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Date: 18-12-2025

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INDIA-OMAN TRADE AND INVESTMENT TIES DEEPEN

Context

- India and Oman have signed the **Comprehensive Economic Partnership Agreement (CEPA).**
  - This is the first bilateral agreement that Oman has signed with any country since the United States of America in 2006.

Major Highlights

- **FTA:** Negotiations for the agreement began officially in **2023**.
  - In FTAs two trading partners either significantly reduce or eliminate customs duties on a maximum number of goods traded between them.
  - They also ease norms to promote trade in services and attract investments.
  - India already has a similar agreement with another GCC member **UAE** which came into effect in **2022**.
- **Duty Free Access:** Oman has offered **zero-duty access on 98.08%** of its tariff lines, covering **99.38% of India's exports to Oman.**
  - **India is offering tariff liberalization on 77.79%** of its total tariff lines which covers 94.81% of India's imports from Oman by value.
- **Exclusion from the CEPA:** To safeguard its interest, sensitive products have been kept in the exclusion category by India.
  - It includes agricultural products, including dairy, tea, coffee, rubber, and tobacco; gold and silver bullion, jewellery; other labour-intensive products such as footwear, sports goods; and scrap of many base metals.
- **Enhanced Mobility:** A major highlight of the CEPA is the enhanced mobility framework for Indian professionals.
  - Oman has offered wide-ranging commitments including a notable increase in the quota for Intra-Corporate Transferees from 20% to 50%.
  - Longer permitted duration of stay for Contractual Service Suppliers—extended from the existing 90 days to two years, with a further two-year extension.
- **FDI:** The CEPA further provides for 100% Foreign Direct Investment by Indian companies in major services sectors in Oman through commercial presence, expanding India's services industry to expand operations in the region.
- **Traditional Medicines:** Oman's commitment on Traditional Medicine extended across all modes of supply representing the first such comprehensive commitment made by any country.
  - It will create a significant opportunity for India's AYUSH and wellness sectors to showcase its strength in the Gulf region.

India-Oman Ties

- Diplomatic relations were **formalised in 1955** and elevated to a **Strategic Partnership in 2008.**
- **Trade Relations:** Oman is India's **28th largest trading partner in FY 2023-2024**, with total bilateral trade rising from US$ 6.70 billion in 2017-18 to US$ 10.61 billion in 2024-25.
  - India ranked as Oman's fourth largest source of non-oil imports and third largest destination for non-oil exports, underlining the diversification of economic ties beyond hydrocarbons.
- **Investment flows** have been similarly robust, with more than **6,000 India–Oman joint ventures operating in Oman.**
  - These ventures account for an estimated **7.5 billion US dollars in capital over time.**
  - Oman's cumulative FDI equity inflows into India between **2000 - 2025 amounted to 605.57 million US dollars.**
- **Defence Cooperation:** India and Oman conduct regular biennial bilateral exercises between all three services.
  - Army exercise: Al Najah
  - Air Force exercise: Eastern Bridge
  - Naval Exercise: Naseem Al Bahr
- **Maritime Cooperation:** Oman is at the gateway of Strait of Hormuz through which India imports one-fifth of its oil imports.
  - India signed a pact with the country in 2018 to access the Duqm port of Oman.
  - The Port of Duqm is situated on the southeastern seaboard of Oman, overlooking the Arabian Sea and the Indian Ocean. It is strategically located, in close proximity to the Chabahar port in Iran.

About GCC

- It is a **political and economic alliance** of **six Middle Eastern countries**—Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman.
- It was established in **1981.**
- It aims to achieve unity among its members based on their common objectives and their similar political and cultural identities, which are rooted in Arab and Islamic cultures.
- The presidency of the council rotates **annually**.

Way Ahead

- India-Oman economic relations are increasingly driven by diversification, sustainability and long-term strategic alignment.
- The CEPA is expected to significantly boost bilateral trade, generate employment, expand exports, strengthen supply chains, and open new avenues for deeper, long-term economic engagement between India and Oman.

Source: DD

SUPREME COURT CLARIFIES ARAVALLI BOUNDARIES, REGULATES MINING

Context

- The Supreme Court, in a recent order, settled on a uniform definition of the Aravalli hills and ranges, and paused the grant of fresh mining leases across Delhi, Haryana, Rajasthan, and Gujarat.

Significance of the Aravalli Range

- The Aravalli Range, stretching over approximately **692 kilometres (430 miles)** in a northeastern direction, traverses the Indian states of **Gujarat, Rajasthan, and Haryana** before culminating in **Delhi**, is the oldest mountain range in India.
  - **Rajasthan** accounts for nearly **two-thirds** of the mountain range.
- It acts as a **critical ecological barrier** preventing the eastward expansion of the **Thar Desert** into Haryana, Rajasthan, and western Uttar Pradesh.
- The Aravallis support water-recharge systems and are the source of rivers such as the **Sabarmati and Luni.**
- The region is **rich in minerals** including sandstone, limestone, marble, granite, lead, zinc, copper, gold, and tungsten.

Actions taken against mining

- In May 2024, the Court prohibited the grant and renewal of mining leases across the Aravalli range and directed the **Central Empowered Committee (CEC)** to conduct a detailed review.
- The CEC in its 2024 report recommended:
  - **Absolute prohibition of mining** in ecologically sensitive zones such as protected habitats, water bodies, tiger corridors, aquifer recharge areas, and the National Capital Region.
  - **Strict regulation** of stone-crushing units.
  - **A moratorium on new leases and renewals** until mapping and impact assessments are completed.
  - The uniform definition of the Aravalli Hills and Ranges.

New Definition of the Aravallis

- Any landform that is at an **elevation of 100 m or more** above the local relief will be considered as part of Aravalli Hills along with its slopes and adjacent land.
- By this definition **90% of the Aravali Hills** will not be counted as Aravalli anymore.
- **Area excluded:** The ministry's list of 34 Aravalli districts across four states left out many districts with an established presence of Aravalli.

Aravalli Green Wall Initiative

- In 2025, the Union Government launched the Aravalli 'Green Wall' project.
- The initiative aims to expand green cover in a **five-kilometre buffer** around the Aravalli range.
- It covers **29 districts** across Gujarat, Rajasthan, Haryana, and Delhi.
- The project seeks to restore **26 million hectares** of degraded land by 2030 and strengthen ecological resilience against desertification.

Way Ahead

- Accepting the 100-m height definition, the SC has asked the ministry to develop a **Management Plan for Sustainable Mining** with the help of Indian Council of Forestry Research and Education (ICFRE) for the Aravalli Hills under the new definition.

Source: TH

INDIA TOPS GLOBAL DOPING VIOLATIONS: WADA REPORT 2024

In News

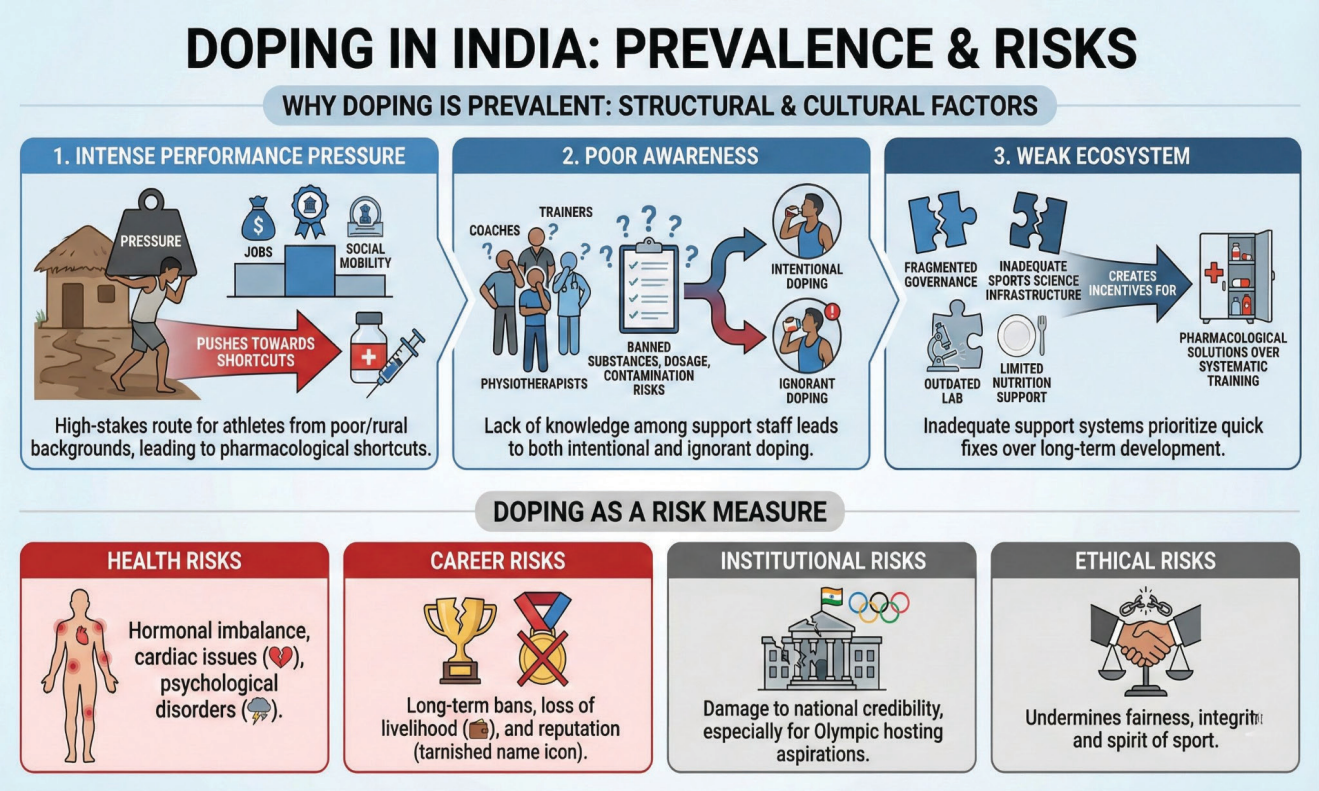
- The World Anti-Doping Agency (WADA) Report 2024 has ranked **India as the worst doping offender globally for the third consecutive year**, recording **260 Adverse Analytical Findings (AAFs) with a positivity rate of 3.6%.**

About

- In contrast, countries such as **China (0.2%), France (0.8%), Russia (0.7%) and the US (1.1%)** recorded far lower positivity rates despite wider testing programs.
- This comes at a crucial time when India is preparing to host the 2030 Commonwealth Games and bidding for the 2036 Olympic and Paralympic Games. The **International Olympic Committee (IOC)** has expressed concerns over India's doping record, flagging it as a reputational and governance risk.

What is Doping?

- The World Anti-Doping Code defines a range of anti-doping rule violations, including presence or use of a prohibited substance, refusal to submit to sample collection, tampering with the testing process, trafficking, administration, and complicity by support personnel.
- These substances include anabolic steroids, stimulants, blood-doping agents like EPO, and various hormone modulators that can increase strength, endurance, or recovery capacity.



India's Efforts to Tackle Doping

- **National Anti-Doping Act, 2022:** This landmark legislation gave the National Anti-Doping Agency (NADA) and the National Dope Testing Laboratory (NDTL) statutory status.
  - National Anti-Doping (Amendment) Bill, 2025 recently introduced to strengthen institutional autonomy.
  - India is a signatory to the **UNESCO International Convention Against Doping in Sport.**
- **Athlete Passport Management Unit (APMU):** A dedicated unit at NDTL was inaugurated in 2025 to monitor the Biological Passport of athletes.
- **NIDAMS Portal:** The NADA India Data Administration and Management System was launched in 2025. It digitalizes the entire process—from planning tests and generating mission orders for Doping Control Officers (DCOs).
- **"Know Your Medicine" (KYM) App:** A mobile tool that allows athletes to scan or search medicines to check if they contain substances prohibited by WADA.

About the World Anti-Doping Agency (WADA)

- The World Anti-Doping Agency (WADA) coordinates the **global fight against doping in sports** through unified rules and oversight.
- **Founded in 1999** as a Swiss private law foundation following the **Lausanne Declaration**, it is headquartered in Montreal, Canada, with regional offices in Lausanne (Europe), Cape Town (Africa), and Montevideo (Latin America).
- The agency publishes the **World Anti-Doping Code** and the annual prohibited list.

Source:TOI

HOW INDIA'S SCIENCE AND TECHNOLOGY ECOSYSTEM STRENGTHENED IN 2025

Context

- India's science and technology (S&T) landscape witnessed significant momentum in 2025, marked by improved global rankings, large-scale funding for research and innovation, and advances in frontier technologies.

Rising global standing in science and innovation

- India secured the **38th position** in the **Global Innovation Index 2025,** reflecting steady progress among the world's most innovative economies.
- India ranked **6th globally** in **intellectual property filings**, underlining growing innovation output, and also improved in the **Network Readiness Index,** rising from 79th in 2019 to **49th in 2024**.
- India also placed **third** globally in **research publications**, reinforcing its expanding academic and scientific footprint.

Major Initiatives taken by the Government

- **Research, Development and Innovation (RDI) Scheme:** It was approved with a total outlay of **₹1 lakh crore** over **six years.**
  - Designed to **attract private-sector participation**, the scheme focuses on **research in sunrise sectors** such as AI, quantum technologies, clean energy, biotechnology, space and the digital economy.
- **Anusandhan National Research Foundation (ANRF)** has been established with the ANRF **2023 Act. It aims** to seed, grow and promote R&D and foster a culture of research and innovation throughout India's universities, colleges, research institutions, and R&D laboratories.
  - **ANRF will act as an apex body** to provide high-level strategic direction of scientific research in the country as per recommendations of the **National Education Policy (NEP).**
- **Atal Innovation Mission (AIM):** Encourages startups, entrepreneurship, and innovation among students and professionals.
- **Launch of National Missions** such as;
  - **National Quantum Mission** to make India one of the leading nations in the development of Quantum Technologies & Applications (budget outlay: **₹6,003.65 crore**).
  - **India Semiconductor Mission** (₹76,000 crore) for building up the semiconductor ecosystem in India.
  - **India AI Mission** to strengthen AI capabilities (budget outlay: ₹10,372 crore).
  - **National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS)** strengthened capabilities in robotics, AI, healthcare, cybersecurity, and mining technologies.
- **Innovation, startups and inclusive science:** Through initiatives like **NIDHI (National Initiative for Developing and Harnessing Innovations),** DST expanded startup incubation to **Tier II and III cities**, set up **new incubators and entrepreneur-in-residence centres**, and supported advanced manufacturing and medical device innovation.
- **Research parks** at IIT Delhi, IIT Guwahati, IIT Kharagpur, IIT Kanpur, IIT Chennai, have been established which provide an interface between entrepreneurship and Industry to establish their R&D units in collaboration with students & faculty members of the IITs.

What are the Challenges?

- **Funding Constraints:** Despite robust government support, private sector investment in R&D in India remains limited compared to global benchmarks, constraining large-scale innovation.
- **Talent Retention Challenges:** The **brain drain persists**, as skilled researchers are often drawn abroad by better infrastructure, funding, and career advancement opportunities.
- **Limited University-Industry Collaboration:** Weak links between academia and industry hinder commercialization of research.
- **Skilled Workforce Deficit:** Shortage of trained R&D professionals in deep-tech and interdisciplinary fields.

Way Ahead

- India's concerted efforts in strengthening its research and innovation ecosystem reflect a strategic vision to become a global leader in science and technology.

- India must accelerate its capabilities in frontier technologies to maintain and enhance its global standing.
- Continued focus on **talent retention, technology commercialization, and global partnerships** will ensure that India not only addresses national challenges but also contributes significantly to global scientific progress, driving sustainable growth and technological self-reliance.

Source: DD News

NEWS 9IN SHORT

PAMIR MOUNTAINS/ PAMIR-KARAKORAM ANOMALY

Context

- Ice cores from the Pamir Mountains are being studied to understand why its glaciers have resisted melting despite global warming.

What is the Pamir–Karakoram Anomaly?

- It refers to the **unusual behaviour of glaciers** in parts of the **Pamir and Karakoram ranges.**

- Unlike most glaciers worldwide, these glaciers have:
  - Shown resistance to melting, and
  - Experienced slight mass gain in recent decades.
- This makes the region scientifically significant for understanding glacier–climate interactions.

About Pamir Mountains

- **Geology:** Formed by the collision of the **Indian and Eurasian tectonic plates,** making it a seismically active zone.
- **Location:** Spans parts of Tajikistan, Afghanistan, China, and Kyrgyzstan.
  - The Pamir Mountains, also known as the **"Roof of the World,"** form a massive convergence zone (**Pamir Knot)** with the **Himalayas, Karakoram, Hindu Kush, Kunlun, and Tian Shan ranges.**
- **Ancient Routes:** Historically part of the Silk Road, with Marco Polo referencing the area.
- **Major Peaks & Features:** Ismoil Somoni Peak (Tajikistan), Kongur Tagh (China), Muztagh Ata (China) etc.
  - **Tajik National Park:** A large protected area encompassing much of the Pamirs, a **UNESCO** World Heritage site.
- **Drainage System:** The Pamirs are heavily glaciated, with the **Fedchenko Glacier** being the largest glacier in Central Asia.
  - Meltwater from glaciers feeds major rivers such as, **Panj River and Vakhsh River.** These rivers are part of the **Amu Darya river system,** crucial for Central Asia.

Source: TH

DARK MATTER

Context

- A study published recently in the Journal of Cosmology and Astroparticle Physics, claims to have finally detected the elusive **'dark matter'.**

About

- The Universe is composed of **three major components**: normal (baryonic) matter, dark matter, and dark energy. Observations show that **dark energy forms about 68%**, **dark matter about 27%**, and **ordinary matter less than 5%** of the total cosmic content.
- **Dark matter** does not interact with electromagnetic radiation, meaning it neither emits, absorbs, nor reflects light, making it invisible to direct observation. Its existence is inferred from its **gravitational effects** on stars, galaxies, and galaxy clusters.
- Dark matter provides the **gravitational framework** for the universe by holding galaxies together and enabling large-scale structure formation. Evidence includes **galaxy rotation curves, gravitational lensing, and cluster dynamics**.

- **Dark energy** is responsible for the **accelerated expansion of the universe**, discovered through observations of distant Type-Ia supernovae. It behaves as a **repulsive effect at cosmological scales**, often linked to the cosmological constant.
- While dark matter dominates **galactic and cluster-level dynamics**, **dark energy dominates the universe at the largest scales**, shaping its long-term expansion and future evolution.
- Both dark matter and dark energy are known **indirectly**, highlighting major unresolved questions in modern cosmology and fundamental physics.

Source: TH

CHINA TESTS WORLD-FIRST WIRELESS RAIL CONVOY

Context

- China has successfully tested a **wireless rail convoy system** by operating **seven heavy freight trains** (each carrying around 5,000 tonnes) as a single coordinated unit without any physical coupling.
  - The trial was conducted on the **Baoshen Railway in the Inner Mongolia** Autonomous Region.

Significance

- In conventional rail operations, heavier and faster trains must maintain longer distances to ensure safe braking.
- **This innovation enables;**
  - Higher freight throughput on existing tracks.
  - Reduced need for building new railway infrastructure.
  - Better utilisation of existing rail corridors.

How Does the Wireless Rail Convoy System Work?

- The technology uses continuous **train-to-train and train-to-ground** wireless communication. Acceleration, cruising speed, and braking of all trains are synchronised in real time.
- The system employs a **two-dimensional control mechanism** that integrates relative speed between trains maintaining absolute distance between them.
- The technology is conceptually similar to **ADAS (Advanced Driver Assistance Systems)** used in automobiles.
  - Like adaptive cruise control in cars, the trains can dynamically adjust speed and braking based on the movement of the lead train.

Source: IE

EXERCISE DESERT CYCLONE 2025

Context

- India-UAE Joint Military Exercise Desert Cyclone is going to begin in UAE.

About the exercise

- The **first edition** of Exercise Desert Cyclone was held in **2024** in Rajasthan, India.
- The aim of the exercise is to enhance interoperability and foster defence cooperation between the Indian Army and the UAE Land Forces through joint training in an **urban environment**, with a focus on sub-conventional operations under a **United Nations mandate**.

Source: PIB

NAVY INDUCTS SECOND SEAHAWKS SQUADRON

Context

- The Indian Navy commissioned its **second MH 60R helicopter squadron**, **INAS** 335, at INS Hansa in Goa.

About

- Twenty-four of these submarine-hunting helicopters have been acquired by India **from the US.**
  - These are **US-origin Seahawks,** maritime versions of the Black Hawk.
- The squadron has been nicknamed **'Ospreys'** after the fish-hunting bird of prey.
- **The helicopter is designed for a wide range of operations:** anti-submarine warfare (ASW), anti-surface warfare (ASuW), search and rescue (SAR) missions, and medical evacuation (MEDEVAC).
- **These helicopters are replacing** the ageing **British-origin Sea King helicopters,** which have been in service for long.

Source: IE

PARAM VIR CHAKRA (PVC)

Context

- Portraits of all 21 Param Vir Chakra (PVC) awardees have been installed at Rashtrapati Bhavan, replacing the portraits of 96 British Aide-de-Camps (ADCs).
  - This move is part of the government's broader effort to dismantle colonial legacies.

About the Param Vir Chakra

- It was instituted on **26 January 1950 (Republic Day)** by **Dr. Rajendra Prasad**, the first President

of India, with retrospective effect from 15 August 1947.

- The name *Param Vir Chakra* translates to **"Wheel of the Ultimate Brave."**
- The medal was designed by **Savitri Khanolkar**, who drew inspiration from **Sage Dadhichi**, the Vedic rishi who sacrificed his body so that the gods could forge the **Vajra (thunderbolt)** from his spine.
- The medal is cast in bronze. In the centre, on a raised circle, is the **state emblem**, surrounded by **four replicas of Indra's Vajra**, flanked by the sword of **Shivaji**. It is suspended from a swivelling bar and worn with a **32 mm purple ribbon**.

Do You Know?

- An **Aide-de-Camp (ADC)** is a senior military or police officer appointed as a personal assistant to high constitutional or military authorities such as the **President, Governors, or Service Chiefs**, handling protocol, logistics, and official coordination.

Source: PIB

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