

DAILY CURRENT AFFAIRS (DCA)

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INDIA ROLLS OVER \$50 MILLION WORTH TREASURY BILL TO HELP MALDIVES

Context

- India has rolled over a **\$50 million-treasury bill to support Maldives**.
 - Treasury bills are **short-term debt instruments** issued by a government to meet immediate funding needs.

About

- The rollover of the \$50 million treasury bill helps provide **temporary relief to the Maldives**, which is grappling with significant debt and economic strain.
- Despite the economic challenges and tensions in bilateral relations, this extension of financial assistance underscores India's strategic interest in maintaining stable ties with the Maldives, a key partner in the Indian Ocean region.
- The transaction was **carried out by the State Bank of India**, reflecting India's active involvement in supporting the Maldives' financial stability.

Brief on India - Maldives

- India considers the **Maldives as a key maritime neighbour** and an important partner in its **'Neighbourhood First' policy and Vision 'MAHASAGAR'** i.e. Mutual and Holistic Advancement for Security and Growth Across Regions.
- Participation in Multiple Forums:** Both nations are founding members of the South Asian Association for Regional Cooperation (SAARC), the South Asian Economic Union and signatories to the South Asia Free Trade Agreement.
- Economic partnership:** India and Maldives signed a trade agreement in 1981, which provides for export of essential commodities.
 - India-Maldives bilateral trade crossed the USD300 million mark for the first time in 2021 which further crossed the USD 500 million mark in 2022. The trade in 2023 stood at \$ 548 mn.
 - India is one of the biggest investors and tourism markets for the Maldives, with significant trade and infrastructure projects underway.
- Defense and Security Cooperation:** Since **1988**, defence and security has been a major area of cooperation between India and Maldives.
 - A **comprehensive Action Plan for Defence** was also signed in **2016** to consolidate defence partnership.

- Estimates suggest that almost **70% of Maldives' defence training is done by India**.
- Tourism:** In 2023, India was the leading source market for Maldives with a **11.8% market share**.
 - In March 2022, India & Maldives agreed for an open skies arrangement which will further improve connectivity between two countries.
- Connectivity:** The Male to Thilafushi Link project, popularly known as the **Greater Male Connectivity Project (GMCP)**, is a USD 530 million infrastructure project.
 - The project aims to connect Male to Villingili, Gulhifalhu and Thilafushi islands through a series of bridges, causeways and roads.
 - The project is crucial for the proposed Gulhifalhu Port, and will be a major catalyst for the Maldivian economy.

Significance of Maldives for India

- Strategic Importance:** The Maldives is strategically located in the Indian Ocean, and its stability and security are of interest to India.
- Trade Route:** Situated along **crucial maritime trade routes** between the Gulf of Aden and the Strait of Malacca, the **Maldives acts as a "toll gate" for nearly half of India's external trade and 80% of its energy imports**.
- Counterbalancing China:** Maldives presents an opportunity for India to counterbalance China's growing influence in the Indian Ocean, fostering regional balance of power.
- Diplomatic Leverage:** Strong bilateral relations with the Maldives enhance India's leadership role in the Indian Ocean Region (IOR) and in forums like the Indian Ocean Rim Association (IORA).

Challenges in Relations

- Change in Power:** Changes in government create uncertainty and complicate long-term cooperation projects.
- Chinese Influence:** China's growing economic presence in the Maldives, evidenced by investments in infrastructure projects and debt-trap diplomacy, is perceived as a challenge to India's strategic interests in the region.
- Non-traditional threats:** Piracy, terrorism, and drug trafficking remain concerns in the region, requiring continuous collaboration and intelligence sharing between India and the Maldives.
- Extremism and radicalization:** The Maldives' vulnerability to religious extremism and radicalization poses a security threat that necessitates joint efforts in countering such ideologies.

- **Trade imbalance:** The significant trade imbalance between India and the Maldives leads to resentment and calls for diversifying trade partnerships in Maldives.

Way Ahead

- The evolution of India-Maldives relations reflects a combination of geopolitical dynamics, changes in leadership, and shared regional interests.
- India is steadfast in its commitments towards Maldives and **has always walked the extra mile** towards building relations.
- By acknowledging and addressing the challenges, India and the Maldives can navigate the complexities of their relationship and build a stronger, more resilient, and mutually beneficial partnership for the future.

Source: TH

STRENGTHENING INLAND WATER TRANSPORT IN INDIA

Context

- The **Inland Waterways Authority of India (IWAI)** has established a new **regional office in Srinagar**, committed 100 crore to improve three **National Waterways in the region** — **River Chenab (NW-26)**, **River Jhelum (NW-49)**, and **River Ravi (NW-84)**.

Key Highlights

- A MoU was signed between **IWAI and the J&K Government** to promote river cruise tourism.
 - ♦ Ten floating jetties aimed to be installed at key locations, including Akhnoor, Reasi, Pantha Chowk, Zero Bridge, Amira Kadal, and Safa Kadal.
- IWAI aims to construct **floating jetties and landside facilities** to support passenger and cargo movement.
 - ♦ Dredging operations will be conducted to maintain navigational fairways for safe vessel movement.

Inland Water Transport in India

- **National Waterways Act, 2016** has declared **111 inland waterways as 'National Waterways' (NWs)** in the country to promote shipping and navigation on them.
 - ♦ The **total length of NWs is 20,275 km** spread **across 24 States** in the country.

- Currently, Indian operates to a few stretches in the **Ganga-Bhagirathi-Hooghly** rivers, the **Brahmaputra**, the **Barak river**, the **rivers in Goa**, the **backwaters in Kerala**, **inland waters in Mumbai** and the deltaic regions of the **Godavari - Krishna** rivers.

Inland Waterways Authority of India (IWAI)

- It is an **autonomous organization** constituted in **1986** under the **Inland Waterways Authority of India Act, 1985**, under the **Ministry of Ports, Shipping, and Waterways**, based on recommendations of the **National Transport Policy Committee (1980)**.
- **Headquarter:** Noida, Uttar Pradesh.
 - ♦ **Regional Offices:** Patna, Kolkata, Guwahati, Varanasi, Bhubaneswar, and Kochi.
 - ♦ **Sub-Offices:** Prayagraj, Farakka, Sahibganj, Haldia, Swroopganj, Hemnagar, Dibrugarh, Dhubri, Silchar, Kollam, and Vijayawada.
- It is primarily responsible for development, maintenance and regulation of those waterways which have been declared as **National Waterways (NWs) under National Waterways Act, 2016**.

Key Functions of IWAI

- Development of National Waterways
- Regulation and Policy Implementation
- Hydrographic Surveys and Navigational Aids
- Promotion of River Cruise Tourism

Major National Waterways

- **National Waterway 1 (NW-1):** Ganga-Bhagirathi-Hooghly River System (Haldia to Prayagraj, 1,620 km)
- **National Waterway 2 (NW-2):** Brahmaputra River (Dhubri to Sadiya, 891 km)
- **National Waterway 3 (NW-3):** West Coast Canal, Champakara & Udyogmandal Canals (Kottapuram to Kollam, 205 km)
- **National Waterway 4 (NW-4):** Godavari, Krishna Rivers & Buckingham Canal (Kakinada to Puducherry, 1,095 km)
- **National Waterway 5 (NW-5):** Brahmani River, Mahanadi Delta & East Coast Canal (Talcher to Dhamra, 623 km)
- **National Waterway 16 (NW-16):** Barak River (Lakhipur to Bhanga, 121 km)

Advantages of Inland Water Transport

- **Cost-Effective Logistics:** Waterways offer lower transportation costs compared to road and rail.
 - ♦ Fuel consumption per ton-km is significantly less, reducing overall logistics expenses.
 - ♦ **1 Litre of fuel** moves **24 tonne on road, 95 tonne on rail** and **215 tonne on IWT** (for a kilometer).
- **Reducing Pressure on Rail and Road Networks:** India's railways and highways are overburdened, leading to delays and inefficiencies.
 - ♦ IWT can supplement existing transport modes, improving cargo movement efficiency.
- **Environmentally Sustainable:** IWT produces lower carbon emissions, making it a greener mode of transport.
 - ♦ Reduces traffic congestion and air pollution in urban areas.

Expanding IWT Beyond Cargo Transport

- **Roll-on/Roll-off (Ro-Ro) Services:** Enables vehicle transportation across waterways, reducing road congestion.
- **Tourism Development:** Promotes river cruises, houseboats, and eco-tourism, boosting local economies.
- **Passenger Ferry Services:** Provides affordable and efficient travel options, especially in remote regions.

Key Government Initiatives

- **Jal Marg Vikas Project (JMVP):** It focuses on developing NW-1 (Ganga-Bhagirathi-Hooghly river system) for cargo movement.
 - ♦ Includes multi-modal terminals, navigational locks, and fairway development.
- **Jalvahak Scheme:** It provides operating cost incentives for cargo owners using IWT routes.
 - ♦ It aims to increase IWT's modal share from 2% to 5% by 2030.
- **Hybrid Electric and Hydrogen Vessels:** It promotes green technology for sustainable inland navigation.
- **National Waterways (Construction of Jetties/Terminals) Regulations, 2025:** The Ministry of Ports, Shipping and Waterways has introduced new regulations, formulated by IWA, to streamline processes and promote efficient use of India's vast waterways network.

Government's Vision for Inland Water Transport

- The **Shipping Ministry** has set a goal to **complete 150 maritime projects** by September 2025, strengthening India's inland waterways sector.

- The **Harbour Craft Green Transition Programme** aims to accelerate the adoption of **clean energy solutions** across Indian ports.
- A **Coastal Green Shipping Corridor** is being developed, with the Kandla-Tuticorin route as the first corridor.

Challenges and Future Prospects

- **Limited Depth in Rivers:** Seasonal variations affect navigability, requiring dredging and water management.
- **Infrastructure Gaps:** Need for modern terminals, jetties, and intermodal connectivity.
- **Investment:** Encouraging private sector participation in IWT development.

Conclusion

- **India's inland waterways** can become a **key pillar** of sustainable transport, reducing logistics costs and environmental impact, with continued policy support and technological advancements.
- By enhancing waterway connectivity, tourism, and economic opportunities, the initiative aligns with **India's broader Blue Economy vision**.

Source: PIB

NATURAL FARMING CERTIFICATION SYSTEM

Context

- In a bid to boost consumer trust and farmer incomes, the central government is likely to introduce a nationwide **Natural Farming Certification System (NFCS)**.

What is Natural Farming?

- Natural Farming is a **chemical-free farming system** rooted in Indian tradition enriched with modern understanding of ecology, resource recycling and on-farm resource optimization.



Key Features of Natural Farming

- **Zero Budget Natural Farming (ZBNF):** A popular model promoted by **Subhash Palekar**, aimed at drastically reducing input costs.

- **Core practices:**
 - ♦ **Beejamrit:** Natural seed treatment.
 - ♦ **Jeevamrit:** Soil inoculation using fermented cow dung and urine.
 - ♦ **Mulching and Waaphasa:** Moisture retention and aeration of soil.
- **Low input, high sustainability:** Reduces dependence on market-bought inputs.

Benefits of Natural Farming

- **Lower Input Costs:** Natural farming requires fewer external inputs like chemical fertilizers and pesticides, which can reduce overall production costs for farmers.
- **Ensures Better Health:** As Natural Farming does not use any synthetic chemicals, health risks and hazards are eliminated.
 - ♦ The food has higher nutrition density and therefore offers better health benefits.
- **Environment Conservation:** Natural Farming ensures better soil biology, improved agrobiodiversity and a more judicious usage of water with much smaller carbon and nitrogen footprints.
- **Sustainable Farming Practices:** By avoiding the overuse of chemical fertilizers and pesticides, natural farming promotes a more sustainable and regenerative approach to agriculture.

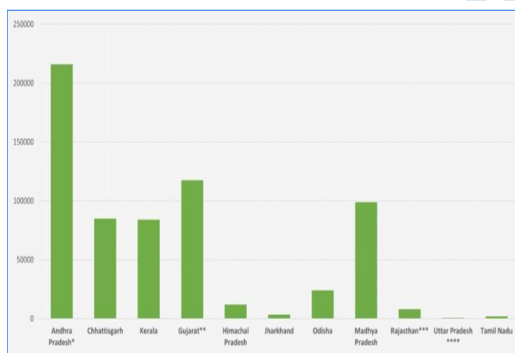


Fig. Major states in India practicing Natural Farming (Source: NITI Aayog) Prospects and challenges of Natural Farming

Why is Certification Needed?

- **Trust Building:** It helps consumers distinguish genuine natural farm produce.
- **Market Access:** It enables farmers to fetch premium prices and enter niche markets (domestic and international).
- **Standardisation:** It brings uniformity to natural farming practices.
- **Monitoring and Accountability:** It ensures traceability and quality control.

Challenges in Scaling Natural Farming

- **Initial Yield Reduction:** During the transition from conventional to natural farming, many farmers reported a temporary decline in crop yields.

- **Limited Scientific Backing:** Although natural farming is promoted as environmentally sustainable, there is limited large-scale, long-term scientific research validating its productivity, resilience, and scalability across diverse agro-climatic zones.
- **Inadequate Institutional Support:** Coordination between agriculture departments, research bodies, and rural institutions is limited.

National Mission on Natural Farming

- **Aim:** To promote natural farming among one-crore farmers across the country.
- **Cluster-Based Approach:** Targeting 15,000 clusters in Gram Panchayats allows for focused implementation and better resource allocation.
- **Bio-Input Resource Centers (BRCs):** Establishing 10,000 BRCs will ensure easy access to essential bio-inputs, making it convenient for farmers to adopt natural farming practices.
- **Model Demonstration Farms:** 2000 NF Model Demonstration Farms shall be established at **Krishi Vigyan Kendras (KVKs), Agricultural Universities (AUs)** and farmers' fields.
 - ♦ They shall be supported by experienced and trained Farmer Master Trainers.
- **Certification and Market Access:** A simplified certification system and dedicated branding will facilitate market access for natural farming products.

Source: MINT

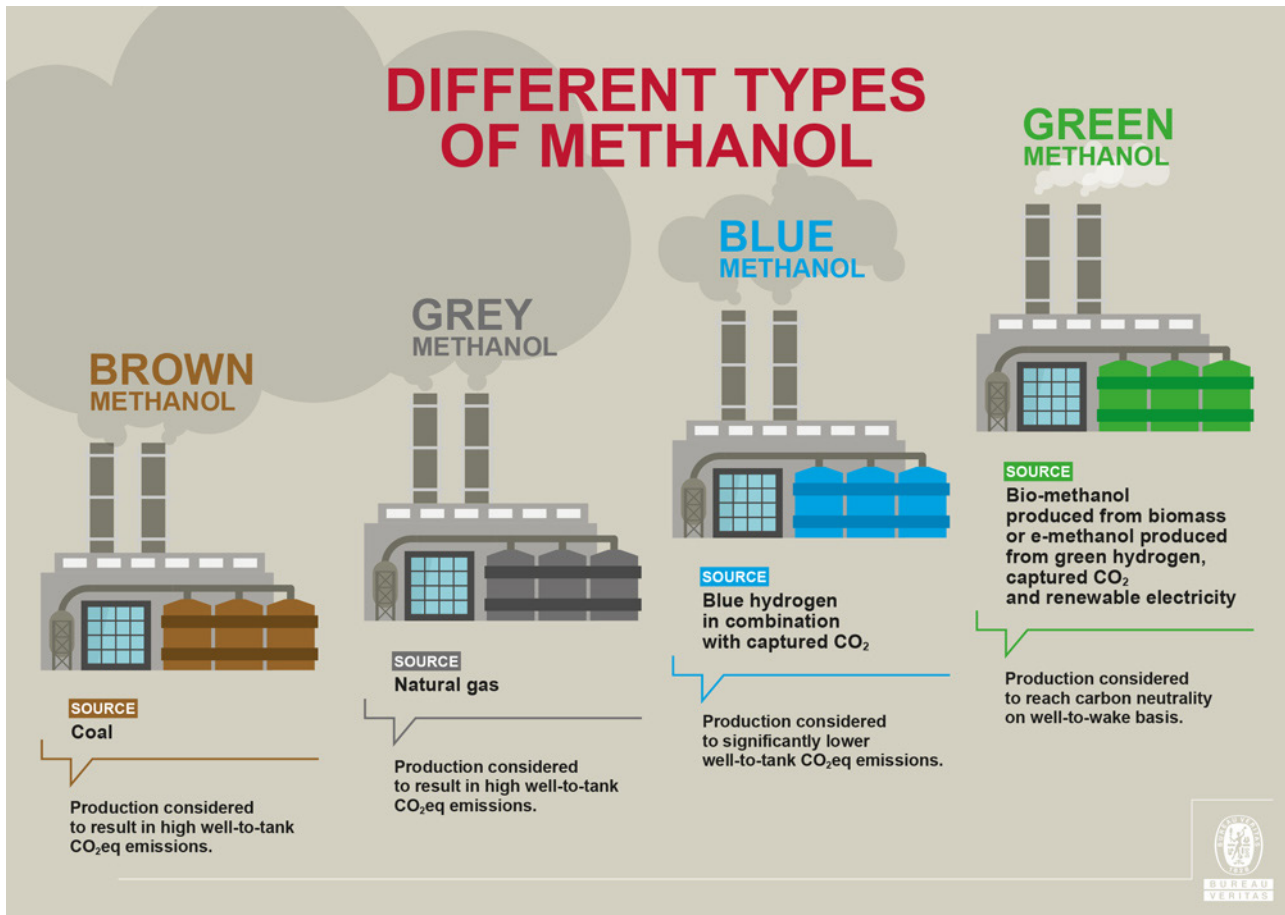
WORLD'S FIRST COMMERCIAL-SCALE E-METHANOL PLANT OPENS IN DENMARK

In News

- Denmark has launched the world's first commercial-scale e-methanol plant in Kasso.
 - ♦ Developed by European Energy (Denmark) and Mitsui (Japan), the plant will produce 42,000 metric tonnes of e-methanol annually.

What is Methanol?

- **About:** Methanol (CH₃OH) is a light, volatile, and flammable liquid alcohol. Conventionally produced from natural gas and coal, it is used in chemicals, fuels, and plastics.



- **Applications:** Used in shipping fuel, plastic production, manufacturing fuel cells etc.
- **High Cost:** Not yet price-competitive with fossil fuels; price parity expected around 2035.
- **Scale of Production:** Infrastructure for large-scale green methanol is nascent.
- **CO₂ Sourcing:** Sustainable and reliable CO capture remains a technological challenge.
- **Storage and Distribution:** Needs new or adapted logistics infrastructure.
- **Government Initiatives and Progress:** The Department of Science and Technology (DST) has initiated the **Methanol Economy Research Programme (MERP)** to support research and development in methanol production and utilization.
- **Blending of 15% methanol in gasoline (M15)** has been notified, and test standards are being developed.
- **National Policy on Biofuels 2018** recognizes methanol and DME (dimethyl ether) as alternative fuels.

Source: TH

India's Methanol Economy Programme

- **About:** Launched by NITI Aayog, the Methanol Economy Programme aims to reduce oil import bills, curb pollution and promote cleaner alternatives of fuel.
- **Key Pillars:** Production of methanol from coal, biomass, and municipal waste can be used in LPG blend, power generation, and transportation which eventually helps in reducing India's oil import bill & greenhouse gas (GHG) emissions.

HOW IS THE SHIPPING INDUSTRY TACKLING EMISSIONS?

Context

- At the 83rd session of the Marine Environment Protection Committee (MEPC-83) of the International Maritime Organization (IMO), a landmark vote was held to adopt a Market-Based Measure (MBM) for decarbonising international shipping.

What is Green Shipping?

- Green shipping refers to **environmentally sustainable practices and technologies used in the maritime industry** to reduce the environmental impact of shipping activities.
- It includes cutting greenhouse gas (GHG) emissions, improving energy efficiency, and minimizing marine pollution.

Need for Green Shipping

- **Global Emissions:** The shipping industry emits around **1 billion tonnes** of GHG annually, accounting for about **2.8%** of global emissions
- **Future Projections:** Emissions may increase by **50–250%** by 2050 if unchecked.
- **Measures Already Enforced:**
 - ♦ **Energy Efficiency Design Index (EEDI):** Sets efficiency standards for new ships.
 - ♦ **Energy Efficiency Management Plan (SEEMP):** Operational plans to cut emissions.
 - ♦ **Mandatory fuel oil consumption reporting:** Improves accountability and transparency.

MEPC-83 Proposals for emissions levy mechanisms

- **The International Chamber of Shipping** advocated for a fixed levy per every tonne of CO₂ emitted.
- **China** proposed a market-driven approach where ships could trade compliance units and invest in alternative fuels.
- **The European Union** suggested a fixed Greenhouse Gas (GHG) levy, managed by an IMO-administered fund.
- **India** proposed a '**bridging mechanism**', which would target only under-compliant ships to bear the financial burden, while rewarding those using Zero or Near-Zero (ZNZ) fuels.
- **Singapore** proposed a hybrid model based on India's proposal, including a **GHG Fuel Standard (GFS)** and a tiered system rewarding surplus emission units and requiring the purchase of remedial units for underperformance.

What was decided?

- **IMO adopted Singapore's hybrid model**, influenced significantly by India's proposal, as its Net Zero Framework.
- This marks the first time a global industry has adopted a mandatory emissions levy. However, the decision of the MEPC-83 is not final yet.

Roadblocks in implementations

- The MEPC-83's decision, having approved the Net Zero Framework, needs to amend **Annex VI of the MARPOL convention**, which governs air pollution from ships.
 - ♦ The amendment will undergo a six-month circulation period among all contracting parties to MARPOL.
- For final adoption, it requires a **two-thirds majority of votes** from members present and voting; this means that if all 101 parties participate, at least 67 must **support the measure**.
- There should be no formal objection by one-third of the parties accounting for 50% of global shipping tonnage.

What are the Concerns?

- **Oil-exporting countries**, led by Saudi Arabia, **opposed** any significant transition to green fuels, prioritising the protection of their fossil fuel markets.
 - ♦ **China and large shipping nations** favoured low levies to maintain trade competitiveness.
 - ♦ **Scandinavian countries** demanded credit for early green efforts.
- The original '**Common But Differentiated Responsibilities and Respective Capabilities**' (CBDR-RC) principle is eroding.
 - ♦ Developed countries are pushing for uniform rules, disregarding historical emissions and economic capacities of developing nations.

Impact on India

- **Short-Term Impact:** India's international fleet (around 135 ships) would incur an additional **\$108 million/year** in fuel costs by 2030 — manageable given the scale.
- **Long-Term Opportunities:**
 - ♦ India is investing heavily via the National Hydrogen Mission.
 - ♦ Indian ports are developing **green hydrogen bunkering capabilities**.
 - ♦ Indian hydrogen already meets the IMO's fuel reward thresholds, aiding its export potential.

Concluding remarks

- The MEPC-83's approval of a market-based emissions framework represents a significant milestone in global efforts to decarbonise the shipping industry.
- If successful, this could serve as a model for other sectors in achieving a low-carbon global economy.

Source: TH

NEWS IN SHORT

FAKHRUDDIN ALI AHMED

Context

- The President of India paid tributes to Fakhruddin Ali Ahmed, former President of India on his birth anniversary.

About Fakhruddin Ali Ahmed

- Early Life and Career:** Born in 1905, Ahmed pursued his education in Delhi and later at the University of Cambridge. Upon returning to India, he practiced law and joined the Indian National Congress.
- Role in Freedom Struggle:** He actively participated in the individual **Satyagraha and Quit India Movement** for which he was arrested in 1942.
 - He was a close **associate of Mahatma Gandhi**.
- Career in Independent India:** He was elected to the Rajya Sabha in 1952 and subsequently to the Lok Sabha in 1967. He held portfolios such as Food and Agriculture, Cooperation, Education, Industrial Development, and Company Laws.
- Presidency:** He served as the **fifth President** of India from August 24, 1974, until his untimely demise on February 11, 1977.
 - He was the **second President of India to die in office**, after Dr. Zakir Husain.
 - During his presidency, he signed the **proclamation of Emergency in 1975** following a meeting with **Prime Minister Indira Gandhi**, one of the most significant and controversial moments in India's constitutional history.

Source: PIB

INDIA REJECTS US CLAIM OF MEDIATION

Context

- India pushed back against US President Donald Trump's **offer to mediate on Kashmir** and his claim that he **used trade** to prevent a “**nuclear war**” between India and Pakistan.

About

- On Nuclear War:** India underlined that all military actions launched by its armed forces in response to the escalatory offensives by Pakistan were in the **domain of ‘conventional’ warfare**.
- On Ceasefire:** India dismissed Trump's claim that the US had made the two nations agree on

a ‘ceasefire’ by using the threat of stopping trade with both India and Pakistan.

- Trade** did not figure in any conversation between Indian and American leaders from the time of Operation Sindoor.
- To halt firing and military actions was worked out **between the Directors General of Military Operations (DGMOs) of India and Pakistan**.
- On Kashmir Issue:** India's long-standing position has been that any issues related to Jammu and Kashmir have to be **addressed by India and Pakistan bilaterally**. That stated policy has not changed.

Source: TOI

INDIA TO MOVE UNSC 1267 TO DECLARE TRF A TERROR GROUP

Context

- India has decided to send a team to the **United Nations Security Council's 1267 Sanctions Committee** meeting to seek the **designation of The Resistance Front (TRF) as a terrorist organisation**.

About

- The team will present new evidence pointing to Pakistan's involvement in supporting terrorism.
- The evidence will highlight TRF's role in the attack.
- Pakistan, a non-permanent member of the UNSC, has been protecting TRF at the council with support from China.

1267 Sanctions Committee

- It is also called the **ISIS and Al-Qaeda Sanctions Committee**, was established under a UNSC resolution in **1999**, to focus on **combating terrorism linked to ISIS, Al-Qaeda, and related groups**.
- Member States** may at any time submit to the **Committee listing requests** for inclusion of individuals, groups, undertakings and entities.
- The Committee **comprises all 15 members** of the Security Council and makes its **decision by consensus**.
- Sanctions Measures Include:**
 - Asset Freeze:** All assets of designated individuals/entities are frozen.
 - Travel Ban:** Listed individuals are banned from entering or transiting through any member state.
 - Arms Embargo:** Prohibition on supplying arms or related material.

Source: TOI

US-SAUDI ARABIA DEALS

Context

- The United States and Saudi Arabia signed a defence agreement worth nearly **\$142 billion**, as part of a broader Saudi commitment to invest \$600 billion in the US.

Key Components of the Agreement

- Defence Package:**
 - Arms, military systems, and services form the core of the deal.
 - Discussions also included Saudi Arabia's interest in Lockheed Martin's **F-35 fighter jets**, though no final purchase has been confirmed.
- Commercial Deals:**
 - General Electric (GE):** Gas turbines and energy solutions exports worth \$14.2 billion.
 - Boeing:** Sale of 737-8 passenger aircraft worth \$4.8 billion.

Source: IE

INDIA'S RETAIL INFLATION HITS SIX-YEAR LOW

In News

- Retail inflation in India, as measured by the Consumer Price Index (CPI), fell to 3.16% in April 2025, marking the lowest level in 69 months (since July 2019).

Key Takeaways from the Report

- Food Inflation Decline:** Improved supply-side management, buffer stocks, and government interventions in pulses.
- Base Effect:** A statistical phenomenon where current year prices are compared with abnormally high prices of the previous year, resulting in seemingly low inflation figures.
- Cooling demand:** A slowdown in demand for housing, possibly due to factors like high prices, interest rates, or economic uncertainty, could lead to a moderation in price increases.
- Core Inflation Remains Higher:** Excluding food inflation, the overall inflation would have been considerably higher at 4.1%, suggesting that the cooling is largely concentrated in the food sector.

What is CPI?

- About:**
 - Retail inflation reflects the rise in prices of goods and services at the consumer level and is calculated through the **Consumer Price Index (CPI)**.

- The CPI tracks price changes by comparing the **current cost of a fixed basket of goods and services** (such as food, clothing, housing, transportation, healthcare, and fuel) to its cost in a base year.
- In India, the current base year for **CPI is 2012**, and the index is compiled by the **National Statistical Office (NSO)** under the **Ministry of Statistics and Programme Implementation (MoSPI)**.
- Significance of CPI:** CPI as a macroeconomic tool used for:
 - Inflation targeting by the Reserve Bank of India (RBI).
 - Policy formulation in areas like taxation, subsidies, and pensions.
 - Measuring real economic growth as a deflator in national income accounts.
 - Social welfare planning, particularly for vulnerable sections
- Types of CPI in India:**
 - CPI (Combined):** Represents all-India retail inflation for both urban and rural consumers. It is the headline CPI used by the RBI for inflation targeting.
 - CPI (IW):** For Industrial Workers, used for wage indexation and labour policies.
 - CPI (AL):** For Agricultural Labourers, useful for rural poverty assessments and welfare schemes.
 - CPI (RL):** For Rural Labourers, often overlaps with CPI-AL, but used for specific rural wage analysis.

Source: TH

WEATHER BALLOONS

Context

- In the wake of budget cuts by the USA, a Silicon Valley startup will soon start to replace the National Oceanic and Atmospheric Administration's (NOAA's) weather balloons with AI-powered alternatives.

Advent of weather balloons

- French meteorologist **Leon Teisserenc de Bort** pioneered the use of weather balloons in the late **19th century**.
- Initially, these balloons carried **meteorographs**, which recorded pressure, temperature, and humidity.
- After bursting at high altitudes, the instruments gently descended to Earth, where data would be recovered.

- The **1930s** saw a revolution with the invention of **radiosondes** — small instruments that could transmit data in real time to ground stations.
 - ♦ Over time, these devices became lighter and more efficient, equipped with longer battery life and integrated with GPS for accurate location and wind tracking.

Global Weather Balloon Programme

- Currently, around **900 weather stations** worldwide, including India's **56 radiosonde stations**, launch balloons twice a day in a coordinated international effort.
- **These provide:**
 - ♦ Critical **upper-air data** for weather forecasts,
 - ♦ Inputs for **numerical weather prediction (NWP)** models,
 - ♦ Insights for **climate monitoring** and **disaster preparedness**.

Source: IE

INDIA'S AIR DEFENCE SHIELD

Context

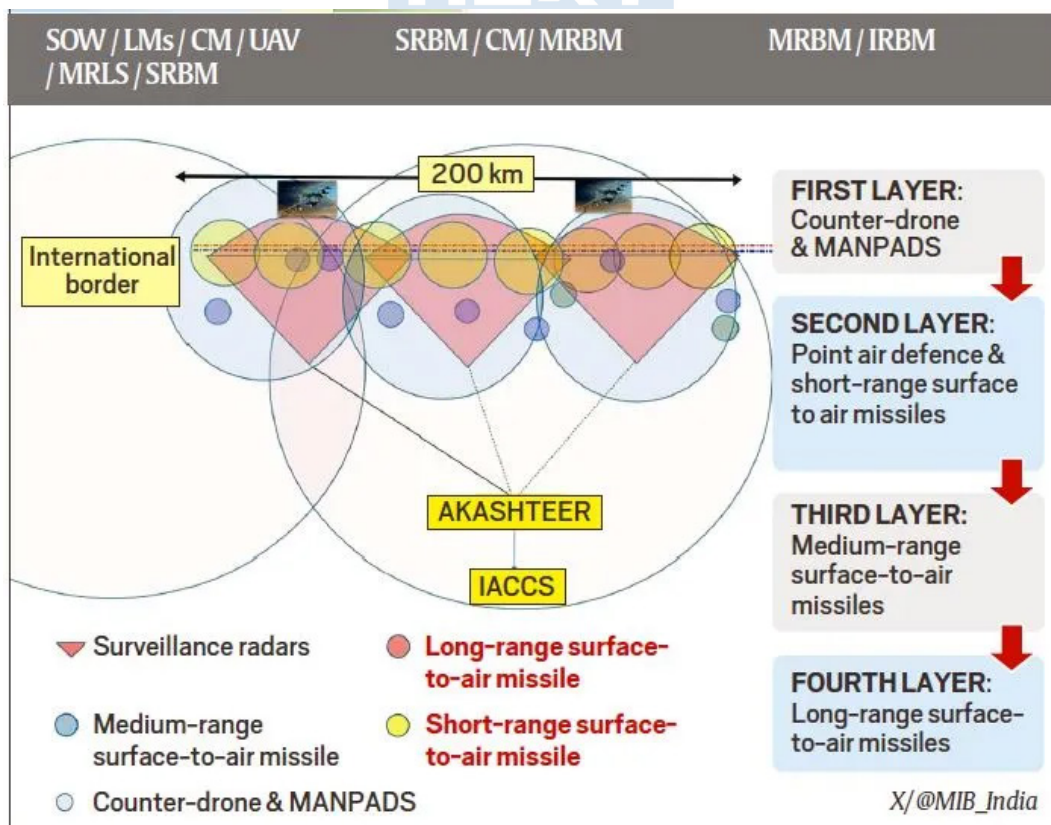
- At the media briefing on Operation Sindoor, military officers displayed a picture of the **Integrated Air Command and Control System (IACCS)** node of the Indian Air Force (IAF).

About IACCS

- IACCS is an **automated command and control system** that **integrates data from all air defence assets**.
- It is developed by the public sector aerospace and defence electronics company **Bharat Electronics Limited (BEL)**.
- The availability of the consolidated dataset, along with real-time updates, provides military commanders at multiple levels with a **comprehensive picture and overall situational awareness during air operations**.

The Army's Akashteer

- The Indian Army has a similar air defence control and reporting system called **Akashteer**, which **connects the units of its air defence**.
- Akashteer too has been developed by **BEL**.
- Akashteer would enable the **monitoring of low-level airspace over battle areas**, and effectively control ground based air defence weapon systems.
- Akashteer operates at a comparatively small scale at present. It is in the process of being integrated with IACCS for effective coordination between the Army and Air Force air defence operations.



Source: IE