Academy of Letters.

Ambubachi Mela

Context

- Thousands of devotees are attending the Ambubachi Mela at Kamakhya Temple in Assam.
- Ambubachi, meaning 'water flowing', is an annual religious festival held at Kamakhya temple in June every year. It marks the menstrual cycle of Goddess Kamakhya. It is part of Tantric fertility worship.
- The festival is associated with fertility, onset of monsoon, and the common historical association across cultures of the Earth as a fertile woman.
- The Temple remains closed during the period and farming activities are forbidden during the festival.
- It is one of the biggest congregations of eastern India.



About Kamakhya Temple

- Located on Nilachal Hill in Guwahati, on the southern bank of the Brahmaputra.
- Built in Nilachala style, blending Nagara and Mughal-influenced elements.
- One of the 51 Shakti Peethas, where Sati's yoni is believed to have fallen. The temple has a yoni stone and spring, no idol. Dedicated to Goddess Kamakhya or Kameswari, associated with desire and fertility. It is a major centre of Tantric Shaktism, especially the Kulachara tradition.
- It was rebuilt in 1565 by Koch king Naranarayan after destruction, likely during Hussein Shah's 1498 invasion.
- It has references in Kalika Purana and Yogini Tantra, showing deep textual antiquity. It reflects Aryan and tribal belief systems. Hosts the Ambubachi Mela, an annual festival, celebrating the goddess's menstruation.

Poson Poya

- An annual Buddhist festival celebrated in Sri Lanka on the full moon day of June. It marks the introduction of Buddhism to Sri Lanka in 236 BCE by Arahant Mahinda, the son of Indian Emperor Ashoka.

Aircraft Accident Investigation Bureau (AAIB)

Prelims Specific Topics

- India's primary agency for investigating aviation accidents, established in 2012 under the Ministry of Civil Aviation. It fulfills India's obligations under Annex 13 of the Chicago Convention, 1944.

Black Box

Prelims Specific Topics

- An electronic flight recording device installed in aircraft to help investigators determine the cause of a crash. It consists of the Cockpit Voice Recorder (CVR) and the Flight Data Recorder (FDR) and is designed to withstand extreme conditions.

FASTag Annual Pass Scheme

Prelims Specific Topics

- Announced by the Ministry of Road and Transport, this pass offers private vehicles toll-free access on National Highways for ₹3,000 annually or 200 trips. FASTags are an electronic toll collection system operated by NHAI using RFID technology.

Montreal Convention 1999 (Mc99)

Prelims Specific Topics

- This convention establishes a compensatory regime for passengers who suffer death or injury during international air travel. India became a signatory in 2009.

Shipki La

Prelims Specific Topics

- A motorable mountain pass at 3,930 m in Himachal Pradesh on the India-China border in the Kinnaur district. It is one of three official India-Tibet trade routes and is where the river Sutlej enters India.

Cyprus

Prelims Specific Topics

- An island in the eastern Mediterranean, Cyprus is a member of the European Union. The Prime Minister's visit was the first in 23 years, and he was honoured with the Grand Cross of the Order of Makarios III. The country's significance to India includes acting as a counterbalance to the Turkey-Pakistan axis and as a gateway to Europe.

Suez Canal

Prelims Specific Topics

- A 193-km artificial waterway connecting the Red Sea to the Mediterranean Sea, which opened in 1869. It is one of the world's busiest maritime routes, handling 12-15% of global trade and 8-9% of global energy flows.

Fuego Volcano

Prelims Specific Topics

- A stratovolcano located in southern Guatemala and one of Central America's most active volcanoes. It is part of the Pacific Ring of Fire and the Central American Volcanic Arc.

Raja Bhabhut Singh

Prelims Specific Topics

- A 19th-century tribal leader from the Gond community in Madhya Pradesh, the Madhya Pradesh government has renamed the Pachmarhi Wildlife Sanctuary after him. He was a freedom fighter who used guerrilla warfare against the British during the 1857 Revolt.

Syama Prasad Mookerjee (1901-1953)

Prelims Specific Topics

- An Indian barrister and politician, he was the youngest Vice-Chancellor of Calcutta University and served as India's first Minister for Industry and Supply. He founded the Bharatiya Jana Sangh, the precursor to the Bharatiya Janata Party (BJP).



Global Liveability Index 2025

Prelims Specific Topics

- Published by the Economist Intelligence Unit (EIU), this index measures the quality of life in 173 cities globally. Copenhagen ranked first, ending Vienna's three-year dominance. Delhi and Mumbai both ranked 141st, and no Indian city was in the top 100.

Global Peace Index 2025

Prelims Specific Topics

- An annual report by the Institute for Economics and Peace (IEP) that measures global peacefulness across 163 countries. Global peacefulness fell by its steepest drop since WWII. India ranked 115th, ahead of Pakistan and Bangladesh.

Exercise Khaan Quest

Prelims Specific Topics

- A UN-mandated multinational peacekeeping exercise held in Ulaanbaatar, Mongolia, that began as a bilateral drill between the U.S. and Mongolia in 2003.

Exercise Shakti 2025

Prelims Specific Topics

Context

- The 8th edition of Exercise Shakti is to be held at La Cavalerie, France.
- A biennial joint military exercise between India and France which is held alternately in both countries.
- Purpose: Enhance joint military capability for multi-domain operations in sub-conventional scenarios.
- Focus: Strengthening interoperability and tactical coordination in joint operations.
- Significance: Deepens strategic defences and fosters bonhomie and mutual understanding between the two armies.
- Other India–France Exercises**
 - Exercise Garuda (Air Force), Exercise Varuna (Navy), and Exercise Desert Knight (Air Forces).

Albinism

Prelims Specific Topics

- A rare inherited genetic condition caused by gene mutations affecting melanin production, leading to reduced or absent melanin in the skin, eyes, and hair. It is a lifelong, non-contagious condition.

Hernia

Prelims Specific Topics

- A protrusion of an internal organ or tissue through a weak spot in the surrounding muscle or connective tissue, most commonly in the abdominal wall.

Lenacapavir

Prelims Specific Topics

- An antiretroviral drug approved by the US FDA as a twice-yearly injectable for HIV prevention. It works by blocking HIV replication by targeting the viral capsid.

Razor Blade Variant

Prelims Specific Topics

- A sub-lineage of the Omicron Covid-19 variant, also known as 'Nimbus,' that causes a severe sore throat.

Rinderpest

Prelims Specific Topics

- A contagious viral disease also known as "cattle plague" that affects cloven-hoofed animals but not humans. It was the second infectious disease, after smallpox, to be declared eradicated in 2011.



Tourette Syndrome

Prelims Specific Topics

- A neurological disorder that causes sudden, unwanted, and uncontrolled rapid and repeated movements or vocal sounds called tics. It typically emerges between ages 2 and 15.

Valley Fever

Prelims Specific Topics

- A fungal infection caused by *Coccidioides* species, spread by inhaling spores from disturbed soil. It is non-contagious and endemic to the Southwestern U.S., Mexico, and parts of Central and South America.

Cathepsin B (Cat B)

Prelims Specific Topics

- A protein-degrading enzyme whose activity, if inhibited, can delay reproductive aging by preserving the ovarian reserve.

Gwada Negative

Prelims Specific Topics

- A new, extremely rare blood group system, the 48th in the world, officially registered as ISBT042. It is a negative blood group system defined by the absence of the EMM antigen.

Muscle Stem Cell Rejuvenation

Prelims Specific Topics

- A study found that Prostaglandin E2 (PGE2) can restore the muscle repair ability of aged stem cells in mice. PGE2 injections helped aged mice regain muscle strength and mass by reopening parts of the genome that had shut down with age.

Statins can Reduce Sepsis Deaths

Prelims Specific Topics

- A study found that statins, which are drugs that lower cholesterol, can reduce the death rate in sepsis patients by almost 40%. Sepsis is a life-threatening condition caused by the body's extreme immune response to an infection, leading to organ dysfunction.

Emperor Penguin

Prelims Specific Topics

- The largest and heaviest penguin species, found exclusively in Antarctica. It is a vital indicator species for climate change and is listed as Near Threatened (NT) on the IUCN Red List because its entire lifecycle is tied to stable sea ice platforms, which are disappearing due to global warming.

Dravidogecko coonoor

Prelims Specific Topics

- A new species of gecko from the *Dravidogecko* genus discovered in the Coonoor Hills of the Western Ghats. It is endemic to the area and found both in urban and natural habitats.

Habrocestum Swaminathani

Prelims Specific Topics

- A new species of jumping spider discovered in the Wayanad Wildlife Sanctuary, named in honor of Dr. M.S. Swaminathan, the father of India's Green Revolution.

Portulaca Bharat

Prelims Specific Topics

- A new and extremely rare flowering plant species discovered in the semi-arid rocky slopes of the Aravalli Hills. Only 10 individuals have been found in the wild.



Eurasian Otter (*Lutra lutra*)

Prelims Specific Topics

- A semiaquatic mammal found across Eurasia and listed as Near Threatened (NT) by the IUCN. It was spotted in Kashmir for the first time in 30 years.

Fishing Cat (*Prionailurus viverrinus*)

Prelims Specific Topics

- A medium-sized wild cat that is an excellent swimmer and primarily active at night. It is listed as Vulnerable (VU) by the IUCN, and a project has been launched to radio-collar fishing cats in the Coringa Wildlife Sanctuary to track their movements and behavior.

Monotremes and AMHY gene

Prelims Specific Topics

- Australian researchers have identified the AMHY gene as the sex-determining gene in monotremes. Monotremes are the only living mammals that lay eggs and include the platypus and echidna.

Tardigrades

Prelims Specific Topics

- Also known as "water bears," these microscopic, multicellular micro-animals have survived all five of Earth's mass extinction events. They can survive in extreme environments, including outer space, by entering a dormant state known as cryptobiosis.

Agarwood (*Aquilaria malaccensis*)

Prelims Specific Topics

- Also known as Oud, it is a highly valuable, aromatic tree that produces resin as a defense mechanism against fungal infections. It is native to Eastern India and is listed as Critically Endangered (CR) by the IUCN due to soaring demand for its wood, which is used in perfumes, religious ceremonies, and medicines.

Indian Rat Snake (*Ptyas mucosa*)

Prelims Specific Topics

- A non-venomous snake that Kerala is considering notifying as its official reptile. It plays a major role in controlling the rodent population, earning it the title "friends of farmers". It is listed as Least Concern (LC) by the IUCN but is threatened by over-exploitation for food and skin.

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