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# Baba's Monthly **CURRENT AFFAIRS MAGAZINE**

CENTRAL SILK BOARD

JUSTICE MISSION

MT ELBRUS

IRRAWADY DOLPHIN

PSLV C62 MISSION



Contents

**PRELIMS** ..... 5

**POLITY & GOVERNANCE** ..... 5

**NATIONAL VOTERS' DAY**..... 5

**BUREAU OF ENERGY EFFICIENCY**..... 5

**SPORTS AUTHORITY OF INDIA (SAI)** ..... 6

**CENTRAL SILK BOARD**..... 7

**NATIONAL LEGAL SERVICES AUTHORITY** ..... 8

**NATIONAL INVESTIGATION AGENCY (NIA)** ..... 9

**DISTRICT MINERAL FOUNDATIONS (DMFS)**..... 9

**CENTRAL GROUND WATER BOARD**..... 10

**INTERNATIONAL RELATIONS** ..... 12

**OPEC PLUS** ..... 12

**INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA)** ..... 13

**UNDESA** ..... 13

**INDIAN OCEAN NAVAL SYMPOSIUM (IONS)**..... 14

**JUSTICE MISSION**..... 15

**UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL**..... 15

**WEIMAR TRIANGLE** ..... 16

**EURATOM**..... 17

**INDO PACIFIC OCEANS INITIATIVE** ..... 18

**ECONOMY** ..... 19

**CATASTROPHE BONDS** ..... 19

**LIVE EVENTS DEVELOPMENT CELL (LEDC)**..... 20

**JAMMA BANE LANDS** ..... 20

**DESIGN LINKED INCENTIVE SCHEME** ..... 21

**SHINE SCHEME** ..... 22

**DIRECTORATE GENERAL OF MINES SAFETY (DGMS)** ..... 23

**PANKHUDI PORTAL** ..... 23

**EXPORT PREPAREDNESS INDEX (EPI)** ..... 24

**GEOGRAPHY** ..... 26

**BOMB CYCLONE** ..... 26

**POPOCATÉPETL VOLCANO**..... 26

**SAGAR ISLAND** ..... 27

DAL LAKE .....	28
ZANSKAR RIVER .....	28
MT ELBRUS .....	29
<b>ENVIRONMENT AND ECOLOGY .....</b>	<b>30</b>
STINGLESS BEES .....	30
DOUBLE HUMPED BACTRIAN CAMEL .....	30
M-STRIPES .....	31
IRRAWADDY DOLPHIN .....	32
KAIMUR WILDLIFE SANCTUARY .....	32
ARALAM BUTTERFLY SANCTUARY.....	33
HOYA NAGAENSIS .....	34
BANNERGHATTA NATIONAL PARK.....	34
SIMILIPAL NATIONAL PARK .....	35
<b>SCIENCE &amp; TECHNOLOGY .....</b>	<b>36</b>
PATHGENNIE.....	36
BIOMATERIALS.....	37
DUST EXPERIMENT (DEX) .....	38
VEHICLE-TO-VEHICLE (V2V) COMMUNICATION TECHNOLOGY .....	38
MOLECULAR CLOUD .....	39
PSLV-C62 MISSION .....	40
DISOBIND TOOL .....	40
ASC ARJUN .....	41
FOREVER CHEMICALS .....	42
BACILLUS SUBTILIS .....	43
DOOMSDAY CLOCK .....	44
CANDIDA AURIS .....	45
SOFT MATTER .....	45
VOYAGER 1 .....	46
SOLAR CYCLES .....	47
<b>HISTORY AND ART &amp; CULTURE .....</b>	<b>48</b>
RANI VELU NACHIYAR .....	48
SOMNATH TEMPLE.....	48
BHADRAKALI TEMPLE INSCRIPTION .....	49
BAGURUMBA DANCE .....	50
PARBATI GIRI .....	50
SAMAKKA-SARALAMMA JATARA.....	51

SHRI MAHAKALESHWAR TEMPLE .....	52
KALADI.....	52
<b>DEFENCE &amp; SECURITY.....</b>	<b>54</b>
PRALAY MISSILE .....	54
SURYASTRA ROCKET LAUNCHER SYSTEM.....	54
BOEING E-4B NIGHTWATCH.....	55
MAN PORTABLE ANTI-TANK GUIDED MISSILE (MPATGM) .....	55
ICGS SANKALP.....	56
PECHORA MISSILE SYSTEM .....	57
INS SUDARSHINI.....	57
<b>GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION.....</b>	<b>59</b>
SOAR PROGRAMME .....	59
NPS VATSALYA SCHEME .....	59
WOMANIYA INITIATIVE .....	60
CHIPS TO START-UP PROGRAMME .....	61
ATAL PENSION YOJANA .....	62
PANCHAM.....	62
MODEL YOUTH GRAM SABHA .....	63
PAIMANA PORTAL.....	64
<b>MISCELLANEOUS .....</b>	<b>65</b>
HENLEY PASSPORT INDEX.....	65
RESPONSIBLE NATIONS INDEX.....	65
INDIRA GANDHI PEACE PRIZE .....	66
JEEVAN RAKSHA PADAK AWARDS .....	67
MUNA ISLAND .....	68
FINKE RIVER .....	68
HATTI TRIBE .....	69
<b>MAINS .....</b>	<b>70</b>
<b>PAPER 1 .....</b>	<b>71</b>
URBAN IS THE NEW POLITICAL: URBANISATION, INFRASTRUCTURE AND THE RECASTING OF INDIAN DEMOCRACY .....	70
INDIA THE BEAUTIFUL MUST BECOME INDIA THE FUNCTIONAL: TOURISM, SOCIETY AND THE EXPERIENCE ECONOMY .....	72
<b>PAPER 2 .....</b>	<b>75</b>
THE WATER DIVIDE: ACCESS WITHOUT QUALITY.....	75
GENERAL CATEGORY AND MERIT: CONSTITUTIONAL MEANING OF RESERVATION .....	76

INDIA–LATIN AMERICA RELATIONS: A NEW WINDOW OF OPPORTUNITY BEYOND MADURO .....	78
THE RIGHT TO DISCONNECT IN AN ‘ALWAYS-ON’ ECONOMY: A GLOBAL NORMS PERSPECTIVE.....	79
SAVING THE ARAVALLIS: WHY INDIA MUST ‘THINK LIKE A MOUNTAIN’ .....	80
STRENGTHENING INDIA’S FIGHT AGAINST ANTIMICROBIAL RESISTANCE (AMR) .....	81
USING GSDP SHARE AS A CRITERION FOR CENTRE–STATE TRANSFERS: A FEDERAL PERSPECTIVE .....	82
AMERICA’S RETREAT FROM THE LIBERAL INTERNATIONAL ORDER IT ONCE BUILT .....	83
HIGH-QUALITY HIGHER EDUCATION AND THE IMPERATIVE OF TRUST BETWEEN THE STATE AND INSTITUTIONS .....	84
DELIMITATION AFTER 2027: REDRAWING POLITICAL POWER IN INDIA.....	86
INDIA–ARAB LEAGUE PARTNERSHIP: FROM ENERGY SECURITY TO STRATEGIC CONVERGENCE .....	88
<b>PAPER 3 .....</b>	<b>90</b>
SECURITY CAMPS AS A GAME CHANGER IN INDIA'S FIGHT AGAINST LEFT-WING EXTREMISM.....	90
RAISING FARMERS’ INCOMES: LESSONS FROM BEED’S KRISHIKUL MODEL .....	91
ARTIFICIAL INTELLIGENCE AND ITS ENVIRONMENTAL IMPACT: AN EMERGING POLICY CHALLENGE FOR INDIA.....	92
PATENT RIGHTS AND PUBLIC HEALTH: BHARAT’S STRATEGIC OPTIONS .....	93
RATIONALISING FOOD AND FERTILISER SUBSIDIES: COMPLETING INDIA’S REFORM DRIVE .....	94
EV BOOM AND THE EMERGING COPPER CONSTRAINT .....	95
HIMALAYAN DEVELOPMENT AT THE COST OF ECOLOGICAL COLLAPSE .....	97
CYBERCRIME AND THE CRISIS OF GLOBAL GOVERNANCE .....	99
WHEN GLOBAL RULES FALTER, DOMESTIC REFORMS BECOME INDIA’S FIRST LINE OF DEFENCE.....	101
GREEN STEEL: THE MISSING LINK IN INDIA’S CLIMATE AND INDUSTRIAL TRANSITION .....	104
<b>PAPER 4.....</b>	<b>106</b>
AI IMPACT SUMMIT AND THE ETHICAL PERSPECTIVE .....	106
CASE STUDY .....	108

## PRELIMS



## POLITY &amp; GOVERNANCE



## NATIONAL VOTERS' DAY

## Context:

- Recently, the Prime Minister of India extended greetings to citizens on the occasion of National Voters' Day.

## About National Voters' Day (NVD):

- Commemoration:** It is observed on **January 25th** across India every year since **2011** to commemorate the **foundation day of the Election Commission of India**.
- Objective:** It is celebrated to **honour voters, strengthen democratic values**, encourage youth participation, and promote universal adult suffrage. It celebrates democracy and empowers every citizen to take part in the electoral process.
- Theme:** The theme for National Voters' Day 2026 is "**My India, My Vote**" with a tagline of "Citizen at the Heart of Indian Democracy".
- Celebrations:** It is celebrated at the **level of national, state, district, constituency, and polling booth** and NVD stands as one of the country's most widespread and significant celebrations.
- Focus on young voters:** It is dedicated to the voters of the nation, National Voters' Day also promotes the **enrolment of new voters, particularly young individuals** who have recently become eligible.
- Historical milestone:** In **2025**, the **ECI celebrated its 75th year of service** to the nation (it was established on Jan 25, 1950).
- Significance of NVD:**
  - Electoral reforms:** NVD highlights initiatives like **SVEEP (Systematic Voters' Education and Electoral Participation)** and digital tools like the Voter Helpline App and e-EPIC.
  - Democratic values:** It reinforces the concept that **voting is not just a right but a civic responsibility** essential for the accountability of representatives.
  - Inclusivity:** Efforts are made to include **Persons with Disabilities (PwDs), senior citizens, and marginalised groups** through the principle of "No Voter to be Left Behind."



## BUREAU OF ENERGY EFFICIENCY

## Context:

- According to a gazette notification issued by the Bureau of Energy Efficiency, energy-efficiency star labelling became mandatory for a range of appliances, from January 1.

## About Bureau of Energy Efficiency:

- Establishment:** It was established in 2002 under the provisions of the Energy Conservation Act, 2001.

- **Objective:** The primary objective of Bureau of Energy Efficiency (BEE) is to reduce energy intensity in the Indian economy.
- **Nodal ministry:** It comes under Ministry of Power.
- **International cooperation:** India, through BEE, is a member of the International Energy Efficiency Hub, which succeeded the IPEEC in 2020 to foster global collaboration on energy efficiency.
- **Annual recognition:** National Energy Conservation Day is observed every December 14th, where the National Energy Conservation Awards (NECA) are presented to industries and institutions for exemplary energy savings.
- **Key functions:**
  - Standards and Labelling (S&L): Launched in 2006, this program provides consumers with an "informed choice" via Star Ratings (1 to 5 stars) for appliances. As of early 2026, the program has expanded to include a wider range of mandatory appliances to further reduce carbon emissions.
  - Energy Conservation Building Code (ECBC): Sets minimum energy standards for new commercial buildings. A specialized code for residential buildings, Eco Niwas Samhita, was also introduced.
  - Certification: BEE is the nodal agency for certifying Energy Managers and Energy Auditors.
  - Designated Consumers: Prescribes energy consumption norms for energy-intensive industries.
- **Major programs:**
  - Perform, Achieve, and Trade (PAT) Scheme: A market-based mechanism where energy-intensive industries receive energy-saving targets. Those exceeding targets earn Energy Saving Certificates (ESCerts), which can be traded.
  - State Energy Efficiency Index (SEEI): Released annually to track state-level progress. The SEEI 2024 (released in late 2025) categorized states like Maharashtra and Andhra Pradesh as "Front Runners".
  - ADEETIE Scheme: Launched for the FY 2025-26 to 2027-28 period, this flagship initiative provides financial and technical assistance to MSMEs to adopt advanced energy-efficient technologies.
  - National Mission for Enhanced Energy Efficiency (NMEEE): One of the eight missions under the National Action Plan on Climate Change (NAPCC).



## SPORTS AUTHORITY OF INDIA (SAI)

### Context:

- The Sports Authority of India (SAI) has launched a four-day Sports Sciences Workshop for combat sports coaches at its Sports Science Division in New Delhi.

### About Sports Authority of India (SAI):

- **Nature:** It is a **registered society** fully funded by the Government of India.
- **Nodal ministry:** It is the apex national sports body of India, established by the **Ministry of Youth Affairs and Sports**, Government of India.
- **Establishment:** It was set up in **1984** to carry forward the legacy of the IXth Asian Games held in New Delhi in 1982 under the Department of Sports.

- **Objective:** SAI has been entrusted with the twin objectives of **promoting sports and achieving sporting excellence** at the national and international level.
- **Focus areas:** SAI's primary efforts include **widespread talent scouting and training of selected individuals** by providing vital inputs like coaching, infrastructure, equipment support, sports kits, competitive exposure, etc.
- **Significance:** SAI has played a significant role in **shaping India's sports development** by providing training to elite athletes and at the same time operating a number of schemes for the identification and development of young talent.
- **Implementation of schemes:** SAI implements the following Sports Promotional Schemes across the country **to identify talented sportspersons in various age groups** and nurture them to excel at the national and international levels:
  - National Centres of Excellence (NCOE)
  - SAI Training Centre (STC)
  - Extension Centre of STC
  - National Sports Talent Contest (NSTC)
- **Other responsibilities:** SAI is also entrusted with the responsibility of **maintaining and utilizing**, on behalf of the Ministry of Youth Affairs & Sports, the following **stadiums in Delhi**, which were constructed/renovated for the IXth Asian Games.
  - Jawaharlal Nehru Sports Stadium
  - Indira Gandhi Sports Complex
  - Major Dhyan Chand National Stadium
  - Dr. Syama Prasad Mookherjee Swimming Pool Complex
  - Dr. Karni Singh Shooting Ranges.



## CENTRAL SILK BOARD

### Context :

- Recently, the government has increased the Central Silk Board's financial approval limit to ₹1 crore from ₹50 lakh by amending Rule 22 of the Central Silk Board Rules, 1955.

### About Central Silk Board:

- **Nature:** It is a **statutory body established in 1948** by an Act of Parliament.
- **Nodal ministry:** It is working under the administrative control of **Ministry of Textiles**, Government of India.
- **Headquarters:** Its headquarters is located in **Bengaluru**.
- **Major functions:**
  - To **advise the central Government** on all matters relating to the development of silk industry including import and export of raw silk
  - To prepare and **furnish such other reports** relating to the silk industry as may be required by the Central Government from time to time.
  - To create greater opportunities for **gainful employment** and improved levels of income in sericulture through spread of scientific sericulture practices.

**About Silk Production in India:**

- **Global Standing:** India is the **2nd largest producer** of silk globally (after China) and the **largest consumer**.
- **Variety:** India is the **only country producing all five commercial varieties:** Mulberry, Tropical Tasar, Oak Tasar, Eri, and Muga.
- **Top Producers:** **Karnataka leads** the chart, followed by Andhra Pradesh and Tamil Nadu.
- **Major Schemes:**
  - **Silk Samagra:** An integrated scheme for the development of the silk industry focusing on R&D, seed organization, and quality certification.
  - **SAMARTH:** A capacity-building and training initiative in the textile sector.

**NATIONAL LEGAL SERVICES AUTHORITY****Context:**

- Recently, Minister of State of the Ministry of Law and Justice informed the Rajya Sabha about district legal services clinics established by the National Legal Services Authority.

**About National Legal Services Authority (NALSA):**

- **Establishment:** It was established under the **Legal Services Authorities (LSA) Act, 1987**.
- **Objective:** It aims to provide **free and competent legal services to the poor and marginalised sections** of the society including Scheduled Caste (SC) and Scheduled Tribe (ST).
- **Constitutional mandate:** It fulfils the objectives of **Article 39A** (Directive Principle), which mandates the State to provide free legal aid. It is also supported by **Articles 14** (Equality before law) and **Article 22(1)** (Rights of arrested persons).
- **Lok Adalats:** NALSA organizes Lok Adalats for amicable settlement of disputes. Awards made by Lok Adalats are deemed to be a **decree of a civil court and are final and binding**.
- **Organizational Structure:**
  - **Patron-in-chief:** The Chief Justice of India.
  - **Executive chairman:** The second senior-most judge of the Supreme Court.
  - **State level:** State Legal Services Authority (SLSA) headed by the Chief Justice of the High Court.
  - **District level:** District Legal Services Authority (DLSA) chaired by the District Judge.
- **The free legal services include:**
  - **Payment of court fees, process fees,** and all other charges payable or incurred in connection with any legal proceedings
  - Providing the **service of lawyers** in legal proceedings;
  - Obtaining and **supply of certified copies of orders** and other documents in legal proceedings.
  - **Preparation of appeal, paper book,** including printing and translation of documents in legal proceedings.



- **Persons eligible for free legal services includes:**
  - **Women and children**
  - Members of **SC/ST**
  - **Industrial** workmen
  - Victims of **mass disasters, violence**, flood, drought, earthquake, and industrial disaster
  - **Disabled** persons
  - Persons **in custody**
  - Persons whose **annual income does not exceed Rs. 1 lakh** (in the Supreme Court Legal Services Committee the limit is Rs. 5,00,000).
  - Victims of **trafficking** in human beings.

## NATIONAL INVESTIGATION AGENCY (NIA)

### Context:

- The National Investigation Agency (NIA) said that a series of milestone achievements marked the year 2025, key among them being an over 92% conviction rate.

### About National Investigation Agency (NIA):

- **Nature:** The National Investigation Agency (NIA) is India's premier federal counter-terrorism agency.
- **Nodal ministry:** It functions under the Ministry of Home Affairs.
- **Formation:** Established in 2009 under the National Investigation Agency Act, 2008, it was created in the aftermath of the 26/11 Mumbai terror attacks to handle terror-related crimes with a unified national approach.
- **Legal status:** It is a statutory body empowered to investigate and prosecute "Scheduled Offences" affecting the sovereignty and integrity of India.
- **Suo-motu powers:** Unlike the CBI, the NIA can take up investigations across any state without state government permission if directed by the Central Government.
- **Special courts:** Trials for NIA cases are conducted in specially designated NIA Special Courts to ensure speedy justice.
- **Jurisdiction:** The NIA investigates crimes listed in the Schedule of the NIA Act, including:
  - Terrorism and terror financing (UAPA).
  - Offences against atomic and nuclear facilities.
  - Hijacking of aircraft and ships
- **Amendment:** NIA (Amendment) Act, 2019 significantly strengthened the agency by:
  - **Widening Scope:** Adding new categories of crime (human trafficking, cyber-terrorism, etc.).
  - **Extending Reach:** Empowering the NIA to probe terror attacks targeting Indians abroad.
  - **Special Courts:** Allowing the Central and State Governments to designate Sessions Courts as Special Courts for NIA trials.



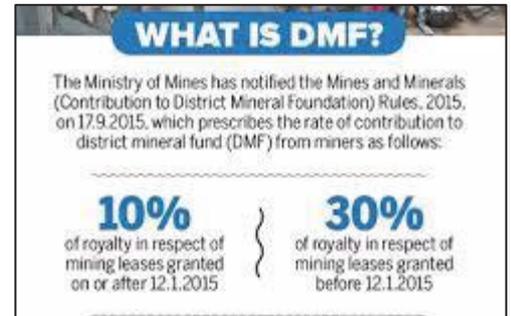
## DISTRICT MINERAL FOUNDATIONS (DMFs)

### Context:

- The Allahabad High Court held that the formation of District Mineral Foundations must be construed liberally for those who are affected negatively by mining operations.

### About District Mineral Foundations (DMFs):

- Nature:** DMFs are **statutory bodies** in India established by the state governments by notification.
- Legal status:** They derive their legal status from Section 9B of the **Mines and Minerals (Development and Regulation) Act, 1957**, as amended on 26 March 2015 as the **Mines and Minerals (Development and Regulation) Amendment Act, 2015**.
- Establishment:** In any district affected by mining-related operations, the **State Government shall, by notification**, establish a trust, as a non-profit body, to be called the DMF.
- Objective:** It aims to work in the interest and **benefit of persons and areas affected by mining-related operations** in a manner as may be prescribed by the respective State Government.
- Jurisdiction:** The operation of DMFs falls under the jurisdiction of the **relevant State Government**. Further, composition and functions of the DMF are also prescribed by the State Governments.
- Funding:** It is funded through the contributions from the **holders of major or minor mineral concessions in the district**, as may be prescribed by the Central or State Government. The Central Government has notified the rates of contribution payable by miners to the DMFs.
- Changes after 2015:** In the case of all mining leases executed **before** 12th January, 2015, miners will have to contribute an **amount equal to 30% of the royalty** payable by them to the DMFs. If mining leases are granted **after** 12.01.2015, the rate of contribution would be **10% of the royalty payable**.
- Uses:** The fund available with the Trust shall be used for:
  - The **overall development of the area** affected by mining-related operations in the District in accordance with the Annual Action Plan prepared by the Trustees of the Foundation for the purpose.
  - Creation of local infrastructure for **socio-economic purposes**.
  - Providing, maintaining, or upgrading **community assets and services** for the local population in the area affected by mining-related operations.
  - Organising or conducting training programmes to **skill development and capacity building** for creating employment and self-employment capabilities.



## CENTRAL GROUND WATER BOARD

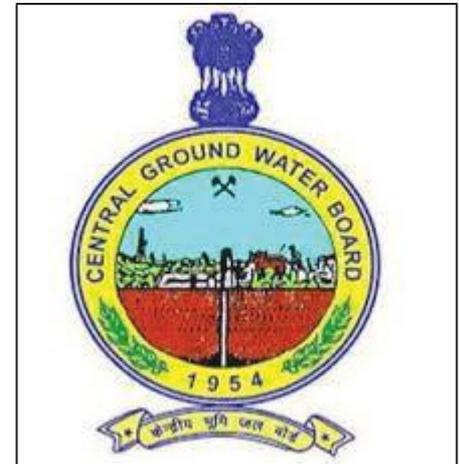
### Context:

- The Central Ground Water Board (CGWB) has stated that Andhra Pradesh is one of the States facing widespread contamination of groundwater as per the BIS standards.

### About Central Ground Water Board:

- Nature:** It is the **National Apex Agency** entrusted with the responsibilities of providing scientific inputs for management, exploration, monitoring, assessment, augmentation, and **regulation of groundwater resources** of the country.

- **Establishment:** It was established in **1970 by renaming the Exploratory Tube wells Organization** under the Ministry of Agriculture, Government of India. It was merged with the Ground Water Wing of the Geological Survey of India during 1972.
- **Nodal ministry:** It is a multidisciplinary scientific organization of the Department of Water Resources, River Development and Ganga Rejuvenation, **Ministry of Jal Shakti**, Government of India.
- **Mandate:** It aims to develop and disseminate technologies and **monitor and implement national policies for the scientific and sustainable development and management of India's groundwater resources.**
- **Organization Setup:** It is headed by the **Chairman and has five members.** It operates via 18 regional offices and 17 divisional offices across India.
- **Composition:** It is a multidisciplinary scientific organization consisting of **Hydrogeologists, Geophysicists, Chemists, Hydrologists,** Hydrometeorologists, and Engineers.
- **Wings:** It has **four main wings**, namely
  - Sustainable Management & Liaison (SML)
  - Survey, Assessment & Monitoring (SAM)
  - Exploratory Drilling & Materials Management (ED&MM)
  - Water Quality & Training and Technology Transfer (WQ&TT).
- **Headquarters:** Its headquarters is located in Bhujal Bhawan, **Faridabad**, Haryana.
- **Regulation:** The regulation and control of groundwater development is managed by Central Ground Water Authority (CGWA) **in coordination with State Government Organizations.**
- **Focus areas:**
  - Groundwater explorations to **delineate groundwater-worthy areas** and potential aquifers.
  - **Geophysical surveys** to delineate groundwater bearing zones, etc.
  - Periodic assessment of the country's groundwater resources.
  - Monitoring of groundwater levels and quality through groundwater observation wells.
  - Dissemination of **Ground Water Data** and knowledge.





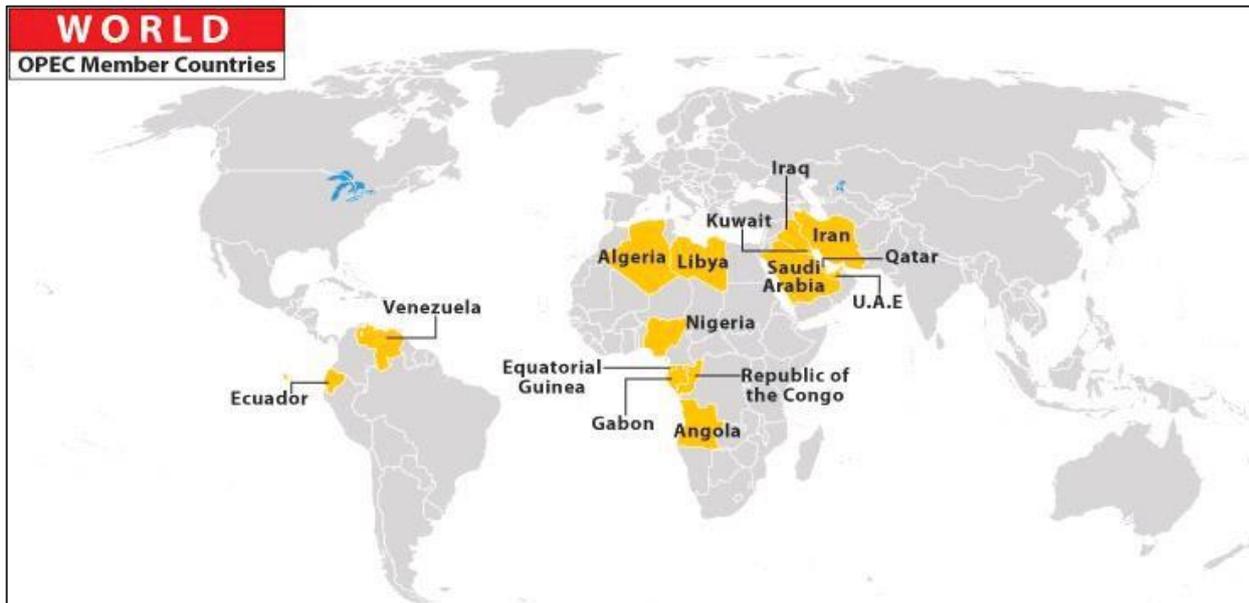
INTERNATIONAL RELATIONS



OPEC PLUS

Context:

- OPEC Plus has agreed in principle to maintain steady oil output despite rising political tensions among key members and widening geopolitical uncertainty.



About OPEC (Organization of the Petroleum Exporting Countries) Plus:

- **Nature:** It is an alliance of **major oil-exporting nations** that work together to regulate global oil supply and prices.
- **Members:** It comprises of **22 countries** (12 OPEC countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman).
- **Objective:** It aims to work together on adjusting crude oil production to bring **stability to the oil market**.
- **Formation:** It was established in **2016 through the "Declaration of Cooperation"** at the Vienna Group meeting. It was formed to counter falling oil prices caused by the surge in U.S. shale oil production.
- **Headquarters:** Its headquarters is located in **Vienna, Austria**.
- **Strategic Significance:** It controls approximately **40% of global oil production** and nearly **80% of proven reserves**.

About OPEC (Organization of the Petroleum Exporting Countries):

- **Nature:** It is a permanent intergovernmental organization of **oil-exporting countries**.
- **Formation:** It was established in **1960** by the five founding members **Iran, Iraq, Kuwait, Saudi Arabia, and Venezuela**.
- **Objective:** It aims to **coordinate members' petroleum policies** to ensure stable oil prices, an efficient supply to consumers, and a fair return for investors.
- **Headquarters:** Its headquarters is located in **Vienna, Austria**.
- **Members:** Currently, it has **12 members**, including Algeria, Congo, Equatorial Guinea, Gabon, Libya, Nigeria, and the United Arab Emirates.

- **Reports:** It publishes the **World Oil Outlook** and the **Monthly Oil Market Report**.

## INTERNATIONAL RENEWABLE ENERGY AGENCY (IRENA)

### Context:

- Union Minister for New and Renewable Energy recently delivered India's national statement at the 16th Assembly of the IRENA in Abu Dhabi, United Arab Emirates.

### About International Renewable Energy Agency (IRENA):

- **Establishment:** It is an intergovernmental organisation that was **founded in 2009** to support countries in their transition to a sustainable energy future.
- **Objective:** It serves as the principal platform for international cooperation, a centre of excellence, and a **repository of policy, technology, resource and financial knowledge on renewable energy**.
- **Member countries:** It has **170 Members and the European Union**. India is also one of the founder members of IRENA.
- **Association with UN:** It is an **official United Nations observer**.
- **Secretariat:** It comprises the **Director-General and his staff**, provides administrative and technical support to the Assembly, the Council and their subsidiary bodies.
- **Headquarters:** Its headquarters is in **Abu Dhabi**, United Arab Emirates.
- **Governance: Assembly is IRENA's ultimate decision-making authority**, made up of one representative from each Member.
- **Council:** It is composed of **21 Member States elected for a two-year term** and is accountable to the Assembly. Council members serve on a rotating basis to ensure the effective participation of both developing and developed countries and a fair and equitable geographical distribution.



## UNDESA

### Context :

- India is expected to grow by 7.4 per cent in the current financial year, driven by consumption and public investment, the UNDESA said in a report.

### About UNDESA:

- **Full form:** It stands for **United Nations Department of Economic and Social Affairs**.
- **Nature:** Rooted in the United Nations Charter and **guided by the transformative 2030 Agenda for Sustainable Development**, the UNDESA upholds the development pillar of the United Nations.
- **Objective:** Its Divisions and Offices work together towards a common goal to promote the **social, economic, and environmental dimensions** of sustainable development.
- **Establishment:** It was originally **founded in 1948** and restructured in 1997.
- **Headquarters:** It is based at UN Headquarters in **New York**, United States.
- **Mandate:**
  - UN DESA's work programme can be categorized into three areas: **norm-setting, analysis, and capacity-building**.

- Its work addresses a range of cross-cutting issues that affect peoples' lives and livelihoods. From **poverty reduction to governance to finance** to the environment, UNDESA's work is about human progress for all, especially the most vulnerable.
- **Focus areas:**
  - To **facilitate the negotiations** of Members States in many intergovernmental bodies to address ongoing or emerging global challenges;
  - To provide substantive **support to intergovernmental processes** on development issues in the General Assembly and the Economic and Social Council;
  - To **advise interested Governments** on the ways and means of translating policy frameworks developed in the UN conferences and summits into programmes at the country level;
  - To **collaborate closely with its partners** at regional and country levels in helping countries to formulate and implement development strategies;
  - To compile, **generate, and analyse a wide range of economic, social, and environmental data** and information on which member states of the United Nations draw.
- **Reports Published:**
  - **World Economic Situation and Prospects Report**
  - **World Social Report**
  - **Sustainable Development Goals Report**



## INDIAN OCEAN NAVAL SYMPOSIUM (IONS)

### Context:

- Boosting maritime engagement with Indonesia and advancing the vision of MAHASAGAR, Indian Navy's First Training Squadron departed Belawan recently.

### About Indian Ocean Naval Symposium (IONS):

- **Nature:** It is a **voluntary initiative** that seeks to increase maritime cooperation **among navies of the littoral states of the Indian Ocean Region** by providing an open and inclusive forum for discussion of regionally relevant maritime issues.
- **Origin:** It was **conceived by the Indian Navy in 2008**. The inaugural edition of IONS was held in Feb 2008 at New Delhi, with the Indian Navy as the Chair for two years (2008–2010).
- **Objective:** It endeavours to generate a **flow of information between naval professionals** that would lead to common understanding and possibly cooperative solutions on the way ahead.
- **Significance:** It promotes maritime cooperation, mutual understanding, and collaboration on issues such as **maritime security and humanitarian assistance and disaster relief (HADR)**.
- **Governance:** IONS is structured around a **rotating chairmanship, biennial conclaves of chiefs, and working groups**.



- **Membership:** It includes **34 members (25 full members and 9 observers)** from Indian Ocean littoral states. The full members are:
  - **South Asian Littorals:** Bangladesh, India, Maldives, Pakistan, Seychelles, Sri Lanka.
  - **West Asian Littorals:** Iran, Oman, Saudi Arabia, United Arab Emirates (UAE).
  - **East African Littorals:** Kenya, Mauritius, Mozambique, South Africa, Tanzania, Eritrea.
  - **Southeast Asian & Australian Littorals:** Australia, France (via Reunion), Indonesia, Malaysia, Myanmar, Singapore, Thailand, Timor-Leste.
  - **Other:** United Kingdom (British Indian Ocean Territory).
- **Focus areas:**
  - **Maritime cooperation:** Enhancing naval collaboration for regional security.
  - **Information sharing:** Exchanging best practices on maritime issues.
  - **Disaster response:** Developing effective mechanisms for Humanitarian Assistance & Disaster Relief (HADR).

## JUSTICE MISSION

### Context:

- Recently, China's People's Liberation Army (PLA) fired off rockets near Taiwan and conducted military drills for a second day, as part of its "Justice Mission 2025".

### About Justice Mission:

- **Nature:** It is a high-intensity, two-day joint military exercise conducted by China's People's Liberation Army (PLA), involving live-fire missile launches, air sorties, and naval maneuvers around Taiwan.
- **Objective:** It is designed to simulate blockade operations and precision strikes against Taiwan's ports and maritime targets.
- **Location:** It is conducted around Taiwan, including waters to the north and south of the island. The missile launches were observed from Pingtan Island, the closest Chinese territory to Taiwan.
- **Nations involved in the mission:**
  - China: It was represented by People's Liberation Army (ground forces, navy, air force, missile units).
  - Taiwan: It was the target of the drills and it responded with heightened military readiness.
- **Major aims of the mission:**
  - To send a deterrent signal against Taiwan's independence assertions.
  - To warn the US and its allies against military support and arms sales to Taiwan.
  - To demonstrate China's capability to blockade and isolate Taiwan during a conflict.
- **Key features of the mission:**
  - Live-fire missile launches targeting surrounding waters.
  - Naval deployments simulating maritime blockades and anti-submarine warfare.
  - Joint operations integrating air, sea, missile, and ground forces.
  - One of the largest drills near Taiwan in recent years, indicating escalation.

## UNITED NATIONS ECONOMIC AND SOCIAL COUNCIL

### Context :

- The Economic and Social Council (ECOSOC) will commemorate its 80th anniversary by holding a special event on 23 January 2026.

**About United Nations Economic and Social Council (ECOSOC):**

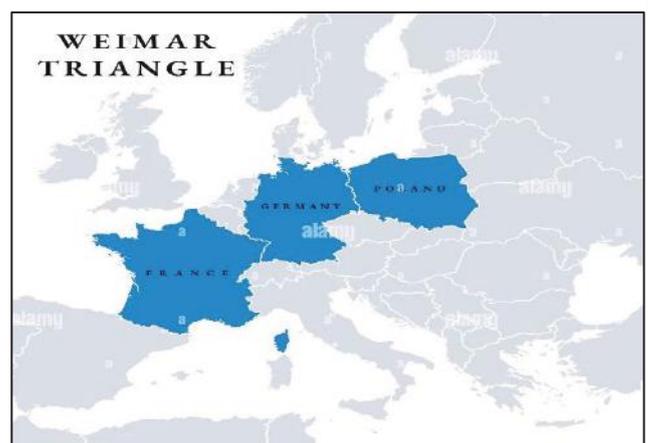
- **Establishment:** It was established by the **Charter of the United Nations in 1945** as one of the six principal organs of the United Nations.
- **Objective:** It is responsible for the direction and coordination of the **economic, social, humanitarian, and cultural activities** carried out by the UN.
- **Decision making:** Decisions are taken by a **simple majority vote**. The presidency of ECOSOC changes annually.
- **Members:** It has **54 members**, which are elected for **three-year terms** by the General Assembly.
- **Geographic distribution of seats:** Seats are distributed among regional groups- **African States (14), Asian States (11), Eastern European States (6), Latin American and Caribbean States (10),** and Western European and other States (13).
- **Headquarters:** Its headquarters is located in **New York (USA)**.
- **Major functions:**
  - It is responsible for **coordinating the social and economic fields** of the organization, specifically in regards to the 14 specialized agencies, the five regional commissions under its jurisdiction and eight functional commissions.
  - It also serves as a **central forum** to discuss international social and economic issues.
  - It formulates **policy recommendations** addressed to the member states and the United States system.
  - It has been at the centre of global progress, advancing the principles of the United Nations Charter and **promoting international cooperation** on economic, social, cultural, educational, health and related issues.

**WEIMAR TRIANGLE****Context :**

- EAM S Jaishankar recently participated in India's first-ever engagement in the Weimar Triangle, with French and Polish counterparts along with German representatives.

**About Weimar Triangle:**

- **Countries involved:** It is a regional **political grouping of France, Germany, and Poland**.
- **Formation:** It was formed on **29 August 1991** by a joint declaration issued in Weimar, Germany, by the Foreign Ministers of the three countries.
- **Nomenclature:** The group takes its name **from the city of Weimar, Germany**, where the initial meeting took place. The Triangle was initially the key forum for supporting **German-Polish reconciliation after World War II**.
- **Structure:** It has **no formal institutional headquarters** or permanent secretariat; it operates through regular summit meetings of heads of state and foreign ministers.



- **Utility:** Although the Weimar Triangle still has no institutional structure, it remains a **framework of reference at the political level.**
- **Objectives:** It had **three objectives:**
  - To involve France in German-Polish reconciliation by building on the Franco-German experience;
  - To strengthen dialogue and political cooperation between the three countries,
  - To support Poland in its process of integration into NATO and the European Union (EU).
- **Significance:** Regular meetings at levels including heads of government, foreign ministers, and European affairs ministers have enabled **coordination on EU policies**, with notable outcomes including **Poland's accession to NATO in 1999 and the European Union in 2004.**
- **Role beyond diplomacy:** Beyond diplomacy, it encompasses civil society efforts like **youth exchanges, academic collaborations, and business networks** to promote intercultural dialogue and mobility.

## EURATOM

### Context:

- The European Union (EU) and India recently committed to promoting collaboration on the peaceful uses of nuclear energy under the India-Euratom agreement.

### About Euratom:

- **Full Form:** Euratom stands for **European Atomic Energy Community.**
- **Establishment:** Euratom is an international organization established **under the Treaty of Rome in 1957.**
- **Objective:** It aims to form a common market for the development of the **peaceful uses of atomic energy.**
- **Association with nuclear materials:** A major incentive for the creation of Euratom was the desire to facilitate the establishment of a **nuclear-energy industry on a European rather than a national scale.** Euratom's control was not extended to nuclear materials intended for military use.
- **Membership:** The original members were Belgium, France, West Germany, Italy, Luxembourg, and the Netherlands. It subsequently came to **include all members of the European Union (EU).**
- **Regulation:** Euratom regulates the **European civil nuclear industry, which produces almost 30% of energy in the EU.** Euratom's work safeguards nuclear materials and technology, facilitates investment, research, and development, and ensures equal access to nuclear supplies, as well as the correct disposal of nuclear waste.
- **Governance:** It is governed by the **Commission and Council, operating under the jurisdiction of the European Court of Justice.** Its main instruments are the Euratom Supply Agency and its research and nuclear safeguard activities.



- **Research:** The EU has its own **Joint Research Centre (JRC)** in the nuclear field. Euratom is involved in developing **atomic fusion technology**, which has the potential of delivering abundant sustainable energy in the future.

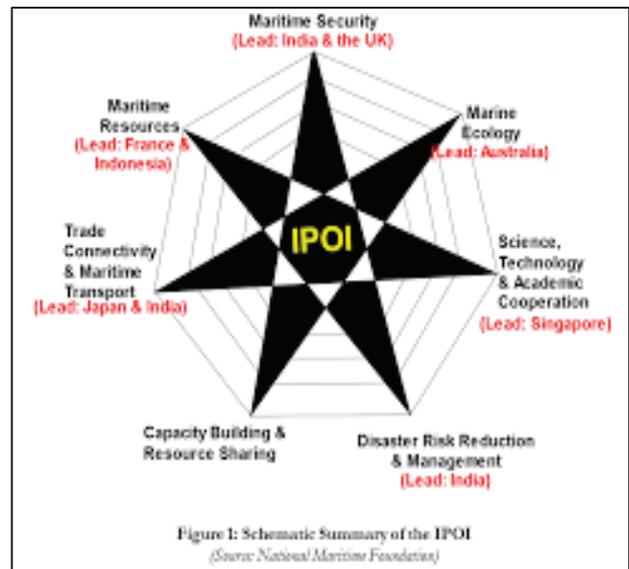
## INDO PACIFIC OCEANS INITIATIVE

### Context:

- Recently, India has welcomed Spain joining the Indo-Pacific Oceans Initiative (IPOI).

### About Indo Pacific Oceans Initiative:

- **Launch:** It was launched by India in **November 2019** at the ASEAN-led East Asia Summit (EAS) in **Bangkok**.
- **Objective:** It aims to promote cooperation for a **free and open Indo-Pacific** and the rules-based regional order.
- **Nature:** It is a **non-treaty-based voluntary arrangement**.
- **Focus:** It **leans heavily on the EAS mechanism**, which includes ASEAN member states and its eight dialogue partners.
- **Philosophy:** It builds upon India's **SAGAR (Security and Growth for All in the Region)** vision (2015) and integrates with the "Act East" and "Act West" policies.
- **Pillars:** It has **outlined 7 pillars**, and it was indicated that one or two countries could take the lead for a pillar with others joining in voluntarily. These pillars are:
  - **Maritime Security:** The United Kingdom (UK) and India
  - **Maritime Ecology:** Australia and Thailand
  - **Maritime Resources:** France and Indonesia
  - **Capacity Building and Resource Sharing:** Germany
  - **Disaster Risk Reduction and Management:** India and Bangladesh
  - **Science, Technology, and Academic Cooperation:** Italy and Singapore
  - **Trade, Connectivity, and Maritime Transport:** Japan and the United States (US).





## ECONOMY



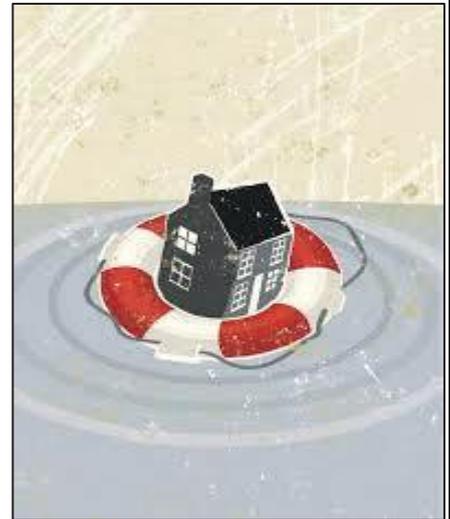
## CATASTROPHE BONDS

## Context:

- Having battled natural disasters in recent years, Kerala asked the Union government to consider instituting 'catastrophe bonds' as protection against disaster-linked losses.

## About Catastrophe Bonds:

- **Nature:** These are **insurance-linked securities** that transfer the financial risks from natural disasters from the bond issuer to the capital market.
- **Significance:** These are a unique hybrid insurance-cum-debt financial product that **transforms insurance cover into a tradable security**.
- **Risk bearing:** At present, the financial risk is **fully borne by the State or Central governments**. These bonds are sponsored by sovereign governments, who pay premiums.
- **Special Purpose Vehicle (SPV):** A separate legal entity is **typically created to hold the investor's principal in safe**, liquid assets (like U.S. Treasuries) to ensure the funds are immediately available if a disaster strikes.
- **Issuing authorities:** These are issued through intermediaries, **such as the World Bank or Asian Development Bank**, to reduce issuance risks.
- **Purchasing authorities:** These are purchased by **global investors, including pension funds, hedge funds**, and family offices, who are attracted by high returns and the diversification benefits of non-market correlated risks.
- **Coupon rates:** **The risk level and frequency of disaster occurrence directly influence** coupon rates. For instance, earthquake-related bonds often offer lower premiums (1-2%) compared to those covering cyclones or hurricanes.
- **Global scene:** **Mexico and the Philippines** have been using CAT bonds to protect themselves against disaster-linked losses.
- **Mechanism:**
  - Investors buy the bond and receive periodic **high-interest payments** (coupons).
  - If no predefined disaster occurs during the bond's **term (usually 1–3 years)**, the investor gets their full principal back.
  - If a trigger event occurs, the principal is forfeited by the investor and **transferred to the sponsor** to fund relief and reconstruction.
- **Relevance for India:**
  - **Fiscal Shock Absorber:** India's high vulnerability to climate-induced disasters makes cat bonds a strategic "fiscal buffer" to protect the national budget from sudden shocks.
  - **Low Insurance Penetration:** With less than 10% of India's disaster-affected population covered by traditional insurance, cat bonds provide a macro-level safety net.



- **Regional Leadership:** India is exploring a South Asian Cat Bond initiative to pool risks across the subcontinent (e.g., earthquakes in Nepal/Bhutan and cyclones in Bangladesh/Sri Lanka) to lower premium costs for all.

## LIVE EVENTS DEVELOPMENT CELL (LEDC)

### Context :

- The Information and Broadcasting Ministry has established a Live Events Development Cell (LEDC) to facilitate the expansion of the “concert economy.”

### About Live Events Development Cell (LEDC):

- **Establishment:** It was established in July 2025 by the Ministry of Information & Broadcasting, Government of India.
- **Objective:** It aims to support the structured growth of India’s rapidly expanding live entertainment industry and strengthen the country’s emerging concert economy.
- **Composition:** It includes representatives from Central and State governments, industry bodies (like FICCI/CII), and major event management companies.
- **Facilitation:** It functions as a single-window facilitation mechanism to streamline permissions and regulatory processes for large-scale events.
- **Vision 2030:** It aims to position India as a premier global destination for live entertainment by 2030.
- **Economic significance:**
  - **Growth Rate:** The organized live events market in India grew by 15% in 2024, reaching a valuation of approximately ₹20,861 crore.
  - **Multiplier Effect:** The initiative aims to boost related sectors like tourism, hospitality, and local employment.
  - **Employment:** The industry currently supports over 10 million jobs across the value chain, with a single large-format event generating more than 15,000 direct and indirect employment opportunities.
- **Other benefits of establishing a dedicated LEDC:**
  - This sector currently outpaces several traditional media segments and maintains an expected compound annual growth rate of 18 percent.
  - As per the report data, Tier-2 and Tier-3 cities are emerging as significant cultural hubs.
  - Consumption across musical concerts, sports, and theatre rose by 17 percent, with over five lakh individuals travelling to other cities to attend events.



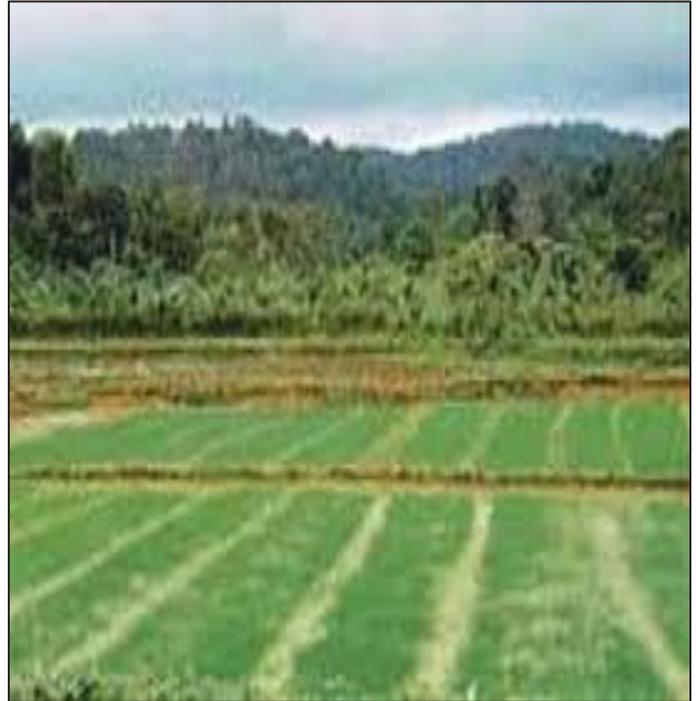
## JAMMA BANE LANDS

### Context:

- The Karnataka government has amended its land revenue law to modernise an age-old system of land records (Jamma Bane) in the scenic Coorg region.

### About Jamma Bane Lands:

- **Location:** Jamma Bane refers to a unique hereditary land tenure system found exclusively in the **Kodagu (Coorg) district of Karnataka.**
- **Distinctiveness:** The word Jamma means **hereditary**. It is distinctly different from other classes of land holdings in the state.
- **History:** These Jamma lands were originally granted **by erstwhile kings of Coorg and the British** — between 1600 and 1800 — to local communities **in return for military service.**
- **Types of lands:** These lands comprise **both wetlands**, used for paddy cultivation, **and forested highlands**, which have transformed into the now-famous coffee estates of Coorg.
- **Ownership:** The Jamma Bane land ownership was historically recorded in the name of the original grantee (the Pattedar). **Even after generations, records often remained in the ancestor's name**, leading to modern legal hurdles.
- **Relevant Acts:** The Coorg Land Revenue and Regulations Act, 1899 was in place to govern land ownership in the region till the introduction of the **Karnataka Land Revenue Act, 1964.**
- **Recent legal developments:**
  - **Modernisation Act:** In January 2025, the Karnataka government passed the **Karnataka Land Revenue (Second Amendment) Act, 2025.**
  - **Purpose:** The amendment aims to modernise land records, **allowing current joint family members to be officially recognised as owners.** This simplifies bank loan approvals, land sales, and inheritance processes.
- **Judicial rulings:**
  - The ownership rights of the people of Kodagu over the Jamma Bane lands in the region was recognised by a full bench of the Karnataka HC in 1993 in **Chekkera Poovaiah vs State of Karnataka.**
  - **In 2024, the Karnataka HC upheld** the Karnataka Land Revenue (Third Amendment) Act, 2011 which gave full ownership rights over Jamma Bane lands in Kodagu to Kodava families.



## DESIGN LINKED INCENTIVE SCHEME

### Context:

- The Design Linked Incentive (DLI) Scheme has become critical to anchoring India in the most strategic segment of the global semiconductor value chain—chip design.

### About Design Linked Incentive Scheme:

- **Nature:** It is a key instrument in advancing India's ambition to develop a **strong fabless capability**.
- **Nodal ministry:** It comes under the **Ministry of Electronics and Information Technology (MeitY)** and is a critical component of the India Semiconductor Mission.
- **Objective:** The scheme aims to **reduce import dependence, strengthen supply chain resilience**, and enhance domestic value addition.
- **Nodal Agency:** **C-DAC (Centre for Development of Advanced Computing)** is responsible for implementation of the scheme.
- **Eligibility:** **Start-ups and MSMEs** are eligible for financial incentives and design infrastructure support for semiconductor product design & deployment. **Other domestic companies** are eligible for financial incentives for deploying semiconductor designs.
- **Support:** It provides support through **three main pillars** over a period of 5–6 years:
  - **Chip Design Infrastructure Support:** Provides startups and MSMEs with remote access to the National EDA Tool Grid, IP core repositories, and post-silicon validation services through the ChipIN Centre (implemented by C-DAC).
  - **Product Design Linked Incentive (P-DLI):** Offers reimbursement of up to 50% of eligible design expenditure, with a ceiling of ₹15 crore per application.
  - **Deployment Linked Incentive (DLI):** Provides an incentive of 4% to 6% of net sales turnover for 5 years, capped at ₹30 crore per application, once the design is successfully deployed in electronic products.

**AATMANIRBHAR SEMICONDUCTOR ECOSYSTEM**

**DESIGN LINKED INCENTIVE (DLI) SCHEME** **NOTIFIED**

**Fiscal support from Government of India:**

- Product Design Linked Incentive - Reimbursement of up to 50% of the eligible expenditure subject to a ceiling of ₹15 Crore per application
- Deployment Linked Incentive - Incentive of 6% to 4% of net sales turnover over 5 years subject to a ceiling of ₹30 Crore per application will be provided to approved applicants

**C-DAC to establish the semiconductor design infrastructure under the scheme and make available to the supported companies**

**Tenure of Scheme:**  
5 years starting from 01.01.2022

**Beneficiaries:**  
100 Domestic semiconductor design companies

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## SHINE SCHEME

### Context:

- At the 79th Foundation Day of the Bureau of Indian Standards (BIS), the Union Minister for Consumer Affairs recently launched the SHINE Scheme in New Delhi.

### About SHINE Scheme:

- **Full Name: Standards Help Inform & Nurture Empowered Women.**
- **Objective:** It aims to empower women with knowledge of safety, quality standards, and consumer protection. It positions **women as "quality ambassadors"** to ensure the safety of products in households and communities.
- **Implementation:** It is conducted through partnerships with **Self-Help Groups (SHGs) and NGOs** via structured training and grassroots literacy programs.
- **Nodal ministry:** It is a flagship women-centric initiative by the Bureau of Indian Standards (BIS) under the **Ministry of Consumer Affairs.**
- **Significance:**
  - **Women-centric governance:** Aligns with women-led development and grassroots empowerment
  - **Consumer safety:** Reduces risks from substandard products at the household level
  - **Inclusive quality infrastructure:** Extends standardisation beyond industries to communities
  - **Economic empowerment:** Strengthens women-led enterprises through quality compliance
  - **Behavioural change:** Builds long-term quality consciousness within society



### About Bureau of Indian Standards:

- **Nature:** It is the **National Standard Body** of India established under the **BIS Act 2016.**
- **Objective:** It was established for the harmonious development of the activities of standardization, marking, and **quality certification of goods** and for matters connected therewith or incidental thereto.
- **Legacy:** It is the **successor of the Indian Standards Institution (ISI)**, which was created in 1947 to ensure quality control and competitive efficiency in the rapid industrialization era.
- **Significance:** It **represents India** in International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC).
- **Nodal Ministry:** It is functioning under the administrative control of the **Ministry of Consumer Affairs, Food and Public Distribution.**
- **Headquarters:** Its headquarters is located in **New Delhi** and maintains regional and branch offices throughout the country.

## DIRECTORATE GENERAL OF MINES SAFETY (DGMS)

### Context :

- The Directorate General of Mines Safety (DGMS), celebrated its 125th Foundation Day today at its Headquarters in Dhanbad, Jharkhand.

### About Directorate General of Mines Safety (DGMS):

- **Nodal ministry:** It is the regulatory agency under the **Ministry of Labour & Employment, Government of India.**

- **Objective:** It dealt with matters pertaining to occupational safety, health, and **welfare of persons employed in mines.**
- **Regulation:** The objective is regulated by the **Mines Act, 1952**, and the Rules and Regulations framed thereunder.
- **Headquarters:** It has its headquarters at **Dhanbad (Jharkhand)** and is headed by the Director-General of Mines Safety.
- **Constitutional provision:** Under the Constitution of India, the safety, welfare, and health of workers employed in mines are the concern of the Central Government (**Entry 55-Union List-Article 246**).
- **History:** For administering the provisions of the **Indian Mines Act, 1901**, the Government of India set up a “**Bureau of Mines Inspection**” on the 7th January 1902 with headquarters at Calcutta.
- **Change in name:** The name of the organization was changed to **the Department of Mines** in 1904, and its headquarters shifted to Dhanbad in 1908. On 01.01.1960, the organization was renamed as “**Office of the Chief Inspector of Mines**”. Since 01.05.1967, the office has been redesignated as the DGMS.
- **Focus areas:** The mission of the DGMS is to continually improve **safety and health standards**, practices, and performance **in the mining industry and upstream petroleum industry** by implementing:
  - proactive safety and health strategies;
  - continuous improvement of processes;
  - effective use of resources;
  - commitment and professional behaviour in its personnel.



## PANKHUDI PORTAL

### Context :

- The Ministry of Women and Child Development recently launched PANKHUDI portal aimed at strengthening initiatives for women and child development.

### About PANKHUDI Portal:

- **Nature:** It is an **integrated Corporate Social Responsibility (CSR)** and partnership facilitation digital portal.
- **Nodal ministry:** It is launched by the **Ministry of Women and Child Development**.
- **Objective:** It is aimed at **strengthening** coordination, transparency, and structured stakeholder participation in **initiatives for women and child development**.
- **Single-window digital platform:** It works as a single-window digital platform, Non-Resident Indians (NRIs), Non-Governmental Organisations (NGOs), Corporate Social Responsibility (CSR) contributors, corporate entities, and government agencies.

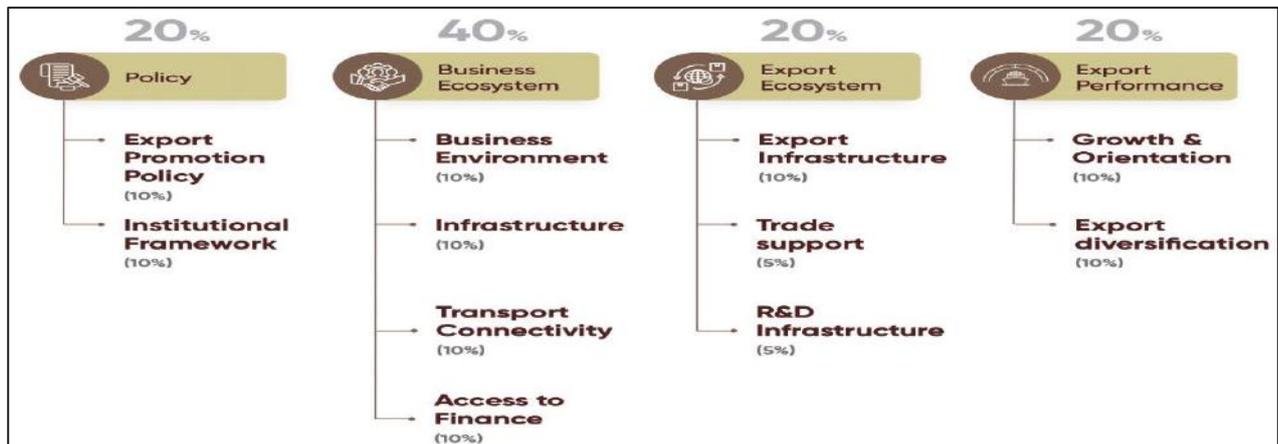


- **Key Thematic Areas: Nutrition, health, Early Childhood Care and Education (ECCE),** child welfare, protection and rehabilitation, and women’s safety and empowerment.
- **Supports Flagship Missions:** It supports and strengthens the implementation of flagship missions, such as **Mission Saksham Anganwadi & Poshan 2.0,** Mission Vatsalya, and Mission Shakti.
- **Transparency:** Contributors register on the portal, identify initiatives, submit proposals, and **track the status of their contributions** through clearly defined approval workflows.
- **Non- Cash Financial Transactions:** All contributions through the portal are accepted **only through non-cash modes.**
- **Significance:** It marks a significant step towards **leveraging digital solutions** for inclusive, collaborative, and **outcome-oriented development of women and children** across India.

## EXPORT PREPAREDNESS INDEX (EPI)

### Context:

- NITI Aayog recently released the Export Preparedness Index 2024, a comprehensive assessment of export readiness across India’s States and Union Territories (UTs).



### About Export Preparedness Index (EPI):

- **Nature:** It is a comprehensive assessment of **export readiness** across India’s States and Union Territories (UTs).
- **Significance:** It recognises the diversity of **subnational economic structures and their critical role** in advancing India’s global trade ambitions.
- **First edition:** The first edition of the EPI was published in **August 2020** and this is the 4th edition.
- **Framework:** It is structured around four pillars, further disaggregated into 13 sub-pillars and 70 indicators. **Four Pillars** are:
  - Export Infrastructure (20% Weightage)
  - Business Ecosystem (40% Weightage)
  - Policy and Governance (20% Weightage)
  - Export Performance (20% Weightage)
- **Classification of States and Union Territories:** States and UTs have been categorised into **Large States & Small States, North East States and Union Territories.** Within each category, they are further classified as
  - **Leaders:** States/UTs demonstrating relatively high export preparedness
  - **Challengers:** States/UTs with moderate preparedness and scope for improvement
  - **Aspirers:** States/UTs at early stages of export ecosystem development
- **Key highlights of EPI 2024:** Under EPI 2024, the following States and UTs have emerged as leading performers in their respective categories:

- Leading Performers (**Large States**): Maharashtra, Tamil Nadu, Gujarat, Uttar Pradesh, Andhra Pradesh
- Leading Performers (**Small States, North Eastern States & Union Territories**): Uttarakhand, Jammu and Kashmir, Nagaland, Dadra and Nagar Haveli & Daman and Diu, Goa.



GEOGRAPHY



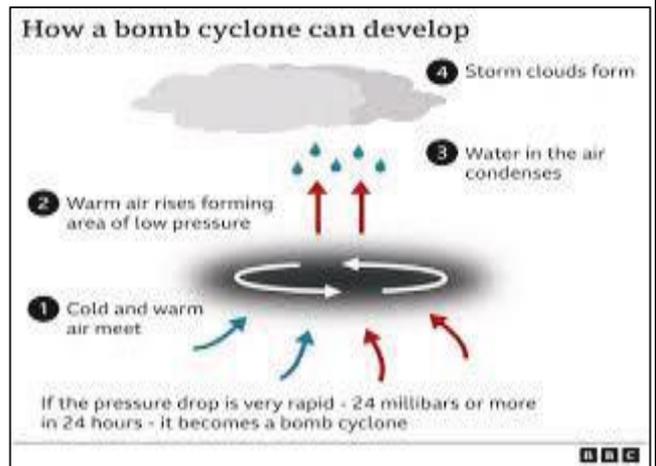
BOMB CYCLONE

Context :

- Recently, a powerful “bomb cyclone” barreled across the northern United States, triggering severe winter weather in the Midwest and the East Coast.

About Bomb Cyclone:

- **Nature:** It is a large midlatitude storm resulting from explosive cyclogenesis (or, informally, bombogenesis), a type of accelerated extratropical cyclone development.
- **Classification:** To be classified as a bomb cyclone, the central atmospheric pressure must drop by at least 24 millibars within 24 hours.
- **Structure:** In structure, a bomb cyclone is indistinguishable from any other intense midlatitude storm.
- **Differentiation:** The centre of the storm is a low-pressure cell (or cyclone) that draws winds near the surface inward. However, a bomb cyclone is set apart by its rapid rate of intensification.
- **Associated phenomena:** Bomb cyclones are often associated with atmospheric rivers and typically form in winter when cold and warm air masses collide.
- **Type of precipitation:** The precipitation associated with a bomb cyclone is intense, ranging from heavy downpours to strong thunderstorms to blizzards and heavy snowfalls, along with strong winds.
- **Active regions:** The four most active regions where extra-tropical explosive cyclogenesis occurs in the world are the Northwest Pacific, the North Atlantic, the Southwest Pacific, and the South Atlantic.



POPOCATÉPETL VOLCANO

Context:

- Scientists recently obtained first 3D images from inside Popocatepetl Volcano, one of the world's most active volcano and whose eruption could affect millions of people.

**About Popocatépetl Volcano:**

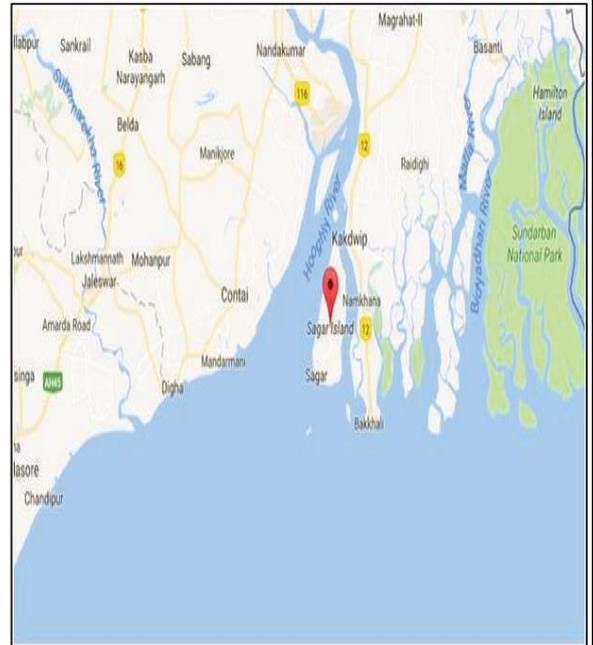
- **Nomenclature:** Popocatépetl means “**Smoking Mountain**” in the Aztec Nahuatl language.
- **Location:** It is located in central **Mexico** roughly 45 miles (72 kilometers) southeast of Mexico City. It is on the border of the states of México and Puebla.
- **Mythology:** In Aztec mythology, it is linked to the twin volcano Iztaccíhuatl. The legend depicts **Popocatépetl as a warrior** and Iztaccíhuatl as a princess who died of grief.
- **National Park:** Both peaks are protected **within the Iza-Popo Zoquiapan National Park**.
- **Interaction of tectonic plates:** It lies on the Trans-Mexican Volcanic Belt, which is the result of the small **Cocos Plate subducting beneath the North American Plate**.
- **Significance:** It is one of Mexico’s most **active volcanoes**, with recorded eruptions since 1519. It is one of the most dangerous volcanoes in the **Ring of Fire**.
- **Type:** It is a **stratovolcano** (also called a composite volcano), characterized by a steep, conical shape built by layers of ash, lava flows, and pyroclastic materials.
- **Elevation:** It is approximately **5,452 meters (17,883 ft)** in height, making it the second-highest peak in Mexico after Citlaltépetl (Pico de Orizaba).
- **Eruption Characteristics:** Primarily **andesitic to dacitic** in composition, it produces viscous lava flows, explosive ash clouds, and pyroclastic flows.
- **Hazard Zone:** An estimated **25 million people live within a 100 km radius** of the summit, making it one of the most high-risk volcanoes globally.

**SAGAR ISLAND****Context:**

- West Bengal Chief Minister Mamata Banerjee recently laid the foundation stone of a 5-km-long bridge over the river Muriganga to connect Sagar Island with the mainland.

**About Sagar Island:**

- **Location:** Sagar Island is located in the Ganges delta, in **West Bengal**. It is about 100 km south of Kolkata. It is part of the **South 24 Parganas district**.
- **Other names:** It is also known as **Gangasagar or Sagardwip**.
- **Associated river:** It lies at the **mouth of the Hooghly River** (a major distributary of the Ganges), an arm of which separates it from the mainland to the east.
- **Uniqueness:** Although Sagar Island is a **part of Sundarbans**, it **does not have any tiger habitation or mangrove forests** or small river tributaries as is characteristic of the overall Sundarban delta.
- **Cultural site:** Situated at a point where the Ganges River system meets the Bay of Bengal, the island is held to be particularly **sacred and is a noted Hindu pilgrimage center**. Thousands of pilgrims make their way to Sagardwip every year in mid-January to take a **holy dip in the river** during the Ganga Sagar Fair.
- **Religious significance:** The **Ganga Sagar Fair** is the second most attended fair in the world, after the popular Kumbh Mela. The **Kapil Muni temple** on the island is a popular pilgrim centre.
- **Concerns:** The island is highly **vulnerable to coastal erosion and rising sea levels**, which threaten its infrastructure and historic sites.
- **Environmental Protection:** Following National Green Tribunal (NGT) directives, recent measures include **Casuarina shelter belt plantations** and mangrove conservation to mitigate saline ingress and shoreline erosion.



## DAL LAKE

### Context:

- Parts of the Dal Lake in Srinagar froze recently as the city recorded its coldest night of the winter, with temperatures plunging below freezing point across the Kashmir valley.

### About Dal Lake:

- **Location:** It is a mid-altitude urban freshwater lake located in Srinagar, **Jammu and Kashmir**. It is surrounded by the Pir Panjal mountains.
- **Other names:** It is integral to tourism and recreation in Kashmir and is named the **“Jewel in the crown of Kashmir”** or **“Srinagar’s Jewel”**.
- **Area:** It covers an area of about **18 to 22 sq.km**.
- **Uniqueness:** It is **one of the world’s largest natural lakes** and also known as the Lake of Flowers.
- **Formation:** Geologists suggest it is either a **remnant of a larger Pleistocene Lake** or a flood plain lake.
- **Source of water:** The lake gets its water mainly from the **Telbal stream**. This stream flows from the Jhelum River.
- **Division:** The wetland is divided by causeways into **four basins: Gagribal, Lokut Dal, Bod Dal, and Nagin** (although Nagin is also considered an independent lake). Lokut-dal and Bod-dal each have an island in the centre, known as Rup Lank (or Char Chinari) and Sona Lank, respectively.



- **Floating gardens:** The floating gardens, locally known as “Rad,” are a spectacular highlight of the lake. These are patches of land that float on the water. Farmers grow vegetables and flowers on them.
- **Shikaras:** Dal Lake is also popular for the floating market, where vendors have their own Shikaras/wooden boats and approach tourists. The shoreline of the lake is encompassed by a boulevard lined with Mughal-era gardens, parks, houseboats, and hotels.

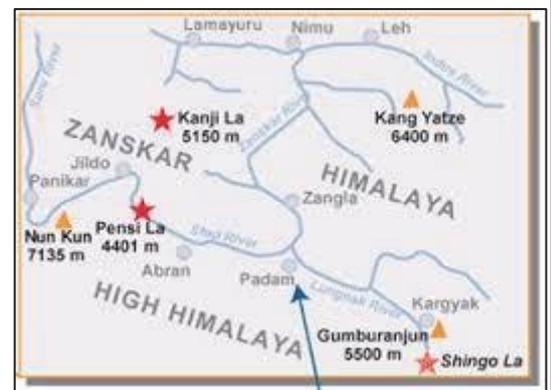
## ZANSKAR RIVER

### Context:

- The awaited Chadar trek on the frozen Zaskar river in Ladakh has been deferred due to inadequate ice formation, disappointing trekkers and adventure sports enthusiasts.

### About Zaskar River:

- **Location:** It is a major left-bank tributary of the Indus River, flowing entirely within the union territory of Ladakh in northern India. It drains the remote Zaskar Valley in the northwestern Himalayas.
- **Course:** The Zaskar River starts high in the Himalayas. It has two main branches; one is Doda, with main source near Pansi-La Pass, and the other branch is formed by the Kargyak River (source near Shingo La) and the Tsarap River (source near Baralacha La).
- **Gorge:** The river meanders northwestwards and finally meets the Indus River near Nimmu of the Ladakh region at an elevation of about 3,100 meters. It is famous for its incredible Zaskar Gorge, which is a super deep canyon it has carved over many years.
- **Structure of valley:** The entire catchment area of the Zaskar River has been formed by the action of glaciers. Its valley is U-shaped, and a number of hanging valleys open into it.
- **Significance:** In the summer season, tourists can embark on river rafting trips, especially in the stretches between Chilling and Nimmu. Winter brings a unique and thrilling experience of walking along the frozen river of Zaskar, which is often called ‘Chadar Trek’.



## MT ELBRUS

### Context:

- Recently, an artificially-triggered avalanche was filmed cascading down Russia's highest mountain, Mount Elbrus.

### About Mt Elbrus:

- **Location:** It is located in southwest Russia and is part of the Caucasus Mountains.
- **Formation:** It is believed that the Caucasus Mountains were formed due to the northward collision of the Arabian Plate with the Eurasian Plate. Geological studies have revealed that Mount Elbrus was formed over 2.5 million years ago and the volcano had been most active during the Holocene Epoch.
- **Elevation:** It has an elevation of 18,510 feet (5,642 meters). It makes up part of the Prielbrusye National Park. It is the highest point in Russia as well as the highest point in all of Europe.
- **Uniqueness:** It is one of the Seven Summits of the world, which are the tallest mountains on each of the seven continents.

- **Volcano:** Mount Elbrus is an **inactive volcano** that consists of two principal summits, both of which are dormant volcanic domes.
- **Climate:** The climate of Elbrus is generally cold. Even during summer, nighttime temperatures are **around -8°C (18°F)**.
- **Major glaciers:** These include **Bolshoi Azaou and Irik Glacier**.
- **Major rivers:** Many Russian rivers like the **Baksan, Malka, and Kuban** rivers originate from Bolshoi Azaou and Irik Glacier glaciers.



**ENVIRONMENT AND ECOLOGY**



**STINGLESS BEES**

**Context :**

- Amazonian stingless bees have become the first insect in the world to be granted legal rights, after two municipalities Satipo and Nauta in Peru passed an ordinance recently.

**About Stingless Bees:**

- **Nature:** Stingless Bees are a class of bees which either do not have stingers or have stingers that cannot cause much pain.
- **Genera:** Common genera of stingless bees include Austroplebeia, Melipona, and Tetragonula
- **Possess small stingers:** They do possess stingers, but they are too small to be useful in defense. Instead of stinging, stingless bees use their mandibles to bite their attackers.
- **Uniqueness:** They are among the planet's oldest pollinators, with a remarkable concentration of species in the Amazon rainforest.
- **Global spread:** They are found in tropical regions across the world, and about half of the 500 known species live in the Amazon. Africa, Australia, Southeast Asia, and parts of the Americas are the main areas where the stingless bee is found.
- **Distribution in India:** In India, these bees are reported primarily from the northeastern, eastern, and southern Indian States.
- **Significance:** Stingless bees can be used for pollination without fear of being stung. They are known for their popular medicinal honey and pollination potential.
- **Keystone species:** They pollinate over 80% of Amazonian flora and are vital for crops like coffee, cocoa, avocados, and blueberries.
- **Medicinal Honey:** Their honey, often called "pot honey," is prized for high antioxidant and anti-inflammatory properties. It is more liquid and has a tangy/sour taste compared to standard honey.
- **Threats:** Deforestation has reduced nesting sites, while pesticide use, climate change and competition from invasive honeybees have further weakened populations.



## DOUBLE HUMPED BACTRIAN CAMEL

### Context:

- In a historic move confirmed by the Ministry of Defence, the double-humped Bactrian camels will make their official debut on the Kartavya Path on January 26.

### About Double Humped Bactrian Camel:

- **Scientific name:** It is scientifically known as **Camelus bactrianus**.
- **Distinctive feature:** They have **two humps** on the back, compared to the single hump of the Dromedary (Arabian) camel. The humps **store fat (not water)** that provides energy and metabolic water during scarcity.
- **Global spread:** They are native to the harsh and arid regions of Central Asia. They occupy habitats **in Central Asia from Afghanistan to China**, primarily up into the Mongolian steppes and the Gobi desert.
- **Distribution in India:** Small populations of these camels are found in high altitude cold deserts of **Ladakh's Nubra Valley**.
- **Resilient:** They possess thick, shaggy coats that fluctuate with the seasons, growing dense to withstand temperatures as low as **minus 40 degrees Celsius**. Their nostrils are sealable to **block out frozen dust**, while their broad feet act like natural snowshoes.
- **Uniqueness:** They are among the few land animals that can survive by **eating snow to meet their hydration needs**.
- **Diet:** Bactrian camels are **omnivores** but primarily herbivores and eat various types of plants.
- **Strategic significance:** They are formally inducted into the **Indian Army for logistical and patrol duties** along the Line of Actual Control (LAC) in Eastern Ladakh.
- **Conservation Status:** They are classified as **'Critically Endangered'** as per IUCN Red List.



## M-STRIPES

### Context :

- Forest staff who are to be involved in census of tigers and other wild animals will be using the advanced M-Stripes app at Anamalai Tiger Reserve.

### About M-STRIPES:

- **Full Form:** MSTRIPES stands for **Monitoring System for Tigers: Intensive Protection and Ecological Status**.

- **Nature:** It is a **software-based monitoring system** created to assist patrol and protect tiger habitats.
- **Launch:** It was launched by the **National Tiger Conservation Authority (NTCA)** along with the Wildlife Institute of India in 2010.
- **Objective:** It is designed to assist wildlife protection, **monitoring, and management of Protected Areas.**
- **Technologies used:** It uses **Global Positioning System (GPS), General Packet Radio Services (GPRS),** and remote sensing.
- **Role of forest guards:** Under MSTripes protocols, forest guards are expected to **patrol their beats and record their tracks using a GPS,** in addition to recording observations in site-specific data sheets.
- **Composition:** The programme consists of **two parts:**
  - an analytical engine with a central desktop software and
  - an online analysis tool, and an Android-based mobile application that records field observations and tracks using real-time GPS.
- **Focus areas:** It aims to
  - collect **information** from the field
  - create a **database** using modern Information Technology (IT)-based tools
  - analyze the information using **GIS and statistical tools**
  - provide inferences that allow **tiger reserve managers** to better manage their wildlife resources.



## IRRAWADDY DOLPHIN

### Context:

- The Union Environment Ministry launched the second nationwide dolphin estimation under Project Dolphin, including the Irrawaddy dolphin for the first time.

### About Irrawaddy Dolphin:

- **Nature:** It is a **euryhaline species** of oceanic dolphin found in discontinuous subpopulations near sea coasts and in estuaries and rivers in parts of the Bay of Bengal and Southeast Asia.
- **Scientific Name:** Its scientific name is **Orcaella brevirostris.**
- **Habitat:** Irrawaddy dolphins prefer **coastal areas, particularly muddy, brackish waters** at river mouths and deltas, and do not appear to venture far offshore.
- **Global distribution:** It is found in three rivers in **South and Southeast Asia-** the Irrawaddy (Myanmar), the Mahakam (Kalimatan, Indonesia), and the Mekong (Cambodia).
- **Distribution in India:** They occur mainly in **Chilika Lake (Odisha);** but they are also reported in the **Sundarbans region.**
- **Uniqueness:** It has an instantly recognisable, **charismatic rounded face** and head with no beak; they look like baby belugas, only with a dorsal fin. They have expressive faces thanks to their



**moveable lips and have creases around their necks** as they are able to move their heads in all directions.

- **Appearance:** They are **grey all over but lighter on the belly**. The dorsal fin is small; their flippers are long and large, with curved leading edges and rounded tips, and their tails are also large.
- **Teeth:** Irrawaddy dolphins have **narrow, pointed, peg-like teeth** about 1 cm in length in both the upper and lower jaws.
- **Ecology:** It is considered an **edge species** as it thrives in ecotones (transition zones between marine and freshwater ecosystems).
- **Cooperative Fishing:** In Myanmar, they are famous for "cooperative fishing" where they help local fishermen herd fish into nets.
- **Spy-hopping:** They often **rise vertically out of the water** to observe their surroundings
- **Conservation status:** It is classified as '**Endangered**' under the IUCN Red List.

## KAIMUR WILDLIFE SANCTUARY

### Context:

- Bihar is set to get its second tiger reserve as the NTCA has given in-principle approval to declare Kaimur Wildlife Sanctuary (KWS) a tiger reserve.

### About Kaimur Wildlife Sanctuary:

- **Location:** It is located in the Kaimur District of Bihar. It is located in the famous Kaimur Hills range.
- **Famous destinations:** The Kaimur Hills, known for their invincibility, are home to two forts and the ancient Mundeshwari Temple, one of the oldest Hindu temples in India.
- **Area:** It is the largest sanctuary in the state and occupies an area of about 1342 sq.km.
- **Rivers and lakes:** It is bounded by the Son River to the north and the Karmanasa River to the south. The valley part is filled with many waterfalls such as Karkat and Telhar and various lakes such as Anupam Lake.
- **Connectivity:** It is connected to the Bandhavgarh-Sanjay-Guru Ghasidas-Palamau tiger meta-population landscape through fragmented forest patches along the Son basin.
- **Historical significance:** Prehistoric rock paintings, stone inscriptions, and monuments have also been discovered here. Prehistoric murals found in the "Lakhania" and other hilly regions and the prehistoric fossils of the Pre-Cambrian times in the "Salakhan" area bear testimony to the ancient origin and existence of this region.
- **Tribes:** The Oraon tribe is believed to have originated from this region.
- **Flora:** A large variety of vegetation is found in the mixed, dry, deciduous forests that cover the area, the primary tree vegetation being Baakli, Mahua, Dhaak, and Bamboo.
- **Fauna:** The wildlife comprises of Black Bucks, Chinkaras, Four-Horned Deers, Blue-Bulls, Sambar, Cheetals, Bears, Leopards, etc. Apart from these pythons, Gharials/Crocodiles and different species of snakes are also found.



## ARALAM BUTTERFLY SANCTUARY

### Context:

- The Kerala government has officially renamed the Aralam Wildlife Sanctuary the Aralam Butterfly Sanctuary, making it the first butterfly sanctuary in the State.

#### About Aralam Butterfly Sanctuary:

- **Location:** Situated in the Kannur district of North Kerala, it is part of the Western Ghats, a UNESCO World Natural Heritage site.
- **Establishment:** Originally established as the **Aralam Wildlife Sanctuary in 1984 under the Wildlife (Protection) Act, 1972**, it was officially renamed the Aralam Butterfly Sanctuary on June 18, 2025, by the Kerala State Wildlife Board.
- **Boundaries:** It shares boundaries with the **Brahmagiri Wildlife Sanctuary** in Karnataka, the **Kottiyoor Wildlife Sanctuary**, and the North Wayanad forest division.
- **Vegetation:** It consists of **evergreen and semi-evergreen forests**.
- **Rivers:** The **Cheenkanni River**, originating from the Brahmagiri ranges, flows through the dense forests of Aralam.
- **Significance:** The region is known for **large-scale butterfly migration and mud-puddling** and is also a special habitat of the Schedule 1 Slender loris. Every January or February, the sanctuary holds a Butterfly Migration Study, which celebrates this seasonal movement and deepens our understanding of these pollinators.
- **Fauna:** It is home to over 266 species of butterflies, accounting for more than **80 percent of all butterflies in Kerala**. Some of these are unique to this region, while others are endangered. In addition to butterflies, Aralam is home to several animals, including **elephants, giant squirrels, leopards**, and a variety of birds.



## HOYA NAGAENSIS

#### Context:

- Recently, a new plant species has been discovered in Nagaland and it's named as Hoya Nagaensis.

#### About Hoya Nagaensis:

- **Location:** It is a new plant species found in the **high-altitude forests of Nagaland**.
- **Nature:** It is a member of the '**wax plant family**' discovered in the Kavunhou Community Reserved Forest in Phek district.
- **Genus:** It belongs to the **Hoya genus**, a group known for its ornamental value.
- **Uniqueness:** It is currently **known from only a single location**, making it highly vulnerable.
- **Features:** The plant displays unique leaf shapes and floral features. It produces **distinctive star-shaped flowers and exudes milk-like latex**, a characteristic of many species in the Apocynaceae or milkweed family.
- **Habitat:** It was found growing in a **temperate forest ecosystem** that remains largely unexplored by science.
- **Threats:** Major threats to this plant include **shifting cultivation and forest disturbance**.



- **Ecological significance:** It highlights the importance of **community-protected forests** of Nagaland as a **vital refuge for rare and endemic plants**. It underscores the Eastern Himalaya as a reservoir of undiscovered plant diversity.
- **Conservation status:** It is classified as '**Critically Endangered**' (provisional classification) as per the IUCN Red List.

## BANNERGHATTA NATIONAL PARK

### Context:

- The Central Empowered Committee recommended that the Ecologically Sensitive Zone around Bannerghatta National Park should be restored to its original 2016 extent.

### About Bannerghatta National Park:

- **Location:** It is located in the hills of the Anekal range, near Bangalore, **Karnataka**.
- **Establishment:** It was declared a **National Park in 1974**. In 2006, India's first butterfly enclosure was inaugurated at the park.
- **Area:** It covers an area of approximately **260.51 sq km**.
- **Connectivity:** It forms a vital elephant corridor **linking the Biligirirangana Hills and Sathyamangalam forests**.
- **River:** The **Suvarnamukhi stream**, the main source of water for the animals in the park, runs through the centre of the park.
- **Vegetation:** There are three types of vegetation that can be found here: **Dry Deciduous Scrub Forests, Southern Tropical Dry Deciduous Forests** and Southern Tropical Moist Mixed Forests.
- **Flora:** These include **Narcissus latifolia, Schleicheria oleosa, Sandalwood, Neem, Tamarind, Bamboo, Eucalyptus**, etc.
- **Fauna:** Prime habitat for several species, including the endangered Asian Elephant, Indian gaur, Tiger, Sambar deer, Spotted deer, Leopard, Wild dog, Wild pig, Sloth bear etc. are found here.



## SIMILIPAL NATIONAL PARK

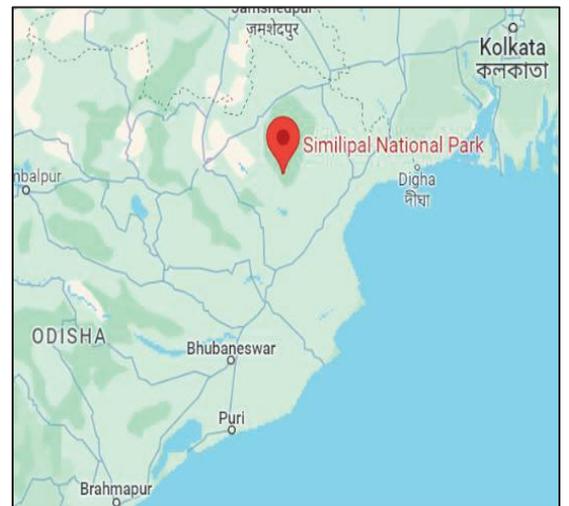
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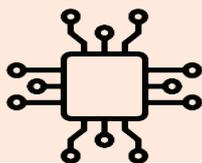
- The latest crocodile census has recorded an increase in the crocodile population in Odisha's Similipal National Park.

### About Similipal National Park:

- **Location:** It is situated in the Mayurbhanj district of **Odisha**.
- **Area:** It covers an area of approximately **2750 sq.km**.

- **Nomenclature:** The park is named after the **Simul (silk cotton) tree**, which grows in abundance here.
- **Uniqueness:** Not only a National Park, Similipal is **also a Tiger Reserve, Wildlife Sanctuary, Biosphere Reserve**, and also a part of the Mayurbhanj Elephant Reserve. Situated in the Deccan Peninsular Bio-geographic Zone, it harbours **a unique blend of Western Ghats, Eastern Ghats, and eastern Himalayan biodiversity**.
- **Aesthetic places:** It has some beautiful **waterfalls like Joranda and Barehipani**. It is surrounded by high plateaus and hills, the highest peak being the **twin peaks of Khairiburu and Meghashini** (1515 m above mean sea level).
- **Tribes:** It is also home to various tribes, including **Kolha, Santhala, Bhumija, Bhatudi, Gondas, Khadia, Mankadia, and Sahara**.
- **Vegetation:** The forest is predominantly **moist mixed deciduous forest with tropical semi-evergreen forest** in areas with suitable microclimatic conditions and sporadic patches of dry deciduous forests and grasslands.
- **Flora:** Sal is the dominant tree species here. It houses 7% of the **flowering plants and 8% of India's orchids**. The park also has extensive grasslands that are grazing grounds for many of the herbivores.
- **Fauna:** It is known for the tiger, elephant, and hill mynah. It holds the highest tiger population in Odisha. It is the **only tiger reserve in the country to boast of melanistic tigers**. Apart from the tiger, the major mammals are the leopard, sambar, barking deer, gaur, jungle cat, wild boar, four-horned antelope, giant squirrel, and common langur.

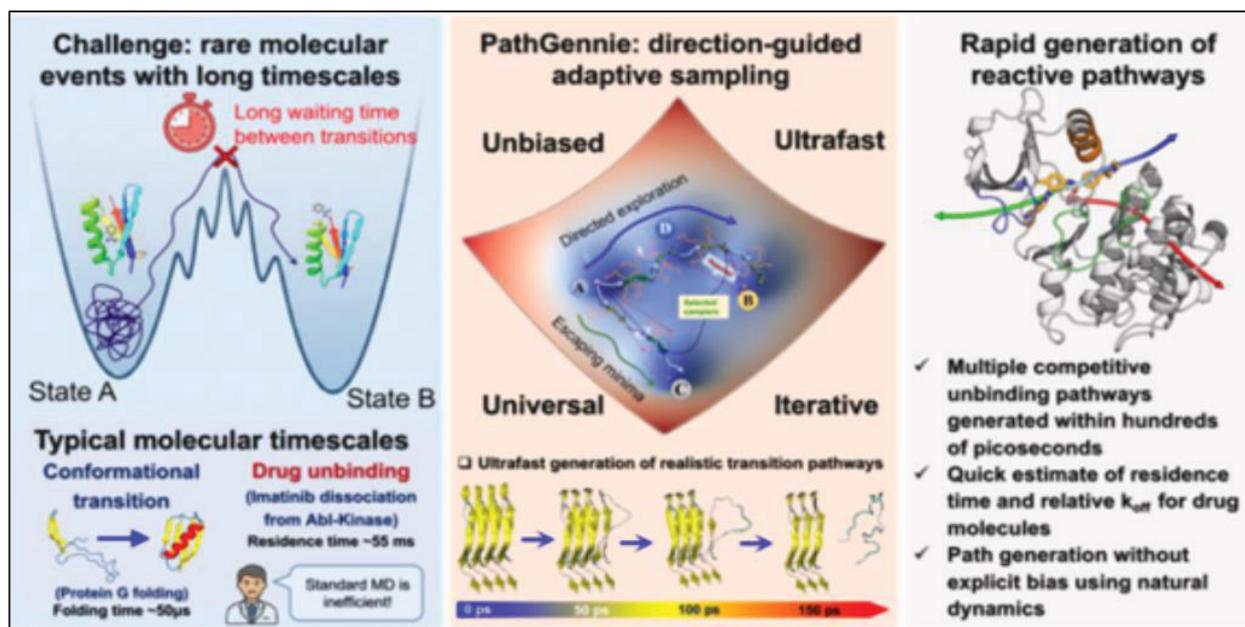




## PATHGENNIE

## Context :

- The Ministry of Science and Technology has recently developed new open-source software, PathGennie, for fast tracking of drug discovery.



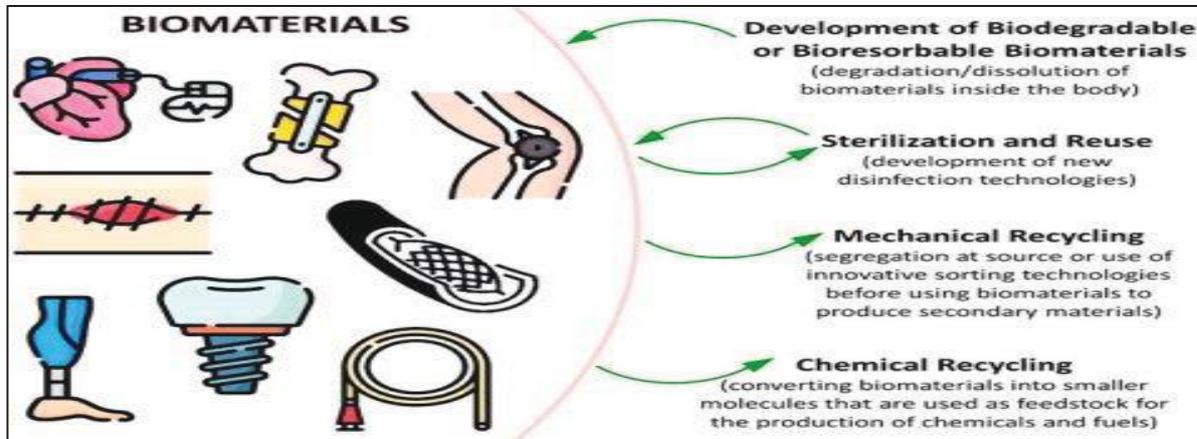
## About PathGennie:

- Nature:** It is a novel computational framework developed by scientists that can significantly accelerate the simulation of rare molecular events. It is open source software developed for fast tracking of drug discovery.
- Objective:** It is aimed at fast-tracking the drug discovery process by accurately tracking molecular unbinding pathways.
- Development:** It was developed by scientists at the S.N. Bose National Centre for Basic Sciences, Kolkata, an autonomous institute under the Department of Science and Technology (DST).
- Significance:** It addresses a long-standing challenge in molecular simulations, accurately modelling how drug molecules detach from their target proteins. It predicts the potential drugs unbind from their protein targets without the artificial distortions commonly used in standard methods.
- Focus on Residence Time:** Unlike standard methods that focus on binding strength, PathGennie predicts a drug's "residence time"—the duration it stays attached to a protein—which is a more accurate indicator of therapeutic effectiveness.
- Bias-free simulation:** It eliminates artificial distortions and biases common in traditional molecular dynamics. Instead, it uses "Direction-Guided Adaptive Sampling," which mimics natural selection at a microscopic scale to identify productive molecular pathways.
- Works on microscopic scale:** It mimics natural selection on a microscopic scale instead of forcing the molecule to move.
- Major applications:** It addresses problems such as chemical reactions, catalytic processes, phase transitions, or self-assembly phenomena. It is also compatible with modern machine-learning techniques which ensures integration into diverse simulation pipelines.

## BIOMATERIALS

### Context :

- As countries look to shift to cleaner processes to manufacture consumer products, biomaterials will become the new frontier of materials engineering.



### About Biomaterials:

- Nature:** Biomaterials refer to materials that are derived wholly or partly from biological sources or are **engineered using biological processes** to replace or interact with conventional materials.
- Usage:** Unlike traditional petroleum-based materials, biomaterials are designed to reduce environmental impact while supporting sustainable production systems. They are increasingly used in **sectors such as packaging, textiles, construction, and healthcare**.
- Classification:** Broadly, biomaterials are classified into **three categories**.
  - Drop-in biomaterials** are chemically identical to petroleum-based materials and can be used in existing manufacturing systems without major modifications. Examples include bio-PET used in packaging.
  - Drop-out biomaterials** are chemically different and require new processing or end-of-life systems, such as polylactic acid (PLA), which needs industrial composting.
  - Novel biomaterials** go a step further by offering entirely new properties, including self-healing materials, bioactive implants, and advanced composites with enhanced performance characteristics.
- Significance:** The development of biomaterials is seen as the **next frontier in materials engineering** as industries attempt to reduce carbon footprints and comply with tightening environmental regulations.
- Global Developments:**
  - The **European Union** has introduced **binding regulations** under its Packaging and Packaging Waste Regulation, recognising the environmental benefits of compostable materials in specific applications.
  - The **United States** supports biomaterials through **government procurement policies**, particularly under programmes that prioritise bio-based products.
  - Meanwhile, countries like the **UAE** are positioning themselves as major manufacturing hubs through **large-scale investments** in PLA production.
  - These global developments underscore the **competitive urgency for India** to scale up its biomaterials ecosystem.
- Current Status of Biomaterials in India:**
  - India's biomaterials sector, encompassing bioplastics, biopolymers, and bio-derived materials, is at an **early but rapidly emerging stage**.

- The bioplastics market alone was **valued at around \$500 million in 2024** and is expected to grow steadily through the decade. Several domestic initiatives highlight this transition.
- Large-scale investments such as the **planned PLA plant by Balrampur Chini Mills in Uttar Pradesh** mark a significant step toward commercial-scale biomanufacturing.
- Indian start-ups are also playing a role, with enterprises converting **agricultural and floral waste into value-added biomaterials**.

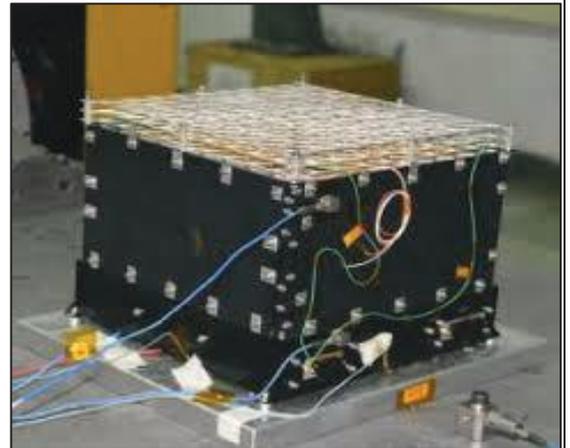
## DUST EXPERIMENT (DEX)

### Context:

- ISRO used the first homegrown cosmic dust detector, the Dust EXperiment, to confirm that a cosmic dust particle hits Earth's atmosphere approx. every thousand seconds.

### About Dust EXperiment (DEX):

- **Nature:** It is the first **Indian-made instrument to hunt** for these high speed **Interplanetary Dust Particles (IDPs)**.
- **Development:** It is developed by the **Physical Research Laboratory, Ahmedabad**.
- **Associated mission:** It was flown on **PSLV Orbital Experimental Module (POEM)** of the PSLV-C58 XPoSat Mission on January 1, 2024.
- **Uniqueness:** It is the **first-of-its-kind instrument** designed to detect such high-transient particles. It is a **blueprint of the detector** which can study the cosmic dust particle at any planet having an atmosphere or no atmosphere.
- **Mechanism:** It is a compact instrument tuned to hear impacts, capturing vital data. At the core of the experiment lies a **3-kilogram dust detector** based on the cutting-edge hypervelocity principle designed to capture high-speed space dust impacts **with only 4.5 W power consumption**.
- **Positioning:** It rocketed to an **altitude of 350Km**.
- **Significance:** Its data redefines our **understanding of the universe and charts the path for safe human deep-space missions**. Understanding and collecting data on interplanetary dust in Earth's atmosphere will also be valuable for planning **Gaganyaan missions**.
- **About Interplanetary Dust Particles (IDPs):**
  - Interplanetary dust refers to **micrometer-scale particles** originating from the solar system.
  - These are microscopic shrapnel from comets and asteroids that form our **atmosphere's mysterious "meteor layer"**, and show up as "shooting stars" at night.
  - These can be analyzed to gain insights into their origins, formation mechanisms, and the processes that occurred in **early solar and presolar environments**.



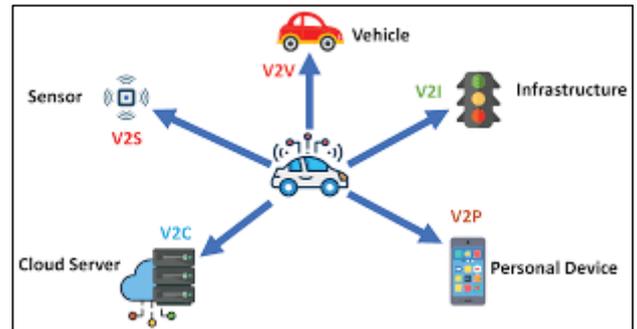
## VEHICLE-TO-VEHICLE (V2V) COMMUNICATION TECHNOLOGY

### Context:

- The Government of India is preparing to roll out Vehicle-to-Vehicle (V2V) communication technology by end of 2026.

### About Vehicle-to-Vehicle (V2V) Communication Technology:

- **Definition:** It is defined as a direct communication method that allows **vehicles to exchange information** with one another.
- **Objective:** The initiative aims to strengthen **road safety and reduce accidents** across the country.
- **Significance:** It enhances **driver awareness of their surroundings through wireless technologies** and allows vehicles to communicate directly with each other without the need for a network.
- **Functioning:** The system will **function through a device similar to a SIM card**, which will be installed in vehicles. The technology will provide alerts related to safe vehicle distance and will also warn drivers about nearby roadside or stationary vehicles.
- **Mechanism:** Vehicles will receive real-time alerts when another vehicle comes too close from any direction. Each vehicle equipped with V2V technology **continuously broadcasts and receives data such as speed, location, direction, acceleration** and braking status.
- **Network Independence:** It operates on a **dedicated radio frequency (the 5.9 GHz band)** authorized by the Department of Telecommunications and does not require mobile networks or internet connectivity.
- **360-Degree Awareness:** The system provides **signals from the front, rear, and sides**, alerting drivers to hazards even when they are beyond the line of sight (e.g., hidden by sharp curves or other vehicles).
- **Low Latency:** Communication happens nearly instantly (**less than 20 milliseconds**), which is critical for preventing high-speed collisions.
- **Advantage:** This feature will be extremely useful during **foggy conditions** when visibility between vehicles drops to almost zero.



## MOLECULAR CLOUD

### Context:

- Recently, astronomers studied the L328 molecular cloud, located around 700 light years away, to map the magnetic fields at multiple scales.

### About Molecular Cloud:

- **Nature:** It is an **interstellar cloud of gas and dust** in which molecules can form, the most common of which is hydrogen (H<sub>2</sub>).
- **Characterization:** These are characterized by their **low temperatures** (below 40 K, colder than liquid nitrogen) and **relatively high densities** (10<sup>3</sup>–10<sup>4</sup> particles per cubic cm).
- **Size:** The size of these clouds can be from a few light years **up to 600 light years**. Their total mass can reach several million solar masses. Molecular clouds with dimensions of more than about 15 light years are also called **giant molecular clouds**.
- **Observation:** Because dust blocks visible light, **they appear as dark patches (Dark Nebulae)**. Astronomers use radio and infrared telescopes to peer through the dust.



- **Mechanism:** The complex interplay between **three key forces, namely gravity, magnetic fields, and turbulence**, determines how these clouds collapse to form stars. The central regions of these clouds are completely hidden from view by dust.
- **Longevity:** These clouds **do not last for a very long time**. After the new stars are born, their solar winds blow away the remaining gas and dust.
- **Significance:** Molecular clouds are so important because they are the **raw material of stars and planets**. It is thought to be the birthplace of stars and planetary systems through processes of contraction, condensation, and accretion.

## PSLV-C62 MISSION

### Context:

- ISRO recently said that the PSLV-C62 mission encountered an anomaly during end of the PS3 stage and a detailed analysis has been initiated.

### About PSLV-C62 Mission:

- **Nature:** It was the **first space mission of 2026** for the Indian Space Research Organisation (**ISRO**).
- **Launch Vehicle:** It was launched using **PSLV-DL variant (Dual Launch)**, which utilizes two solid strap-on motors (PSOM-XL) to augment thrust.
- **Payloads:** It carried **one primary satellite and 18 secondary payloads** into space. The primary payload was the earth observation satellite **EOS-N1 (codenamed 'Anvesha')**, an hyperspectral imaging satellite developed primarily for the Defence Research and Development Organisation (DRDO) for strategic purposes.
- **Significance of EOS-N1:** Unlike conventional imaging satellites, hyperspectral satellites could "see" the Earth in hundreds of wavelengths, allowing them to identify materials and objects with far greater precision. This capability made EOS-N1 a high-value asset for **national security, border surveillance and strategic monitoring**.
- **Other Important Payloads:**
  - **AayulSAT (India):** Developed by OrbitAID Aerospace, this was India's first on-orbit satellite refuelling demonstrator, aimed at extending satellite life.
  - **KID (Spain):** The Kestrel Initial Technology Demonstrator, a small-scale prototype for a re-entry vehicle designed to splash down in the South Pacific Ocean.
  - **Theos-2A (Thailand):** An Earth observation satellite developed in collaboration with international partners.
- **Anomaly:** The mission encountered a **third-stage malfunction** (anomaly) after an initially successful lift-off. This was the second consecutive failure involving the PSLV's third stage, following the PSLV-C61 mission setback in May 2025.



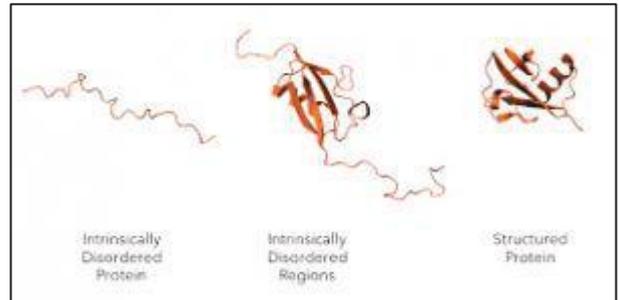
## DISOBIND TOOL

### Context :

- Researchers have developed a deep-learning tool named Disobind that can predict how intrinsically disordered proteins (IDP) latch on to their binding partners.

**About Disobind Tool:**

- **Development:** It is developed by the researchers of National Centre for Biological Sciences (NCBS), Tata Institute of Fundamental Research, Bengaluru.
- **Nature:** It is **open-source** and freely available for researchers worldwide.
- **Objective:** It **analyses the protein sequences** and uses protein language models (a form of AI trained on millions of known protein sequences).
- **No structural info needed:** It does not require any structural information or sequence alignments, **making it super convenient.**
- **High accuracy:** Disobind **outperformed popular tools like AlphaFold-multimer and AlphaFold3** in tests on new protein pairs. Disobind delivered consistently higher accuracy when tested on new protein pairs it had not seen before.
- **Applications:** Applications of the tool could span **from disease biology to drug design.**

**About Intrinsically Disordered Proteins:**

- **Definition:** Intrinsically disordered proteins are defined as proteins or **regions of proteins that lack a fixed or ordered three-dimensional structure** under biological conditions.
- **Other names:** They are also called **natively unfolded or intrinsically unstructured proteins.**
- **Importance:** These are important for **cellular signalling** and regulation.
- **Functions:** They are **shape shifting molecules** vital to cellular communication. They don't form a fixed structure. They guide signalling networks. They **also help proteins move and find partners within the cell**, regulate which genes are switched on or off.
- **Significance:** They **support protein folding and quality control**, and assemble flexible cellular hubs called condensates.

**ASC ARJUN****Context :**

- Recently, the Indian Railways has introduced a humanoid robot named "ASC ARJUN" at Visakhapatnam Railway Station.

**About ASC Arjun:**

- **Nature:** It is a **humanoid robot** introduced by the **Indian Railways.**
- **Objective:** The robot will **operate alongside Railway Protection Force (RPF) personnel to assist in station operations**, particularly during periods of heavy passenger movement.
- **Development:** It is designed and developed **entirely in Visakhapatnam** using home-grown technology. A dedicated team worked continuously for more than a year to bring this project to fruition.
- **Use of AI:** It is equipped with a **Face Recognition System (FRS) for intrusion detection, AI-based crowd monitoring** and real-time alert generation for RPF control rooms.



- **Multilingual:** It can also make **automated public announcements in English, Hindi and Telugu** to assist passengers and promote safety awareness.
- **Navigation:** It also features **semi-autonomous navigation** with obstacle-avoidance capability,
- **Patrolling:** It can patrol **station platforms round the clock**, supporting surveillance and optimising manpower deployment.
- **Welcoming gestures:** It has been designed for passenger interaction, offering gestures **such as a 'Namaste' for passengers and salutes for RPF personnel**, along with an interface to provide information and assistance.
- **Equipped for emergency:** It is also fitted with **fire and smoke detection systems** to aid timely response during emergencies.

## FOREVER CHEMICALS

### Context:

- New filtration technology developed by Rice University may absorb some Pfas “forever chemicals” at 100 times the rate previously possible.

### About Forever Chemicals:



- **Nature:** Forever chemicals, are a large chemical family of thousands of **highly persistent, toxic, man-made, hazardous chemicals**.
- **Nomenclature:** The name ‘forever chemicals’ comes from the fact that they **remain in the environment without breaking down for generations**.
- **Other names:** They are also known as **PFAS (per- and poly- fluoroalkyl substances)**.
- **Uniqueness:** PFAS molecules have a chain of linked carbon and fluorine atoms. Because the **carbon-fluorine bond is one of the strongest**, these chemicals do not degrade easily in the environment.
- **Durability:** In manufacturing, PFAS are favoured for their durability and useful properties such as **non-stick, water repellence, and anti-grease**.
- **Uses:** PFAS are used in the manufacture of many **domestic products, including- skin creams and cosmetics, car and floor polish, rinse aid for dishwashers**, textile and fabric treatments, food packaging and microwave popcorn bags, baking equipment, frying pans, outdoor clothing and shoes, firefighting foam, etc.

- **Concerns:** Over time, PFAS may leak into the soil, water, and air.
- **Exposure:** People are most likely exposed to these chemicals by consuming PFAS-contaminated water or food, using products made with PFAS, or breathing air containing PFAS. Because PFAS breaks down slowly, if at all, people and animals are repeatedly exposed to them, and blood levels of some PFAS can build up over time.
- **Impacts of PFAS on human health:** Forever chemicals have been linked to multiple health problems, including compromised immune systems, liver damage, thyroid diseases, increased cholesterol levels, hypertension, developmental delays in infants, and increased certain cancers such as kidney and testicular.
- **Regulation:** The Stockholm Convention has listed some PFAS, such as Perfluorooctane sulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA), as persistent organic pollutants (POPs).

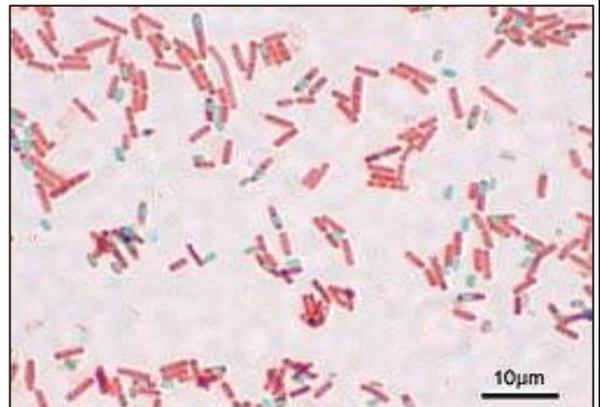
## BACILLUS SUBTILIS

### Context:

- Recently, Kerala officially declared Bacillus subtilis as 'State microbe'.

### About Bacillus Subtilis:

- **Classification:** It is a rod-shaped, Gram-positive bacterium.
- **Metabolism:** It is a facultative anaerobe, meaning it can grow in both oxygen-rich and oxygen-poor environments.
- **Nature:** Bacillus subtilis (B. subtilis) is a type of probiotic ("good" bacteria) found naturally in the human gut. It's also found in fermented foods.
- **Habitat:** It is mostly found in soil and vegetation with an optimal growth temperature from 25-35 degrees Celsius.
- **Significance:** B. subtilis has the ability to produce and secrete antibiotics. The genomic structure of this microorganism contains five signal peptidase genes that are important for the secretion of these antibiotics. It has shown to be capable of secreting polymyxin, difficidin, subtilin, and mycobacillin.
- **Resilience:** A major feature is its ability to form tough, protective endospores. These allow it to survive extreme conditions like heat, UV radiation, and drought for decades.
- **Transmission and disease:** B.subtilis is non-pathogenic but can contaminate food and be considered an opportunistic pathogen among the immuno-compromised.
- **Applications:**
  - **Agriculture (Bio-control):** It is widely used as a bio-fungicide (e.g., the product ENTAZIA) to protect crops from diseases like Bacterial Leaf Blight by colonising root systems and producing antibiotics.
  - **Probiotics:** It supports gut health and immunity in humans and animals. It is even used to enhance performance in poultry.
  - **Fermentation:** It is essential for traditional fermented foods like Natto (Japan), Kinema (Sikkim), and Akhuni (Nagaland).
  - **Biotechnology:** It is used on an industrial scale to produce enzymes like amylases and proteases, as well as vitamins.

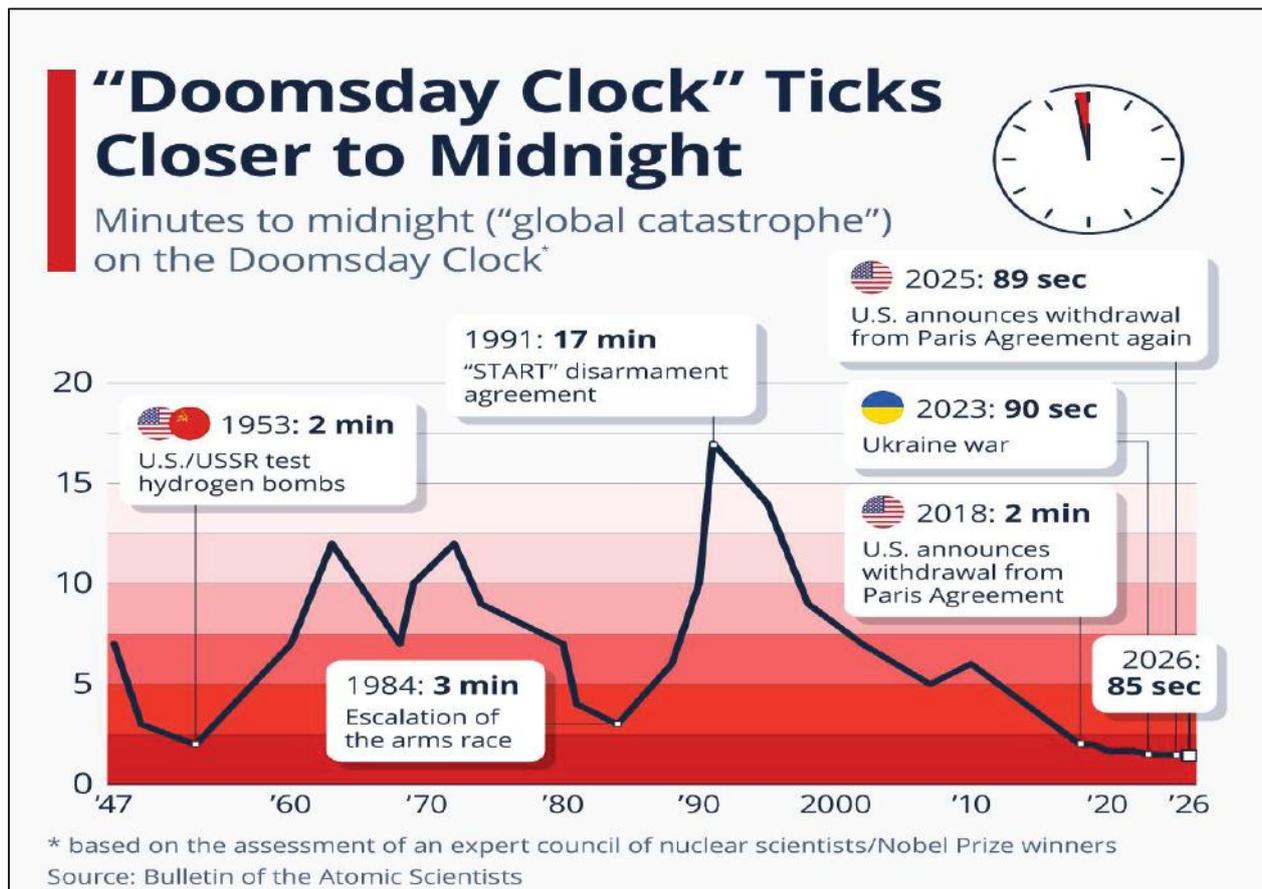


- **Environmental utility:** It plays a role in bioremediation by cleaning heavy metals and hydrocarbons from contaminated sites and can even be used to degrade certain plastics.

## DOOMSDAY CLOCK

### Context:

- Bulletin of the Atomic Scientists advanced the 2026 Doomsday Clock to 85 seconds to midnight, underscoring that the world is edging closer to a man-made global disaster.



### About Doomsday Clock:

- **Nature:** It is a symbolic clock adopted by atomic scientists to show **how close human beings are considered to be to a global catastrophe.**
- **Symbolism:** **Midnight represents total annihilation**, while movements away from or toward midnight reflect changes in existential risk.
- **Origin:** Doomsday Clock was established **in 1947 by the Bulletin of the Atomic Scientists (BAS)**, which was founded two years earlier. During that time, the clock was set at seven minutes to midnight.
- **Setting mechanism:** The time is adjusted **annually by the Bulletin** website in consultation with its Board of Sponsors.
- **Key determinants:** Existential threats include **nuclear risk, climate change, disruptive technologies like generative AI and cyberattacks**, and biological risks.
- **Mechanism:** Metaphorically, the clock's minute hand **moves closer to or farther from midnight, depending on the level of threat** thought to be posed by nuclear weapons, climate change, or disruptive technologies.

- **Current setting:** Since its invention in 1947, the clock has been **reset 27 times**. In **January 2026 the clock was set to 85 seconds before midnight**, the closest it has ever been to doomsday.

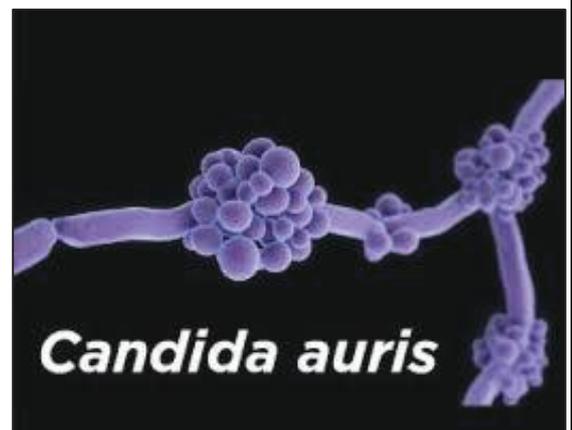
## CANDIDA AURIS

### Context :

- The drug-resistant fungal species *Candida auris* is turning more deadly and is spreading globally, according to a study led by Indian researchers.

### About *Candida Auris*:

- **Nature:** It is a fungus that causes serious infections. Known as a "superbug," it is often resistant to multiple classes of antifungal drugs, including azoles, polyenes, and echinocandins.
- **Discovery:** It was first discovered in 2009 in Japan but an analysis of the fungus revealed that it was already identified in 1996 in South Korea.
- **Symptoms:** A person infected with this life-threatening fungus experiences symptoms like fever, sepsis, aches and fatigue.
- **Target:** It mainly affects patients who already have many medical problems or have had frequent hospital stays or live in nursing homes. It is more likely to affect patients who suffer from conditions such as blood cancer or diabetes, have received lot of antibiotics or have devices like tubes going into their body.
- **Transmission:** It can spread indirectly from patient to patient in healthcare settings such as hospitals or nursing homes as it remains on people's skin and objects such as hospital furniture and equipments like glucometers, temperature probes, blood pressure cuffs, ultrasound machines and nursing carts etc. for quite a long time.
- **Concerns:** According to health care agencies, almost half of the patients who contract *Candida Auris* die within 90 days. Some types of *Candida Auris* fungi are resistant to the first line and second line anti-fungal medications.
- **Treatment:** This fungal infection can be serious and even fatal as there is no specific treatment for it.
- **WHO Classification:** It is listed as a "Critical Priority" pathogen in the World Health Organization's first-ever list of fungal priority pathogens.
- **Precautions:**
  - Family members of patients with *C Auris* infection, public health officials, laboratory staff and healthcare personnel can all help in stopping its spread.
  - Once the patient is diagnosed with having *C Auris*, the healthcare facilities should place the patient in a separate room as soon as possible.
  - Wounds should be bandaged to prevent any fluids from seeping out and infecting others.
  - It is also important for healthcare facilities to regularly and thoroughly clean and disinfect affected patient's room with special cleaners known to work against fungi.
  - Cleaning hands with hand sanitizer or soap and water before and after touching a patient with *C Auris* or equipment in his/ her room.



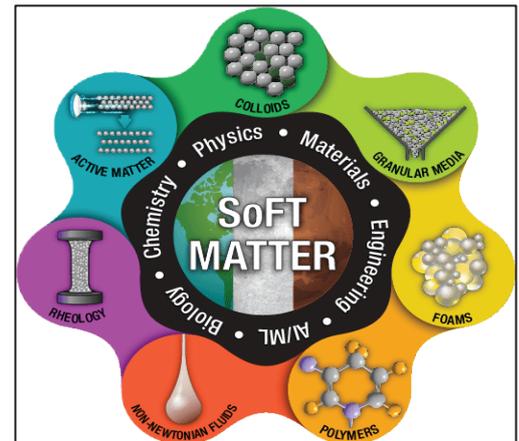
## SOFT MATTER

### Context :

- Every morning, as you use either your toothpaste or shampoo, you engage with soft matter, materials that flow like liquids under force but hold their shape at rest.

### About Soft Matter:

- **Definition:** Soft matter, or soft materials, is a **sub-field of “condensed matter”**, referring to a variety of materials that can be **easily deformed or structurally altered by thermal fluctuations** or nominal external stress.
- **Ubiquity:** They exhibit many useful and appealing properties, which account for their ubiquity in everyday life, finding use in a **diverse range of applications** in industry including, food, medical, automotive, construction, transportation, electronics, and manufacturing.
- **Scale:** One of the important characteristics of soft matter is their physical structures in the **mesoscopic scale**.
- **Behaviour:** It is the properties and **interactions of these structures** that determine the overall behaviour of the material.
- **Weak intermolecular forces:** Unlike "hard" materials (metals, ceramics) held together by strong bonds, soft matter building blocks are **linked by weak forces**.
- **Viscoelasticity:** These materials exhibit a **"borderline" behaviour between solids and liquids**— they can show both viscosity (liquid-like resistance) and elasticity (solid-like springiness).
- **High sensitivity:** Small **changes in temperature or pressure** can drastically alter their physical properties.
- **Common Examples**
  - **Food items:** Curd, ice cream, butter, and ketchup.
  - **Personal care:** Shampoo, toothpaste, and soap bubbles.
  - **Biological systems:** Living cells, blood, proteins, and cell membranes.
  - **Industrial materials:** Polymers, colloids, liquid crystals, gels, and foams.



## VOYAGER 1

### Context :

- Nearly 50 years after launch in 2026, Voyager 1 will mark yet another first by reaching a distance where Earth is a full day away at the speed of light.

### About Voyager 1:

- **Launching agency:** It is a space probe launched by **NASA (National Aeronautics and Space Administration)** in 1977.
- **Objective:** It aims to explore the **outer planets** in our solar system, **specifically Jupiter and Saturn**.

- **Milestone:** In August 2012, it became the **first human-made object to enter interstellar space after crossing the heliopause**—the boundary where the Sun's solar wind meets the interstellar medium.
- **Uniqueness:** It is the first spacecraft to travel beyond the solar system and reach interstellar space. It is currently the **most distant human-made object from Earth, located over 15 billion miles away**. Signals take approximately 22.5 hours one-way to reach the probe.
- **Instruments:** The instruments of Voyager 1 included **Cosmic Ray Subsystem, Plasma Wave Subsystem, Infrared Interferometer Spectrometer and Radiometer (IRIS)** etc.
- **Significant Discoveries:**
  - **Jupiter:** Discovered active volcanoes on the moon Io and identified a thin ring around the planet along with two **new moons, Thebe and Metis**.
  - **Saturn:** Identified five new moons and the **G-ring**.
  - **Golden Record:** Carries a 12-inch gold-plated copper disk containing sounds and images **representing life and culture on Earth** as a message to extraterrestrial life.



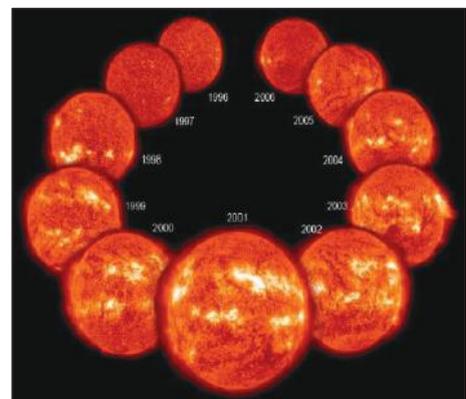
## SOLAR CYCLES

### Context :

- Recently, the IIT-Kanpur team developed a new way to predict solar cycles.

### About Solar Cycles:

- **Nature:** The solar cycle describes an approximately 11-year **cycle of solar activity**.
- **Mechanism:** It is **driven by the Solar Dynamo mechanism**, where the movement of electrically charged plasma generates powerful magnetic fields.
- **Frequency:** It is indicated by the frequency and intensity of sunspots visible on the surface. **Every 11 years** or so, the Sun's magnetic field completely flips.
- **Polarity flip:** This means that the **Sun's north and south poles switch places**. Then it takes about another 11 years for the Sun's north and south poles to flip back again.
- **Hale Cycle:** A **full magnetic cycle** (returning to original polarity) takes two solar cycles, **roughly 22 years**.
- **Measurement:** It is tracked **by counting sunspots**—dark, cooler regions with intense magnetic fields
- **Impact:** The solar cycle has the potential to impact Earth's climatic conditions through changes in solar radiation, **cosmic rays, and ozone distribution**.
- **Cycle Stages:**
  - **Solar minimum:** It is the beginning of a solar cycle or when the Sun has the least sunspots. Over time, solar activity—and the number of sunspots—increases.
  - **Solar maximum:** It is the middle of the solar cycle or when the Sun has the most sunspots. As the cycle ends, it fades back to the solar minimum, and then a new cycle begins.





## RANI VELU NACHIYAR

### Context:

- Prime Minister Narendra Modi recently paid tributes to Rani Velu Nachiyar on her birth anniversary, remembering her as one of India's bravest and most visionary rulers.

### About Rani Velu Nachiyar:

- **Early life:** Rani Velu Nachiyar (1730–1796) was the princess of Ramanathapuram and the only child of Raja Chellamuthu vijayaragunatha Sethupathy and Rani Sakandhimuthal of the Ramnad kingdom.
- **Marriage:** At the age of 16, she married the prince of Sivaganga, Muthuvadugananthur Udaiyathevar. She was an 18th-century queen of Sivaganga in present-day Tamil Nadu.
- **Other names:** She is also known as Veeramangai.
- **Military skills:** She was trained in handling various weapons, horse riding, archery, and traditional martial arts such as Silambam and Valari.
- **Polyglot:** She was also a distinguished scholar. She was proficient in multiple languages, including Tamil, English, French, and Urdu.
- **Strategic alliances:** Velu Nachiyar forged strategic alliances with several powerful leaders of the time, including Hyder Ali of Mysore and Gopala Nayaker.
- **Dedicated women army:** She raised a formidable army that included a dedicated women's battalion and the queen named her women's army "Udaiyaal" in her adopted daughter's honour.
- **First human bomb:** Her commander, Kuyili, is considered the "first woman martyr" and the first suicide bomber in Indian history. In 1780, she drenched herself in ghee, set herself on fire, and walked into a British ammunition depot to destroy their weapons.
- **Uniqueness:** She was the first queen to fight for freedom from the British in India. She granted powers to the Marudu brothers to administer the country in 1780.
- **Postal Stamp:** A commemorative postage stamp was issued by the Government of India in 2008 to honour her legacy.
- **India's Joan of Arc:** Some historians refer to her as "India's Joan of Arc" for her pioneering role in the anti-colonial struggle.



## SOMNATH TEMPLE

### Context:

- Prime Minister Narendra Modi extended greetings to the nation on the commencement of Somnath Swabhiman Parv.

### About Somnath Temple:

- **Deity:** It is a Hindu temple dedicated to **Lord Shiva**.
- **Location:** It is located in Prabhas Patan near Veraval in Saurashtra on the western coast of **Gujarat**.
- **Uniqueness:** It is the **first of the 12 jyotirlinga shrines** in India that are regarded as the manifestation of the Lord Shiva Himself.

- **Religious significance:** References to the temple are found in ancient texts like **Skandpuran, Shreemad Bhagavat, Shivpuran, and the Rig-Veda**. It is also the **Neejdham Prasthan Leela** site where Lord Shri Krishna took his last journey.
- **Geographical Significance:** Situated at the **confluence of Kapila, Hiran, and Saraswati rivers** with the Arabian Sea. **Abadhith Samudra Marg (Tirth Stambh)** indicates an **uninterrupted sea route to the South Pole**, with the nearest landmass ~9,936 km away, reflecting ancient Indian geographical knowledge.
- **Timeline:** The ancient temple's timeline can be **traced from 649 BC** but is believed to be older than that.
- **Construction:** According to tradition, it was **built in phases**—first in gold by Somraj (Moon God), then in silver by Ravana, later in wood by Lord Krishna. King Bhimdev I (or Bhima I) of the Solanki dynasty rebuilt the temple in stone after its destruction by Mahmud of Ghazni in 1026 CE.
- **Attacks and reconstructions:** First major attack on the temple took place in **1026 AD by Mahmud of Ghazni** (documented by Al-Biruni). The temple was looted and destroyed multiple times, including in 1026, 1297, 1394, and 1706 CE (Aurangzeb). **2026 marks 1,000 years since the first attack**, a significant civilisational milestone.
- **Present form:** The existing temple was rebuilt post-independence as a symbol of national resurgence. **Sardar Vallabhbhai Patel initiated the reconstruction** in 1947. The **Pran-Pratistha was performed by President Dr. Rajendra Prasad** in May, 1951.



## BHADRAKALI TEMPLE INSCRIPTION

### Context:

- Epigraphic evidence, including the Bhadrakali Temple inscription, found across Prabhas region, authenticates the historical legacy of Prabhas Patan and the Somnath Temple.

### About Bhadrakali Temple Inscription:

- **Location:** It is situated in **Prabhas Patan, Gujarat** specifically on the wall of the Bhadrakali Temple.
- **Carving:** It was **carved in 1169 CE** (Valabhi Samvat 850 and Vikram Samvat 1255).
- **Patronage:** It is a eulogistic inscription of **Param Pashupata Acharya Shriman Bhavabrihaspati**, the (spiritual preceptor of Maharajadhiraj Kumarapala of Anhilwad Patan).
- **Tradition:** It reflects the **Shaiva-Pashupata lineage**, a dominant religious tradition in early medieval Gujarat.
- **Significance:** This inscription **records the ancient and medieval history of the Somnath Temple**. It mentions the construction of Somnath Temple in all four yugas.
- **Historical narrative:** The inscription uniquely lists the materials used for the Somnath Temple across the **four Yugas**:
  - **Satya Yuga:** Built of Gold by Chandra (Soma).
  - **Treta Yuga:** Built of Silver by Ravana.
  - **Dvapara Yuga:** Built of Wood by Shri Krishna.
  - **Kali Yuga:** Built of Stone by King Bhimdev Solanki (and later renovated by Kumarapala)
- **Associated rulers:** The historic Bhadrakali inscription reflects the devotion of the **Solanki rulers** and scholars like Bhavabrihaspati.



- **Protection:** It is protected by **State Department of Archaeology, Gujarat.**

## BAGURUMBA DANCE

### Context:

- Recently, the Prime Minister of India witnessed a performance of the traditional Bagurumba dance of the Bodo community in Assam.

### About Bagurumba Dance:

- **Nature:** It is one of the **folk dances** of the Bodo community, deeply inspired by nature.
- **Location:** It is performed by indigenous **Bodo Tribe of Assam and Northeast India.**
- **Other names:** It is often called the "**Butterfly Dance**" because its gentle, flowing hand movements mimic the fluttering of butterflies.
- **Significance:** It represents **peace, fertility, joy and collective harmony**, and is closely associated with **festivals such as Bwisagu**, the Bodo New Year, and Domasi.
- **Formation of geometric shapes:** Performances are usually organised in groups, forming **circles or lines** that enhance its visual elegance.
- **Performance:** It is traditionally performed **only by women** of the Bodo community, with the musical instruments being played by their male counterparts.
- **Dance attire:** The dancers dress in handwoven, bright red, yellow, and green **dokhna, jwmgra, and aronai**, dancing to the beautiful beats of the handmade percussion instruments.
- **Musical instruments used:** The musical instruments include the **traditional kham** (a drum made of wood and goatskin), including **sifung** (a bamboo flute), and other wooden instruments like **jota, gongwna and tharkha.**



## PARBATI GIRI

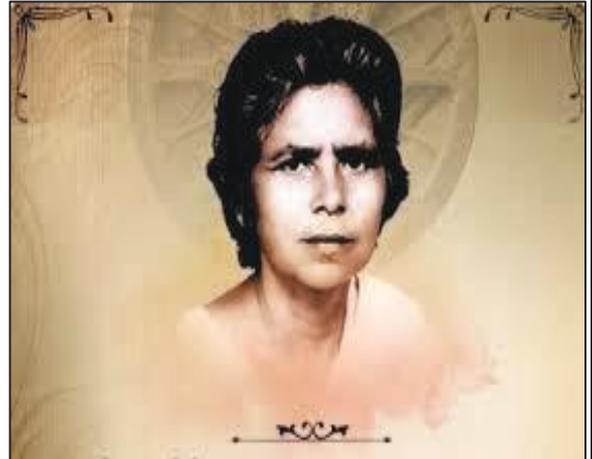
### Context:

- The Prime Minister of India recently paid homage to freedom fighter Parbati Giri on the occasion of her birth centenary.

### About Parbati Giri:

- **Birth:** Born on **19 January 1926** to mother Srimati and father Dhananjay Giri of Samleipadar village near Bijepur of the present Bargarh district and **undivided Sambalpur district of Odisha**, she was filled with patriotism since childhood.
- **Entry into freedom struggle:** In 1938, she left home to dedicate herself fully to the freedom struggle **through the Indian National Congress**, embracing Gandhian ideals such as khadi, self-reliance, and constructive social work as a way of life.
- **Contribution in independence movement:** In 1942, she was just 16 when she was in the **forefront of agitation following Mahatma Gandhi's 'Quit India' movement.** She had also staged an **agitation at Bargarh Court** to persuade the lawyers to boycott the erstwhile court in defiance of the British.
- **Influence of Mahatma Gandhi:** She was inspired by Gandhian philosophy. She had even come in contact with Mahatma Gandhi. She had taken **tutelage at the famous Ashrams in Bari, Wardha, and Delhi Gandhi Sebashram.**

- **Life after independence:** While she fought for the Independence of India, after independence she dedicated her life as a **social worker**. Parbati Giri led **famine relief operations during the 1951 Odisha famine**. She worked extensively on **prison reforms, leprosy eradication**, and the welfare of the destitute and marginalized.
- **Other names:** Also known as the **Mother Teresa of Western Odisha**, and epithet as **'Banhi-kanya' (daughter of fire)**, Giri was a prominent freedom fighter from Odisha.
- **Legacy:** Dearly known as **Badamaa (Big mother) to the inmates of her Ashrams**, the legendary woman from the Western Odishan district Bargarh worked for the poor and downtrodden till her death.



### SAMAKKA-SARALAMMA JATARA

#### Context:

- Recently, Telangana started preparing for the biennial Sammakka-Saralamma Jatara, one of the world's largest indigenous spiritual gatherings.

#### About Samakka-Saralamma Jatara:

- **Nature:** It is a **tribal festival** of honouring the goddesses celebrated in the state of **Telangana**, India.
- **Location:** Medaram is a remote place in the **Eturnagaram Wildlife Sanctuary**, a part of Dandakaranya, the largest surviving forest belt in the Mulugu.
- **Other names:** It is also known as **Medaram Jatara**.
- **Frequency:** It is held **every two years** (biannually). It is celebrated during the time the goddesses of the tribals are believed to visit them.
- **Significance:** It is recognized as the **world's largest indigenous spiritual gathering** and **India's second-largest fair after the Kumbh Mela**.
- **History:** In this festival people from all walks of life join together to commemorate the revolt led by Sammakka and Saralamma, a mother-daughter duo, **against** imposing taxes on the tribal populace during a period of drought by the **Kakatiya rulers in the 12th century**.
- **Ritual:** People **offer Bangaram or gold** of a quantity equal to their weight to the goddesses and take **holy bath in Jampanna Vagu**, a tributary to River Godavari.
- **Associated tribe:** The rituals related to the Goddesses are entirely conducted by **Koya tribe** priests, in accordance with Koya customs and traditions.
- **Animistic roots:** The festival remains largely **free of Vedic or Brahmanic influence**, centering on nature and ancestral worship



### SHRI MAHAKALESHWAR TEMPLE

#### Context:

- Supreme Court of India recently declined to entertain a plea against the practice of 'VIP Darshan' at the Shri Mahakaleshwar Temple in Ujjain.

#### About Shri Mahakaleshwar Temple:

- **Location:** It is a Hindu temple located on the banks of the River Shipra at **Ujjain in Madhya Pradesh**.
- **Significance:** It is dedicated to Lord Shiva. It is **one of the 12 Jyotirlingas in India**.
- **Uniqueness:** It is the **only Jyotirlinga that faces south (Dakshinamukhi)**, a unique feature associated with Tantric traditions where Shiva is considered the 'Lord of Time and Death'.
- **History:** The history of the temple dates back to ancient times, with **references** to the temple found **in various Hindu scriptures and texts**. The temple finds mention in the **Puranas**. The renowned poet Kalidas also mentioned this temple in his creations.
- **Construction:** The current structure of the temple was built **in the 18th century by the Maratha ruler Ranoji Shinde**. However, the temple has been destroyed and rebuilt several times throughout history.
- **Architecture:** The architecture of the temple shows the **influence of Maratha, Bhumija, and Chalukya styles** of structural design.
- **Spread:** The temple complex is spread **over five levels**, one of which is underground. The Sabha Mandap (assembly hall) and Garbha Griha (sanctum sanctorum) are adorned with elaborate sculptures depicting various Hindu deities and mythological scenes.
- **Craftsmanship:** The sanctum houses the Jyotirlinga, which is the focal point of devotion and rituals. The **grand spire (shikhara), intricately carved pillars, and ornate ceilings** are proof of the exquisite craftsmanship.



## KALADI

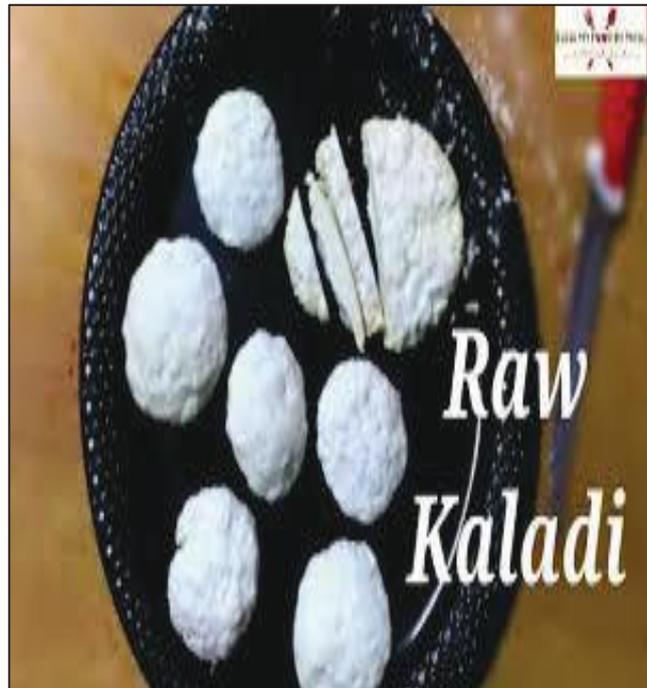
#### Context:

- Recently, the union Minister of State for Science & Technology directed that "Kaladi" traditional dairy products be upscaled for wider food applications and recipes.

#### About Kaladi:

- **Nature:** Kaladi is a famous **Dogra cuisine**.
- **Location:** It is a traditional dairy product of Udhampur district, **Jammu & Kashmir**.
- **Other names:** It is often called the **"mozzarella of Jammu"** due to its stretchable texture when cooked.
- **Significance:** It has received the **Geographical Indication tag (GI)**.
- **Preparation process:**
  - It is traditionally prepared from **raw full-fat milk** using whey water as a coagulant. The raw full fat milk, **vigorously churned** in an iron pot with a wooden plunger-like tool.
  - The molten mass of **milk solids was then separated by adding sour milk or curd** called mathar. Once stretched, the flattened cheese was cooled on the black iron pot itself, before being placed in a bowl to solidify.

- The solidified cheese was then sun **dried to help it to lose the moisture**. Since the ambient temperature in the mountainous area of Udhampur remains low despite a strong sun, the Kalari dried from the outside yet remain moist inside.
- **Key constraints:**
  - The product's **short shelf life**, especially without refrigeration, limits its market reach.
  - The government aims to **improve this** through scientific validation, **while ensuring the preservation of Kaladi's taste, texture**, and nutritional identity, with opportunities for recipe diversification.
- **Scientific support:**
  - The **CSIR-Central Food Technology Research Institute (CSIR-CFTRI), Mysuru, and the CSIR-Indian Institute of Integrative Medicine (CSIR-IIIM), Jammu**, will collaborate on nutrient profiling, characterisation, value addition, and shelf-life enhancement to facilitate the scaling up of Kaladi.
- **Market and export expansion:**
  - The initiative aims to bring Kaladi to **national and international markets**, improving farmer incomes and showcasing Dogra cuisine globally.



## *DEFENCE & SECURITY*

### PRALAY MISSILE

#### Context :

- Recently, India's newly developed Pralay missile cleared user evaluation trials on the eve of the New Year 2026, paving the way for its early induction into the armed forces.

#### About Pralay Missile:

- **Nature:** It is an indigenously-developed quasi-ballistic missile employing state-of-the-art guidance and navigation to ensure high precision. It is a solid propellant quasi-ballistic missile.

- **Development:** It has been developed by Research Centre Imarat and in collaboration with other Defence Research & Development Organisation labs.
- **Industry partners:** These include Bharat Dynamics Limited & Bharat Electronics Limited and many other industries and MSMEs.
- **Range:** The missile has a range of 150-500 km and can be launched from a mobile launcher.
- **Payload capacity:** It has a payload capacity of 500-1,000 kg.
- **Capability:** The missile is capable of carrying conventional warheads.
- **Speed:** The missile reaches terminal speeds of Mach 6.1 and can engage targets such as radar installations, command centers, and airstrips.
- **Guidance system:** It is equipped with state-of-the-art inertial navigation system and integrated avionics for pinpoint accuracy, with a Circular Error Probable (CEP) of less than 10 meters.



## SURYASTRA ROCKET LAUNCHER SYSTEM

### Context:

- Indian Army signed a ₹293 crore contract with private defence manufacturer NIBE Limited, for the supply of an advanced long-range rocket launcher system Suryastra.

### About Suryastra Rocket Launcher System:

- **Nature:** It is an advanced **long-range rocket launcher system**.
- **Development:** It is developed by **Pune-based NIBE Limited** in collaboration with Israel's Elbit Systems.
- **Uniqueness:** It is **India's first** indigenous universal multi-calibre rocket launcher system.
- **Range:** It is capable of executing precision surface-to-surface striking targets at ranges of **150 and 300 kilometers**.
- **Multi-target Capability:** It is designed to engage multiple **targets simultaneously** at varying ranges.
- **Precision:** It achieves a high degree of accuracy with a circular error probable (CEP) of **less than five metres** during trials. The same launcher is also capable of firing loitering munitions up to a range of 100 km.
- **Technologies used:** The system is based on Elbit Systems' **PULS (Precise & Universal Launching System)** launcher technology. It is equipped with a modern fire control system that integrates **GPS, inertial navigation**, and digital ballistic computation.



## BOEING E-4B NIGHTWATCH

### Context:

- Boeing E-4B Nightwatch, known as the 'Doomsday plane', has been sighted in Washington, days after the US captured Nicolas Maduro and his wife.

**About Boeing E-4B Nightwatch:**

- **Other names:** The Boeing E-4B Nightwatch is widely known as the “Doomsday Plane.”
- **Mandate:** Its mission is to ensure the **US government can continue to function even if “doomsday” arrives.**
- **Uniqueness:** It is the **most secretive aircraft in the US military’s** arsenal. It serves as the National Airborne Operations Center and functions as a flying command post.
- **Significance:** It is designed to keep the US government operational during **extreme scenarios such as nuclear war, catastrophic attacks on US soil,** or the destruction of ground-based command centres.
- **Part of NC3:** It is a core component of the military’s **Nuclear Command, Control, and Communications system,** often referred to as NC3, which enables senior leaders to authorize and manage nuclear forces under all conditions.
- **Operational planes:** There are **currently four E-4Bs** in service. At least one aircraft is kept on continuous alert at all times.
- **Previous uses:** The E-4B has been activated in a real emergency **only once, in the aftermath of the September 11, 2001 attacks,** when it was used to ensure continuity of government.
- **Modification:** It is built on a heavily modified **Boeing 747-200** airframe.
- **Carrying capacity:** Each E-4B has a maximum takeoff weight of **around 360,000 kilograms,** an unrefuelled endurance of roughly 12 hours, and an operating ceiling above 30,000 feet (about 9,091 metres). It can carry **up to 111 personnel,** including senior command staff, intelligence teams, and communications specialists.
- **Structure:** The main deck is divided into **six functional areas,** including command workspaces, conference and briefing rooms, an operations floor, communications hubs, and rest areas. The aircraft is hardened against electromagnetic pulse effects, **shielded against nuclear and thermal radiation,** and equipped with multiple layers of secure communications.



## MAN PORTABLE ANTI-TANK GUIDED MISSILE (MPATGM)

**Context:**

- Man Portable Anti-tank Guided Missile (MPATGM) Weapon System, indigenously developed by DRDO has been field evaluated in different flight configurations.

**About Man Portable Anti-Tank Guided Missile (MPATGM):**

- **Development:** It is indigenously designed and developed by **Defence Research & Development Organisation (DRDO).**
- **Partners:** **Bharat Dynamics Limited (BDL)** and **Bharat Electronics Limited (BEL)** are the development-cum-production partners (DcPP) for the MPATGM.
- **Composition:** The system consisted of the **MPATGM, Launcher, Target Acquisition System, and the Fire Control Unit.**
- **Generation:** It is the **third-generation “fire and forget” missile.**



- **Operational Range:** Its range is **minimum of 200m to a maximum of 4 km** (varies by source, commonly cited as up to 2.5–4 km).
- **Weight:** It is extremely **lightweight (approx. 14.5 kg)** to ensure portability by a single soldier.
- **Launch platforms:** The missile can be launched from a **tripod-mounted system as well as from a military vehicle-based launcher**, enhancing its operational flexibility.
- **Guidance system:** It uses a **Miniaturized Imaging Infrared (IIR) Seeker** for all-weather, day/night operations.
- **Warhead:** It is equipped with a **Tandem High Explosive Anti-Tank (HEAT) warhead**, specifically designed to defeat Explosive Reactive Armour (ERA).

## ICGS SANKALP

### Context :

- Recently, Indian Coast Guard Ship (ICGS) Sankalp visited Port Louis in Mauritius as part of overseas deployment in the Indian Ocean Region.

### About ICGS Sankalp:

- **Nature:** ICGS Sankalp is a **5th generation Advanced Offshore Patrol Vessel (AOPV)**.
- **Construction:** The vessel is indigenously built by the **Goa Shipyard Limited**.
- **Commissioning:** It was commissioned on **May 20, 2008, in Goa**.
- **Motto:** Its motto is "**Extending the Horizon**".
- **Functions:** It is designed primarily for **extended maritime surveillance, exclusive economic zone (EEZ) protection**, search and rescue operations, and enforcement of maritime laws within India's vast oceanic domains.
- **Structure:** The ship is **105-meter-long** with an endurance of 6,500 nautical miles.
- **Capacity:** It has displacement capacity of approximately **2,325 tonnes at full load**.
- **Surveillance:** It consists of HAL Chetak **rotary-wing aircraft** for enhanced aerial surveillance and SAR.
- **Armaments:** It is equipped with primary armament consisting of two 30 mm CRN-91 **twin-barrel naval guns**, designed for surface engagement and controlled by an **integrated fire control system**.
- **Navigation:** It is equipped with **state-of-the-art navigation and communication equipment**. It is also fitted with davits to deploy up to five high-speed interceptor boats.



## PECHORA MISSILE SYSTEM

### Context :

- Bengaluru-based Alpha Design Technologies Ltd (ADTL) has completed a major upgrade of the Indian Air Force's Pechora, a surface-to air missile (SAM) system.

### About Pechora Missile System:

- **Official name:** The Pechora missile system is officially known as the **S-125 Neva/Pechora**.

- **Nature:** It is a Soviet-origin, **medium-range surface-to-air missile (SAM) system** designed to intercept low- to medium-altitude targets.
- **Induction:** It has been a mainstay of India's air defence network **since the 1970s**.
- **Composition:** The system consists of a radar-guided **missile launcher and a fire control unit**, typically employing the V-600 missile.
- **Radar:** It uses the **4R90 Yatagan radar**, equipped with five parabolic antennas, to detect, track, and lock onto targets. Once a threat is identified, the system can launch missiles to intercept and destroy it mid-air.
- **Effectiveness:** It is particularly effective **against slow-moving or low-flying targets**, making it well-suited for countering drones and cruise missiles.
- **Operational efficiency:** It can **operate independently or as part of a larger, integrated air defence network**, and is capable of functioning even in environments with heavy electronic jamming.
- **Range:** The Pechora system has an operational **firing range of up to 30–35.4 km**, with some upgraded versions reaching 35.4 km.
- **Altitude:** It can engage targets flying at altitudes from as low as 20 meters **up to 20–25 km**, making it versatile for both low and medium-altitude threats.
- **Detection:** The system's radar can **detect targets up to 100 km away**, providing early warning and engagement capability.
- **Accuracy:** The Pechora boasts a **high kill probability of around 92%** and can engage up to two targets simultaneously at speeds up to 900 m/s.



## INS SUDARSHINI

### Context :

- The Indian Navy's Sail Training Ship INS Sudarshini will embark on the flagship voyage of Lokayan 26, a 10-month transoceanic expedition.

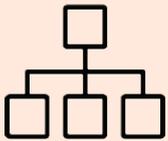
### About INS Sudarshini:

- **Nature:** It is an indigenously built **Sail Training Ship (STS)**.
- **Construction:** It was built by **Goa Shipyard Limited** and based at Kochi, Kerala under the Southern Naval Command of the Indian Navy.
- **Commissioning:** It was successfully built and was commissioned in **January 2012**.
- **Objective:** The aim of using such ships is to **make sailors sea-friendly**, as they are taught how to survive alone at sea, **understand rough weather conditions** and train themselves to become good sailors.
- **Class:** It is a **three-masted barque** and the sister ship of INS Tarangini.
- **Propulsion:** It is capable of operating under **both sail and diesel power**.
- **Capacity:** It has a very high endurance and can be deployed at sea continuously for a **period of twenty days**.

### About Lokayan 26:

- **Nature:** It is a **10-month transoceanic expedition** covering over 22,000 nautical miles.

- **Ship used:** It will be executed by **INS Sudarshini**, an indigenously built three-masted sail training ship based at the Southern Naval Command in Kochi.
- **Global reach:** The voyage will visit **18 ports across 13 countries**.
- **Objective:** Over 200 **trainees from the Indian Navy and Coast Guard will undergo intensive sail training** to master ocean navigation and eco-friendly maritime practices.
- **Key events:** The ship is scheduled to participate in prestigious international "tall-ship" events, viz. **Escale à Sète in France** and **SAIL 250 in New York City, USA**.
- **Strategic vision:** The mission aligns with **India's MAHASAGAR initiative** (Maritime Heritage and Security and Growth for All in the Region) and the philosophy of **Vasudhaiva Kutumbakam** ("The World is One Family").



### GOVT. INITIATIVES, SCHEMES AND POLICIES, ORGANISATION



## SOAR PROGRAMME

### Context:

- The President of India, Smt. Droupadi Murmu, recently graced a special function under SOAR Programme at the Rashtrapati Bhavan Cultural Centre (RBCC), New Delhi.

### About SOAR Programme:

- **Full Form:** SOAR stands for Skilling for AI Readiness.
- **Nodal ministry:** It is an initiative of the Ministry of Skill Development and Entrepreneurship (MSDE).
- **Objective:** It aims to integrate artificial intelligence learning into India's school education and training ecosystem, preparing both students and teachers for a rapidly evolving digital world.
- **Vision:** It has a vision to position India as a global leader in AI by preparing its youth for AI-driven careers and entrepreneurial ventures. It focuses on school students from classes 6 to 12 and educators across India.
- **Course:** It offers three targeted 15-hour modules for students and a 45-hour module for teachers. These courses introduce foundational AI and machine learning concepts, along with data literacy and the ethical use of technology.
- **Funding:** To this government provided ₹500 crore to establish a Centre of Excellence in Artificial Intelligence for Education.



- **Focus areas:** The centre will focus on developing AI-based learning tools, promoting multilingual AI resources for Indian languages, and fostering innovative classroom practices.
- **Future prospects:** It will also strengthen AI curriculum development across technical institutions and complement existing efforts by IITs and AICTE-approved colleges that already offer advanced courses in machine learning, deep learning, and data analytics.

## NPS VATSALYA SCHEME

### Context:

- Recently, the Pension Fund Regulatory and Development Authority (PFRDA) has issued the NPS Vatsalya Scheme Guidelines 2025.

### About NPS Vatsalya Scheme:

- **Nature:** It is a contributory savings and **long-term financial security scheme** designed exclusively for minors.
- **Regulatory Body:** It is regulated and administered by the Pension Fund Regulatory and Development Authority (PFRDA).
- **Eligibility:** It is open to all Indian citizens, including NRI/OCI, **below 18 years of age**.
- **Account Operation:** Account is opened in the name of the minor and is operated **by the guardian**.
- **Contribution:** **Minimum** initial and annual contribution is **₹250** and **there is no maximum limit** on contribution. The contribution can also be gifted by relatives and friends.
- **Pension Fund Selection:** Guardian can choose any one Pension Fund **registered with PFRDA** for this purpose.
- **Withdrawal Provisions:**
  - **Partial Withdrawal:** It is allowed after 3 years for specific purposes like education, medical treatment, or disability (up to 25% of own contributions).
  - **Exit at 18:** If the subscriber exits at 18, at least 80% of the corpus must be used to purchase an annuity, while 20% can be a lump sum (if the total corpus is  $\leq$  ₹2.5 lakh, a full lump sum is allowed).
- **Significance:**
  - **Financial Inclusion:** Expands the pension net to the younger population, ensuring "Viksit Bharat@2047" goals of a pensioned society.
  - **Intergenerational Equity:** Promotes wealth accumulation through the power of compounding over decades.
  - **Social Security:** Addresses long-term financial risks for minors, providing a cushion for retirement long before they enter the workforce.



## WOMANIYA INITIATIVE

### Context:

- Recently, the Government e-Marketplace (GeM) marked seven years of the Womaniya initiative.

### About Womaniya Initiative:

- **Launch:** It was launched on 14 January 2019.
- **Nature:** It is a flagship programme aimed at strengthening the **participation of women-led Micro and Small Enterprises (MSEs)** in public procurement.
- **Objective:** The initiative seeks to develop women entrepreneurship to achieve **gender-inclusive economic growth**.
- **Market access:** It allows women to **sell products like handicrafts, handlooms, jute, and home décor directly to various government ministries** and departments without intermediaries.
- **Milestone:** In January 2026, the initiative **celebrated seven years**, reporting that women-led MSEs have fulfilled orders worth over ₹80,000 crore on the GeM Portal.
- **Procurement targets:** It helps fulfil the mandatory government norm requiring **at least 3% of total annual procurement by central ministries/PSUs** to be from women-owned enterprises.
- **GeM & UN Women Partnership:** A recent MoU between GeM and UN Women India aims to enhance gender-responsive procurement and align with **Sustainable Development Goal 5 (Gender Equality)**.
- **Digital inclusivity:** The platform currently hosts **over 2 lakh registered women-led MSEs**, accounting for roughly 4.7% of the total order value on GeM.
- **Significance:** It addresses the **"triple challenge" of access to markets, finance, and value addition**. It also aligns with national missions like Aatmanirbhar Bharat and Make in India by integrating local value chains.



## CHIPS TO START-UP PROGRAMME

### Context:

- The Chips to Start-up Programme has delivered measurable outcomes across capacity building, infrastructure access, and hands-on chip design enablement.



### About Chips to Start-Up Programme:

- **Nodal ministry:** It is an umbrella capacity-building initiative launched by the **Ministry of Electronics and Information Technology (MeitY)** in 2022.
- **Objective:** It aims to **catalyse the incubation of 25 start-ups** and enable 10 technology transfers.

- **Funding and tenure:** The total outlay of the scheme is **Rs. 250 crore over five years**.
- **Institutional framework:** The **Centre for Development of Advanced Computing (C-DAC)** is the nodal implementing agency.
- **Focus areas:**
  - It targets the development of **85,000 industry-ready professionals** across undergraduate, postgraduate, and doctoral levels.
  - It seeks to provide access to **SMART lab facilities**, train one lakh students, generate 50 patents, and support at least 2,000 focused research publications.
  - It supports innovation, enhances **employability**, and enables academic institutions to play a more active role in India's semiconductor value chain.
- **Programme approach:**
  - The C2S Programme adopts a comprehensive approach, **providing students with hands-on experience** in chip design, fabrication, and testing.
  - It is achieved through **regular training sessions** in collaboration with industry partners, combined with mentorship and practical support.
  - Students gain **access to advanced chip design tools**, fabrication facilities, and testing resources, including state-of-the-art EDA software and semiconductor foundries.
  - These opportunities also include **implementing R&D projects** under the C2S Programme to develop working prototypes of Application-Specific Integrated Circuit (ASICs), Systems-on-Chip (SoCs), and Intellectual Property (IP) Core designs.

## ATAL PENSION YOJANA

### Context:

- Recently, the union cabinet approved the continuation of Atal Pension Yojana (APY) up to FY 2030-31.

### About Atal Pension Yojana:

- **Launch:** It was launched by the Government of India on **9th May 2015**.
- **Objective:** It was designed to **encourage voluntary savings for retirement** by offering defined pension benefits, linked to the age of joining and amount of contribution.
- **Administration:** It is administered by the **Pension Fund Regulatory and Development Authority (PFRDA)**.
- **Target group:** It is aimed at workers in the **unorganised sector**. It was initially available to all citizens of India between 18 and 40 years of age. With effect from 1st October 2022, individuals paying income tax are not eligible to join the scheme.
- **Guaranteed pension:** Subscribers can opt for a fixed pension ranging **from ₹1,000 to ₹5,000 per month**, depending on the contribution made.
- **Government co-contribution:** For subscribers who enrolled between June 1, 2015, and March 31, 2016, and met certain criteria, the government contributed **50% of the subscriber's amount or ₹1,000 per annum** for five years.



- **Exit and withdrawal options**
  - **Exit at age 60:** Full pension begins.
  - **Exit before age 60:** Permitted only in cases of death or terminal illness.
  - **Voluntary exit:** Allowed, but the subscriber only receives the contribution made (with interest) and government co-contribution (if any) is forfeited.

## PANCHAM

### Context:

- Recently, the Union Minister of State for Panchayati Raj launched the PANCHAM – Panchayat Assistance and Messaging Chatbot.

### About PANCHAM:

- **Full form:** PANCHAM stands for **Panchayat Assistance and Messaging Chatbot**.
- **Development:** It is a digital tool developed in collaboration with **UNICEF**.
- **Objective:** It is a flagship digital initiative aimed at **empowering Panchayat Elected Representatives and Functionaries**.
- **Focus areas:** It is designed as a digital companion for Panchayats, providing **timely and contextual guidance, simplified workflows, and easy access to information** to support day-to-day governance and service delivery functions.
- **Direct connect:** It enables, for the first time, a direct digital-connect **between the Government of India and Elected Panchayat Functionaries** across the country.
- **Language support:** It is **integrated with BHASHINI** and will support 22 Indian languages, enabling Panchayat representatives to interact with the platform in their preferred local language.
- **Citizen access:** Citizens would be able to access PANCHAM **through a QR-code-based entry mechanism**. It will facilitate quicker decision-making, and stronger feedback loops between the grassroots and decision-making centres.
- **Two-way communications:** It facilitates two-way communication and officials can **send feedback, ask questions, and flag local problems** directly to the ministry.
- **Information dissemination:** The Ministry would be able to directly disseminate **circulars, advisories, key messages, and updates** to Panchayat Elected Representatives and Functionaries.



## MODEL YOUTH GRAM SABHA

### Context:

- The Ministry of Panchayati Raj recently organised a National Award Ceremony to felicitate the winners of the Model Youth Gram Sabha.

### About Model Youth Gram Sabha:

- **Nature:** It is a simulated forum for **school children to participate in mock Gram Sabha sessions**.
- **Objective:** It is a pioneering initiative to **strengthen Janbhagidari and promote participatory local governance** by engaging students in simulated Gram Sabha sessions.

- **Uniqueness:** It is an initiative based on the Model UN – an educational simulation of the United Nations – in schools across the country
- **Nodal ministries:** It is an initiative of the Ministry of Panchayati Raj, in collaboration with the Ministry of Education and the Ministry of Tribal Affairs.
- **Implementation:** It will be rolled out across more than 1,000 schools nationwide, including Jawahar Navodaya Vidyalayas, Eklavya Model Residential Schools (EMRSs), and State Government Schools.
- **Focus:** Students from classes 9-12 will play the roles of sarpanch, ward members, and village-level officials, including village secretary, Anganwadi worker etc. They will hold mock meetings of the Gram Sabha, discuss various issues, and prepare the village budget and development plans.
- **Financial support:** The Panchayati Raj Ministry also provides a support of Rs 20,000 to each school for holding the mock Gram Sabha.



## PAIMANA PORTAL

### Context:

- MoSPI has operationalised a new web-based portal, PAIMANA portal for the mandated monitoring of Central Sector Infrastructure Projects worth ₹150 crore and above.

### About PAIMANA Portal:

- **Full Form:** PAIMANA stands for **Project Assessment, Infrastructure Monitoring & Analytics for Nation-building.**
- **Nodal ministry:** It is a flagship initiative of the **Ministry of Statistics and Programme Implementation (MoSPI).**
- **Objective:** It functions as a **centralised national repository of infrastructure projects, enabling web-generated analytical reports** and enhancing data accuracy, and operational efficiency.
- **Integration:** It is integrated with **DPIIT's Integrated Project Monitoring Portal (IPMP/IIG-PMG)** through APIs.
- **Centralized project monitoring:** It serves as a centralized project monitoring system, providing a **single-window interface for ministries, departments,** and implementing agencies to upload, track, and review project information.
- **Real-time dashboards:** It features real-time dashboards with drill-down capabilities, enabling **users to monitor progress across sectors, states, and timelines.**
- **Advanced data analytics:** It includes **role-based user access, interactive dashboards, reporting and query modules,** and review cases for identification of data gaps.



## MISCELLANEOUS

## HENLEY PASSPORT INDEX

## Context :

- The 2026 Henley Passport Index has shown significant shifts in global travel mobility, with Asia continuing to dominate the top ranks.

## About Henley Passport Index:

- Nature:** It is a popular ranking of global passports that **measures passport strength** by the number of destinations that holders can visit without a prior visa.
- Mandate:** The index **ranks countries** based on statistics provided by the **International Air Transport Association (IATA)**.
- Origin:** It started in **2006** as the Henley & Partners Visa Restrictions Index (HVRI).
- Publishing agency:** It is published by **London-based** global citizenship and residence advisory firm **Henley & Partners**.
- Coverage:** It ranks 199 different passports against **227 travel destinations**.
- Significance:** The **stronger the passport, the more countries its holders can enter without a prior visa** — a privilege that reflects diplomatic ties, economic influence, and international trust.
- Key Highlights of Henley Passport Index 2026:**
  - The top three passports in the world come from Asia. **Singapore ranks first**, while Japan and South Korea are tied for second place.
  - India's passport** also saw improvement, climbing five spots to **80th position**.
  - Afghanistan is at the bottom** of the list, ranked 101st, with visa-free access to 24 destinations.



## RESPONSIBLE NATIONS INDEX

## Context:

- Recently, India launched the Responsible Nations Index (RNI) at the Dr. Ambedkar International Centre, New Delhi.

## About Responsible Nations Index:

- Development:** It is developed by the **World Intellectual Foundation (WIF)** in collaboration with **Jawaharlal Nehru University (JNU)**, **IIM Mumbai**, and the **Dr. Ambedkar International Centre**.
- Uniqueness:** It is **India's first globally anchored index**.
- Objective:** It is designed to **assess countries on the basis of responsible governance, social well-being, environmental stewardship**, and global responsibility, moving beyond conventional power- and GDP-based measures.
- Coverage:** The Index covers **154 countries** and is built on transparent, globally sourced data to ensure credibility and comparability.

- **Significance:** It seeks to promote a **global dialogue on ethics, responsibility, global food security, and sustainable leadership** in international affairs. It is also expected to contribute to a more balanced and value-based understanding of national performance on the global stage.
- **Dimensions:** It is structured around **three core dimensions**, namely
  - **Internal responsibility:** It focuses on dignity, justice, and the well-being of citizens;
  - **Environmental responsibility:** It is covering stewardship of natural resources and climate action.
  - **External responsibility:** It measures a country's contribution to peace, cooperation, and global stability.
- **Key highlights of Responsible Nations Index 2026:**
  - **Top 3 countries:** Singapore (Rank 1), Switzerland (Rank 2), Denmark (Rank 3)
  - India is the top-ranked Asian nation. **India ranks 16th globally**, ahead of South Korea (21), Thailand (24) and Kyrgyzstan (22).
  - 9 of the top 10 countries are European, underscoring Europe's strength in institutional ethics.



## INDIRA GANDHI PEACE PRIZE

### Context :

- Recently, Mozambican rights activist Graca Machel has been selected for the Indira Gandhi Prize for Peace, Disarmament and Development for 2025.

### About Indira Gandhi Peace Prize:

- **Establishment:** It was instituted in the **memory of** the former Prime Minister **Indira Gandhi** by a trust in her name in **1986**.
- **Other names:** It is also known as the **Indira Gandhi Prize for Peace, Disarmament, and Development**.
- **Key features:** The prize carries a cash prize of **Rs 1 crore, a citation and a trophy**, and is regarded as one of India's prestigious international peace awards.
- **Eligibility:** It is **awarded annually** by the Indira Gandhi Memorial Trust to a **person or organization** without any distinction of nationality, race or religion, in recognition of creative efforts towards:
  - Promoting **international peace and disarmament**, racial equality, and goodwill and harmony among nations;
  - Securing **economic co-operation** and promoting a new international economic order;
  - Accelerating the all-round **advancement of developing nations**;
  - Ensuring that the discoveries of science and modern knowledge are used for the **larger good of the human race**; and



- Enlarging the scope of freedom and **enriching the human spirit**.
- **Recent winners:**
  - **2025: Graça Machel** (Mozambican activist) – For her contributions to peace and humanitarian action.
  - **2024: Michelle Bachelet** (Former President of Chile) – For her work in gender equality and human rights.
  - **2023: Daniel Barenboim and Ali Abu Awwad** (Jointly) – For promoting peace in the Israel-Palestine conflict through music and dialogue.

## JEEVAN RAKSHA PADAK AWARDS

### Context:

- Recently, the President of India has conferred the Jeevan Raksha Padak Series of Awards-2025 to 30 persons.

### About Jeevan Raksha Padak Awards:

- **Nature:** The Jeevan Raksha Padak awards are a **series of civilian life-saving honours** presented by the Government of India for meritorious acts of courage in saving a person's life.
- **Establishment:** Originally **instituted in 1961 as an offshoot of the Ashoka Chakra series**, these awards are traditionally announced on Republic Day.
- **Categories:** The Jeevan Raksha Padak Award is given in **three categories**, namely,
  - **Sarvottam Jeevan Raksha Padak:** It is awarded for conspicuous courage in saving life under circumstances of very great danger to the life of the rescuer.
  - **Uttam Jeevan Raksha Padam:** It is awarded for courage and promptitude in saving life under circumstances of great danger to the life of the rescuer.
  - **Jeevan Raksha Padak:** It is awarded for courage and promptitude in saving life under circumstances of grave bodily injury to the rescuer.
- **Eligibility:** **Persons of all walks** of life are eligible for these awards. The award can **also be conferred posthumously**.
- **Presentation:** It is presented to the awardees **by the respective Union Ministries/Organizations/State Government** to which the awardee belongs.
- **Nomination and approval:** Its **nominations are invited annually from States/UTs** and Union Ministries. The recommendations of the award are considered by the Awards Committee within a period of two calendar years from the date of performance of the act. **Final approval is given by the Prime Minister and the President** of India.
- **Award:** The decoration of the award consists of a **Medal, Certificate, along with a one-time monetary allowance:** Sarvottam Jeevan Raksha Padak (₹2 lakh), Uttam Jeevan Raksha Padam (₹1.5 lakh) and Jeevan Raksha (₹1 lakh).



## MUNA ISLAND

### Context :

- The painted outline of a human hand inside a cave on the Indonesian island of Muna represents what researchers are calling the oldest example of rock art in the world, created at least 67,800 years ago.

### About Muna Island:

- **Location:** It is situated in the Southeast **Sulawesi province of Indonesia**. The island falls within the Wallacea biogeographical zone, a transition area between Asian and Australasian flora and fauna.
- **Area:** With an area of **1,704 sq.km.**, it has a hilly surface, rising to 1,460 feet (445 metres). The north and northeast have teak forests.
- **Significance:** It is known for its **diverse culture and natural beauty**, including lush forests and pristine beaches.
- **Demographics:** The island is home to the **Muna people, who have a rich cultural heritage** and are known for their traditional crafts and dances.
- **Economy:** The economy of Muna Island is primarily based on **agriculture, fishing, and local crafts**.
- **Ports:** The main town and principal port is **Raha, on the northeastern coast** across the Strait of Buton from the neighbouring island of Buton to the east.
- **Tourist places:** One of the most famous natural attractions on Muna Island is the **Liangkobori Cave**, which contains prehistoric paintings. Additionally, there is **Napabale Lake**, which has a natural tunnel connecting it directly to the sea.



## FINKE RIVER

### Context :

- The Finke River, known to the Arrernte people as Larapinta, is believed to be the world's oldest river system, even older than the dinosaurs.

### About Finke River:

- **Location:** It is a major but intermittent river of central **Australia**.
- **Course:** It **starts in the MacDonnell Ranges** in the Northern Territory. It forms where two smaller creeks, Davenport and Ormiston, meet. It **flows for about 600 kilometers** (370 miles) towards the Simpson Desert in South Australia.
- **Uniqueness:** It is often called "**the oldest river in the world.**"
- **Origin:** A combination of geological records, weathering profiles, and radionuclide measurements in the surrounding sediments and rocks has enabled scientists to date this river system to the **Devonian (419 million to 359 million) or Carboniferous (359 million to 299 million) period**.



- **Antecedent River:** It is believed to be an antecedent river, meaning its course predates the uplift of the MacDonnell Ranges. As the mountains rose, the **river maintained its path by cutting through them, creating deep gorges like Palm Valley.**
- **Unique biodiversity:** Palm Valley along the river is home to the **Red Cabbage Palm**, a relic species from a much wetter prehistoric climate.
- **Appearance:** Most of the time, the Finke River **looks like a series of waterholes.** But after heavy rains, it can turn into a powerful, fast-flowing river. During big floods, its water can even reach the Macumba River and eventually Lake Eyre.
- **Cultural significance:** Known as Larapinta by the Indigenous Arrernte people, it holds **deep spiritual value in Aboriginal "Dreaming" stories.**

## HATTI TRIBE

### Context :

- "Boda Tyohar", the biggest annual festival of the Hati tribe in Himachal Pradesh's Sirmour commenced recently with traditional fervour.

### About Hatti Tribe:

- **Nomenclature:** The Hattis are a close-knit community who take their name from their age-old professional **practice of selling their homegrown crops at small markets called 'Haat'** in nearby cities.
- **Location:** These tribal people reside in the **Himachal-Uttarakhand border** in the basin of the Giri and Tons rivers, both tributaries of the Yamuna.
- **Social Structure:** The community maintains a rigid caste system, primarily divided into **upper castes (Bhat and Khash) and lower castes (Badhois).**
- **Clans:** There are two main Hatti clans: **one in the Trans-Giri area** of the Sirmour district in Himachal Pradesh and the **other in Jaunsar Bawar of Uttarakhand.** The two Hatti clans have similar traditions, and intermarriages are common.
- **Marriage:** **Jodidara is a traditional form of polyandrous marriage** practised among the Hatti tribe in Himachal Pradesh, where a woman marries two or more brothers. **Polyandry is legally recognised** in Himachal Pradesh under revenue laws.
- **Attire:** Hatti men traditionally don **distinctive white headgear** on ceremonial occasions.
- **Governance:** Harris is governed by a **traditional council called 'khumbli'** which decides community matters.
- **Economy:** The Hatti population **relies on agriculture** for livelihood and bare subsistence since their climate is ideal for **growing "Cash Crops."**
- **Festival:** **Boda Tyohar, also called Magho ko Tyohar,** is the biggest annual festival of the Hatti tribe.
- **Population:** According to the **2011 census,** members of the community numbered **around 2.5 lakh,** but at present the population of the Hattis is estimated at around 3 lakhs.
- **ST Status:** In 2023, the Indian government granted Scheduled Tribe (ST) status to the **Hatti community in Himachal Pradesh.**



**MAINS****PAPER 1**

## URBAN IS THE NEW POLITICAL: URBANISATION, INFRASTRUCTURE AND THE RECASTING OF INDIAN DEMOCRACY

**Context (Introduction):**

- India marks **20 years of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM)**—one of the earliest large-scale urban regeneration programmes. Since **1990**, India’s urban population has risen from **25% to about one-third**, and is projected to reach **~40% by the end of the decade**. This shift signals not just demographic change, but a **reorientation of political power, infrastructure priorities, and state–citizen relations**.

**Core Idea**

Urbanisation in India has transformed the **city from a site of residence into a site of power**. “Urban is the **new political**” because cities now shape:

- Economic growth strategies
- Infrastructure investment models
- Social aspirations
- Democratic engagement

Urbanisation must therefore be understood as a **political and infrastructural process**, not just spatial expansion.

**Key Arguments & Analysis****1. From Agrarian Imagination to Urban Reality (GS-1)**

India, long imagined as:

- A **village-centric society** (Gandhian ideal)
- An agrarian democracy

is now experiencing a decisive **urban turn**:

- Over **500 million Indians** live in towns and cities
- Urban spaces increasingly define **youth aspirations, consumption patterns and social mobility**

**2. Evolution of Urban Policy Regime (GS-3)**

Post-1990 liberalisation reshaped urban governance through:

- **JNNURM (2005)** – infrastructure + governance reforms
- **AMRUT (2015)** – water, sanitation, mobility
- **Smart Cities Mission** – technology-driven urban management

These programmes reflect a shift from welfare-oriented planning to **growth-led urban infrastructure**.

### 3. The New Urban Model: Capital Attraction over Citizenship

According to the article, contemporary cities are increasingly designed to:

- Attract **global capital**
- Enable **elite consumption**
- Promote **urban beautification** and gentrification

Manifestations include:

- Gated communities
- Corporate-friendly highways
- Glass towers replacing traditional livelihoods

This **top-down urbanism** privileges:

- Wealthy residents
- Cosmopolitan elites
- Entrepreneurial classes

often at the cost of:

- Informal workers
- Migrants
- Urban poor

### 4. Infrastructure Conflicts as Political Flashpoints

Urban infrastructure has become a site of contestation:

- Protests against **Aravalli hill exploitation**
- Opposition to **Great Nicobar Island Development Project**
- Gig workers' resistance to platform-based service aggregators

These conflicts reflect:

- Displacement and ecological stress
- Unequal distribution of urban gains
- Weak participatory planning

**Urban infrastructure is no longer neutral—it is political.**

### 5. Changing State–Citizen Relationship

Urbanisation reshapes democracy itself:

- Citizens engage the state through **municipal politics**, not just national elections
- Governance shifts from redistribution to **service delivery and growth management**
- Democracy becomes more **managerial, technocratic and uneven**

## Why It Matters

- Cities generate the bulk of **GDP and infrastructure demand**
- Urban youth shape **future political behaviour**
- Poorly governed urbanisation leads to:
  - Social unrest
  - Ecological degradation
  - Democratic alienation

Urbanisation, if exclusionary, can **undermine social cohesion** and **democratic legitimacy**.

## Way Forward: Towards Good Urban Politics

### 1. Re-centre Citizenship in Urban Planning

- Move beyond capital-centric city building
- Recognise migrants, informal workers and slum dwellers as **urban citizens**, not encroachments

### 2. Strengthen Urban Local Governments

- Genuine fiscal and functional devolution
- Empower municipalities as **democratic institutions**, not implementation agencies

### 3. Infrastructure with Social Legitimacy

- Participatory planning
- Environmental safeguards
- Inclusive housing and transport systems

### 4. Balance Growth with Justice

- Avoid “glass-tower urbanism”
- Integrate ecological sustainability with infrastructure expansion

## Conclusion

- Urbanisation in India is not just **about cities growing bigger**, but about **democracy changing shape**. Better cities will not emerge from infrastructure alone. They require **good urban politics** inclusive, participatory and socially grounded if India’s urban future is to strengthen rather than fragment its democracy.

## INDIA THE BEAUTIFUL MUST BECOME INDIA THE FUNCTIONAL: TOURISM, SOCIETY AND THE EXPERIENCE ECONOMY

### Context (Introduction):

- India possesses **extraordinary civilisational depth, cultural diversity and natural beauty**, yet attracts only **5.6 million foreign tourists (Aug 2025)**—a modest figure for a country of **1.4 billion people**. Countries like **Thailand and Singapore**, despite smaller size, outperform India in tourism receipts and arrivals. This gap reflects not a lack of heritage, but **structural and social deficits** in how India delivers the tourism *experience*.

## Core Idea

Tourism is a **social experience economy**, not just a cultural showcase. India's tourism underperformance arises from three interlinked societal challenges:

- **The Three "I" Deficit**
  1. **Image**
  2. **Infrastructure**
  3. **India itself (social behaviour and service culture)**

Unless these are addressed together, India will remain a **"tantalising idea rather than a top-tier destination."**

## Key Challenges (Indian Society Lens)

### 1. Image Deficit: Perception of Safety and Inclusiveness

- Persistent global concerns about **women's safety**, harassment, and scams
- Negative headlines outweigh branding campaigns like **'Incredible India'**
- Tourists seek **welcome, trust and predictability**, not confrontation

### 2. Infrastructure as a Social Experience

Tourist experience begins at:

- **Airports, immigration counters, taxis, public toilets, signage, Wi-Fi.** Hospitality sector faces a **~40% trained staff shortfall**

Issues:

- Poor last-mile connectivity
- Unreliable sanitation and digital access
- Inconsistent quality outside luxury hotels

### 3. "India Itself": Social Behaviour and Service Culture

- Overcrowding, noise, aggressive solicitation
- Lack of multilingual professionalism
- Tourism seen as **fallback employment**, not a respected vocation

Graduates prefer **office jobs over hospitality**, affecting service quality.

### 4. Gender Dimension

- Women travellers disproportionately affected by safety concerns
- **Underrepresentation of women in tourism** workforce reduces trust
- Harassment and scams erode India's social image abroad

## Why It Matters

- Tourism creates **more jobs per rupee** than manufacturing (WTO data)
- Employs **unskilled and semi-skilled youth**—key for demographic dividend

- Acts as a **soft-power amplifier** shaping global perceptions of Indian society
- In South Asia, tourism failure has contributed to **youth unrest** (Sri Lanka, Bangladesh)

**Tourism is not just economic—it is a social stabiliser.**

## Way Forward

### 1. Rebrand Beyond Monuments

- Move from generic branding to **segmented narratives**:
  - **Spiritual India, Adventure India, Luxury India, Living India**
- Promote curated circuits:
  - **Buddhist Circuit**
  - **Ramayana Circuit**
  - **Himalayan & Coastal Trails**

### 2. Professionalise the Social Interface

- Large-scale **vocational training** in hospitality
- Multilingual guides and tourist police
- **Centralised verified apps** for guides, transport, and payments
- Treat tourism as a **calling**, not casual labour

### 3. Gender-Responsive Tourism

- Hire and train **more women** in tourism services
- Strong enforcement against harassment and scams
- Safe public spaces and transport as default infrastructure

### 4. Ease of Entry & Welcome Culture

- Expand **e-visas**, long-term multi-entry visas
- Train immigration officers in **courtesy and cultural sensitivity**
- “Visa on Arrival for the World” as an aspirational goal

### 5. Sustainable & Community-Based Tourism

- Regulate footfalls at fragile sites
- Promote **homestays, eco-lodges, local artisans**
- Ensure development does not degrade **culture or environment**

## Conclusion

India does not need to **reinvent** itself it needs to **refine** itself. The world is not rejecting India’s culture; it is hesitating at India’s **functionality, safety and social experience**. Until **image, infrastructure and social behaviour** align, India will remain admired from afar but avoided in practice. Making **India functional** is the first step to making **India unforgettable**.

## PAPER 2

## THE WATER DIVIDE: ACCESS WITHOUT QUALITY

## Context (Introduction):

- The Indore water contamination tragedy, which led to multiple deaths and illness among over 2,000 residents, exposes a critical gap in India's water governance: rapid expansion of piped water access without commensurate assurance of water quality at the consumer end.

## Current Status: Water Quality and Water Stress in India

- **High coverage, low safety:** NFHS-5 shows **96% of households use "improved" drinking water sources**, yet WHO estimates that unsafe water causes **over 1.5 lakh deaths annually in India**, mainly from diarrhoeal diseases.
- **Urban vulnerability:** Even "clean" cities like Indore and campuses like VIT Bhopal (2025 jaundice outbreak) reveal that municipal supply is not inherently safe.
- **Severe water stress:** NITI Aayog's *Composite Water Management Index* warns that **600 million Indians face high-to-extreme water stress**, with 21 cities projected to run out of groundwater.
- **Chemical contamination:** Government data shows **fluoride, arsenic, iron and nitrate contamination** affecting drinking water in over **300 districts**, especially in central and eastern India.
- **Infrastructure deficit:** The Ministry of Housing and Urban Affairs notes that **over 40% of urban water is lost** through leakages, increasing contamination risks.
- **Disease burden:** India accounts for a disproportionate share of global **water-borne diseases**, with children under five most affected.

## Core Issues in Water Quality Governance

- **Coverage-first approach:** Jal Jeevan Mission prioritised tap connections; however, **quality monitoring has lagged behind scale**, leading to unsafe last-mile delivery.
- **Inadequate testing frequency:** Many States test water **only periodically**, not continuously, allowing contamination to go undetected for weeks.
- **Ageing pipelines:** Old, corroded pipes often run alongside sewage lines, causing cross-contamination, as seen in Indore and earlier cases in Chennai and Bengaluru.
- **Fragmented accountability:** Water sourcing, treatment and distribution fall under different agencies, diluting responsibility when failures occur.
- **Weak enforcement:** BIS drinking water standards exist, but penalties for municipal non-compliance are rare.
- **Poor public disclosure:** Unlike air quality indices, **real-time water quality data is rarely shared with citizens**, delaying preventive action.

## Government Efforts and Policy Measures

- **Jal Jeevan Mission (JJM):** Provided tap connections to over **13 crore rural households**, with a mandate for water quality testing labs, though utilisation varies widely across States.
- **Swachh Bharat Mission:** Reduced open defecation from 39% (2014) to single digits, indirectly lowering faecal contamination, but sewerage coverage remains incomplete.

- **AMRUT & AMRUT 2.0:** Target urban water supply and sewerage; however, CAG reports highlight delays and under-utilisation of funds.
- **National Water Policy:** Advocates integrated water resource management and pollution control, but implementation remains uneven.
- **Water Quality Monitoring & Surveillance Programme:** Exists on paper, yet many districts lack functional labs or trained personnel.
- **NITI Aayog alerts:** Repeatedly flagged declining groundwater quality and urged States to treat water safety as a public health priority.

### Way Forward: Reforms Needed

- **From access to assurance:** Treat **potable quality at the delivery point** as a core service obligation, not an optional add-on.
- **Real-time monitoring:** Deploy sensor-based testing and community-level kits for early detection of microbial and chemical contaminants.
- **Infrastructure renewal:** Replace ageing pipelines and ensure physical separation of drinking water and sewage networks.
- **Clear accountability:** Assign a single authority at the city/district level responsible for end-to-end water safety.
- **Strict enforcement:** Mandate compliance with BIS standards, backed by financial penalties and independent audits.
- **Citizen awareness:** Publish water quality dashboards and issue timely advisories, similar to air quality alerts.

### Conclusion

- India's water challenge has moved beyond scarcity to safety. As NITI Aayog cautions, expanding access without quality assurance risks turning a welfare success into a public health crisis. Safe drinking water must shift from intent-driven policy to enforceable, transparent governance.

## GENERAL CATEGORY AND MERIT: CONSTITUTIONAL MEANING OF RESERVATION

### Context (Introduction):

- A recent Supreme Court ruling clarified that the **general (open) category is not reserved for any social group**, but is a merit-based pool open to all candidates. The judgment arose from exclusion of meritorious reserved-category candidates during recruitment shortlisting, raising concerns that affirmative action was being misapplied to create **new forms of exclusion**, contrary to Article 14 and Article 16.

### Reservation in India: Constitutional Basis and Rationale

- **Article 16(1):** Guarantees equality of opportunity in public employment for all citizens.
- **Article 16(4):** Permits reservation for backward classes inadequately represented in services—an **exception**, not the rule.
- **Article 14:** Prohibits arbitrary classification; reservation must further substantive equality, not reverse discrimination.
- **Rationale:** Address historical exclusion, structural disadvantage, and lack of representation—not to penalise merit.
- **Nature of reservation:** Reservation applies **only to earmarked posts**, not to open competition posts.

### Judicial Evolution on Merit and Reservation

- **Supreme Court of India – Indra Sawhney (1992):** Open category posts are available to all; reserved candidates qualifying on merit cannot be excluded.
- **Saurav Yadav (2021):** Reaffirmed that meritorious reserved candidates must be counted in the open category, not forced into reserved slots.
- **Core principle:** Reservation cannot be applied in a manner that **undermines merit-based equality** under Article 16(1).

### The Latest Judgment: Key Constitutional Clarifications

- **Open category is not a quota:**
  - The Court held that treating the general category as exclusive to non-reserved candidates converts it into “communal reservation,” violating Articles 14 and 16.
- **Merit over social identity:**
  - A reserved-category candidate crossing the general cut-off does so **on merit**, not by availing reservation.
- **No “double benefit”:**
  - Reservation is availed only when relaxations (age, marks, standards) are used. Mere social identity does not amount to benefit.
- **Shortlisting stage matters:**
  - Since written exam marks formed a substantial part of final selection, exclusion at this stage caused irreversible harm.
- **Merit-induced shift, not migration:**
  - The Court clarified this is not “migration” at a later stage, but competing in the open category from the outset.
- **Corrective directions:**
  - First prepare a **common merit list**, then fill reserved posts from remaining candidates.
- **Protection against disadvantage:**
  - A meritorious reserved candidate cannot be forced into an open slot if it results in losing a better post available under reservation.

### Significance of the Ruling

- Reinforces that **reservation is a tool of inclusion**, not exclusion.
- Prevents **penalisation of merit** among disadvantaged groups.
- Ensures consistency between **affirmative action and equality of opportunity**.
- Provides clarity to recruitment agencies on constitutionally compliant selection processes.

### Way Forward

- **Standardised recruitment guidelines:** Mandate merit-first preparation of open category lists across all public recruitments.
- **Administrative training:** Sensitise recruiting authorities on constitutional limits of reservation.
- **Judicial consistency:** Apply the principle uniformly across multi-stage examinations.
- **Policy clarity:** Avoid mechanical category-wise segregation at intermediate stages.
- **Balance equality goals:** Ensure reservation continues to correct disadvantage without creating new inequities.

## Conclusion

- The judgment restores the constitutional balance between **merit and social justice**, reaffirming that equality of opportunity remains the rule and reservation its carefully limited exception. By clarifying that the general category is open to all, the Court ensures that affirmative action remains a **means of empowerment**, not a mechanism of unintended exclusion.

## INDIA–LATIN AMERICA RELATIONS: A NEW WINDOW OF OPPORTUNITY BEYOND MADURO

### Context (Introduction):

- Recent political churn in Latin America, triggered by renewed U.S. intervention in Venezuela and the potential end of the Maduro era, signals a broader geopolitical reordering in the region. These developments open a strategic window for India to correct its prolonged neglect of Latin America and recalibrate its regional engagement.

### Core Idea

The **post-Maduro transition** could **dilute the long-standing axis of anti-American politics backed by extra-regional powers like China and Russia**, creating space for **diversified partnerships**. For India, the moment offers an opportunity to deepen political, economic, and diplomatic engagement in a region undergoing internal churn and restructured great-power relations.

### Challenges in India's Latin America Policy

- **Strategic Marginalisation:** Latin America has remained **peripheral to India's foreign policy** priorities compared to the immediate neighbourhood and Indo-Pacific.
- **Limited Economic Footprint:** India's annual trade with the region (**~\$45 billion**) is **modest relative to China's ~\$500 billion**.
- **Diplomatic Thinness:** Sparse high-level visits and institutional mechanisms limit sustained engagement.
- **Over-dependence on China-centric Trade:** Indian exports remain concentrated in few markets, increasing vulnerability to global shocks.

### Why the Moment Matters for India

- **Geopolitical Flux:** U.S. reassertion in the Western Hemisphere and declining left-wing populism reduce ideological barriers to engagement.
- **Economic Diversification:** Latin America's **\$5.5 trillion economy and 650 million population offer scope for trade diversification amid global protectionism**.
- **Strategic Balancing:** Regional **states seek alternatives to excessive Chinese capital**, technology, and market dependence.
- **South–South Synergy:** Shared developmental challenges allow **cooperation in pharmaceuticals, digital public infrastructure, energy transition, and agriculture**.

### Way Forward

- **Institutionalise political engagement** through regular summits and strategic dialogues
- Expand trade agreements **and promote Indian private sector presence**
- Strengthen development cooperation and capacity-building initiatives
- Invest in **cultural, educational, and people-to-people linkages** to sustain long-term influence

## Conclusion

- The unfolding changes in Latin America are not merely regional disturbances but part of a larger reconfiguration of global power. For India, **moving beyond episodic diplomacy** to sustained engagement can convert this moment into a strategic opportunity—enhancing economic resilience, geopolitical reach, and the credibility of its global ambitions.

## THE RIGHT TO DISCONNECT IN AN 'ALWAYS-ON' ECONOMY: A GLOBAL NORMS PERSPECTIVE

### Context (Introduction):

- Digital technologies have transformed work into a 24×7 activity, eroding the boundary between professional and personal life. **This culture of constant availability has produced a silent crisis of burnout, mental health stress, and declining productivity.** The debate on the “right to disconnect” has thus moved from a labour welfare concern to a global governance and international norms issue.

### Core Idea

The right to disconnect recognises an **employee’s entitlement to disengage from work-related digital communication beyond prescribed working hours without fear of reprisal.** It reframes **occupational safety** to include mental well-being, aligning labour rights with contemporary realities of platform work, remote employment, and hyper-connectivity.

### Problem Diagnosis (Indian Context)

- **Excessive Working Hours:** ILO data show over **half of India’s workforce** works more than **49 hours per week.**
- **Mental Health Externalities:** National surveys link work-related **stress to rising anxiety, depression, and lifestyle diseases.**
- **Regulatory Gaps:** The Occupational Safety, Health and Working Conditions Code, 2020 caps **hours mainly for “workers”, excluding large sections of contractual, freelance, and gig employees.**
- **Power Asymmetry:** Fear of disciplinary action for delayed responses skews bargaining power towards employers in digitally monitored workplaces.

### Why It Matters (Global and Economic Logic)

- **Article 21 – Right to Life with Dignity:** Mental well-being and reasonable rest are **integral to a dignified life,** as recognised in **judicial interpretations of Article 21.**
- **Directive Principles: Articles 39(e), 39(f), and 42** obligate the State to protect workers’ health and **ensure just and humane working conditions.**
- **Equality Concerns:** Exclusion of gig and contractual workers raises **issues under Article 14 due to arbitrary classification.**
- **Democratic Governance:** A fatigued workforce weakens citizen participation and long-term institutional capacity.
- **International Norm Diffusion:** Countries such as **France, Italy, Ireland, Portugal, and Australia** have **legislated limits on after-hours digital communication,** recognising downtime as essential to productivity.
- **Competitiveness Argument: Empirical evidence** from advanced economies shows that **respecting rest improves innovation, reduces errors, and sustains long-term output.**
- **Human Capital Protection:** In an economy driven by services and knowledge work, mental well-being is a strategic asset.

- **Normative Alignment:** Adoption strengthens India's compliance with evolving global labour standards promoted by the ILO.

### Way Forward

- Amend the OSH Code to extend the right to disconnect to all categories of workers, including gig and contractual employees
- Create **grievance redress mechanisms** against digital overreach
- Promote organisational culture change **through awareness and compliance audits**
- Integrate mental health support within occupational safety frameworks

### Conclusion

- The right to disconnect is not an anti-growth measure but an investment in sustainable productivity. As global labour norms evolve to address the realities of the digital economy, India's willingness to institutionalise this right will signal whether its growth model values speed alone—or the strength and resilience of its human capital.

## SAVING THE ARAVALLIS: WHY INDIA MUST 'THINK LIKE A MOUNTAIN'

### Context (Introduction):

- The Aravalli range, one of the world's oldest mountain systems, faces sustained ecological degradation due to mining, urbanisation, and fragmented governance across Rajasthan, Haryana, and the National Capital Region. Despite recent Supreme Court interventions—such as pausing height-based reclassification of hills—the crisis persists, highlighting deeper governance and environmental failures.

### Core Idea

The **ecological principle of “thinking like a mountain”**, coined by **Aldo Leopold**, which emphasises **long-term ecosystem integrity over short-term economic gains**. Applied to the Aravallis, this approach demands treating the **mountain range as an integrated ecological system rather than as discrete parcels** defined by administrative or legal thresholds.

### Problem Diagnosis: Governance and Environmental Failures

- **Short-termism in policymaking:** Prioritisation of construction materials and real estate over ecological stability has led to quarrying, deforestation, and landscape fragmentation.
- **Reductionist legal definitions:** Height-based classification of hills **ignores ecological functions of low-lying ridges**, exposing them to mining and degradation.
- **Fragmented governance:** District-wise mining leases and State-level jurisdictions fail to reflect the **transboundary nature of the Aravalli ecosystem**.
- **Ecological disruption:** Mining and urban sprawl disturb natural drainage, accelerate soil erosion, reduce forest cover, and disrupt food webs.

### Why the Aravallis Matter

- **Environmental security:** The Aravallis act as **groundwater recharge zones, biodiversity corridors, and a climatic barrier limiting desertification from the Thar**. Recognising these functions, the Supreme Court in **MC Mehta v. Union of India (Aravalli mining cases)** prohibited mining in ecologically sensitive areas, affirming that environmental protection must override commercial exploitation

- **Climate resilience:** Forested hills **capture carbon, regulate microclimates, and influence the monsoon system** in northern India.
- **Constitutional mandate:** **Article 48A** directs the State to **protect and improve the environment**, while **Article 21** (as judicially interpreted) includes the **right to a healthy environment**. In **Vellore Citizens' Welfare Forum v. Union of India (1996)**, the Court embedded the doctrine of **Sustainable Development** into Indian law, holding that development cannot be pursued at the cost of irreversible environmental damage
- **Intergenerational equity:** Irreversible ecological damage violates the principle that development must not compromise future generations.

#### Way Forward:

- Adopt **ecosystem-scale governance**, treating the Aravallis as a single ecological unit rather than fragmented administrative zones
- Replace district-wise mining permissions with a **comprehensive Aravalli management plan** based on ecological carrying capacity
- Align judicial definitions with scientific understanding of ecological connectivity
- Strengthen enforcement of environmental laws through coordinated Centre–State mechanisms
- Embed long-term ecological impact assessments into all land-use and infrastructure decisions

#### Conclusion

- The Aravalli crisis illustrates the dangers of governance that values immediate economic returns over ecological permanence. **“Thinking like a mountain” is not environmental romanticism but policy realism** recognising that while forests may regrow in decades, mountain ecosystems formed over millions of years are irreplaceable. For a megadiverse country like India, ecological short-sightedness would be the costliest failure of governance.

## STRENGTHENING INDIA'S FIGHT AGAINST ANTIMICROBIAL RESISTANCE (AMR)

#### Context (Introduction):

- Antimicrobial Resistance (AMR) has emerged as one of India's **most serious public health challenges**. The Prime Minister's reference to AMR in the December 2025 *Mann Ki Baat* broadcast marks a rare moment of political signalling on the issue. This intervention has the potential to mainstream AMR as a public concern, but awareness alone will be insufficient without systemic strengthening of surveillance and governance.

#### Core Idea

AMR occurs when **microorganisms evolve resistance to antibiotics** due to their irrational and excessive use. In India, AMR has expanded beyond hospitals into communities, agriculture, and the environment, demanding a comprehensive **One Health approach** that integrates human, animal, and environmental health systems.

#### Problem Diagnosis: Gaps in India's AMR Response

- **Indiscriminate antibiotic use:** Self-medication and over-the-counter availability have accelerated resistance, reducing the effectiveness of antibiotics for common infections.
- **Surveillance blind spots:** India's AMR surveillance network **remains heavily urban- and tertiary-care-centric, failing to capture community-level resistance patterns**.
- **Limited representativeness:** The **National AMR Surveillance Network (NARS-Net)** and **WHO's GLASS** data draw from a restricted number of sites, excluding large non-urban populations.

- **Exclusion of private healthcare:** Absence of private hospitals from routine surveillance weakens the national resistance picture.
- **Fragmented implementation:** While policy frameworks exist, enforcement, monitoring, and investment remain uneven.

### Why It Matters

- **Threat to health security:** Rising resistance **undermines treatment of pneumonia, urinary tract infections, and post-surgical care.**
- **Economic burden:** AMR **increases healthcare costs, prolongs illness, and reduces workforce productivity.**
- **Equity concern:** Rural and primary-care settings face higher vulnerability due to poor diagnostics and delayed treatment.
- **Global obligation:** India's AMR trends influence global health outcomes, given its population size and pharmaceutical footprint.

### Way Forward

- Expand AMR surveillance to **secondary and primary healthcare centres**, especially in non-urban regions
- Mandate inclusion of **private hospitals and laboratories** in national surveillance systems
- Strengthen enforcement of prescription-only antibiotic sales
- Integrate AMR awareness with behavioural change campaigns beyond episodic messaging
- Operationalise a robust **One Health framework** linking human health, veterinary use, and environmental controls

### Conclusion

- Political acknowledgement of AMR is a necessary first step, but India's real challenge lies in fine-tuning surveillance, regulation, and enforcement. Without representative data and systemic integration, AMR will continue to outpace policy responses. A strengthened, inclusive surveillance architecture is essential to convert awareness into effective national action against one of the gravest health threats of the 21st century.

## USING GSDP SHARE AS A CRITERION FOR CENTRE–STATE TRANSFERS: A FEDERAL PERSPECTIVE

### Context (Introduction):

- Centre–State fiscal transfers in India are determined primarily through Finance Commission (FC) recommendations, which decide both the vertical devolution and the horizontal distribution among States. In recent years, these **transfers have become contentious due to GST-related revenue changes, rising cesses and surcharges, and perceptions among high-performing States that their tax contributions are not adequately reflected in devolution outcomes.**

### Core Idea

State's share in Gross State Domestic Product (GSDP) can serve as a meaningful proxy for the accrual of central taxes at the State level. Since direct tax collections are recorded at the place of registration rather than the place of income generation, GSDP better reflects underlying economic activity and contribution to national income than raw tax collection figures.

### Limitations of the Existing Devolution Framework

- **Mismatch between tax collection and economic activity:** Direct taxes are attributed to the location of registered offices, disadvantaging manufacturing and labour-exporting States.
- **GST distortions:** Destination-based GST captures consumption, not production, weakening its use as a contribution metric.
- **Erosion of fiscal autonomy:** Rising reliance on cesses and surcharges reduces the divisible pool shared with States.
- **Equity–efficiency tension:** Heavy reliance on income distance prioritises redistribution but undervalues contribution by high-GSDP States.
- **Perception of unfairness:** States like Maharashtra, Karnataka and Tamil Nadu contribute a higher share of national output but receive lower shares of transfers.

### Why GSDP Matters

- **Better proxy for tax accrual:** Empirical evidence shows a strong correlation between States' GSDP shares and central tax accruals, stronger than with devolution outcomes.
- **Balancing equity and efficiency:** GSDP captures contribution, while other criteria can continue to address regional disparities.
- **Fiscal federal trust:** Recognising economic contribution enhances the credibility and acceptability of the transfer system.
- **Cooperative federalism:** A formula that reflects both capacity and need reduces inter-State friction and strengthens Centre–State relations.

### Way Forward

- Increase the weight of **GSDP share** as a criterion in **horizontal devolution** while retaining redistributive variables
- **Improve inter-State data on production, migration, and multi-location enterprises**
- **Rationalise cesses and surcharges** to restore the size of the divisible pool

### Conclusion

- India's fiscal federalism must evolve from a narrow redistribution framework to one that also acknowledges economic contribution. Incorporating GSDP more prominently in devolution formulas can **strike a pragmatic balance between equity and efficiency, strengthen cooperative federalism, and enhance the legitimacy of Centre–State fiscal transfers in a post-GST era.**

## AMERICA'S RETREAT FROM THE LIBERAL INTERNATIONAL ORDER IT ONCE BUILT

### Context (Introduction):

- The post-Second World War global order was largely shaped and led by the United States through institutions such as the United Nations and the Bretton Woods system. However, recent U.S. policy choices—especially under the Trump administration **signal a growing disengagement from the very multilateral architecture it helped create, raising concerns about the future of global governance.**

### Core Idea

The **U.S. is progressively walking away from rules-based multilateralism in favour of unilateral, transactional, and short-term national interest calculations.** This shift threatens the stability, legitimacy, and effectiveness of international institutions that have underpinned global cooperation and relative order for decades.

## Nature of the U.S. Retreat

- **Erosion of Multilateral Commitment:** Withdrawal from or undermining of global organisations dealing with **trade, climate change, migration, and human rights** weakens institutional credibility.
- **Unilateralism and Executive Action:** Increased reliance on **executive orders and tariffs bypasses negotiated norms** and dispute-resolution mechanisms.
- **Normative Inconsistency:** Actions such as **violating sovereignty norms** while claiming to uphold international law dilute moral authority.
- **Trade System Disruption: Protectionist tariffs and coercive bargaining** undermine the predictability of the global trading system.
- **Leadership Vacuum:** Reduced U.S. engagement **leaves institutions under-resourced and directionless.**

## Why It Matters

- **Fragility of Global Institutions:** Institutions like the UN and WTO depend on leadership by major powers for enforcement and legitimacy.
- **No Ready Substitute:** While **China** may expand its influence, it lacks **both normative acceptance and institutional depth** to fully replace U.S. leadership.
- **Impact on Global South:** Multilateral weakening disproportionately affects developing countries that rely on rules-based systems for voice and protection.
- **Rule-based Order at Risk:** Retreat from norms risks a return to power-centric, interest-driven global politics.

## Implications for India

- **Strategic Autonomy Challenge:** A weakening multilateral order complicates India's reliance on international law and institutions.
- **Opportunity for Middle-Power Diplomacy:** India can play a stabilising role by supporting institutional reform and coalition-based multilateralism.
- **Need for Issue-based Engagement:** Climate action, trade reform, and development finance require India to engage beyond great-power binaries.

## Way Forward

- Strengthen and reform multilateral institutions rather than abandon them
- Encourage **shared leadership and burden-sharing** among major powers
- **Enable greater representation of the Global South** in global governance

## Conclusion

- America's disengagement from the international system it built risks **accelerating institutional decay and global disorder.** In the absence of a credible alternative leader, the erosion of multilateralism could result in a harsher, more unequal world. **Preserving a rules-based order now depends on collective responsibility,** adaptive reform, and renewed commitment by both established and emerging powers.

# HIGH-QUALITY HIGHER EDUCATION AND THE IMPERATIVE OF TRUST BETWEEN THE STATE AND INSTITUTIONS

## Context (Introduction):

- India's higher education system is undergoing a significant transition under the National Education Policy (NEP) 2020, marked by curriculum flexibility, interdisciplinary learning, and regulatory reform. This

transformation has gained momentum, but its sustainability hinges critically on building trust between the State and higher education institutions (HEIs).

### Core Idea

High-quality education cannot be delivered through regulation alone; **it requires institutional autonomy anchored in accountability**. Trust between the State and institutions enables innovation in teaching, research, and governance, while excessive control risks stifling academic creativity and global competitiveness.

### Trust Deficit and Structural Constraints

- **Over-regulation legacy:** Historically fragmented and compliance-heavy regulation has limited institutional autonomy and experimentation.
- **Uneven regulatory capacity:** Multiple regulators and ad hoc oversight have created uncertainty and inhibited long-term planning.
- **Research ecosystem gaps:** While ANRF and RDI schemes strengthen research funding, collaboration and institutional confidence remain uneven.
- **Science education limitations:** Despite progress, **hands-on, experiential science education remains inadequate** across institutions.
- **Global mobility pressures:** Tighter visa regimes and geopolitics require strong domestic institutions to retain talent.

### Why Trust Matters

- **Institutional autonomy:** Trusted institutions can innovate curricula, pedagogy, and assessment aligned with global standards.
- **Quality assurance:** Unified accreditation and transparent disclosure signal quality to students and parents without micromanagement.
- **Research competitiveness:** Stable **state support enables long-term investments in interdisciplinary and frontier research**.
- **Human capital outcomes:** Education systems grounded in trust produce adaptable graduates suited for leadership, innovation, and economic growth.
- **International credibility:** Predictable governance enhances **India's attractiveness as a global education hub**.

### Way Forward

- Implement the **Bharat Shiksha Adhishtan Bill, 2025** to create a single, credible regulatory architecture
- Shift the State's role from controller to **enabler and standard-setter**
- Strengthen **accreditation, benchmarking, and public disclosure** instead of prescriptive controls
- Deepen industry academia collaboration and experiential science education
- Institutionalise formal trust-based compacts between the State and HEIs

### Conclusion

- India's higher education reform stands at a decisive moment. Regulatory consolidation and policy clarity have created momentum, but excellence will depend on mutual trust between the State and institutions. A governance model that empowers institutions while ensuring accountability is essential if India is to build a globally competitive, innovation-driven higher education system.

## DELIMITATION AFTER 2027: REDRAWING POLITICAL POWER IN INDIA

### Context (Introduction):

- Delimitation, the constitutionally mandated redrawing of electoral boundaries to reflect population changes will resume after the **first Census conducted post-2026**, i.e., **Census 2027**. This will be **India's most consequential delimitation exercise since Independence**, as the inter-State distribution of **Lok Sabha seats has remained frozen since 1976**, based on **1971 population data (≈548 million)**, while India's population is now about **1.47 billion**. The freeze was intended to **avoid penalising States that successfully implemented population control**, reinforced by the **84th Constitutional Amendment Act, 2001**, which extended the suspension till 2026.

### Why Delimitation After 2027 Is Politically and Constitutionally Explosive

- Representation imbalance:** Current representation rests on **50-year-old population data**, undermining equal suffrage.
- Federal fault line:** Southern and western States (low fertility, better governance outcomes) risk **losing relative political weight**, while northern States (higher fertility) gain.
- Moral paradox:** States rewarded earlier for population control now face political disadvantage.
- Coalition arithmetic:** Uttar Pradesh and Bihar together could command **over 25% of Lok Sabha seats**, fundamentally reshaping coalition politics.

### Key Constitutional and Legal Framework

- Article 82:** Delimitation after every Census.
- Articles 170, 330, 332:** Delimitation for State Assemblies and reserved constituencies.
- 84th Constitutional Amendment (2001):** Froze inter-State seat redistribution till Census after 2026.
- Delimitation Commission:** Independent, decisions have **force of law**, not just executive discretion.

### The Numbers That Drive the Anxiety (Illustrative Projections)

If seats are allocated purely by population in an expanded Lok Sabha (~888 seats):

- Uttar Pradesh:** ~151 seats (from 80)
- Bihar:** ~82 seats (from 40)
- Tamil Nadu:** ~53 seats (from 39) → share falls from **7.2% to ~6%**
- Kerala:** ~23 seats (from 20) → share falls to ~2.6%

Parliament functions on **absolute numbers**, not proportional fairness thus bargaining power shifts sharply.

### Governance and Federalism Concerns

- Distortion of cooperative federalism**
- Erosion of Rajya Sabha's balancing role**, already weakened due to dilution of domicile norms
- Regional alienation**, particularly in southern States
- Risk of legal challenges under Article 14 (equality)** if redistribution appears arbitrary

### Policy Options Debated (As Highlighted in the Article)

- 1. Extend the Freeze Beyond 2026**
  - Preserves current balance

- But violates **equal representation principle**
- Risks constitutional challenge

## 2. Expand Lok Sabha Strength (e.g., 543 → 700–888)

- No State loses absolute seats
- But proportional imbalance remains

## 3. Weighted Delimitation Formula

- Example: **80% population + 20% governance indicators**
  - Literacy, health, fertility control
- Analogous to **Finance Commission's composite criteria**
- Rewards outcomes, not just numbers

## 4. Strengthen the Rajya Sabha as a Federal Chamber

- Restore domicile linkage
- Reduce population dominance
- Consider **equal or tiered State representation** (U.S. Senate model adaptation)

## 5. Structural Federal Solutions

- **Bifurcation of large States** (e.g., Uttar Pradesh into 3–4 States)
- A federal—not merely administrative—solution

## 6. Phased Redistribution

- Partial reallocation in **2034**, full in **2039**
- Reduces political shock, allows adjustment

## Procedural and Institutional Safeguards Needed

- Delimitation Commission must include **demographers, constitutional experts, federal scholars**
- **Transparency**, public hearings, and reasoned orders
- Careful handling of **SC/ST reserved constituencies**, where **location discretion** is high and manipulation risks exist

## Way Forward

Delimitation after 2027 must balance:

- **Democratic equality** (one person, one vote)
- **Federal fairness**
- **Political stability**
- **Governance incentives**

A **hybrid approach**, Lok Sabha expansion + weighted formula + strengthened Rajya Sabha + phased implementation offers the most viable path.

## Conclusion

- Delimitation will not merely redraw constituencies; it will **redefine India's federal compact**. **Done well**, it can modernise representation and restore trust. **Done poorly**, driven by **political arithmetic alone**, it risks deepening regional mistrust and weakening India's federal spirit. **"The Census will count India's population; delimitation will measure the health of its democracy."**

## INDIA–ARAB LEAGUE PARTNERSHIP: FROM ENERGY SECURITY TO STRATEGIC CONVERGENCE

### Context (Introduction):

- The **2nd India–Arab Foreign Ministers' Meeting (Jan 30–31, 2026, New Delhi)** marks a significant milestone in India's West Asia diplomacy. It comes amid: Intensifying conflicts in **Gaza, Iran–Israel tensions, Syria**, and a shifting global order shaped by **U.S. unilateralism and erosion of rule-based norms**. At a time of regional instability, India's outreach to the **22-member Arab League (LAS)** signals its intent to build **institutionalised, multi-pillar engagement** with the Arab world.

### Core Idea

India–Arab League relations have evolved from **historical goodwill and energy dependence** into a **comprehensive strategic partnership**, encompassing:

- Energy security
- Trade and investment
- Defence and maritime security
- Digital public infrastructure
- Connectivity and supply chains

As India grows into a **major economic and geopolitical power**, the Arab League region has become a **critical pillar of India's global matrix**.

### Key Pillars of Engagement

#### 1. Institutional and Diplomatic Architecture

- Arab League founded: **1945 (Cairo)**
- India–LAS engagement formalised via **MoU (2002)**
- **Arab-India Cooperation Forum (AICF)** established in **2008**
- Regular ministerial and summit-level interactions

#### 2. Trade, Investment and Connectivity

- Bilateral trade: **~\$240 billion**
- **CEPA with UAE and Oman**; trade with UAE crossed **\$115 billion**
- Target: **\$200 billion trade with UAE by 2030**
- Major investments pledged:
  - UAE: **\$75 bn**
  - Saudi Arabia: **\$100 bn**
  - Qatar: **\$10 bn**
- India–Middle East–Europe Economic Corridor (IMEC) adds strategic depth

#### 3. Energy Security (Critical Pillar)

- Arab region supplies:

- ~60% of India's crude oil
- 70% of natural gas
- >50% of fertilisers
- Strategic agreements:
  - UAE strategic oil storage in India (\$400 million)
  - Qatar LNG deal (2024): **7.5 million tonnes/year for 20 years**
  - ADNOC–IOC LNG contract (2023): **1.2 MTPA for 14 years**

#### 4. Security and Defence Cooperation

- Defence agreements with **Oman, UAE, Saudi Arabia, Egypt, Qatar**
- Maritime security under **SAGAR** framework
- Strategic access to **Duqm Port (Oman)** – Indian Navy advantage
- Joint production and exports:
  - **Tejas, BrahMos, Akash** missiles
- Convergence on counter-terrorism; LAS countries condemned major terror attacks in India

#### 5. Digital & Financial Integration

- **RuPay card** launched in UAE (2019)
- **Indian Rupee accepted** at Dubai airports (2023)
- **UPI operational** in UAE, Saudi Arabia, Qatar, Bahrain
- Rupee–dirham settlement system with UAE

#### Challenges & Strategic Risks

- **Regional volatility:** Gaza conflict, Iran tensions, Yemen war
- **Intra-Arab fault lines** (Saudi Arabia–UAE competition)
- Risk of India being drawn into **great-power rivalries**
- Balancing relations with **Israel, Iran and Arab states simultaneously**
- Maritime security threats in **Red Sea and Gulf of Aden**

#### Why It Matters for India

- Secures India's **energy lifelines and sea lanes**
- Supports India's rise as a **net security provider in the Indian Ocean**
- Strengthens India's position in **Global South leadership**
- Enables diversification from over-dependence on any single bloc
- Enhances India's **strategic autonomy**

#### Conclusion

- India–Arab League relations are no longer limited to oil and remittances. They reflect a **mature strategic partnership** based on **trust, convergence and shared interests**. As geopolitical turbulence intensifies, closer India–LAS engagement offers: Stability for the region, Strategic depth for India, and a credible alternative model of cooperation in a fractured global order.

## PAPER 3

**SECURITY CAMPS AS A GAME CHANGER IN INDIA'S FIGHT AGAINST LEFT-WING EXTREMISM****Context (Introduction):**

- India's long-running Left-Wing Extremism (LWE) challenge has witnessed a decisive shift in recent years. **Government data indicate nearly a 90% decline in Maoist violence since 2010.** A key factor behind this transformation, has been **the establishment of security camps** in remote and previously Maoist-dominated areas.

**Core Idea**

Security camps have altered the strategic landscape of counter-insurgency by ensuring permanent state presence in inaccessible regions. Unlike episodic operations, these camps integrate security, governance outreach, and development, thereby dismantling Maoist influence over territory, population, and narratives.

**Challenges that Sustained Maoism Earlier**

- **Rugged terrain and administrative vacuum: Dense forests and inaccessibility in regions** like Abujmad (Bastar) kept civil administration absent, enabling Maoists to establish territorial control.
- **Low police–population ratio and delayed response: Policing remained confined to district headquarters,** allowing Maoists to strike and withdraw before security forces could respond.
- **Alienation of tribal communities: Poor access to welfare, healthcare, and grievance redressal fostered distrust,** which Maoists exploited by projecting themselves as tribal protectors.
- **Parallel Maoist administration: Maoists ran jan adalats, levied informal taxes, and regulated forest produce,** filling governance gaps left by the state.
- **Weak intelligence penetration: Fear of reprisals and limited state contact prevented HUMINT generation,** allowing Maoist networks to operate undetected.

**Why Security Camps Matter**

- **Enhanced Security Footprint: Permanent camps deter** Maoist mobility and end operational impunity.
- **Faster Response & Better Intelligence: Reduced reaction time** and improved HUMINT through civilian confidence.
- **Psychological Impact:** Visible state presence reassures locals while demoralising Maoist cadres.
- **Governance Penetration:** Civil administration leverages camps to deliver services, with collectors, tehsildars, and line departments reaching villages for the first time.
- **Developmental Spillovers: Roads, mobile towers, and welfare access** reshape daily life and weaken insurgent legitimacy.
- **Capability Attrition of Maoists: Declining recruitment, funding, and arms access** have led to surrenders and neutralisation of leadership.

**Way Forward: From Security to Sustainable Peace**

- Institutionalise **rights-based governance** through **PESA and Forest Rights Act implementation**
- **Transition from security-led control to civilian administrative leadership**
- **Strengthen local self-governance** and livelihood opportunities

- Integrate a **long-term regional development plan** aligned with the **Viksit Bharat 2047 vision**

### Conclusion

- Security camps have proven to be more than tactical installations; they are instruments of state legitimacy in India's counter-Maoist strategy. However, enduring peace depends on converting security gains into constitutional governance, inclusive development, and tribal empowerment—ensuring Maoism fades not just militarily, but socially and politically as well.

## RAISING FARMERS' INCOMES: LESSONS FROM BEED'S KRISHIKUL MODEL

### Context (Introduction):

- Doubling farmers' incomes has remained elusive despite policy emphasis, as conventional approaches focused on input subsidies and MSPs have delivered limited gains. **The Beed experiment in Maharashtra, offers an evidence-based pathway to income enhancement through crop diversification, institutional support, and market integration.**

### Core Idea

**The Krishikul initiative** under the Global Vikas Trust demonstrates that **shifting from low-value traditional crops to high-value fruit crops**, combined with scientific farming and assured market linkages, **can significantly raise farm incomes**. Independent evaluation by TISS (2024) shows per-acre incomes rising nearly ten-fold within a short transition period.

### Challenges in India's Farm Income Strategy

- **Low-productivity cereal cropping: Rain-fed paddy-wheat dominance** in central and eastern India **keeps yields and incomes structurally low.**
- **Fragmented landholdings: Sub-1-hectare holdings** limit access to quality seeds, irrigation, and mechanisation.
- **Weak post-harvest systems: Poor cold chains and processing cause distress sales** and high losses in fruits and vegetables.
- **Credit and risk constraints: Inadequate formal credit pushes farmers to avoid high-value crops** due to income risk.
- **Weak market linkage: Reliance on APMC mandis exposes farmers to price crashes** in perishables like tomato and onion.

### Why the Beed Model Matters

- **Income Diversification: Fruit crops like guava, pomegranate, and custard apple generated cumulative returns far higher than soybean or cotton.**
- **Human Capital & Trust: Continuous engagement, training, and confidence-building** were central to adoption.
- **Natural Resource Management: Aquashaft-based groundwater recharge** raised water tables by up to 350 feet, ensuring irrigation sustainability.
- **Institutional Synergy: Integration of NGOs, banks (through FLDG), and research institutions** reduced risk and enhanced scalability.
- **Economic Logic: Higher value realisation, stable demand, and reduced distress migration** strengthened rural economies.

### Way Forward

- Promote region-specific crop diversification aligned with agro-climatic conditions
- Scale public-private-NGO partnerships for extension and credit support
- Invest in aggregation, grading, cold chains, and processing to capture value
- Shift policy focus from production targets to income and value-chain outcomes

### Conclusion

- The Beed experience shows that farmers' income growth is not achieved by price support alone but by restructuring agriculture around value, markets, and institutions. Replicating such integrated models can transform Indian agriculture from subsistence-oriented production to income-driven growth.

## ARTIFICIAL INTELLIGENCE AND ITS ENVIRONMENTAL IMPACT: AN EMERGING POLICY CHALLENGE FOR INDIA

### Context (Introduction):

- Artificial Intelligence (AI) is rapidly transforming sectors ranging from healthcare and agriculture to governance and finance. However, as highlighted in the article, **the environmental costs of developing and deploying AI systems have received far less policy attention**. With India positioning itself as a global AI hub, ignoring these impacts risks undermining climate and sustainability goals.

### Core Idea

**AI is not environmentally neutral.** The development, training, and deployment of large AI models impose significant **energy, water, and carbon costs**, necessitating a policy framework that integrates AI governance with environmental regulation and sustainability metrics.

### Environmental Impact of AI

- **Carbon footprint**
  - Training a single **Large Language Model (LLM)** can generate **~3,00,000 kg of CO<sub>2</sub> emissions**
  - Another study estimates **~6,26,000 pounds of CO<sub>2</sub>** for training one large model
  - Comparable to the **lifetime emissions of multiple cars**
- **Energy consumption**
  - According to **UNEP (2024)**, a single query on **ChatGPT consumes ~10 times more energy** than a Google search
  - Global **ICT sector** contributes **1.8%–2.8% of global GHG emissions** (some estimates up to **3.9%**)
- **Water stress**
  - AI servers may consume **4.2–6.6 billion cubic metres of water by 2027**, aggravating water scarcity
  - Data centres rely heavily on freshwater for cooling

### Global Regulatory Responses

- **UNESCO (2021): *Recommendation on the Ethics of Artificial Intelligence*** — recognises AI's negative impacts on environment and society
- **European Union:**
  - **AI Environmental Impacts Act, 2024**
  - Harmonised AI rules linking technology governance with sustainability

- **Corporate Sustainability Reporting Directive (CSRD)** mandates disclosure of emissions from data centres and high-compute activities
- **United States & EU** emerging as leaders in **AI sustainability regulation**

### India's Policy Gaps and Challenges

- **Data deficit:** No standardised, verifiable data on **AI-specific carbon, energy, and water footprints**
- **Regulatory blind spot:** Environmental Impact Assessment (EIA) framework focuses on physical infrastructure, not **digital or algorithmic projects**
- **Narrative imbalance:** Policy discourse emphasises **AI for climate solutions**, but not **climate costs of AI**
- **Lack of disclosure norms:** AI environmental impacts are not part of **ESG reporting standards** in India

### Way Forward

- Develop **measurement standards** for AI energy, water, and GHG footprints
- Extend **EIA Notification, 2006** to assess large-scale AI model development and data centres
- Mandate **AI-specific environmental disclosures** under ESG norms (SEBI, MCA)
- Incentivise **green AI practices**:
  - Pre-trained models
  - Renewable-powered data centres
  - Efficient algorithms
- Promote **multi-stakeholder governance** involving industry, think tanks, and civil society

### Conclusion

- As India accelerates AI adoption, **environmental sustainability must become a core pillar of AI governance**. Measuring, regulating, and disclosing AI's ecological footprint is essential to ensure that technological progress does not come at the cost of climate stability and resource security. Responsible AI is not only ethical—it is environmentally imperative.

## PATENT RIGHTS AND PUBLIC HEALTH: BHARAT'S STRATEGIC OPTIONS

### Context (Introduction):

- India's pharmaceutical sector sits at the intersection of **TRIPS obligations, public health imperatives, and global geopolitics of medicines**. Persistent concerns over **evergreening by multinational pharmaceutical firms**, high prices of life-saving drugs, and unequal access—especially in the Global South—have revived debates on how India should deploy its patent regime in the public interest.

### Core Idea

India's patent framework is **TRIPS-compliant yet welfare-oriented**, allowing the State to **balance innovation incentives with access to medicines**. Contrary to claims of "weak IPR enforcement", TRIPS itself permit **public-health-centric flexibilities**, which India is legally entitled to invoke to prevent abuse of patent monopolies.

### Key Governance & Policy Challenges

- **Evergreening of patents:** Minor modifications used to extend monopoly without enhanced therapeutic efficacy
- **High cost of patented medicines**, particularly oncology and chronic disease drugs
- **Under-utilisation of statutory powers** despite clear legal backing
- **Global pressure** from pharmaceutical lobbies in the Global North

- **Manufacturing–access gap** in developing countries lacking domestic pharma capacity

### Why It Matters

- **Right to Health (Article 21)** obliges State intervention
- **Public health emergencies** require rapid access to affordable drugs
- India’s role as “**Pharmacy of the Global South**” strengthens South–South cooperation
- Prevents **anti-competitive outcomes** and market distortion
- Reinforces India’s credibility in **rules-based multilateralism under WTO–TRIPS**

### India’s Legal & Strategic Options

- **Section 3(d), Patents Act** – Prevents *evergreening* without enhanced efficacy
- **Section 47(4) – Government use** of patented drugs without patentee consent
- **Section 84 – Compulsory licensing** for unmet public health needs
- **Section 66 – Revocation of patents prejudicial to public interest**
- **Section 102 – Eminent domain over patents** with compensation
- **Section 92A** – Export of generics to countries with **insufficient manufacturing capacity**
- **Competition Act, 2002** – Addresses **abuse of dominant position**
- **TRIPS flexibilities** – Public health safeguards recognised under WTO law

### International Dimension

- Supports access to medicines in **Africa and other Global South regions**
- Counters monopolistic practices of Global North pharma innovators
- Aligns with India’s leadership in **health diplomacy and vaccine equity**

### Way Forward

- Institutionalise **regular patent audits** in health-critical sectors
- Proactive use of **compulsory licensing and government use provisions**
- Integrate **competition law scrutiny** with patent enforcement
- Develop a **transparent public-interest patent policy framework**
- Parallel investment in **domestic pharmaceutical R&D and manufacturing**

### Conclusion

- India’s patent regime is not anti-innovation but **anti-abuse**. A calibrated and confident use of **TRIPS-compliant flexibilities** allows Bharat to protect public health, uphold constitutional values, and maintain credibility in the global intellectual property order—while still fostering genuine innovation.

## RATIONALISING FOOD AND FERTILISER SUBSIDIES: COMPLETING INDIA’S REFORM DRIVE

### Context (Introduction):

- India’s reform momentum—spanning GST, IBC, DBT and FTAs—now confronts its most politically sensitive frontier: **food and fertiliser subsidies**. Despite falling inflation and improved macro stability, **agriculture growth is slowing**, and distorted price incentives continue to undermine crop diversification, soil health, and fiscal efficiency.

### Core Idea

India's subsidy regime, while rooted in **food security and farmer welfare**, has become **economically inefficient and environmentally damaging**. The current structure disproportionately favours **rice–wheat systems and urea-intensive farming**, crowding out pulses, oilseeds, fruits and vegetables—key to nutrition security and sustainable agriculture.

### Key Issues and Distortions

- **Food subsidy** (~₹2 trillion):
  - Economic cost of rice ≈ ₹42/kg, wheat ≈ ₹30/kg, yet distributed free to ~56% of population under PDS
  - According to **World Bank PPP estimates**, extreme poverty fell to **5.3% in 2022**, questioning blanket coverage
- **Fertiliser subsidy** (~₹2 trillion):
  - **Urea overuse** due to price controls; imbalance in **N:P:K ratio**
  - Excessive **phosphatic and potassic fertilisers** contaminate groundwater and raise **GHG emissions**
- **Cropping distortions**: MSP + procurement + subsidised power and fertilisers bias farmers towards **rice, wheat, sugarcane**
- **Fiscal stress**: Combined subsidies ≈ **8–8.5% of Union Budget**

### Why It Matters

- **Governance**: Subsidy inefficiency crowds out productive public investment
- **Health & Nutrition**: PDS calorie security ≠ nutrition security
- **Agriculture & Environment**: Soil degradation, water stress, emissions
- **International Commitments**: Climate action and trade competitiveness require subsidy reform

### Way Forward

- **Gradual PDS rationalisation**: Reduce coverage from **56% → 40% → 25%**, protect **antyyodaya households**
- **Direct Cash Transfers**: Replace in-kind food for non-poor with cash/vouchers
- **Crop-neutral incentives**: Shift support towards **pulses, oilseeds, millets, fruits, vegetables**
- **Fertiliser reform**: Expand **nutrient-based subsidy (NBS)**, move towards **DAP/MOP pricing reform**
- **DBT to farmers**: Merge fertiliser subsidies with **PM-KISAN-type income support**

### Conclusion

- Completing India's reform journey requires moving from **input-heavy, distortionary subsidies** to **income support and nutrition-focused welfare**. Political courage, phased implementation, and DBT-backed reforms can align **fiscal prudence, farmer welfare, nutrition security, and environmental sustainability**—true to the spirit of "Reform Express".

## EV BOOM AND THE EMERGING COPPER CONSTRAINT

### Context (Introduction):

- The global transition to **electric vehicles (EVs)** is central to climate mitigation and energy transition strategies. However, beneath the technological optimism lies a **structural resource constraint** an accelerating **copper crunch** that threatens to **slow electrification, raise costs, and reshape global energy geopolitics**.

## Core Idea / Definition

Copper is the **indispensable metal of electrification**, forming the backbone of **EV batteries, motors, wiring, charging infrastructure, and power grids**. Unlike lithium or cobalt, **copper has no scalable substitute**, and EVs require **4–5 times more copper** than internal combustion engine vehicles, making electrification inherently **resource-intensive**.

## Key Trends and Evidence

- **Global EV sales** rose from **~0.55 million (2015)** to **~20 million units (2025)**
- **EV-related copper demand** increased from **~27,500 tonnes (2015)** to **over 1.28 million tonnes (2024)**
- **Copper demand elasticity peaked at 1.76 (2019)**, indicating copper use grew faster than EV adoption
- **EV copper demand surged** from **~39,000 tonnes (2016)** to **~1.1 million tonnes (2024)**
- **China dominates:**
  - **~60% of global EV-based copper consumption by 2025**
  - **>70% control over global battery cell production**

## Challenges: Why a Copper Crunch is Emerging

1. **Supply-side rigidity**
  - **10–15 year mine development cycle**
  - Declining **ore grades** in existing mines
  - Environmental opposition in major producers (**Chile, Peru, U.S.**)
2. **Demand–supply mismatch**
  - 2024: Supply exceeded demand by **~0.3 million tonnes**
  - 2026: Demand projected at **~30 million tonnes**, supply only **~28 million tonnes**
  - Deficit could reach **4.5 million tonnes by 2028** and **~8 million tonnes by 2030**
3. **Technological lock-in**
  - Efficiency gains may reduce elasticity to **~0.90 by 2025**, but **absolute demand keeps rising**
  - No viable large-scale copper alternatives for grids and motors
4. **Geopolitical concentration**
  - China's dominance provides **pricing power, long-term contract leverage, and strategic influence**
  - Resource nationalism risks in copper-rich regions

## Why It Matters for India and the Energy Transition

- **EV affordability risk:** Copper shortages can **increase EV costs**, slowing adoption
- **Grid stress:** Electrification of transport, renewables, and storage all compete for copper
- **Decarbonisation bottleneck:** Copper scarcity could delay **net-zero timelines**
- **Strategic vulnerability:** Dependence on external copper supply mirrors earlier oil dependency
- **Industrial competitiveness:** Copper access will shape future **battery, EV, and grid manufacturing hubs**

## Way Forward

1. **Accelerate copper recycling**
  - Urban mining, circular economy frameworks
  - EV-specific recycling mandates
2. **Secure overseas mineral assets**
  - Long-term offtake agreements with **Chile, Peru, Africa**
  - Strategic mineral diplomacy

### 3. Technological innovation

- Copper-efficient motor designs
- Advanced power electronics
- High-voltage architectures to reduce material intensity

### 4. Integrated resource planning

- Align **EV policy, grid expansion, and mineral strategy**
- Treat copper as a **strategic energy resource**

### 5. Domestic capacity building

- Strengthen refining, smelting, and downstream manufacturing
- Incentivise exploration of low-grade deposits using new technologies

## Conclusion

- The EV revolution is not merely a technological transition but a **resource-intensive transformation**. **Copper has emerged as the critical artery of electrification**, and without decisive action on mining, recycling, and innovation, the energy transition risks being throttled by material scarcity. For countries like India, **energy security in the 21st century will increasingly hinge on mineral strategy**, not just clean technology adoption.

## HIMALAYAN DEVELOPMENT AT THE COST OF ECOLOGICAL COLLAPSE

### Context (Introduction):

- The Himalayan region witnessed **near-continuous climate shocks in 2025**, with **over 4,000 climate-related deaths** across India. **Himachal Pradesh and Uttarakhand** were among the worst affected, with towns such as **Dharali, Harsil, Uttarkashi, Chamoli, Kullu, Mandi and Kishtwar** devastated by **cloudbursts, landslides, avalanches and flash floods**. Despite this, **large infrastructure projects**, particularly the **Char Dham road-widening project**, continue to be pushed in **highly disaster-prone ecological zones**, signalling a dangerous policy disconnect.

### Core Issue:

The Himalayas are **one of the world's most climate-sensitive landscapes**, warming **~50% faster than the global average (IPCC-linked studies)**.

Yet, development interventions are being pursued through:

- **Large-scale deforestation**
- **Slope cutting and tunnel construction**
- **Road widening beyond ecological carrying capacity**

This has triggered a feedback loop of **land instability + climate amplification**, raising the risk of an **"ecocide-like scenario"** in the Himalayas.

### Ecological Importance of Devdar (Deodar) Forests

Devdar forests are not symbolic assets but **critical ecological infrastructure**:

### Key ecological functions

- **Slope stabilisation** through deep root systems
- **Landslide and avalanche buffering**

- **Glacial debris flow moderation**
- **Water quality regulation of the Ganga headwaters**
- **Microclimate regulation** (cooler air, oxygen balance)
- **Antimicrobial river ecology** via phenolic compounds that suppress harmful bacteria and promote beneficial microbial systems

### Policy Failure: Char Dham Road Project as a Case Study

#### Structural flaws

- **Bypassing comprehensive Environmental Impact Assessment**
- **Project fragmentation to avoid scrutiny**
- Adoption of **12-metre DL-PS (double-lane paved shoulder) standard** despite disaster vulnerability
- **Vertical hill cutting** violating Himalayan geology's "angle of repose"
- **Dumping of muck into water sources**

#### Consequences

- Nearly **700 km of widened roads**
- **800+ active landslide zones**
- Key border routes rendered unusable during disasters
- Locals term the project an "**all-paidal (all-pedal) road**", reflecting loss of resilience

#### Climate Change as a Risk Multiplier

Climate change is not the root cause but a **risk amplifier**:

- **Erratic rainfall patterns**
- **Accelerated glacial melt**
- Entry into a dangerous "**water peak phase**" → catastrophic floods followed by long-term water scarcity

This makes **infrastructure-led fragility** far more lethal.

#### Institutional and Governance Gaps

- Ignoring **Main Central Thrust (MCT)** classification where heavy infrastructure is discouraged
- Repeated warnings by **National Green Tribunal (NGT)** overlooked
- **NMHSE (National Mission for Sustaining the Himalayan Ecosystem)** principles contradicted in practice
- Absence of **carrying capacity assessments**
- Weak enforcement of **disaster-resilient land-use planning**

#### Why This Matters

- **Environmental security = National security** in fragile border regions
- **Development losses outweigh short-term gains** due to repeated infrastructure damage
- **Public finance strain** from disaster relief and rebuilding
- **Downstream impacts** on Ganga basin affecting millions
- Undermines India's **climate adaptation credibility**

## Way Forward

### 1. Development Sequencing

- **Disaster resilience must precede connectivity**, not vice versa

### 2. Strict Ecological Zoning

- Enforce **eco-sensitive zones and MCT restrictions**
- No road widening beyond **stability thresholds**

### 3. Scientific Engineering

- **Slope stabilisation before expansion**
- Terrain-specific Road widths
- Avoid vertical hill cutting

### 4. Institutional Accountability

- Mandatory **cumulative EIA**
- Binding compliance with **NGT rulings**
- Strengthen **NMHSE implementation**

### 5. Nature-based Solutions

- Protect native forests (Devdar)
- Restore natural drainage systems
- Glacier and watershed-centric planning

## Conclusion

- The Himalayas are **not a development frontier to be conquered**, but a **living ecological system that sustains the subcontinent**. Pursuing **infrastructure-first policies in disaster zones**, under accelerating climate stress, represents **scientific, ecological and governance failure**. **“Without the Himalayas, there is no India.”** Sustainable development here is **not ideological restraint but ecological necessity**.

## CYBERCRIME AND THE CRISIS OF GLOBAL GOVERNANCE

### Context (Introduction):

- Cybercrime has emerged as a transnational threat cutting across **national security, economic stability, democratic rights, and data sovereignty**. In **December 2024**, the UN General Assembly adopted the **UN Convention against Cybercrime**, the first global criminal justice instrument in over **two decades**. However, **India, the U.S., Japan, and Canada did not sign**, exposing deep fractures in **global cyber governance** and highlighting a wider **crisis of multilateralism**.

### Core Issue

The debate around the UN Cybercrime Convention reflects a **principle–practice divide** in international law, where **consensus on abstract norms masks sharp divergence in implementation**, especially concerning:

- **Definition of cybercrime**

- **Human rights safeguards**
- **State control over data**
- **Cross-border law enforcement cooperation**

This fragmentation is occurring amid a shift from rule-based multilateralism to **polycentrism**, where governance increasingly relies on **smaller, issue-based coalitions**.

### Key Developments

- The Convention was **proposed by Russia (2017)** and negotiated through **8 formal UN sessions**.
- Adopted in **Dec 2024**, supported by **72 countries**.
- Seeks to move beyond the **Budapest Convention (2001)**, which:
  - Is **European-led**
  - Excludes Russia and China
  - Operates via **invitation-only accession**
- **India actively participated** in negotiations but rejected the final text.
- U.S. and civil society groups flagged risks of:
  - **Overbroad crime definitions**
  - **Political misuse against journalists and activists**
- Russia–China view the Convention as a way to **legitimise sovereign control over cyberspace**.

### Challenges Exposed

#### 1. Principles–Practice Rift

- Vague definitions of “*serious cybercrime*” allow **criminal law expansion**, threatening:
  - **Freedom of expression**
  - **Due process**
  - **Judicial oversight**
- Human rights protections remain **anchored in domestic legal systems**, not international enforcement.

#### 2. Data Sovereignty vs Data Flows

- India sought stronger **institutional control over citizens’ data**, which was diluted.
- Near-universal acceptance that **trusted data flows** are necessary, but **mechanisms remain contested**.

#### 3. Erosion of Multilateral Institutions

- UN credibility weakened by:
  - **Security Council paralysis** (Ukraine, Gaza)
  - **U.S. funding cuts**
  - **WTO dispute settlement paralysis (since 2019)**
- Cyber governance mirrors this institutional breakdown.

#### 4. Rise of Polycentrism

- Governance shifting to:
  - **Plurilateral groups** (Quad, Five Eyes)
  - **Regional frameworks**
- Leads to **institutional overlap**, coordination failures, and uneven state capacity.

## Why This Matters for India

- **Cybersecurity** is now integral to:
  - National security
  - Digital economy
  - Democratic resilience
- India risks:
  - Losing **rule-making influence**
  - Being forced into **rule-taker status**
- India's regulatory experiments (e.g., **AI content watermarking**) show the danger of **over-prescriptive domestic rules** diverging from global norms.
- Balancing:
  - **Strategic autonomy**
  - **Human rights**
  - **Global interoperability**is becoming increasingly complex.

## Way Forward

### At the Global Level

- Advocate **narrow, precise definitions** of cybercrime.
- Push for **mandatory judicial review**, proportionality, and due process safeguards.
- Engage in **issue-based coalitions** without abandoning multilateral forums.

### At the National Level

- Build **technical negotiating capacity** across:
  - Cyber law
  - Encryption
  - AI governance
- Harmonise domestic cyber laws with **globally accepted principles** (privacy, necessity, proportionality).
- Invest in **regulatory institutions**, not just rule-making.

## Conclusion

- Cybercrime governance today mirrors the wider **global governance crisis**—fragmented authority, contested norms, and weakened institutions. For India, the challenge is not merely whether to sign a convention, but **whether it can shape the evolving cyber order without surrendering institutional autonomy or democratic values**. The shift to polycentrism is unavoidable, but **without strategic capacity-building, it risks deepening inequality and instability in cyberspace governance**.

## WHEN GLOBAL RULES FALTER, DOMESTIC REFORMS BECOME INDIA'S FIRST LINE OF DEFENCE

### Context (Introduction):

- The erosion of the **rules-based global economic order** marked by **US policy unpredictability**, **Chinese excess capacity**, weakening multilateralism, and rising protectionism—has altered the external environment facing India. While near-term indicators suggest a **cyclical recovery** in India's economy in

2026, however, **cyclical tailwinds are insufficient** in a structurally volatile global system. Only **deep domestic reforms** can provide durable economic insulation.

## Core Idea

### Cyclical growth impulses vs structural growth capacity:

- India's current upturn is driven by **GST and income-tax buoyancy**, lower commodity prices, regulatory easing, and residual post-pandemic momentum.
- However, in a world where **global trade rules are fragmenting**, **export-led certainty cannot be assumed**.
- Therefore, India's growth strategy must pivot decisively from **temporary demand support** to **long-term structural reform**, especially in **investment, labour, capital formation, and productivity**.

### Key Economic Signals Highlighted

- **GDP growth** shows cyclical strength, supported by:
  - GST and direct tax collections
  - Monetary and regulatory easing
  - Moderation in urban consumption slowdown
- **Consumption recovery is uneven:**
  - Wage growth in listed firms slowed to **mid-single digits (2025)**
  - Personal credit growth driven by **gold loans**, not income growth
- **Exports resilient but slowing:**
  - Non-oil export growth slowed to **~3%** by end-2025
  - Export momentum expected to weaken further in 2026
- **Private capex remains tentative**, constrained by:
  - Excess Chinese capacity
  - US trade and industrial policy uncertainty

### Structural Challenges Identified

#### 1. Global Economic Fragmentation

- Collapse of predictable trade rules
- Weaponisation of tariffs and industrial policy
- Weakening WTO dispute settlement
- Rising geopolitical risk premia

#### 2. Exhaustion of Cyclical Policy Space

- Fiscal consolidation imperative:
  - **Combined Centre–State fiscal deficit** must decline by **~1%** of GDP
- Limited monetary policy headroom:
  - **Real interest rates already ~1.25%**
- Nominal GDP growth alone cannot sustain long-term expansion

#### 3. Investment and Productivity Constraints

- India's growth has become **capital-intensive**, not labour-absorbing
- Formalisation and compliance costs risk **crowding out MSMEs**

- Labour productivity growth remains inadequate for demographic needs

### Why It Matters for India

- **External insulation:** With exports exposed to geopolitical shocks, **domestic demand and private investment** must anchor growth.
- **Employment challenge:** Only **labour-intensive growth** can absorb India's expanding workforce.
- **Strategic autonomy:** Economic resilience underpins India's foreign policy flexibility in an unstable global order.
- **Middle-income transition:** Achieving **\$15,000 per capita income by 2047** requires sustained **8% growth**, which cyclical rebounds cannot deliver.

### Way Forward

#### 1. Structural Investment Push

- Shift from episodic public capex to **crowding-in private investment**
- Focus on **capital deepening** without suppressing labour demand

#### 2. Labour-Intensive Growth Strategy

- Mission-mode focus on:
  - **Education**
  - **Skilling**
  - **Health**
- Align labour reforms with **employment elasticity**, not only ease of doing business

#### 3. Trade and Industrial Strategy

- Avoid pessimistic trade disengagement
- **Selective FTAs** that enhance competitiveness (not defensive protectionism)
- Rationalise tariffs and non-tariff barriers to integrate into **global value chains**

#### 4. Institutional Reforms

- Predictable tax and regulatory regime
- Simplification without excessive compliance burdens
- Strengthen policy credibility to revive **animal spirits**

### Conclusion

- As the **rules-based global order weakens**, India cannot rely on external stability or short-term macro tailwinds. Cyclical recovery may provide breathing space, but **only sustained structural reforms**—in investment, labour markets, productivity, and institutional credibility—can shield the economy from global volatility. In a fragmented world, **domestic reform becomes the first line of economic defence**.

## GREEN STEEL: THE MISSING LINK IN INDIA'S CLIMATE AND INDUSTRIAL TRANSITION

### Context (Introduction):

- At **COP30 in Belém (2025)**, India committed to submitting a **revised, more ambitious Nationally Determined Contribution (NDC)**. Achieving this commitment requires **economy-wide decarbonisation**, especially in **hard-to-abate sectors**—with **steel being the most critical**.

### India's steel sector:

- Produces **~125 million tonnes/year**
- Needs to scale to **>400 million tonnes by mid-century**
- Contributes **~12% of India's total carbon emissions**, primarily due to **coal-based blast furnace technology**

### Core Idea

**Green steel is not optional—it is a strategic necessity.** Without rapid transition to **low-carbon steelmaking**, India risks:

- Lock-in of **carbon-inefficient infrastructure**
- Loss of **export competitiveness**
- Failure to meet climate commitments

### Key Challenges

#### 1. Carbon Lock-in Risk

- Steel investments today determine emissions for **30–40 years**
- Continued expansion of coal-based blast furnaces risks locking in **billions of dollars of high-carbon assets**

#### 2. High Cost & Technology Barriers

- Low-carbon steel has **30–50% higher capital intensity**
- Technologies (hydrogen DRI, CCUS) are still:
  - Capital-heavy
  - Low-maturity
  - Scale-constrained

#### 3. Input Constraints

- **Green hydrogen:** limited supply, high cost
- **Renewable energy:** insufficient dedicated capacity for steel
- **Scrap steel market:** informal, fragmented, limited availability
- **Natural gas:** limited availability as a transition fuel

#### 4. Policy Gaps

- Despite:
  - **Green Steel Roadmap (Sept 2025)**
  - **Green Steel Taxonomy (Dec 2024)** – first globally
  - **National Green Hydrogen Mission**

- **Carbon Credit Trading Scheme (CCTS)** covering **253 steel units**

### Why It Matters

- Steel underpins:
  - Infrastructure
  - Manufacturing
  - Defence and urbanisation
- Decarbonising steel:
  - Enables India's **net-zero pathway**
  - Preserves **export competitiveness**
  - Prevents future stranded assets
- Early movers in green steel gain **first-mover advantage** globally

### Way Forward

#### 1. Carbon Pricing & Market Signals

- Roll out **carbon price regime early**
- Use price signals to disperse green steel costs across value chains

#### 2. Scale from Pilots to Commercialisation

- Fast-track:
  - Demonstration plants
  - Near-zero emission full-scale facilities
- Mandate all **new steel capacity** to be **low or near-zero carbon**

#### 3. Public Procurement & Demand Creation

- Create **domestic demand** via:
  - Public procurement of green steel
  - Infrastructure mandates
- Socialise **Green Steel Taxonomy**

#### 4. Infrastructure & Shared Ecosystems

- Government-led hubs for:
  - Green hydrogen
  - Renewable energy
  - CO<sub>2</sub> transport and storage
- Shared infrastructure to reduce costs for MSME steel producers

### Conclusion

- Steel is India's **next climate frontier**. What renewable energy was to India a decade ago, **green steel is today**—a test of policy credibility, industrial vision and climate leadership. By combining: **Decisive corporate action, Robust, market-aligned policy frameworks, Early investment signals**, India can decarbonise steel, safeguard growth, and shape the future of global sustainable industrialisation.

## PAPER 4

### AI IMPACT SUMMIT AND THE ETHICAL PERSPECTIVE

#### Context (Introduction)

- India is preparing to host the **AI Impact Summit (2026)** at a time when **Artificial Intelligence is rapidly entering public governance, welfare delivery, policing, healthcare, and finance**. However, **AI ethics in India risks remaining rhetorical unless translated into enforceable, context-sensitive, people-centred standards**.

#### Core Idea

**AI Ethics** refers to the application of **human rights-based principles**—*privacy, equality, non-discrimination, dignity, accountability, and transparency*—to the **design, deployment, and governance of AI systems**, especially when used by the State.

The **ethical AI must move beyond abstract principles to enforceable, auditable, and grievance-enabled frameworks**, grounded in **India's social realities**.

#### Key Ethical Concerns

##### 1. Abstract ethics vs enforceable ethics

- AI ethics discussions are often **"blue-sky" ideas**, lacking **precision, accountability, and remedies**.
- International frameworks (UNESCO AI Ethics Principles, UNDP Human Development Report 2025) emphasise **rights-based AI**, but implementation remains weak.

##### 2. Intersectional harm and algorithmic bias

- AI systems often replicate **existing social hierarchies**.
- Indian datasets invisibilise **intersectional identities** (caste × gender × class × disability).
- Result: **Disproportionate harms** to Dalit women, Adivasi communities, migrant workers, linguistic minorities.

##### 3. Opacity and lack of transparency

- AI systems deployed in public systems often operate as **black boxes**.
- There is a need for:
  - Publicly accessible model cards**
  - Disclosure of **training data, known biases, limitations, and appropriate use cases**

##### 4. Data extraction without consent or benefit

- AI development relies on **community data** that is often:
  - Extracted without consent**
  - Monetised** without benefit-sharing
- There is a need for **community data trusts**, akin to forest or mineral commons.

## 5. Absence of accountability and remedies

- When AI systems cause harm (e.g., denial of welfare, wrongful surveillance, facial recognition failures), responsibility is **diffused**.
- There is a need for:
  - **Clear liability rules**
  - **Primary liability on deploying government departments**
  - Secondary liability on vendors for flawed or misrepresented systems

## 6. Need for human oversight in high-risk domains

- In sectors like **policing, healthcare, welfare, education**, algorithmic outputs must not be final.
- **Mandated human oversight** is essential to override automated decisions.

### Why This Matters

#### Governance and Technology

- AI is reshaping **state capacity**, service delivery and decision-making.
- Without ethical guardrails, AI can **amplify exclusion rather than efficiency**.

#### Ethics and Human Values

- Ethical governance demands:
  - **Justice over convenience**
  - **Dignity over efficiency**
  - **Accountability over opacity**
- Ethical AI is not about slowing innovation but **aligning technology with constitutional morality**.

### Way Forward:

#### 1. Human rights–anchored AI governance

- Anchor AI ethics in **constitutional values** (Articles 14, 15, 21).
- Treat AI harms as **rights violations**, not technical glitches.

#### 2. Mandatory intersectional audits

- Regular **algorithmic audits** to identify overlapping harms across caste, gender, class.
- Move ethics from **Western abstractions to Indian social contexts**.

#### 3. Transparency by design

- Mandatory **model cards and impact disclosures** for all public-sector AI systems.
- Citizen-readable explanations, not just technical documentation.

#### 4. Community data governance

- Establish **community data trusts**.
- Ensure **benefit-sharing** where community data generates economic value.

### 5. Clear liability and grievance redress

- Fix **primary accountability on the State**.
- Create **independent grievance redress mechanisms** with time-bound remedies.

### 6. Human oversight in high-risk applications

- Statutory requirement for **human review** in welfare, policing, healthcare, education.
- Automated decisions must be **contestable**.

### Conclusion

- As India positions itself as a global AI leader and hosts the AI Impact Summit, **ethical AI cannot remain aspirational**. The article underscores that **AI ethics must be enforceable, intersectional, and rooted in lived realities**. By anchoring AI governance in **human rights, accountability, and community control**, India can demonstrate that **technological leadership and ethical leadership are not contradictory but complementary** and offer a globally relevant model of **people-centred AI governance**.

## CASE STUDY

A high-performing software engineer in a leading tech firm faces repeated sexual harassment from a manager who is considered a critical "work asset," contributing significantly to the company's revenue through major client acquisitions. The harassment includes unwanted physical advances, explicit messages, and inappropriate conduct during meetings, persisting over six months. Upon reporting to HR, the engineer discovers a history of five prior complaints against the manager, all previously dismissed without action. HR advises the engineer to remain silent, promising a transfer to a new team with attractive onsite opportunities abroad. The company's policy mandates reporting such incidents, yet leadership appears to prioritize business interests over employee safety. This creates a profound ethical dilemma: silence preserves organizational stability and personal career advancement, but perpetuates a toxic culture and potential harm to others.

### Questions:

- Evaluate the engineer's options: accept the transfer, escalate to higher authorities/external bodies (e.g., Internal Complaints Committee, labor courts), or resign?
- How should organizational leaders balance individual rights with institutional imperatives?
- Suggest administrative reforms to prevent such conflicts, drawing from good governance principles like accountability and zero-tolerance for harassment.