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IAS ORIGIN

YOUR PATHWAY TO UPSC SUCCESS

WEEKLY CURRENT AFFAIRS

6TH OCT TO 11TH OCTOBER






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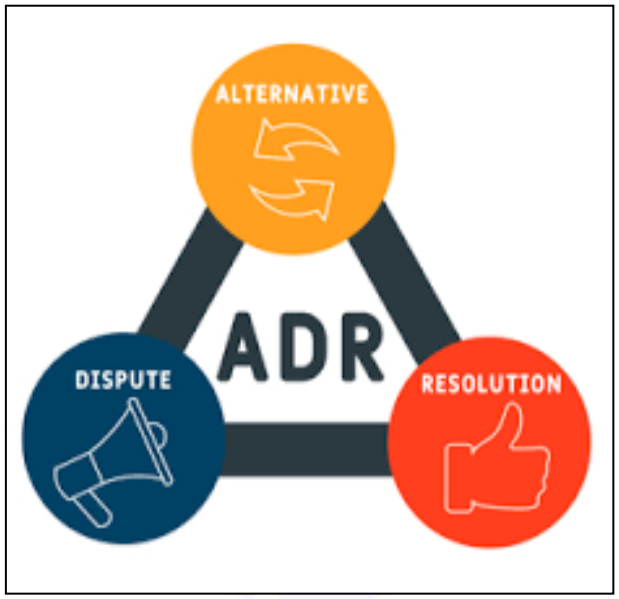
01 ALTERNATIVE DISPUTE RESOLUTION (ADR)

Law and Justice Minister emphasized the need for **global cooperation** to strengthen **Alternative Dispute Resolution (ADR) mechanisms**, referencing the **Panch Parmeshwar doctrine**, which advocates for **collective consensus** in **dispute resolution**.



WHAT IS ADR?

- **Alternative Dispute Resolution (ADR)** refers to processes and techniques of resolving disputes **outside** the formal court litigation system.
- **Core idea:** consensual, party-driven, flexible, quicker and cheaper methods to achieve dispute settlement while conserving judicial resources and preserving relationships.
- ADR is not a single method but a **family of procedures**: arbitration, mediation, conciliation, negotiation, Lok Adalat, expert determination, neutral evaluation, mini-trials, etc.

OBJECTIVES / POLICY RATIONALE

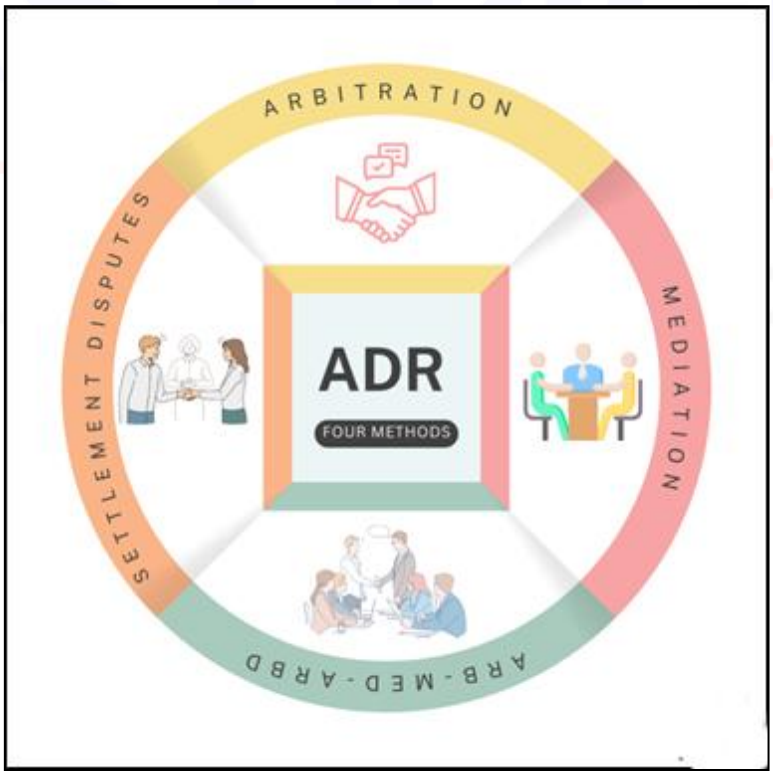
- **Access to justice & speed** — reduce backlog and delay in courts.
- **Cost-effectiveness** — cheaper than protracted litigation.
- **Party autonomy** — parties control process, choice of neutral, venue, procedure.
- **Specialization & expertise** — arbitrators/experts can be domain specialists (construction, commercial, technical).

- **Confidentiality & relationship preservation** — important in commercial and family disputes.
- **Decongest courts** — by diverting suitable matters for consensual settlement.
- **International competitiveness** — making India a hub for commercial arbitration (policy aim behind arbitration law reforms).

MAIN MODES / TYPES OF ADR

ARBITRATION

- **Nature:** Adjudicatory — private judge(s) (arbitrator(s)) decide; award is binding and enforceable like a court decree subject to limited judicial review.
- **Use:** Commercial contracts, construction, international commercial disputes.
- **Key legal structure in India:** Arbitration & Conciliation Act, 1996 (and significant amendments in 2015, 2019, 2021) — intended to align domestic law with international standards and make India arbitration-friendly.
- **Advantages:** Finality (limited appeals), party autonomy, enforceability under domestic law and New York Convention (for foreign awards if seat is India / enforcement regimes).
- **Limitations:** Cost (especially international commercial arbitration), possible delay if parties litigate interim issues, judicial interference at enforcement/challenge stage.



MEDIATION

- **Nature:** Facilitative/transformative — neutral mediator helps parties negotiate a settlement; mediator does not impose a decision.
- **Legal recognition in India:** The **Mediation Act, 2023** institutionalizes mediation (enforceability of mediated settlement agreements, mediation council, recognition of online & institutional mediation). It aims to make mediation a mainstream pre-litigation / pre-trial mechanism.
- **Advantages:** Voluntary, flexible, preserves relationships, quick, low cost; settlements can be made enforceable under the Mediation Act.
- **Limitations:** Depends on party willingness; power imbalances can affect fairness; confidentiality vs. need for enforceability requires safeguards.

CONCILIATION

- **Nature:** Similar to mediation but conciliator may propose terms/solutions; more evaluative/active role.
- **Use:** Often used in commercial and labour disputes; institutional conciliation e.g., by Centre for Arbitration & Conciliation in some contexts.

LOK ADALAT

- **Nature:** Statutory forum under the **Legal Services Authorities Act, 1987** for amicable settlement of pending & pre-litigation matters; awards are final and deemed decree of civil court, generally non-appealable. Lok Adalats play a deliberate social justice role by providing free legal services.
- **Features:** Informal, presided by judicial and non-judicial members, emphasis on compromise; useful for petty civil/cheque bounce/consumer disputes.
- **Limitations:** Cannot force settlement; procedural safeguards and consent are important (courts have clarified limits where Lok Adalat acted without due consent). Recent high court decisions stress consent and procedural propriety.

NEGOTIATION

- Straightforward direct bargaining between parties or through counsel — the simplest ADR form, sometimes assisted by lawyers.

EXPERT DETERMINATION / NEUTRAL EVALUATION / MED-ARB / MINI-TRIALS

- **Expert determination:** technical disputes referred to an expert whose decision may be binding.

- **Med-arb:** hybrid — parties first mediate, then arbitrate if mediation fails (must have clear agreement).
- **Neutral evaluation:** neutral gives an assessment of strengths/weaknesses to promote settlement.

INDIAN LEGAL & INSTITUTIONAL FRAMEWORK

- **Arbitration & Conciliation Act, 1996** — primary statute; amended significantly in **2015, 2019 and 2021** to streamline processes, emphasize party autonomy, reduce court intervention, and expedite enforcement.
- **Mediation Act, 2023** — statutory recognition of mediation, enforcement of settlement agreements, Mediation Council and mediator registration, online & institutional mediation emphasis.
- **Legal Services Authorities Act, 1987** — statutory basis for Lok Adalats and free legal services; Lok Adalat awards treated as civil court decrees.
- **Civil Procedure Code (CPC) — Section 89** — courts are mandated to consider referring civil disputes to ADR (arbitration, conciliation, mediation, Lok Adalat) when settlement appears possible — integrates ADR into court processes.
- **International instruments:** New York Convention (1958) — for recognition & enforcement of foreign arbitral awards; India is a signatory and enforcement is a key part of arbitration policy reforms.
- **Judicial bodies & committees:** Supreme Court's Mediation and Conciliation Project Committee (MCPC), National Legal Services Authority (NALSA), State Legal Services Authorities (SLSA), and more recently the envisaged **Mediation Council / Registry** under the Mediation Act.

INTEGRATION WITH THE FORMAL JUSTICE SYSTEM

- **Court referrals:** Section 89 CPC and judicial encouragement for ADR. Courts often refer civil disputes for settlement and mediation; some high courts and district courts run court-annexed mediation centers and mediation days.
- **Pre-litigation mediation / mandatory mediation:** The Mediation Act and some procedural rules encourage mediation before litigation or at early stages in judicial proceedings.
- **Lok Adalats** help clear backlog by disposing of matters through compromise; awards are final and binding (but procedural safeguards exist).

LANDMARK CASES & JURISPRUDENCE (SELECT)

- **ONGC v. Saw Pipes (earlier)** — explored public policy and arbitral award scrutiny (important for section 34 interpretation). Courts insist on limited interference.
- **Chloro Controls** — on referring non-signatories to arbitration in composite transactions; clarified when non-signatories can be bound/ referred.
- **Note:** jurisprudence in arbitration & mediation is large; exam answers should cite leading cases relevant to question asked.

ADVANTAGES & STRENGTHS

- **Reduces judicial backlog & delay.**
- **Economical:** Lower legal costs and discovery expenses (depends on mode).
- **Flexibility:** Procedures, timelines, confidentiality, and solutions (e.g., creative equitable remedies) not available in courts.
- **Expert decision-makers:** Tribunals/experts with subject knowledge.
- **International enforcement:** Arbitral awards enforceable across New York Convention signatories.
- **Social benefits:** Reconciliation, preservation of business relationships (especially via mediation/conciliation).

WEAKNESSES, CHALLENGES & CRITICISMS

- **Access & equity concerns:** Power imbalances can produce unfair settlements (especially in mediation without legal aid).
- **Confidentiality vs. public interest:** Some settlements may suppress information needed for public accountability.

- **Quality & regulation:** Need for minimum standards, accreditation, training of mediators / arbitrators. (Mediation Act seeks mediator registry; implementation matters.)
- **Costs for international arbitration** — can rival or exceed litigation.
- **Judicial interference & delay** at enforcement stage if courts over-intervene or if amendments create additional hurdles. (Debate on 2021 Arbitration Amendment.)
- **Fragmentation & uneven institutional capacity** across states; Lok Adalat quality varies.

SECTORAL APPLICATION & EXAMPLES

- **Commercial & international trade:** arbitration & mediation dominate.
- **Family & matrimonial disputes:** mediation, family courts, community mediation.
- **Consumer disputes:** Lok Adalats, mediation in consumer fora.
- **Labour & employment:** conciliation (statutory machinery in labour laws), mediation to preserve employment relations.
- **Environmental & community conflicts:** community mediation, participatory dispute resolution.

POLICY ISSUES & REFORM SUGGESTIONS

- **Strengthen institutional infrastructure:** national and state mediation institutions, mediator registries, court-annexed ADR cells. (Mediation Act provides for Mediation Council — implement robustly.)
- **Quality standards & training:** standardized curricula, accreditation for mediators and arbitrators; ethics code.
- **Legal clarity on hybrid processes:** clear rules for med-arb, confidentiality waivers, enforceability.
- **Access & legal aid:** integrate legal aid into mediation/Lok Adalat processes to protect weaker parties; NALSA role to be deepened.
- **Use of technology:** online mediation, e-arbitration portals (Mediation Act explicitly recognizes online mediation).
- **Balance finality with public interest:** narrow and well-defined grounds for setting aside arbitral awards to prevent misuse while protecting consumer/public interest.

- **Data & monitoring:** collect statistics on ADR outcomes (settlement rates, enforcement, user satisfaction) to guide policy.

QUICK FACTS & CITATIONS (KEY STATUTES / SOURCES)

- **Mediation Act, 2023** — statutory recognition & enforceability of mediated settlements; Mediation Council; online mediation.
- **Arbitration & Conciliation Act, 1996** — amended 2015, 2019, 2021 to promote arbitration in India.
- **Legal Services Authorities Act, 1987** — statutory basis for **Lok Adalats**; awards deemed decrees.
- **Section 89 CPC** — courts to refer disputes to ADR where possible.
- **Case law** (selected): ONGC / Saw Pipes and Chloro Controls — shape public policy & non-signatory arbitration doctrines.

POSSIBLE MAINS / ESSAY QUESTIONS (PRACTICE)

- "ADR mechanisms have become indispensable for effective access to justice in India. Examine."
- "Evaluate the impact of the Mediation Act, 2023 on India's dispute resolution landscape."
- "Arbitration law reforms in India have struck a balance between party autonomy and public interest — critically examine."
- "**Lok Adalats:** Strengths, limitations and recommendations to enhance access to justice."

02 VERY LARGE GAS CARRIER (VLGC) SHIVALIK

India received its **3rd Very Large Gas Carrier (VLGC) Shivalik** under the Indian flag at **Visakhapatnam Port**, marking a milestone in maritime **self-reliance and energy** security.

VERY LARGE GAS CARRIER (VLGC) SHIVALIK

- The induction of **Shivalik** by the **shipping corporation of Indian (SCI)** enhances **Atmanirbharata in shipping** and strengthens India's energy trade connectivity.
- **Size & Capacity:** VLGC Shivalik, vessel is **225 meters long** with **82,000 cubic metres (CBM) capacity**, designed to carry large volumes of **liquefied petroleum gas (LPG)**, including **propane and butane**.
- **Engineering:** It features segregated tanks, advanced temperature control, and meets global safety and efficiency standards.
- **Strategic Significance:** Built under the Indian flag in **South Korea**, Shivalik reduces India's **reliance on foreign-flagged vessels for energy imports** and strengthens **India's energy security** and **connectivity with the Arabian Gulf**.
- **Maritime Self-Reliance:** It represents India's growing **Atmanirbharata** in shipping and contributes to the goal of becoming a **top-five maritime nation by 2047**.
    - India aims for an end-to-end maritime ecosystem with **build, own, repair, and recycle**, enhancing EXIM efficiency and contributing to **Viksit Bharat 2047**.

- **Domestic Shipbuilding Push:** Policies like **Shipbuilding Financial Assistance Scheme (SBFAS), Maritime Development Fund (MDF), and Shipbuilding Development Scheme** promote local shipbuilding, repair, and recycling.

03 RISE IN INDIA'S EXTERNAL DEBT

India's external debt has risen to **USD 747.2 billion** at the end of June 2025, marking a **1.5% increase** over the previous quarter, as per the latest data released by the **Reserve Bank of India (RBI)**.

WHAT IS EXTERNAL DEBT?

- External debt refers to the outstanding liabilities of residents of a country (government, private sector, banks, corporates) to non-residents (foreign governments, multilateral institutions, foreign commercial lenders) repayable in foreign currency, goods, or services.
- It includes **public / government debt** and **private / corporate debt**, short-term and long-term, and debt instruments such as loans, bonds, trade credits, external commercial borrowings (ECBs), non-resident deposits, etc.
- In India, external debt statistics are compiled jointly by the **Ministry of Finance (Debt Management Division / External Debt Management Unit)** and the **Reserve Bank of India (RBI)**.
- External debt is also part of the **International Investment Position (IIP)** of a country, representing external liabilities.

RECENT TREND: HOW MUCH HAS INDIA'S EXTERNAL DEBT RISEN?

KEY DATA

- As of **March 2025**, India's external debt stood at **US$ 736.3 billion**, up from ~ US$ 668.8 billion in March 2024 — an increase of **US$ 67.5 billion**, or roughly 10%.
- External debt as a percentage of GDP has climbed from ~ **18.5% in March 2024** to **19.1% in March 2025**.
- Long-term debt (original maturity > 1 year) is about **US$ 601.9 billion**, having increased by around **US$ 60.6 billion** over the year.
- The share of **short-term debt** (maturity up to 1 year) in total external debt has declined slightly, now ~ **18.3%**.
- However, the **short-term debt to foreign exchange reserves** ratio has edged up — from ~ 19.7% to ~ 20.1%.
- In terms of **currency composition**, as of March 2025:
    - U.S. dollar-denominated debt: ~ 54.2%
    - Rupee-denominated: ~ 31.1%

- Japanese yen: ~ 6.2%, SDRs: ~ 4.6%, Euro: ~ 3.2%

- In terms of **type of instrument / debt liability**, as of March 2025: loans constitute ~ 34%, currency & deposits ~ 22.8%, trade credit & advances ~ 17.8%, debt securities ~ 17.7%.

OTHER DATA POINTS:

- At end-September 2024, external debt was reported at **US$ 711.8 billion**, up ~ 4.3% from June 2024.
- External debt in India as percentage of GDP over the past decade averaged ~ 20.8% (Focus Economics)

Thus, the recent rise is significant, though in historical perspective India's external debt ratio remains moderate.

DRIVERS / CAUSES OF THE RISE IN EXTERNAL DEBT

The increase in India's external debt is not due to one single factor but the interplay of multiple domestic and external factors. Below are the principal drivers:

Driver	Explanation / Mechanism
Valuation Effects (Exchange Rate Movements)	A part of the increase (~ US$ 5.3 billion in 2025) is attributable to **valuation / currency effect** — that is, depreciation / appreciation of the U.S. dollar relative to the rupee (or other currencies) revalues outstanding foreign-currency denominated liabilities upward.
New Borrowings — Long-term Loans / Projects / Sovereign Issues	The government (and public sector undertakings), as well as private and corporates, borrow from multilateral, bilateral, and commercial sources to finance infrastructure and capital projects. These fresh borrowings add to the stock.
External Commercial Borrowings (ECBs) / Corporate Borrowing	Indian corporates increasingly tap global markets for capital, especially when domestic interest rates are high, adding to external debt.
Trade Credit / Advances / Suppliers' Credit	Imports on credit, deferred payments etc. also contribute to short-term external liabilities.
Non-Resident Deposits & NRI Deposits	Deposits held by non-residents in Indian banks or in rupee liabilities add to external liabilities.

Debt in Rupee Denomination (External Rupee Debt)	Some borrowing is denominated in Indian rupees but owed to non-residents (external rupee debt), which also is included.
Capital Flows & Portfolio Liabilities	Debt securities issued to non-residents also count.
Slower GDP Growth / Higher Inflation	If nominal GDP growth lags, the denominator shrinks relative to debt, pushing up debt/GDP ratio even if absolute debt growth is moderate.
Macro Policy / Fiscal Pressure	In periods of fiscal stress, governments may resort to external borrowing if domestic financing is constrained or costlier.
Global Conditions & External Access	Low global interest rates or favorable terms offered by multilateral institutions often encourage more external borrowing. Similarly, risk appetite and investor sentiment in capital markets affect ability to borrow externally.

Therefore, the observed rise is partly structural (new debt) and partly valuation / accounting effects.

RISKS & VULNERABILITIES ASSOCIATED WITH RISING EXTERNAL DEBT

While increase in external debt is not per se bad, higher external liabilities entail several risks. These must be carefully managed.

- **Currency / Exchange Rate Risk**
    - A large share of debt is denominated in foreign currency (especially USD). Depreciation of rupee increases the rupee cost of servicing the debt.
    - Volatility in forex markets can magnify debt servicing burdens.
- **Refinancing & Roll-over Risk**
    - For debts maturing soon (short-term or those coming up for refinancing), if global interest rates rise or investor sentiment deteriorates, refinancing may become costly or difficult.
    - The ratio of short-term debt to reserves is a key metric — if it rises too much, vulnerability increases.
- **Interest Rate Risk / Cost of Borrowing**
    - If the cost of external borrowing (interest / spreads) rises, debt service burden increases.

- When global interest rates rise, new external borrowing becomes more expensive.

- **Debt Service Burden & Fiscal Stress**
  - Servicing external debt (interest + principal) demands foreign exchange outflows, which can strain fiscal balance / current account.
  - If export growth or foreign currency earnings slow, servicing becomes more burdensome.
- **Contagion / External Shock Risk**
  - In adverse external conditions (global recession, capital flight, banking crisis elsewhere), access to external borrowing could tighten.
  - Sudden stops or reversal of capital flows can stress the balance of payments.
- **Crowding Out / Crowding In Effect**
  - The availability of external funds may influence domestic credit markets; could lead to over-borrowing or complacency in domestic resource mobilization.

- **Political / Sovereign Risk**
  - Increased external debt may reduce fiscal flexibility, making the government more vulnerable in crisis.
  - Bond markets / rating agencies monitor external debt; large external debt may affect sovereign credit ratings or borrowing costs.
- **Maturity Mismatch / Structure Risk**
  - If a large portion of external debt is short-term or has a mismatch between revenues (which may come over long term) and liability maturity, risk increases.

- **Dependencies & Conditionalities**
    - Some external borrowings (especially concessional / multilateral) come with policy conditionalities which may constrain domestic policy choices.

MITIGATING / CUSHIONING FACTORS & POSITIVE ASPECTS

Though the rise in external debt carries risks, there are mitigating factors in India's case which reduce the precariousness of this rise.

- **Strong Foreign Exchange Reserves Buffer**
    - India's foreign exchange reserves are substantial (e.g., ~ US$ 691.5 billion as of May 2025)
    - The reserves cover multiple months of imports and are broadly sufficient relative to the external debt obligations.
- **Moderate Debt-to-GDP Ratio (Relative to Many Peers)**
    - Even after the rise, India's external debt is ~ 19.1% of GDP — a manageable level compared to many emerging markets.
    - Historically, India's external debt-GDP ratio has been in the ~15–25% band, which gives some comfort.

- **Declining Share of Short-term Debt**
    - The share of short-term debt in total external debt is falling (now ~ 18.3%), reducing rollover risk.
- **Diverse Currency Composition / Some Rupee-Denominated Debt**
    - Around ~ 31% of debt is in rupee denomination, insulating that portion from exchange rate volatility.

- **Robust Export / Forex-earning Base**
    - India's exports, remittances, services sector earnings, software / IT services, tourism, and foreign investment income provide foreign exchange inflows which help service debt.
    - In the Q4 FY25, India recorded a **current account surplus** of US$ 13.5 billion, helping ease external pressure.
- **Concessional / Multilateral Borrowing**
    - Some external debt is on favorable terms (lower interest rates, longer maturities) when borrowed from multilateral / development institutions.
- **Prudent Fiscal & Debt Management Policy**
    - The indebtedness of the **government (public external debt)** is a smaller share of total external debt; much of the rise is in private sector / corporate external borrowings.
    - The government has in recent years tried to maintain fiscal discipline, improve revenue mobilization, and manage external debt prudently.

ASSESSMENT: IS THE RISE A CAUSE FOR CONCERN?

In evaluating whether the rise is alarming or manageable, one has to balance risks and strengths.

ARGUMENTS SUGGESTING CONCERN

- The absolute jump (~US$ 67.5 billion) is substantial, and any further sharp depreciation could amplify servicing costs.
- The short-term debt to reserves ratio rising slightly indicates increased rollover pressure.
- Global conditions (rising interest rates, geopolitical risks, risk aversion) could make external borrowing more difficult/expensive.
- If corporate / private sector external debt is large, in a downturn, defaults or stress could spill over into banking / financial sectors.
- If capital inflows slow or reverse, the balance of payments may come under stress.

ARGUMENTS REDUCING WORRY

- The debt-to-GDP ratio remains moderate and historically comfortable.
- India's reserves are strong, providing a buffer.

- The structure of debt (lower share of short-term debt) is improving.
- The government's share in external debt is limited (much of expansion is in private sector).
- Current account surplus in Q4 FY25 and strong foreign inflows help ease balance sheet stress.

Overall, while the rise merits attention and careful monitoring, it is not yet at a crisis threshold. The key is to maintain vigilance over servicing burdens, foreign exchange risks, and maturity profiles.

POLICY MEASURES & RECOMMENDATIONS (FOR INDIA)

To manage and contain external debt risks, and ensure sustainable debt trajectory, India should consider the following policy measures:

- **Limit Excessive External Borrowing by Corporates / Private Sector**
  - Impose caps / prudential norms on external commercial borrowings (ECBs) based on debt servicing capacity, hedging norms, debt-to-equity limits, etc.
- **Encourage Rupee-Denominated External Debt**
  - Promote issuance of rupee-denominated debt to non-residents (e.g. masala bonds) so that currency risk is internalized.
  - But such issuance must be cautiously managed to avoid currency substitution risks.
- **Strengthen Hedging & Risk Mitigation Tools**
  - Encourage or mandate hedging of foreign currency exposures by corporate borrowers.
  - Use forward contracts, swaps, etc.
- **Prudent Maturity Management**
  - Aim to shift borrowing toward longer maturities, reducing rollover risk.
  - Avoid over-concentration of maturity in near future years.
- **Bolster Foreign Exchange Reserves**
  - Continue efforts to build and maintain adequate reserves as a buffer.
  - Diversify reserve assets.
- **Promote Export Growth & Inflows**

- Strengthen export competitiveness, services exports, remittances, tourism, foreign investments — so foreign exchange inflows support debt servicing.
- Encourage FDI, ODI, external inflows in non-debt form.

- **Fiscal Discipline & Domestic Resource Mobilization**
  - Reduce dependence on debt (external or internal) by strengthening tax revenue, broadening the tax base, pruning subsidies, improving public expenditure efficiency.
  - Use public investment carefully, ensuring projects generate returns / foreign exchange earnings.
- **Debt Transparency & Monitoring**
  - Maintain robust data systems for external debt, residual maturity, sectoral exposure, currency composition.
  - Disclose stress indicators (debt service ratio, short-term debt to reserves, etc.).
  - Use scenario stress testing for external debt under adverse shocks.
- **Use Concessional / Multilateral Funding Wisely**
  - Leverage concessional funding (low interest, long maturity) for infrastructure / strategic investment.
  - Avoid overreliance on commercial external debt with volatile terms.
- **Macroprudential & Regulatory Oversight**
  - Strengthen regulatory oversight of banks and NBFCs' foreign exposures.
  - Monitor systemic risk from corporates' external borrowing.
- **Crisis Preparedness & Swap Agreements**
  - Maintain or negotiate currency swap lines or credit lines with other central banks / institutions to cushion sudden external liquidity stress.
  - Participation in multilateral frameworks (e.g. IMF facilities).
- **Exchange Rate & Monetary Policy Stability**
  - Avoid excessive volatility in the rupee; manage orderly forex policy.
  - Coordinate monetary and debt policy to balance growth and external stability.

04 NOBEL PRIZE

ORIGIN & HISTORY

FOUNDER – ALFRED NOBEL (1833–1896)

- **Alfred Bernhard Nobel** was a Swedish chemist, engineer, and inventor — best known for **inventing dynamite** in 1867.
- His inventions made him immensely wealthy but also associated him with destructive warfare.
- When his brother died, a French newspaper mistakenly published Alfred's obituary titled **"The merchant of death is dead."**
    - Shocked by this portrayal, he resolved to leave a legacy for **"the greatest benefit to humankind."**

ESTABLISHMENT

- In his **will dated 27 November 1895**, Nobel bequeathed **94% of his wealth (≈ 31 million Swedish kronor)** to establish a fund — **the Nobel Foundation**.
- The will specified that the interest from the fund should be used annually to award prizes in:
    - **Physics**
    - **Chemistry**
    - **Physiology or Medicine**
    - **Literature**
    - **Peace**

NOBEL FOUNDATION (1900)

- Formed in **1900** to administer the estate and finances of the prizes.
- First prizes awarded in **1901** in Stockholm and Oslo.

OBJECTIVE

"To honor those who, during the preceding year, have conferred the greatest benefit to humankind." – ***Alfred Nobel's Will***

The prizes recognize *outstanding contributions* to:

- The **advancement of knowledge** (science, medicine, literature)
- The **promotion of peace and fraternity** among nations.

NOBEL PRIZE FIELDS (5 ORIGINAL + 1 LATER ADDED)

Category	Established	Awarded By	Institution / Location
Physics	1901	Royal Swedish Academy of Sciences	Stockholm, Sweden
Chemistry	1901	Royal Swedish Academy of Sciences	Stockholm, Sweden
Physiology or Medicine	1901	Nobel Assembly at Karolinska Institute	Stockholm, Sweden
Literature	1901	Swedish Academy	Stockholm, Sweden
Peace	1901	Norwegian Nobel Committee (appointed by Norwegian Parliament – Storting)	Oslo, Norway
Economic Sciences (Nobel Memorial Prize)	1969	Sveriges Riksbank (Sweden's Central Bank)	Royal Swedish Academy of Sciences, Stockholm

WHY IS THE PEACE PRIZE GIVEN IN NORWAY?

- At the time of Nobel's will, **Sweden and Norway were in a political union (1814–1905)** under the Swedish crown.
- Nobel wished that the **Peace Prize** be awarded by **Norway**, as Norway was seen as more peace-oriented and less militaristic.
- Even after the dissolution of the union in 1905, this arrangement continued — hence the Peace Prize is still awarded in **Oslo**, while all others are awarded in **Stockholm**.

ELIGIBILITY & SELECTION PROCESS

NOMINATION

- Only **qualified nominators** (such as academicians, previous laureates, and members of academies) can nominate.
- Nominations open **September** of the previous year and close **31 January** of the award year.

EVALUATION

- Each awarding institution appoints **expert committees** to evaluate nominations confidentially.
- Extensive peer review and expert consultation are done.

DECISION

- Final decision is made by:
  - **Royal Swedish Academy of Sciences** – Physics, Chemistry, Economics
  - **Karolinska Institute** – Medicine
  - **Swedish Academy** – Literature
  - **Norwegian Nobel Committee** – Peace

ANNOUNCEMENT & CEREMONY

- Announced each **October**.
- Awarded on **10 December** — *the death anniversary of Alfred Nobel*.
- Each laureate receives:
  - **A gold medal**
  - **A diploma**
  - **A monetary prize** (~ 11 million Swedish kronor as of 2024)

NOBEL PRIZE IN PHYSIOLOGY OR MEDICINE 2025

The **2025 Nobel Prize in Physiology or Medicine** was awarded **jointly** to:

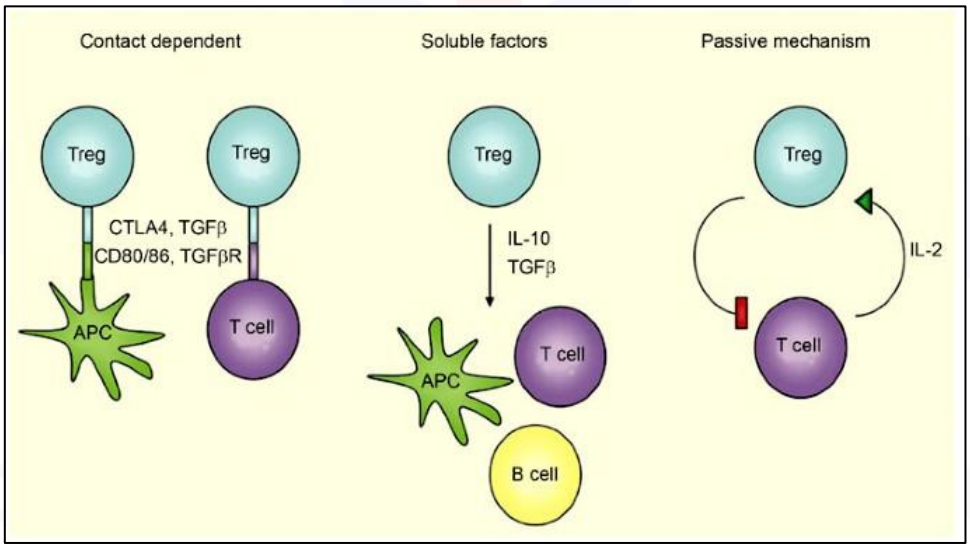
- Mary E. Brunkow (USA)
- Fred (Frederick) J. Ramsdell (USA)

- Shimon Sakaguchi (Japan)
- They were honoured "**for their discoveries concerning peripheral immune tolerance**" — specifically, how the immune system restrains itself from attacking the body's own tissues.
- The official press release was issued on **6 October 2025** by the Nobel Assembly at Karolinska Institutet, Stockholm.
- **Their prize shares:** each gets 1/3 share of the award.

PERIPHERAL IMMUNE TOLERANCE & REGULATORY T CELLS (TREGS)

WHAT THE DISCOVERY IS ABOUT

- The immune system must strike a delicate balance: **eliminate pathogens** (viruses, bacteria) while **not attacking self** (body's own cells).
- Classical immunology emphasized *central tolerance* (in the thymus, where self-reactive T cells are eliminated) as the key mechanism to prevent autoimmunity.
- These laureates showed that **immune regulation in the periphery** (outside the thymus) is equally essential — i.e., **peripheral immune tolerance**.



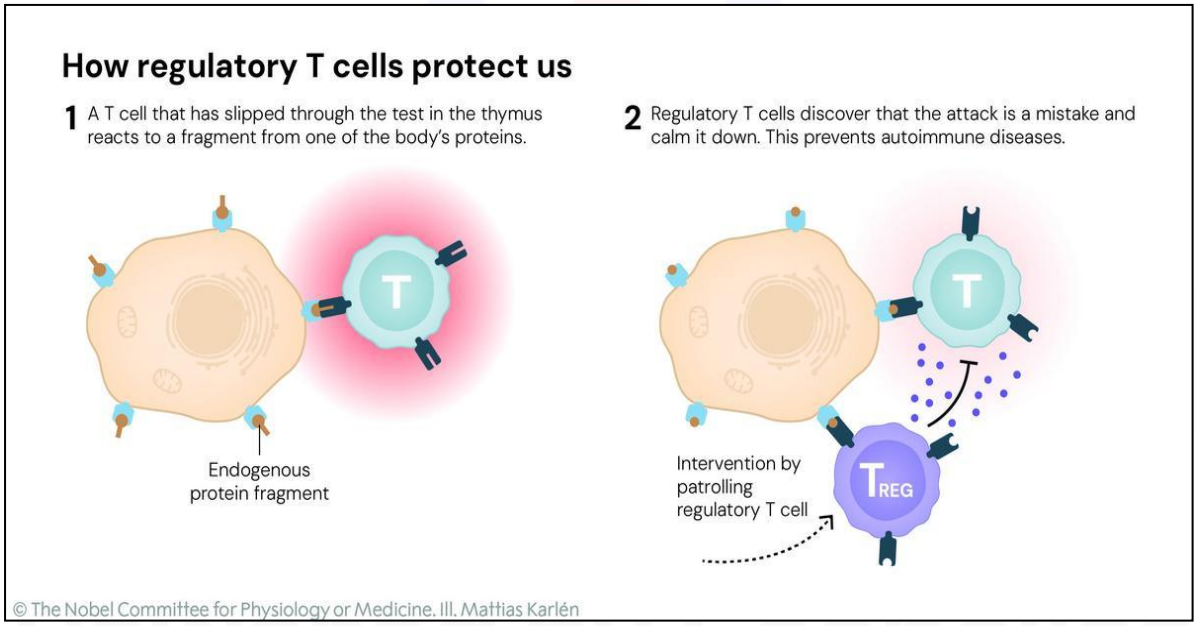
KEY CONTRIBUTIONS OF EACH

- **Shimon Sakaguchi (1995):** Identified a population of **regulatory T cells (Tregs)** that act as "immune system guards," preventing overactive immune responses and autoimmunity.
- **Mary E. Brunkow & Fred Ramsdell (early 2000s):** Discovered and characterized the **FOXP3 gene** as a "master regulator" for Treg function. Mutations in FOXP3 were linked to severe autoimmune disease (e.g. IPEX syndrome).

- Later, integrative work clarified how *FOXP3 expression* is essential for Treg development, stability, and suppressive function.

BIOLOGICAL MECHANISM (IN BRIEF)

- **Tregs** (regulatory T cells) are a subset of CD4+ T cells that **suppress activation** of other immune cells (effector T cells), thereby preventing immune overreaction or attack on healthy tissues.
- FOXP3 is a transcription factor crucial for Treg lineage — turning on genes that give Tregs their suppressive phenotype, and repressing inflammatory/effector genes.
- In absence/dysfunction of FOXP3, Tregs fail, and immune tolerance breaks down → autoimmune disease.
- The discoveries reshaped the understanding of **immune homeostasis** — a dynamic interplay between activation and suppression.



IMPORTANCE / SIGNIFICANCE OF THE DISCOVERY

CONCEPTUAL / SCIENTIFIC IMPACT

- It changed the paradigm: immune regulation is not just about elimination of self-reactive cells in development (central tolerance), but about **continuous regulation in peripheral tissues** by Tregs.
- It opened a **new field of immunology** focused on regulatory circuits rather than just "attack" mechanisms.
- Provided molecular targets (FOXP3 and downstream pathways) for therapeutic manipulation.

MEDICAL & THERAPEUTIC IMPLICATIONS

- **Autoimmune Diseases**
  - Diseases like type 1 diabetes, multiple sclerosis, rheumatoid arthritis, lupus — where immune system attacks self — can be better understood in light of Treg dysfunction.
  - Therapies that **boost Treg function** or **correct FOXP3 dysfunction** hold promise.
- **Transplantation / Graft Rejection**
  - Tregs can be used to **suppress immune rejection** of transplanted organs or tissues, reducing need for broad immunosuppression.
- **Cancer Immunotherapy**
  - In cancer, Tregs can suppress anti-tumor immune responses (a "brake"). Modulating Tregs (reducing their action in tumor microenvironment) is a strategy to **boost immune attack on tumors**.
  - Precision targeting: using Tregs to control autoimmune side effects in immunotherapy is also under investigation.
- **Clinical Trials & Translation**
  - According to sources, **over 200 clinical trials** are ongoing involving Treg-based therapies (autoimmunity, transplantation, cancer).
  - However, many challenges remain in safety, specificity, stability, delivery, side effects.

STRENGTHS, CHALLENGES & CAVEATS

STRENGTHS / BREAKTHROUGH NATURE

- The discovery is **fundamental** — it provides insight into a core biological principle (immune self-tolerance).
- It links **molecular genetics, immunology, and clinical disease** — a full translational arc.
- Opens pathways for **precision immunotherapy** rather than blanket suppression.

CHALLENGES / LIMITATIONS

- Translating into safe, effective therapies is nontrivial: Tregs must be **stable, specific (to the right tissue)**, not become immunosuppressive in unwanted places (e.g. tumors).

- Risk of tipping the balance too far — immunodeficiency, infections, or provoking cancer if suppression too strong.
- Heterogeneity: Tregs are not homogeneous; different subsets exist, context matters, epigenetic regulation is complex.
- Long-term safety, scalability, regulatory hurdles in human therapy remain.

BROADER &RELEVANT IMPLICATIONS

FOR SCIENCE & HEALTH POLICY

- Emphasis on **precision medicine**: not only "killing pathogens" but **modulating immune balance**.
- Importance of **immune modulation** in non-infectious diseases (autoimmunity, chronic inflammation, cancer).
- Justifies funding & policy push toward immunology, gene therapy, cell therapy, biotech.

FOR INDIA / GLOBAL SOUTH

- Autoimmune and chronic inflammatory diseases are rising; having foundational knowledge helps local research and therapeutic development.
- Could guide India's health research priorities (e.g. at ICMR, DBT/BIOTECH, immunology centers).
- Encourages partnerships, clinical trials in India for Treg-based therapies (if regulatory & infrastructure allow).

PHILOSOPHICAL / ETHICAL CONSIDERATIONS

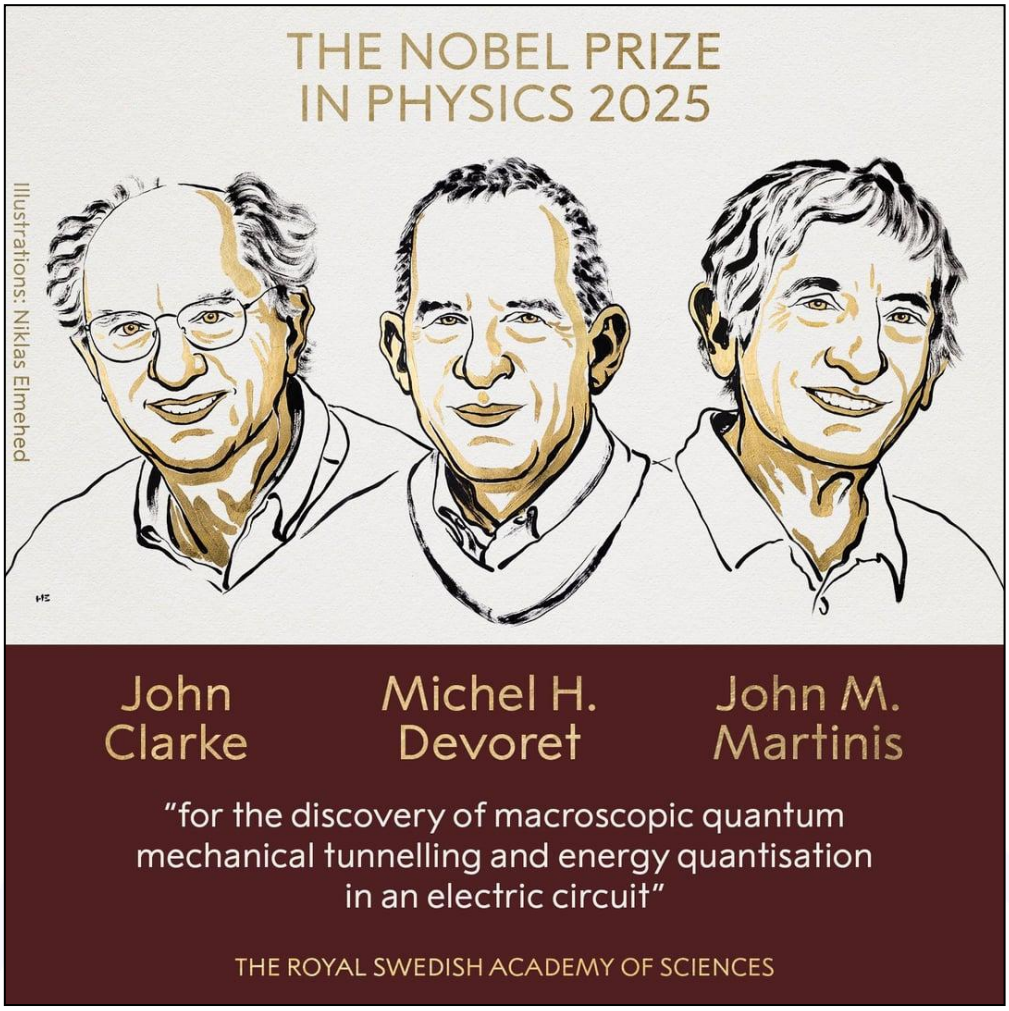
- Manipulating immune systems raises ethical issues: whose immunity to suppress, risk-benefit tradeoffs, long-term effects.
- Equity: expensive biologic / cell therapies may remain accessible only to the rich, raising questions of health justice.

2025 NOBEL PRIZE IN PHYSICS

LAUREATES & OFFICIAL ANNOUNCEMENT

- The **2025 Nobel Prize in Physics** was jointly awarded to **John Clarke**, **Michel H. Devoret**, and **John M. Martinis** for their pioneering work in quantum mechanics.
- The citation: **"for the discovery of macroscopic quantum mechanical tunnelling and energy quantisation in an electric circuit."**

- The announcement was made on **7 October 2025** by the Royal Swedish Academy of Sciences.
- Each laureate receives an equal share of the prize.



QUANTUM TUNNELLING & ENERGY QUANTIZATION

WHAT THE DISCOVERY IS

- The laureates demonstrated that **quantum mechanical phenomena**, such as **tunnelling** (particles crossing barriers they classically should not cross) and **discrete energy levels**, can manifest in a macroscopic electrical circuit (i.e. at scales much larger than atoms).
- Their experiments employed **superconducting circuits**, including **Josephson junctions**, to show that an electrical current through such devices can tunnel through insulating barriers and that the system's energy states are quantized (i.e. having discrete allowed levels).
- These findings bridge the classical world (big circuits) and quantum mechanics (phenomena usually confined to atoms or subatomic particles).

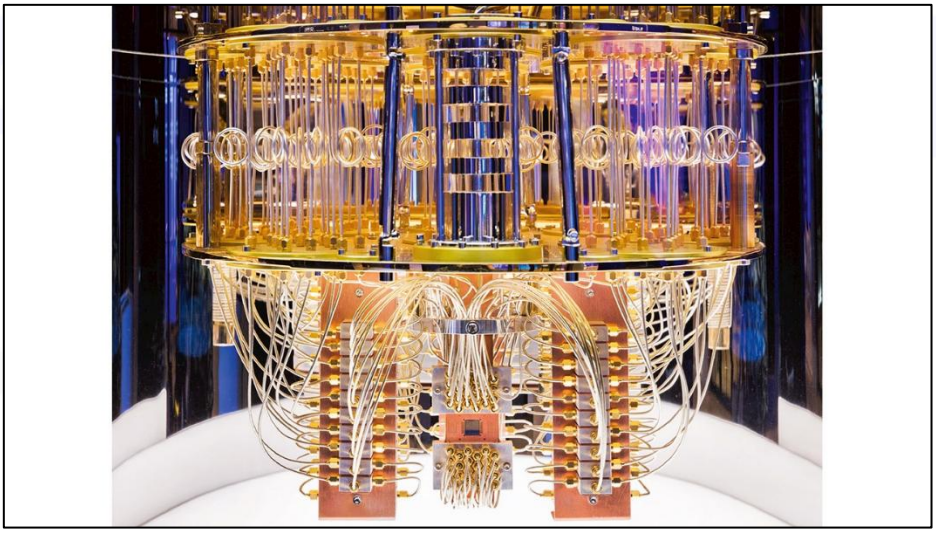
HOW IT FITS IN THE QUANTUM PARADIGM

- In typical quantum mechanics, effects like **superposition**, **tunnelling**, and **discrete energy levels** are associated with microscopic systems (electrons, atoms). The question has long been: *can quantum effects persist in larger, engineered systems?* Their work shows "yes."
- The circuits act somewhat like **artificial atoms** — electronic systems engineered to show quantized behavior at macroscopic scales.
- These experiments required extremely low temperatures (to maintain superconductivity), precise fabrication, and isolation from decoherence (noise) to preserve quantum coherence in circuits.

IMPORTANCE & SIGNIFICANCE

FOUNDATIONAL SIGNIFICANCE

- It provides **experimental proof** that quantum mechanics is not limited to microscopic scales but can manifest in man-built devices of macroscopic scale. This helps affirm the universality of quantum laws.
- It extends the conceptual boundary between "quantum world" and "classical world," deepening our understanding of where quantum behavior can be engineered and controlled.



TECHNOLOGICAL & APPLICATION RELEVANCE

- **Quantum Computing**
    - Superconducting circuits are among the leading platforms for **qubits** (quantum bits). These findings underpin how circuits can maintain quantum coherence and be manipulated.

    - The ability to use real circuits that behave quantumly is essential in scaling up quantum computers.

- **Quantum Sensors & Metrology**
    - Devices exploiting macroscopic quantum behaviors can achieve very high sensitivity to magnetic fields, electric fields, forces, etc.
    - Use in gravitational wave detection, magnetic resonance imaging (MRI), precision timekeeping, and fundamental physics experiments.
- **Quantum Cryptography & Communication**
    - Reliable quantum devices are needed for secure quantum communication, quantum key distribution, and quantum networks.
- **Spin-offs to conventional electronics**
    - Some techniques in noise suppression, fabrication, materials, and cryogenics developed for quantum circuits can feed back into advanced classical electronics.

BROADER IMPACT

- Moves quantum physics from abstract laboratory curiosities to **engineered, deployable technologies**.
- Encourages investment, research, and policy support in quantum technologies globally and in India.
- Helps define the next frontier of technological competition — quantum supremacy, secure communication, quantum internet.

CHALLENGES, LIMITATIONS & OPEN QUESTIONS

- **Decoherence & Noise:** In macroscopic circuits, preserving quantum coherence (preventing interaction with environment that destroys quantum states) is extremely difficult.
- **Scalability:** It is easier to demonstrate quantum effects in small systems; scaling them up to many qubits with error correction remains a huge engineering challenge.
- **Materials, fabrication, and control precision:** Fabrication imperfections, defects, material inhomogeneities can degrade quantum behavior.
- **Thermal effects:** Need ultra-low temperatures (millikelvin regimes), which makes systems expensive and complex.

- **Error correction and fault tolerance:** For real quantum computers, quantum error correction must be integrated, which is resource-intensive.

CONTEXT, TRENDS & RELATION TO PAST AWARDS

- The Nobel committee often waits years (sometimes decades) before recognizing quantum and condensed matter breakthroughs, to see their lasting value.
- Past Nobel Prizes in Physics have been awarded for quantum phenomena, e.g. Josephson effect (1962), quantum Hall effect, topological insulators, etc. The 2025 award continues that tradition but pushes the boundary into macroscopic circuits.
- This aligns with the global "quantum race" — countries, institutions investing heavily in quantum computing, quantum communication, and quantum sensing.

RELEVANCE TO INDIA

POLICY & SCIENCE & TECH

- India has launched the **National Quantum Mission (2023–2030)** to accelerate quantum research, applications, and human capital. The 2025 Nobel underscores the importance of such missions.
- Encourages Indian institutions (IISc, IITs, DRDO, ISRO) to invest in superconducting circuit research, quantum computing labs, cryogenics, etc.
- Highlights global strategic importance: quantum technology is now a critical domain in national security, computing, communication.

NOBEL PEACE PRIZE IN 2025

LAUREATE & ANNOUNCEMENT

- The **2025 Nobel Peace Prize** was awarded to **María Corina Machado** (Venezuela).
- The announcement came on **10 October 2025**, made by the Norwegian Nobel Committee in Oslo.
- The award ceremony is scheduled for **10 December 2025** in Oslo.
- The citation for her award reads:
  "for her tireless work promoting democratic rights for the people of Venezuela and for her struggle to achieve a just and peaceful transition from dictatorship to democracy."

WHO IS MARÍA CORINA MACHADO?

BACKGROUND & POLITICAL PROFILE

- Born in **1967** in Venezuela.
- She has led a notable advocacy and opposition role in Venezuelan politics, emphasizing democracy, free elections, and resisting authoritarianism.
- She founded the **Atenea Foundation**, which works with children in underprivileged areas in Caracas.
- In 2002, she was involved in establishing **Súmate**, an electoral-monitoring group aimed at ensuring transparency in Venezuelan elections.
- Ahead of the 2024 presidential election, she was **disqualified** by Maduro's controlled electoral authorities from contesting, forcing her into hiding.
- Even while in hiding, she remained a **key unifying figure** in the Venezuelan opposition, galvanizing support for free elections and non-violent transition.

REASONS / JUSTIFICATION FOR THE AWARD

According to the Nobel Committee's press release:

- Her work is deemed a **brave and committed defense of democracy** in Venezuela, especially in a context where democratic institutions have been systematically weakened.
- She has played a role in bringing together a previously fragmented opposition, under a shared goal of restoring free elections and representative governance.
- Despite severe threats to her life, the loss of public space, and repressive tactics by the regime, she persisted in advocating non-violent change
- The Committee emphasized the symbolic importance of recognizing a **"civilian courage"** in resisting authoritarianism.

Thus, the award frames democracy not only as a political system but also as a **foundation for peace** — in the view that durable peace is tied to rights, accountability, inclusion, and representation.

SIGNIFICANCE & IMPLICATIONS

SYMBOLIC & POLITICAL SIGNIFICANCE

- The Nobel nod amplifies international attention on Venezuela's political and humanitarian crisis, especially regarding suppression of dissent, human rights, and disputed elections.
- It empowers and legitimizes the Venezuelan opposition, offering them moral cover and raising their platform globally.
- It sends a message internationally: that democratic struggle under repression is worthy of recognition and that authoritarian regimes may be held to account symbolically.

GEOPOLITICAL / DIPLOMATIC CONSEQUENCES

- May increase pressure on Venezuela from international actors, human rights bodies, and foreign governments to demand democratic norms, free elections, and respect for civil liberties.
- Could influence bilateral or multilateral aid, sanctions, or diplomatic leverage vis-à-vis Venezuela.
- May embolden similar democracy movements elsewhere (Latin America, Africa, Asia) as a precedent of international backing.

FOR THE NOBEL PEACE PRIZE TRADITION

- Reinforces a trend of awarding the Prize not only to negotiated peace treaties or disarmament, but to **non-violent political activism, human rights, and resistance to authoritarianism**.
- Highlights the interplay of democracy, rights, and peace — not just absence of conflict, but presence of justice and freedom.

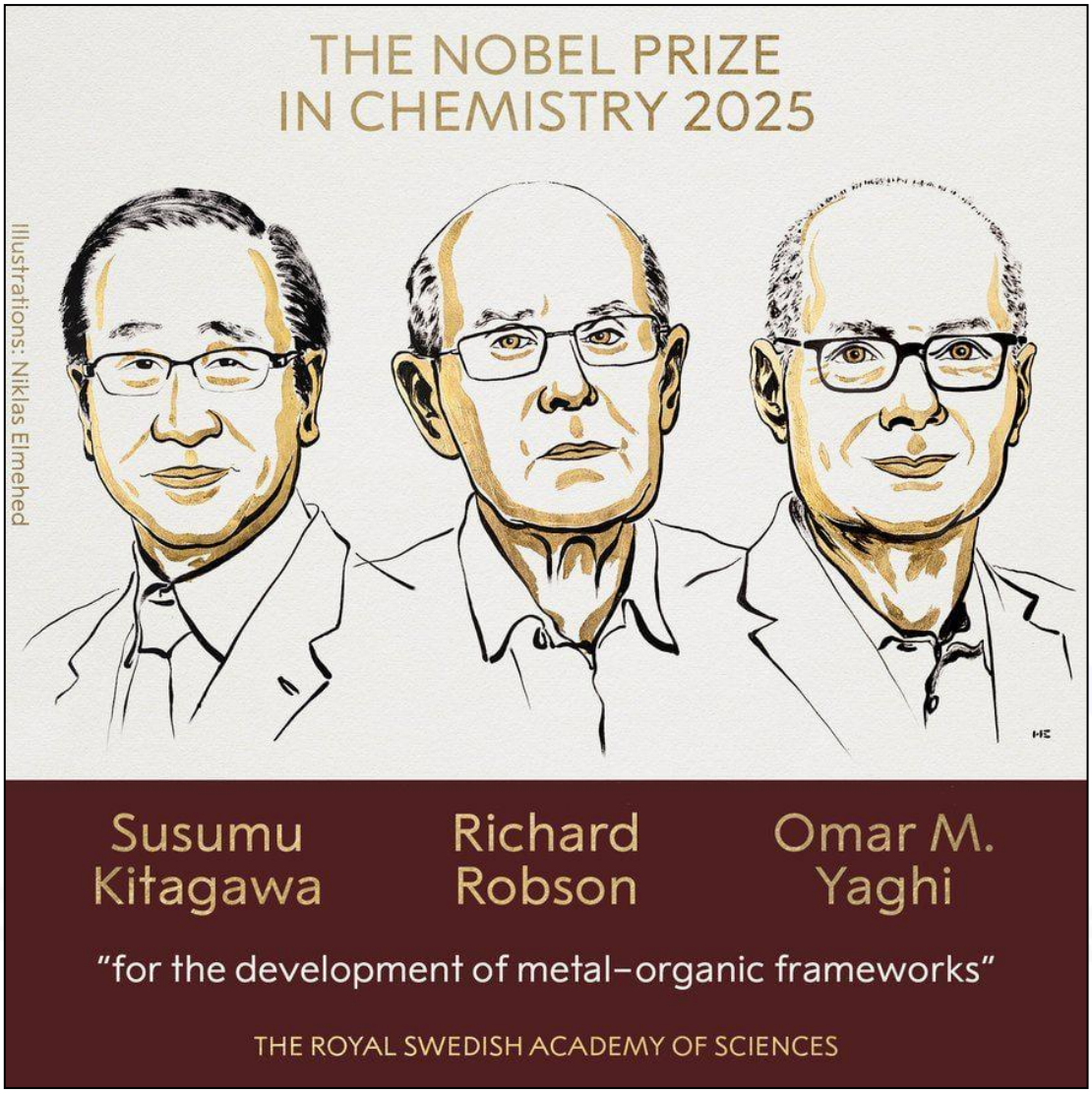
CRITICISMS, CHALLENGES & CONTROVERSIES

No major global award is without debate. Some points raised in discourse around this Nobel include:

- **"Political vs. Peace" debate**
  - Some critics argue that her activism is inherently political rather than traditional peace work (like mediation, conflict resolution).
  - The boundary between political struggle and peace activism is contested; critics caution against conflating regime change advocacy with "peace work."
- **Accusations of Partiality / Past Positions**
  - Her support for Israel during the Gaza conflict and criticism of Hamas have drawn scrutiny, especially in Latin America where regional solidarity is complex.
  - She has been criticized for calling for foreign intervention in Venezuela, which opponents see as problematic for sovereignty.
- **Logistics & Safety Concerns**
  - Given that she is in hiding under threat, logistical challenges may arise in her attending the prize ceremony, speaking freely, or ensuring her safety.
  - Persecution risks could increase as the regime may target her more aggressively after such a high-profile recognition.

- **Timing & Speculation**
    - Before the announcement, there was unusual betting activity, leading to speculation of information leaks; the Nobel committee initiated an investigation.
    - Some observers view this as a politically symbolic choice over a more "objective" peace mediator.

NOBEL PRIZE IN CHEMISTRY 2025



LAUREATES & OFFICIAL ANNOUNCEMENT

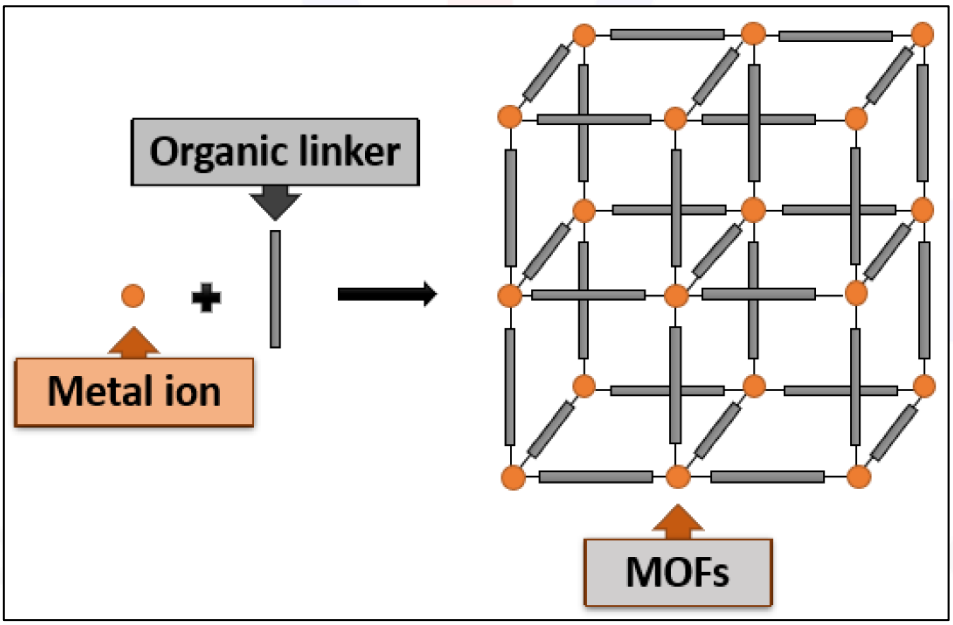
- The **2025 Nobel Prize in Chemistry** was awarded **jointly** to:
    - **Susumu Kitagawa** (Japan)
    - **Richard Robson** (Australia)
    - **Omar M. Yaghi** (USA)

- The award was given **"for their development of metal–organic frameworks (MOFs)"**, a new class of highly porous materials with transformative applications in sustainability, energy, medicine, and environmental cleanup.
- Announcement: **9 October 2025**, by the Royal Swedish Academy of Sciences, Stockholm.
- Each laureate receives **one-third share** of the prize.

SCIENTIFIC DISCOVERY: METAL–ORGANIC FRAMEWORKS (MOFS)

WHAT ARE MOFS?

- **Metal–Organic Frameworks** are crystalline materials composed of **metal ions or clusters** connected by **organic linkers**, forming a **highly porous 3D network**.
- Their **internal surface areas are enormous**, sometimes exceeding 7,000 m^2 per gram — making them like **molecular sponges**.
- MOFs are **tunable**: their chemical properties and pore sizes can be engineered to capture, store, or release specific molecules.



KEY CONTRIBUTIONS OF EACH LAUREATE

- **Richard Robson**: Introduced the concept of constructing 3D frameworks from metal centers and organic ligands in the 1980s — conceptual pioneer.
- **Susumu Kitagawa**: Developed MOFs with **flexibility and stability**, showing how the structures could **adapt to guest molecules** without collapsing.
- **Omar M. Yaghi**: Innovated **reticular chemistry**, expanding MOF design and applications in gas storage, catalysis, and environmental cleanup.

SIGNIFICANCE OF THE DISCOVERY

SCIENTIFIC IMPORTANCE

- Established a **new branch of materials science**, linking chemistry, crystallography, and nanotechnology.
- Demonstrated how **engineered porous frameworks** can mimic natural systems (like zeolites) but with **higher tunability and functionality**.

APPLICATIONS & REAL-WORLD RELEVANCE

- **Carbon Capture & Climate Change Mitigation**
  - MOFs can **trap CO_2** efficiently from the atmosphere or industrial emissions.
- **Water Harvesting & Purification**
  - MOFs can extract **water from arid air** and remove **toxic contaminants**, including PFAS (per- and polyfluoroalkyl substances).
- **Energy Storage**
  - Ideal for **hydrogen or methane storage**, supporting **clean energy technologies**.
- **Drug Delivery & Medicine**
  - MOFs can be loaded with drugs and **release them at targeted sites**, improving efficacy.
- **Pollution Remediation**
  - Can absorb **heavy metals and toxins** from wastewater, helping environmental cleanup.

CHALLENGES, LIMITATIONS & FUTURE DIRECTIONS

- **Scalability**: Industrial-scale production is still costly.
- **Stability**: Some MOFs degrade under humidity or high temperatures; improving robustness is key.
- **Selectivity**: Tuning MOFs for **specific molecules** remains a challenge.
- **Sustainability**: Research needed to use **eco-friendly metals and linkers** to prevent secondary pollution.

Future research aims to develop **next-generation MOFs** for **energy, environmental, and biomedical applications**, potentially revolutionizing how we store gases, harvest water, and remove pollutants.

BROADER & RELEVANT IMPLICATIONS

SCIENCE & TECHNOLOGY

- MOFs showcase **cutting-edge chemical engineering** with practical sustainability applications.
- Highlight India's potential in **materials science, clean energy, and water technology**, aligning with programs like **National Mission on Clean Energy** or **Water Innovation initiatives**.

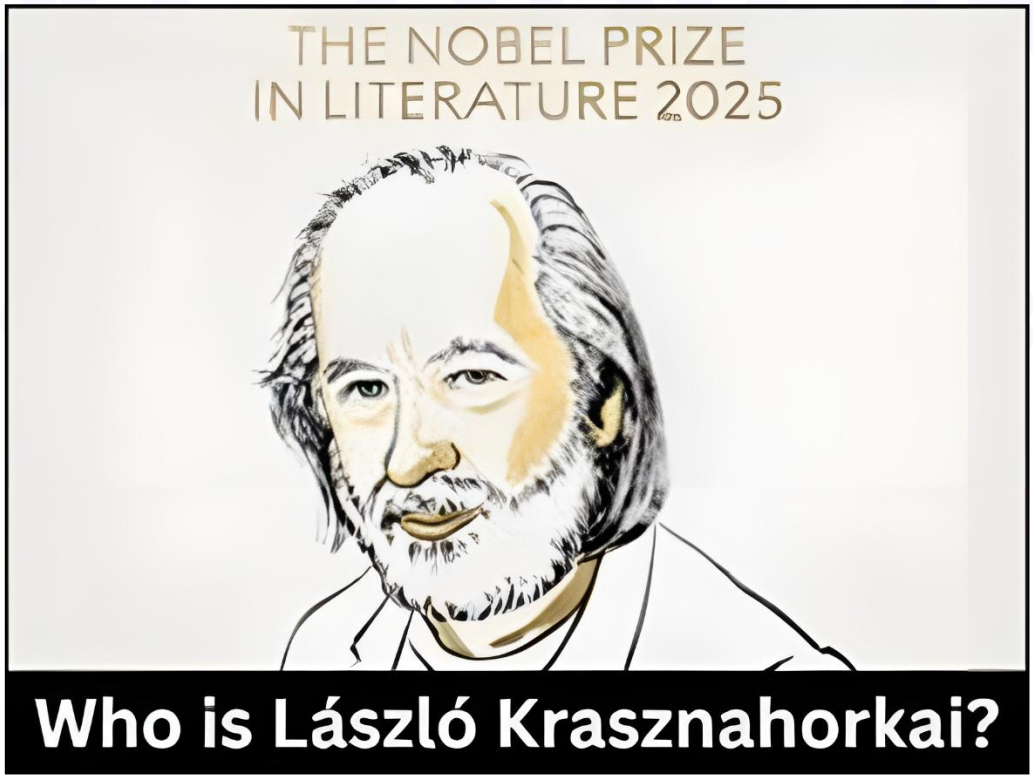
POLICY & STRATEGIC RELEVANCE

- Carbon capture technologies using MOFs can support India's **Net Zero 2070** goals.
- Water-harvesting MOFs may aid **drought-prone regions**, making it a **policy-relevant scientific tool**.

ETHICAL / SOCIETAL CONSIDERATIONS

- Ensuring **equitable access** to MOF-based solutions in medicine and environment.
- Avoiding environmental harm from large-scale MOF production or disposal.

NOBEL PRIZE LITERATURE 2025



ABOUT LÁSZLÓ KRASZNAHORKAI

- **Born**: 1954, Gyula, Hungary
- **Notable Works**:
    - **Satantango (1985):** A bleak portrayal of life on a dilapidated collective farm in pre-communist Hungary.
    - **The Melancholy of Resistance (1989):** A surreal, disturbing tale set in a small Hungarian town.
    - **Baron Wenckheim's Homecoming (2016):** A sprawling saga of a gambling-addicted aristocrat.
- **Style**: Known for long, winding sentences and dense prose.
- **Influences**: His works have been compared to those of Franz Kafka and Thomas Bernhard.

05 INDIA CALLS FOR UN REFORMS AT 80TH UNGA SESSION

India's External Affairs Minister addressed the **80th session of the United Nations General Assembly (UNGA)** in New York, highlighting the **need for UN reform** and India's readiness to assume greater responsibilities in driving UN reforms.

UNITED NATIONS (UN)

- **Founded**: 24 October 1945, after **World War II**, to prevent global conflicts and promote cooperation.
- **Headquarters**: New York, USA.
- **Membership**: 193 sovereign nations.
- **Purposes & Principles** (UN Charter):
  - Maintain **international peace and security**.
  - Promote **human rights and fundamental freedoms**.
  - Encourage **economic and social development**.
  - Foster **international cooperation** in solving global problems.
  - Uphold **respect for sovereignty and non-interference**, while facilitating **collective action** when necessary.

MAJOR ORGANS:

- **General Assembly (UNGA)** – main deliberative forum, all 193 members have equal vote.
- **Security Council (UNSC)** – responsible for peace and security; has 5 permanent members (P5) and 10 non-permanent members.
- **Economic and Social Council (ECOSOC)** – coordinates economic, social, and environmental cooperation.
- **International Court of Justice (ICJ)** – adjudicates legal disputes between states.
- **Secretariat** – administrative body led by the Secretary-General.
- **Trusteeship Council –** inactive, previously oversaw trust territories.

WHAT IS THE UNITED NATIONS GENERAL ASSEMBLY (UNGA)?

- **Composition**: All 193 member states, each with **one vote** (equal voice).
- **Functions**:
    - Discuss and recommend solutions on **international peace, development, human rights, and security**.
    - Adopt **resolutions** and **declarations** (non-binding, but carry political weight).
    - Elect **non-permanent Security Council members**, ICJ judges, and other UN positions.
    - Serve as **platform for diplomatic negotiations and advocacy**.
- **Significance**: UNGA ensures **universal representation**, contrasting UNSC where only a few powers dominate decisions.

WHY THE UN NEEDS REFORMS?

STRUCTURAL OBSOLESCENCE

- **UNSC still reflects 1945 geopolitics** – USA, UK, France, Russia, China (P5) dominate decision-making.
- Emerging powers like **India, Brazil, Germany, Japan** lack permanent membership.
- **Global South underrepresented**, despite contributing significantly to population and global economy.

DECISION-MAKING GRIDLOCK

- **Veto power of P5** often leads to stalemates (e.g., Syria, Ukraine crises).
- Delays urgent responses to conflicts, terrorism, and humanitarian crises.

EMERGING GLOBAL CHALLENGES

- **Climate change, cyber threats, global pandemics, terrorism, nuclear proliferation** require rapid, inclusive, and coordinated action.
- Current UN structures are **slow, hierarchical, and outdated** to tackle these issues efficiently.

REPRESENTATION AND LEGITIMACY

- Developing countries, particularly from **Africa, Asia, and Latin America**, feel **excluded from critical decision-making**, reducing **UN credibility**.

INDIA'S STAND AT THE 80TH UNGA

- **Speaker**: External Affairs Minister **S. Jaishankar** (September 2025).
- **Key Messages**:
  - **UN reform is urgent** – UNSC must reflect **21st-century realities**.
  - **Expansion of permanent membership** – India, Brazil, Germany, Japan (G4 nations).
  - **Representation for Global South** – to improve fairness and legitimacy.
  - **Rule of Law** – central to national governance and international peace.
  - Support for **multilateralism** and **collective action** on climate, peace, and development.
- **Global Support**:

- Kazakhstan's President **Kassym-Jomart Tokayev** echoed India's call for **comprehensive UN reforms**, including digital equity and sustainability.

- India's push aligns with its long-standing foreign policy goal: **permanent UNSC seat** and leadership in global governance.

SIGNIFICANCE OF INDIA'S CALL

GEOPOLITICAL RELEVANCE

- Highlights India's **rising influence in international affairs**.
- Demonstrates India's readiness to **share global responsibilities**, including **peacekeeping and humanitarian assistance**.

STRATEGIC IMPORTANCE

- Supports India's **UNSC permanent membership campaign**.
- Reinforces India as a **responsible global actor** in tackling conflicts, terrorism, and climate change.

CHALLENGES TO UN REFORMS

- **Resistance from P5** – reluctance to dilute veto power.
- **Consensus Requirement** – reforms need **2/3 majority in UNGA + UNSC approval**.
- **Regional Disputes** – rival claims (e.g., India vs Pakistan, Germany vs Italy).
- **Operational Complexity** – expanding membership may slow UNSC decision-making.
- **Political Will** – varied priorities of member states may delay reforms.

WAY FORWARD FOR UN REFORMS

- **Incremental Approach** – first expand **non-permanent members**, then negotiate permanent seats.
- **Inclusive Dialogue** – ensure **Global South and African nations** participate fully.
- **Veto Limitations** – consider **restrictions in humanitarian crises or terrorism cases**.
- **Modernization** – adopt **digital decision-making, AI-based simulations**, rapid reporting.
- **Strengthen Accountability** – enforce **rule of law and transparency** in UN operations.

- **Regional Cooperation** – leverage **G4, African Union, ASEAN** for consensus building.

GLOBAL IMPLICATIONS

- **Enhanced legitimacy** for UN decisions if reforms succeed.
- Empowerment of **emerging powers** strengthens multipolarity.
- Improved response to **climate, security, and humanitarian crises**.
- Reinforces **rules-based international order**, aligning with India's strategic interests.

CONCLUSION

- India's advocacy at the **80th UNGA** signals a **push for a more inclusive, representative, and efficient UN**.
- Reforms will:
    - Empower the **Global South**,
    - Strengthen **multilateralism**,
    - Enhance **peacekeeping and development efforts**,
    - Reinforce **international law and rules-based order**,
    - Support India's **strategic ambitions** in global governance.
- **India is positioning itself as a responsible, influential actor** shaping the future of the UN for the 21st century.

06 CRIME IN INDIA 2023

The **National Crime Records Bureau (NCRB)** released the ***Crime in India 2023*** report showing a **7.2% rise (compared to 2022)** in **total crimes** to over **6.24 million cases**.

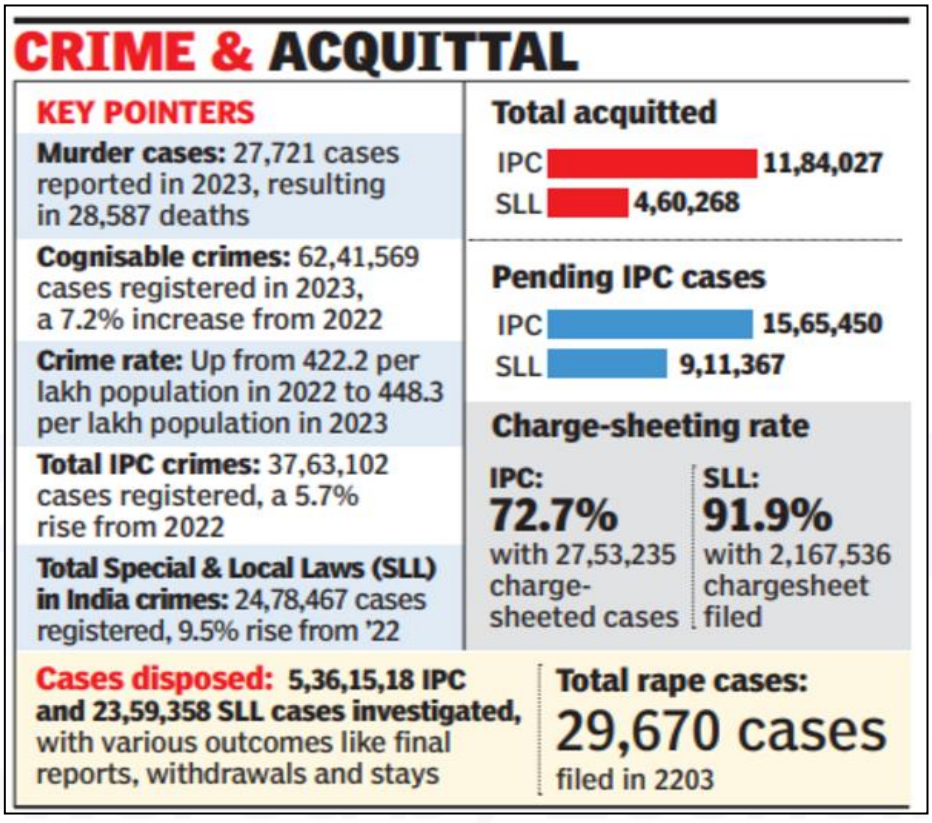
INTRODUCTION

- **National Crime Records Bureau (NCRB)**, under **Ministry of Home Affairs**, publishes the **Crime in India** report annually since 1953.
- Purpose:
  - Provide **comprehensive data on crimes across India**.
  - Aid **policy formulation, law enforcement, and academic research**.
  - Enable **monitoring trends and evaluating crime prevention measures**.
- **2023 Report Highlights**:
  - Total crimes registered: **6.24 million** (7.2% increase from 2022).
  - Shows **increasing trends in violent crimes, cybercrime, and crimes against vulnerable groups**.
  - Serves as a key tool for **GS Paper 2 & 3 topics**: internal security, law enforcement, social issues, and governance.

OVERALL CRIME TRENDS

Aspect	Data / Trend	Analysis
Total crimes	6,24,0000+ cases	7.2% increase from 2022, indicating rising reporting and/or incidence
Highest-crime states	Uttar Pradesh, Maharashtra, Tamil Nadu	Urbanization, population density, law enforcement capacity factors
Crime rate	~458.7 per 1 lakh population	Indicates increased likelihood of crime per capita

Observation: Rise in crime may partly reflect **improved reporting mechanisms** and awareness campaigns.



CRIME AGAINST WOMEN

- **Total cases**: ~5.3 lakh (slight increase from 2022).
- **Major categories**:
  - **Rape**: Increased slightly; significant underreporting persists.
  - **Molestation & sexual harassment**: Increased in urban areas.
  - **Domestic violence**: Shows high prevalence, underlines social patriarchy.

- **High-crime states**: Uttar Pradesh, Maharashtra, West Bengal, Bihar.
- **Policy implication**: Need for **gender-sensitive policing, awareness, and legal support**.

CRIME AGAINST CHILDREN

- Cases increased, including **kidnapping, abduction, sexual abuse**.
- **Digital crimes against minors** (online sexual exploitation, cyberbullying) rising sharply.
- **Vulnerability**: Especially in urban slums and remote areas.
- **Policy Response**: Strengthen **POSCO Act implementation, cyber surveillance, and school safety measures**.

CYBERCRIME

- **Significant rise** observed:
  - Online frauds, financial scams, phishing attacks.
  - Social media harassment and identity theft.
- **Causes**:
  - Increased **internet penetration**.
  - Low **digital literacy and weak cybersecurity infrastructure**.
- **Policy Implications**:
  - Capacity building of **cybercrime units**.
  - National awareness campaigns like **Cyber Surakshit Bharat**.

PROPERTY CRIME

- **Theft, burglary, dacoity** show regional variations.
- **Urban areas** show higher property-related offences than rural.
- **Causes**: Migration, unemployment, socio-economic disparity.
- **Policy Measures**: **Community policing, CCTV surveillance, quick response teams**.

ORGANIZED CRIME & TERRORISM-LINKED CRIME

- **NCRB reports an increase in organized crime networks**, often linked with:
  - Drugs, smuggling, human trafficking.

- **Emerging threats**: Terror financing, radicalization via online platforms.
- **Policy Action**: Strengthen **NIA, anti-terrorism cells, intelligence-sharing**.

CAUSES OF RISING CRIME

- **Socio-economic factors**: Poverty, inequality, unemployment, substance abuse.
- **Urbanization & migration**: Overcrowding, slum proliferation, inadequate policing.
- **Digitalization**: Rapid internet growth with low cybersecurity awareness.
- **Patriarchy & social bias**: Gender-based crimes persist due to deep-rooted norms.
- **Improved reporting**: Awareness and technology result in higher registration of crimes.

CHALLENGES IN CRIME PREVENTION

- **Underreporting**: Especially for sexual and domestic violence.
- **Weak policing infrastructure**: Low police-population ratio in some states.
- **Judicial backlog**: Delayed trials reduce deterrence.
- **Cybercrime complexity**: Cross-border and technologically sophisticated crimes.
- **Regional disparities**: Some states lag in enforcement and awareness campaigns.

POLICY IMPLICATIONS & WAY FORWARD

- **Modern Policing**
  - AI-based predictive policing.
  - Body cams, CCTV, and data analytics for crime prevention.
- **Legal & Judicial Strengthening**
  - Fast-track courts for sexual crimes.
  - Simplified processes for reporting cybercrime.
- **Community Engagement**
  - Neighborhood watch, community policing, and school programs.
- **Cybersecurity Measures**
  - National-level cybersecurity awareness campaigns.

- Strengthen CERT-IN and cybercrime cells.

- **Capacity Building**
  - Police training in gender sensitivity, cybercrime handling, and intelligence gathering.
- **Data-Driven Governance**
  - NCRB data to guide **policy formulation, resource allocation, and law enforcement strategies**.

KEY TAKEAWAYS

- **Rising Crime Trend**: Total cases increased by 7.2% in 2023 → reflects need for **stronger law enforcement & social interventions**.
- **Focus Areas**: Women, children, cybercrime, organized crime.
- **Policy Relevance**: Modern policing, rule of law, digital literacy, social reforms.
- **Exam Linkage**: GS Paper 2 (Internal Security & Law), GS Paper 3 (Social Issues, Cybersecurity, Crime), Ethics (Integrity, Rule of Law).

CONCLUSION

- **Crime in India 2023** highlights the **rising challenges to internal security and social order**.
- Effective crime control requires a **multi-pronged strategy**:
  - Modern policing & technology,
  - Cybercrime prevention,
  - Gender & child protection initiatives,
  - Community participation, and
  - Data-driven policy-making.
- NCRB's annual report is **crucial for governance, policymaking, and research**, forming the basis for targeted **crime prevention strategies**.

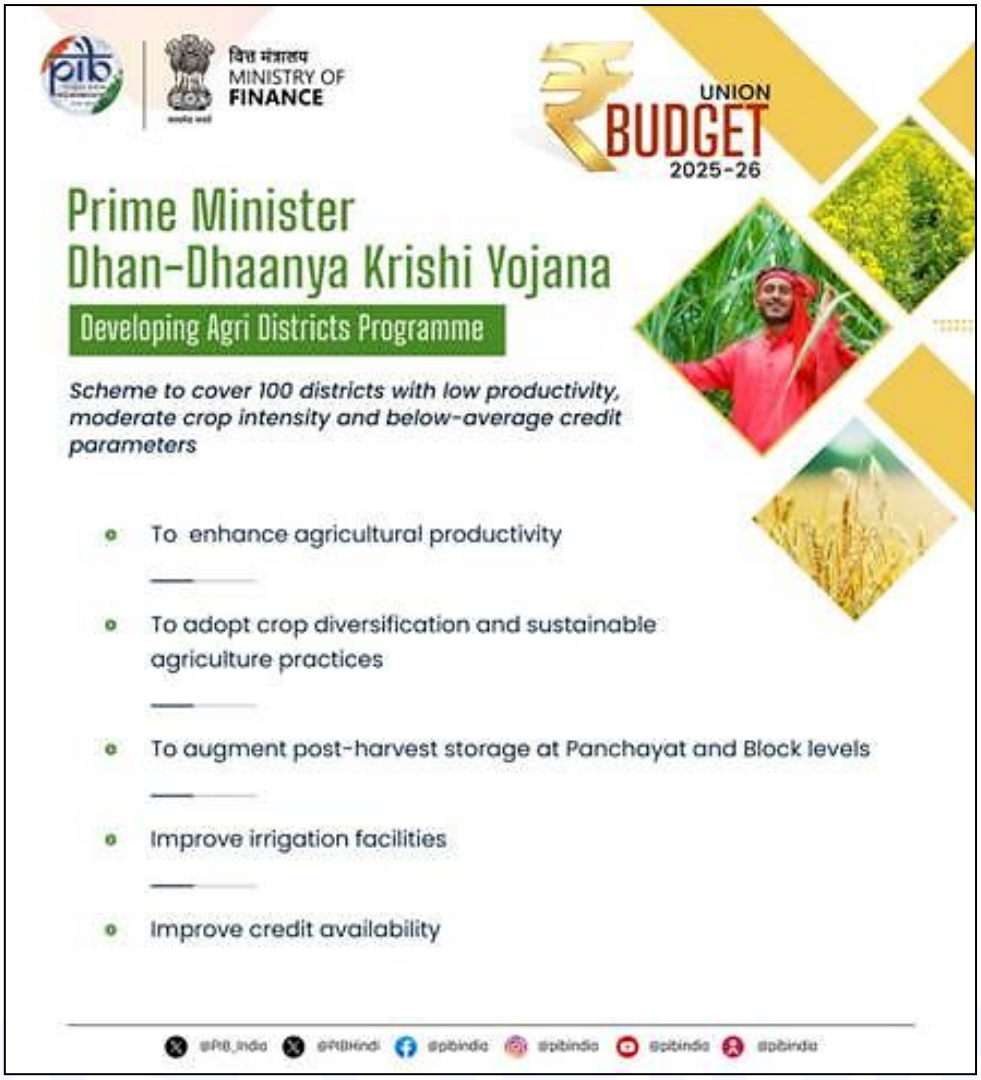
07 PRIME MINISTER DHAN-DHAANYA KRISHI YOJANA (PMDDKY)

Centre has announced **100 Aspirational Agriculture Districts** under the **Prime Minister Dhan-Dhaanya Krishi Yojana (PMDDKY)**, aiming to boost farm productivity and rural prosperity.

WHAT IS THE PRIME MINISTER DHAN-DHAANYA KRISHI YOJANA (PMDDKY)?

The **PMDDKY** announced in the **Union Budget 2025** to make farming easier, modern, and more profitable.

- It is modeled after the **NITI Aayog's Aspirational Districts Programme (ADP)**, but focused exclusively on **agriculture and allied sectors**.
- PMDDKY has no separate budgetary allocation, it converges budgets of **36 existing schemes** from 11 departments, including **Pradhan Mantri Kisan Samman Nidhi** (cash transfers), **Pradhan Mantri Fasal Bima Yojana** (crop insurance), and **Pradhan Mantri Krishi Sinchayee Yojna** (irrigation) with an annual outlay of Rs 24,000 crore from 2025-26 to 2030-31, totaling Rs 1.44 lakh crore.
- Around **40% is earmarked for subsidies, 30% for infrastructure, 20% for loans, and 10% for training and market support.**



BACKGROUND

- **Need for the Scheme**:
  - Farmers often face **price volatility** for crops like rice, wheat, pulses, and oilseeds.
  - Traditional MSP systems sometimes **fail to reach small and marginal farmers**.
  - **Distress sales** and indebtedness remain high in rural India.
  - Growing emphasis on **food security**, market efficiency, and **digital integration** in agriculture.
- **Linkages with Other Schemes**:
  - **PM-Kisan Samman Nidhi**: Provides income support to farmers.
  - **Pradhan Mantri Fasal Bima Yojana (PMFBY)**: Crop insurance for risk mitigation.

- **e-NAM (National Agriculture Market)**: Digital trading platform for fair price discovery.
- PMDDKY complements these schemes by **ensuring MSP procurement and stable income**.

KEY FEATURES

- **Financial Assistance and MSP Procurement**
  - Direct financial support to farmers for procurement at **MSP or above**.
  - Reduces **distress selling**, especially in surplus years.
  - Helps **stabilize market prices** and ensures adequate **buffer stock for food security**.
- **Crop Coverage**
  - Initially focuses on **major cereals** (rice, wheat), **pulses**, and **oilseeds**.
  - Can be expanded to **horticulture, millets, and minor crops** to improve farmer diversification.
- **Target Beneficiaries**
  - **Small and marginal farmers**, typically owning less than 2 hectares.
  - Inclusion of **Farmer Producer Organizations (FPOs)** and **cooperatives** for bulk procurement.
- **Implementation Mechanism**
  - **Central government** provides funds and oversight.
  - **State governments** handle logistics: storage, procurement centers, payment distribution.
  - **Digital integration** through e-NAM, Aadhaar-based transfers, and online tracking.
- **Market Stabilization**
  - Prevents market glut and price collapse.
  - Supports **public distribution system** and buffer stock maintenance.
- **Incentives for Farmers**
  - Ensures **predictable income**, encouraging investment in inputs and technology.
  - Promotes **crop diversification** and sustainable farming practices.

OBJECTIVES OF PMDDKY

- **Income Security**: Ensure fair prices and reduce farmer distress.
- **Food Security**: Strengthen **public procurement and buffer stocks**.
- **Market Efficiency**: Reduce dependence on intermediaries and promote transparency.
- **Digital Integration**: Use e-NAM, Aadhaar, and digital payment systems.
- **Support Small & Marginal Farmers**: Focus on the most vulnerable in the agricultural sector.

IMPLEMENTATION CHALLENGES

- **Awareness Gap**: Remote and marginal farmers may lack knowledge of the scheme.
- **Logistics & Storage**: Efficient procurement, transport, and storage remain challenging.
- **Digital Divide**: e-NAM and online payments may exclude digitally illiterate farmers.
- **Price Distortions**: Market prices may fluctuate faster than MSP updates.
- **Coordination Issues**: Requires seamless coordination between **central, state governments, FPOs, and cooperatives**.

MONITORING AND EVALUATION

- **Digital Tracking**: e-NAM portals and online procurement systems track progress.
- **Transparency**: Real-time updates on crop quantity, procurement, and MSP payments.
- **Audits**: Financial audits and performance evaluations by **Ministry of Agriculture and Farmers' Welfare**.
- **Feedback Mechanism**: Farmers can report grievances via helplines and portals.

WAY FORWARD / RECOMMENDATIONS

- **Awareness Campaigns**: Use local languages and media to educate farmers.
- **Expand Crop Coverage**: Include pulses, millets, horticulture crops for income diversification.

- **FPO & Cooperative Strengthening**: Empower groups to negotiate better prices and bulk sales.
- **Technology Integration**:
  - Use **AI, GIS, and blockchain** for efficient procurement tracking.
  - Enhance **cybersecurity** for digital transactions.
- **Complementary Policies**: Link PMDDKY with **PMFBY, PM-Kisan, and agri-extension services** for holistic support.
- **Regular Review**: Periodic evaluation to ensure **MSP is effective and reaches intended beneficiaries**.

POLICY IMPLICATIONS

- Supports **India's target of doubling farmers' income** by 2025–26.
- Promotes **sustainable agriculture** and **market efficiency**.
- Strengthens **food security** by ensuring consistent procurement.
- Encourages **digitally enabled agriculture**, improving transparency and reducing corruption.

PMDDKY VS. OTHER SCHEMES

Scheme	Focus	PMDDKY Advantage
Pradhan Mantri Kisan Samman Nidhi	$₹6,000/$year cash transfers to farmers	Adds irrigation, storage, markets, and training
Pradhan Mantri Fasal Bima Yojana	Crop insurance against losses	Includes insurance, plus loans, technology, and infrastructure
Pradhan Mantri Krishi Sinchayee Yojana	Irrigation development (drip, sprinkler)	Covers irrigation, storage, credit, and allied sectors
Pradhan Mantri Rashtriya Krishi Vikas Yojana	State-led agricultural projects	National coordination, district-specific plans, and convergence

ASPIRATIONAL DISTRICTS PROGRAMME

The **ADP**, launched in 2018, targets 112 underdeveloped districts to improve health, nutrition, education, infrastructure, and economic opportunities.

- **3Cs Framework:** Built on the 3C framework, ADP promotes Cooperative as well as Competitive federalism.
- **Convergence:** Coordination between various central and state schemes.
- **Collaboration:** Involvement of district, state, and national agencies.
- **Competition:** Healthy competition among districts to drive development.
- **Data-Driven Governance:** Progress is tracked using a public platform, the **Champions of Change Dashboard,** which monitors 49 indicators across five areas.
- The **delta ranking system** measures progress against each district's past performance, encouraging continuous improvement.
- **Success Stories:** Chamba (Himachal Pradesh), achieved 100% tap water coverage and full financial inclusion under PMJDY, and Andhra Pradesh, with two districts ranking in the top 10.

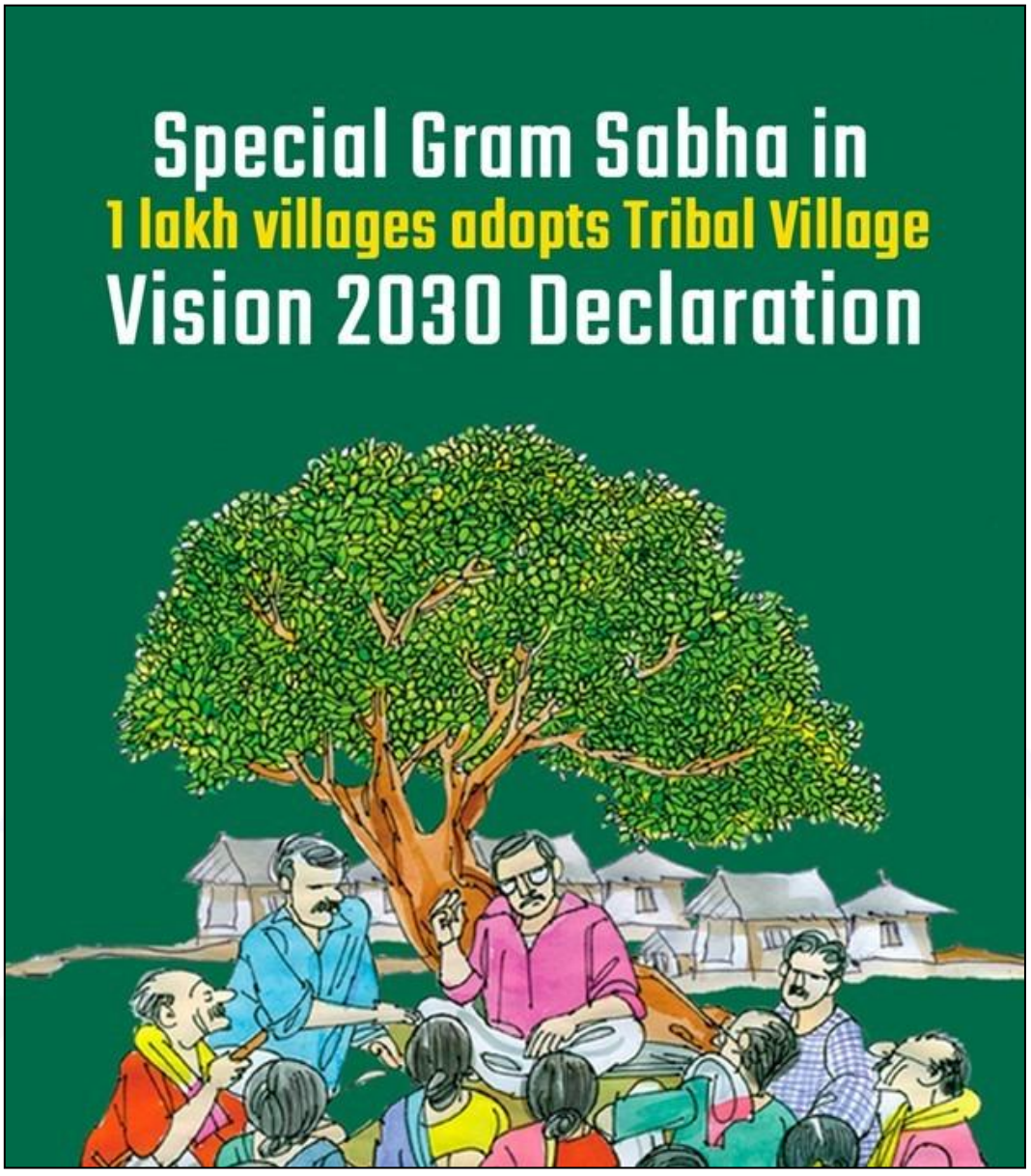
ADPs localized, inclusive governance model has gained **global recognition**, including praise from Singapore, as a replicable approach for empowering communities and strengthening local health systems.

CONCLUSION

- **PM Dhan-Dhaanya Krishi Yojana** is a **comprehensive scheme** targeting **income stabilization, MSP-based procurement, and food security**.
- Effective implementation can:
    - Reduce farmer distress and indebtedness.
    - Strengthen **agriculture markets** and **FPOs**.
    - Encourage **crop diversification** and **sustainable farming**.
    - Contribute to **India's broader goal of doubling farmer income** and achieving **food security**.

08 TRIBAL VILLAGE VISION 2030 DECLARATION

2nd October 2025, tribal villages across India formally adopted the **Tribal Village Vision 2030 Declaration** through Special Gram Sabhas, outlining local development priorities aligned with **Viksit Bharat@2047**.



TRIBAL VILLAGE VISION 2030 DECLARATION

- Tribal Village Vision 2030 is a **landmark grassroots initiative**, under which **special Gram Sabhas** in tribal villages and hamlets adopted their **own Vision 2030 Declarations.**
- These declarations are community-crafted blueprints for development in areas like education, health, infrastructure, and livelihoods.

KEY FEATURES INCLUDE:

- **Community-Led Development:** Transect Walks, Focused Group Discussions (FGDs), and Gap Analysis to identify local needs.
- **Village-Level Goals:** Education, health, livelihoods, financial inclusion, and infrastructure.
- **Integration with Schemes: PM JANMAN, Dharti Aaba Janjatiya Gram Utkarsh Abhiyan 2.0**, and other programmes.
- **Institutional Mechanism: Adi Sewa Kendras** as single-window citizen service centres; villagers contribute 1-hour weekly voluntary service.
- **Tech-Enabled Governance: AI-powered Adi Vaani App** for real-time communication in native languages.

09 INDIA'S FIRST COOPERATIVE COMPRESSED BIOGAS PLANT

Union Home Minister and Minister of Cooperation inaugurated India's first cooperative multi-feed Compressed Biogas (CBG) plant in Kopargaon, Maharashtra.

INTRODUCTION

- **Event**: Inauguration of **India's first cooperative multi-feed Compressed Biogas (CBG) plant**.
- **Location**: Kopargaon, Ahmednagar district, **Maharashtra**.
- **Dignitaries**: Union **Home Minister** and **Minister of Cooperation**.
- **Significance**: Marks a major milestone in **renewable energy, waste-to-energy technology, and cooperative-driven sustainable development**.

WHAT IS COMPRESSED BIOGAS (CBG)?

- **Definition**: CBG is a **high-quality renewable fuel**, produced by **anaerobic digestion of organic waste**, compressed to form a gas similar in composition to **natural gas (CNG)**.
- **Feedstock**: Multi-feed plants can use **a variety of organic wastes**, such as:
    - **Agricultural residue** (paddy straw, wheat straw)
    - **Animal dung** (cow, buffalo, goat)
    - **Food and kitchen waste**
    - **Industrial organic waste** (from sugar mills, breweries, etc.)

- **Uses**:
    - Fuel for **vehicles (CBG as CNG substitute)**
    - Cooking gas for **households**
    - Power generation in **industries and electricity grids**

CBG BENEFITS:

- **Eco-Friendly:** Cleaner alternative to fossil fuels, supporting India's **target of net zero emissions by 2070**.
- **Waste Management:** Converts organic waste into fuel, reducing pollution and promoting a **circular economy**.
- **Energy Security:** Reduces **oil imports** and increases the share of **natural gas** in India's energy mix (currently ~6%, targeted **15% by 2030**).

KEY FEATURES OF THE KOPARGAON CBG PLANT

- **Multi-Feed Capability**:
    - Can process **different types of organic waste simultaneously**, improving **efficiency and feedstock flexibility**.
- **Cooperative Model**:
    - Operated under a **cooperative society model**, empowering **local farmers and communities**.
    - Farmers contribute **agricultural residue and dung**, receive **royalty or revenue share**, enhancing **income**.
- **Capacity & Output**:

- Plant designed to **produce large-scale CBG**, meeting local **transport and domestic energy demands**.
- Expected to **reduce dependency on fossil fuels** and contribute to **net-zero targets**.

- **Environmental Benefits**:
  - Converts **waste to energy**, reducing **open-field burning of crop residue**.
  - Mitigates **air pollution**, particularly **PM2.5 and PM10 emissions** in rural areas.
  - Reduces **greenhouse gas (GHG) emissions**, including **methane** from cattle dung decomposition.

STRATEGIC AND POLICY SIGNIFICANCE

- **Alignment with National Policies**:
  - Supports **Government of India's SATAT (Sustainable Alternative Towards Affordable Transportation) initiative**, promoting CBG production for transport fuel.
  - Contributes to **Energy Transition & Renewable Energy Goals**.
  - Supports **India's pledge under COP28 for net-zero emissions by 2070**.
- **Rural Development and Farmer Empowerment**:
  - Provides **additional income sources** for farmers through sale of biomass and dung.
  - Encourages **cooperative entrepreneurship** in rural areas.
- **Sustainability and Circular Economy**:
  - Promotes **waste-to-value conversion**, improving **resource efficiency**.
  - Integrates **agriculture, waste management, and renewable energy sectors**.

CHALLENGES

- **Feedstock Collection & Logistics**: Timely and sufficient collection of agricultural residue and dung.
- **Technological Investment**: High **capex for multi-feed anaerobic digesters**.
- **Awareness & Adoption**: Farmers and local communities need **training and incentives**.
- **Market Linkages**: Ensuring stable **off-take of CBG for vehicles and industries**.

Feature	CBG (Compressed Biogas)	CNG (Compressed Natural Gas)
Source	Produced from biomass and organic waste.	Extracted from fossil fuels (natural gas fields)
Environmental Impact	Eco-friendly, reduces air pollution (e.g., stubble burning), utilizes waste, supports circular economy	Cleaner than petrol/diesel but fossil fuel-based, contributes to greenhouse gas emissions if not captured efficiently.
Dependence on Imports	Can be produced domestically from local biomass, reducing import dependence	Import dependency in the case of natural gas was at 50.8% in FY25, increasing foreign dependence
Commercial Viability	Supports rural employment and renewable energy initiatives	Conventional energy source, limited scope for rural livelihood creation

INDIA'S INITIATIVES:

- **SATAT (Sustainable Alternative Towards Affordable Transportation) Scheme:** Aims to produce CBG by utilizing 62 million Metric Tonnes of annual waste, thereby reducing import dependence, generating jobs, and lowering vehicular emissions and pollution.
- **National Cooperative Development Corporation (NCDC):** Plans to support 15 sugar mills via NCDC for CBG and potash units.

WAY FORWARD

- **Scaling Up**: Establish more **cooperative CBG plants across India**, particularly in **agriculture-intensive states**.
- **Integration with National Transport**: Promote **CBG-fueled vehicles** for rural and urban transport fleets.
- **Capacity Building**: Train **farmers and cooperative societies** in feedstock management and plant operation.
- **Policy Support**: Ensure **subsidies, tax incentives, and credit support** for CBG projects.
- **Environmental Monitoring**: Track **GHG reductions, pollution control, and sustainability metrics**.

CONCLUSION

- The **Kopargaon cooperative multi-feed CBG plant** is a **pioneering initiative**, combining **renewable energy, cooperative empowerment, and sustainable waste management**.
- Expected outcomes:
  - **Clean energy generation**
  - **Farmer income enhancement**
  - **Reduction in crop residue burning and GHG emissions**
  - Strengthening **India's renewable energy and climate action goals**

10 PANDIT CHHANNULAL MISHRA

Pandit Chhannulal Mishra, the legendary Hindustani classical vocalist and doyen of the Banaras Gharana, has died, leaving behind a rich legacy in semi-classical forms like Thumri, Dadra, Chaiti, and Kajria.

INTRODUCTION

- **Name**: Pandit Chhannulal Mishra
- **Date of Death**: 2025
- **Field**: Hindustani classical music
- **Gharana**: Banaras Gharana (one of the most prestigious traditions in Hindustani music)
- **Specialisation**: Semi-classical forms such as **Thumri, Dadra, Chaiti, Kajri**, along with **Hindustani classical compositions**.

EARLY LIFE AND TRAINING

- Born in **Varanasi, Uttar Pradesh**, a city renowned for its rich musical heritage.
- Trained under stalwarts of the **Banaras Gharana**, mastering both **classical and semi-classical forms**.
- Known for **deep understanding of ragas** and **expressive rendering of lyrics**, particularly in devotional and folk-oriented compositions.

MUSICAL CONTRIBUTIONS

CLASSICAL MUSIC

- Mastered **Khayal and Dhrupad** styles of Hindustani classical music.
- Known for **intense alaaps and improvisation**, maintaining the traditional ethos of Banaras Gharana.

SEMI-CLASSICAL AND FOLK FORMS

- **Thumri & Dadra**: Focused on romantic and devotional themes with emotive expressions.
- **Chaiti & Kajri**: Seasonal songs reflecting folk culture of **Uttar Pradesh and Bihar**.
- **Bhajans & Devotional Music**: Performed across India, blending classical rigor with spiritual depth.

LEGACY AND RECOGNITION

- Contributed to **popularising Banaras Gharana** internationally.
- Known for **collaborations with other classical musicians**, bridging classical and semi-classical styles.
- Inspired generations of musicians and students, emphasizing **emotion, improvisation, and cultural preservation**.

AWARDS AND HONOURS

- **Padma Vibhushan** – One of India's highest civilian awards for exceptional contribution to music.
- **Sangeet Natak Akademi Award** – Recognized for lifetime achievements in Hindustani classical music.
- Various national and international recognitions for promoting **Indian classical music globally**.

SIGNIFICANCE

- **Cultural Preservation**: Pandit Mishra was instrumental in preserving **semi-classical traditions**, ensuring continuity of Thumri, Dadra, Chaiti, and Kajri.
- **Banaras Gharana Legacy**: Reinforced the unique **stylistic nuances** of the Gharana.

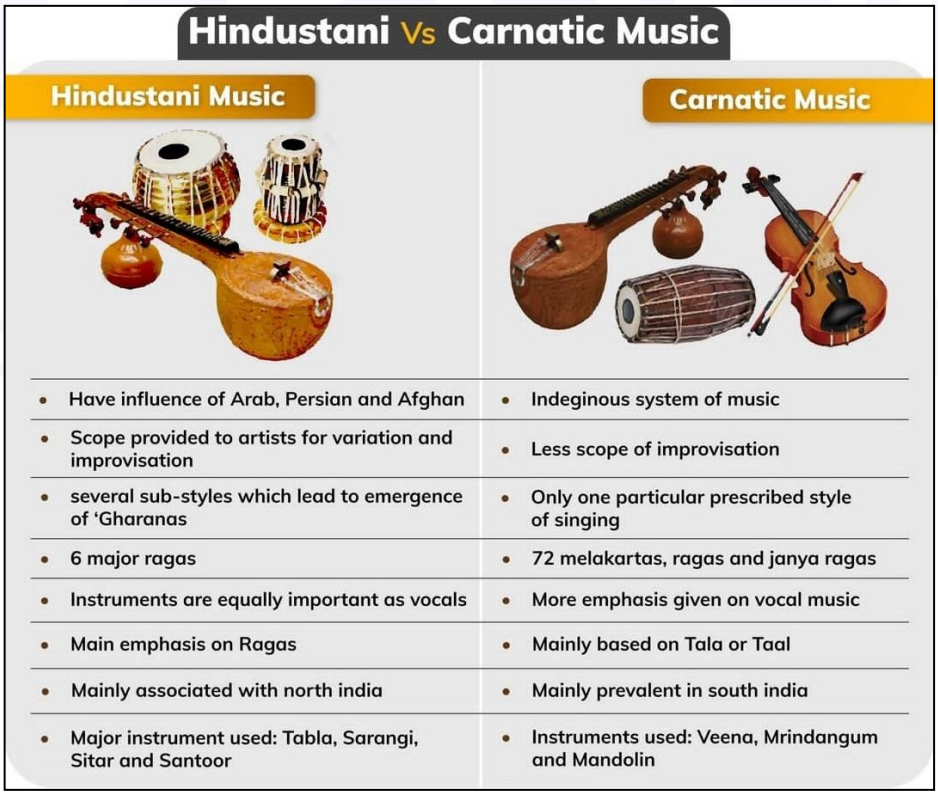
- **Inspirational Figure**: Bridged classical, semi-classical, and devotional music, making it accessible to wider audiences.
- **Global Influence**: Represented India in international music festivals, showcasing the **richness of Indian classical heritage**.

CONCLUSION

- The demise of **Pandit Chhannulal Mishra** marks the end of an era in **Hindustani classical and semi-classical music**.
- His **musical oeuvre and devotion to the Banaras Gharana** continue to inspire musicians and music lovers worldwide.
- He leaves behind a legacy of **musical excellence, cultural preservation, and soulful artistry**.

HINDUSTANI CLASSICAL MUSIC

- Hindustani music, practiced mainly in North India, is one of the two main schools of Indian classical music, the other being Carnatic music from South India.
- **Core Features & Styles:** It is largely vocal-centric, with Dhrupad and Khayal representing Classical Hindustani, while Thumri, Dhamar, Tarana, Tappa Qawwali, and Ghazal is Semi-classical Hindustani Style.



11 EXERCISE KONKAN-25

The Indian Navy and the UK Royal Navy have commenced the **bilateral Exercise KONKAN-25** off India's western coast, marking two decades of growing naval interoperability.

EXERCISE KONKAN:

First held in 2004, Exercise Konkan is an **annual bilateral maritime exercise.**

- The **2025 edition** is the **first-ever exercise** to feature **both nations' Carrier Strike Groups (**the **UK's HMS Prince of Wales** and **India's INS Vikrant**)
- The exercise includes a **Harbour Phase** with professional exchanges and visits, and a **Sea Phase** featuring anti-air, anti-surface, and anti-submarine drills with flying operations.
- **Objective:** Reinforces the **Comprehensive Strategic Partnership** under the **India–UK Vision 2035**, and commitment to a **free, open, and secure Indo-Pacific**.
- **Significance:** The exercise consolidates **strategic ties**, enhances **interoperability**, and underscores a **shared commitment to maritime security**.
- **Other Exercises Between India and UK: Exercise Cobra Warrior**, **Exercise Indradhanush** (Air Force), **AJEYA WARRIOR** (Indian Army)

12 CREDIT REFORMS TO DEEPEN FINANCIAL MARKETS

The **Reserve Bank of India (RBI)** announced a set of credit reforms to deepen **financial markets**, enhance the role of banks in corporate consolidation, and **advance rupee internationalization,** amid rising trade tensions with the US and renewed **BRICS currency** discussions on alternatives to the US dollar.

WHAT ARE THE KEY CREDIT REFORMS ANNOUNCED BY RBI?

- **Finance Mergers and Acquisitions (M&As):** For the first time, **banks in India can lend directly for corporate takeovers (**earlier dominated by **Non-Banking Financial Companies (NBFCs)** and private funds**)**, a domain previously restricted due to concerns over **misuse, promoter risk, and credit concentration**.
- **Rupee-Denominated Lending:** Indian banks can now **lend in rupees to neighbors like Nepal, Bhutan, and Sri Lanka.**
    - This move aims to reduce dollar dependence in regional trade and settlements, provide rupee liquidity, and promote the **internationalization of the rupee** while strengthening India's monetary influence.
- **Increasing Capital Market Lending Limits:** The loan limit against shares has been raised to Rs 1 crore (from Rs 20 lakh), and **Initial Public Offering (IPO)** financing limit increased to Rs 25 lakh (from Rs 10 lakh).

- These measures aim to improve access to market-based financing and energies primary capital markets.

- **Use of SRVA in Corporate Debt:** Funds in **Special Rupee Vostro Accounts (SRVAs),** can now be invested in corporate bonds and commercial papers, **not just government securities.**
    - It strengthens rupee liquidity and deepens India's bond market.
- **Expanded Currency Benchmarks:** The **Financial Benchmarks India Limited (FBIL)** will include more partner currencies beyond USD, Euro, Pound, and Yen. It enables direct forex quotes with more countries and reduces dollar dependence.
- **Revised Basel III Capital Norms:** From April 2027, RBI will implement **revised Basel III capital adequacy norms** for commercial banks.
    - The new standards are expected to **reduce capital requirements for certain sectors, particularly MSMEs** and residential real estate loans, by introducing **lower risk weights for these sectors.**
    - This aims to boost banks' capital adequacy ratios while **maintaining financial stability.**

FINANCIAL MARKETS IN INDIA

- Financial markets are platforms where securities like stocks, bonds, and currencies are traded.
    - These markets, including **forex**, **bond**, **stock**, **money**, and **derivatives markets**, play a crucial role in a country's economic growth.
- **Components of Financial Markets in India:**
    - **Money Market**: Deals with **short-term financial instruments** (less than one year), facilitating borrowing and lending between banks and financial institutions.
    - **Capital Markets**: Involves **long-term instruments** (over one year). It includes the **primary market** (new securities) and **secondary market** (existing securities).
    - **Foreign Exchange Market**: Facilitates **currency trading,** crucial for international trade and investment.
    - **Derivatives Market**: Involves trading instruments like **options and futures** that derive value from underlying assets.
    - **Importance of Financial Markets:** It supports **capital raising, risk management, and contributes to economic stability and growth.** They

are essential for businesses, investors, and overall economic development.

- A failure in these markets can lead to **recession and unemployment.**

WHAT ARE THE IMPLICATIONS OF THE CREDIT REFORMS BY RBI?

- **Enhanced Capital Access:** By allowing banks to fund takeovers, corporates now have access to **low-cost, structured finance for scaling operations.**
    - However, this also increases exposure to promoter risk and demands **enhanced credit appraisal, monitoring, and governance safeguards** to prevent asset quality deterioration.
- **Corporate Sector Empowerment**: Easier access to structured bank finance enables well-governed companies to undertake **strategic expansions and sectoral consolidation.**
    - This is likely to catalyze growth in key sectors like infrastructure, energy, logistics, and manufacturing, improving global competitiveness.
- **Rupee Internationalization:** Allowing rupee-denominated loans to neighbor's positions **India as a regional financial anchor.** These reforms serve as a counterweight to global currency blocs, offering a practical alternative through **rupee-based trade and credit.**
    - Enabling investments of surplus SRVA balances into Indian corporate bonds further builds international confidence in Indian markets and deepens rupee liquidity abroad.

13 IAF TO GET FIRST TEJAS MK1A

Indian Air Force (IAF) is set to receive its first Light Combat Aircraft (LCA) Tejas Mk1A, marking a significant milestone in India's indigenous fighter jet programme.

INTRODUCTION

- **Event**: Indian Air Force (IAF) to receive **first Light Combat Aircraft (LCA) Tejas Mk1A**.
- **Significance**: Marks a major milestone in India's **indigenous fighter jet programme**, enhancing self-reliance in defense production.
- **Manufacturer**: Hindustan Aeronautics Limited (HAL), India.
- **Type**: Single-engine, multirole **lightweight supersonic fighter aircraft**.

BACKGROUND

- **LCA Tejas Programme**:
  - Initiated in the 1980s to develop **an indigenous light fighter** to replace MiG-21 and improve air combat capabilities.
  - Part of India's **Atmanirbhar Bharat in defense**.
  - The aircraft is developed by **Aeronautical Development Agency (ADA)** in collaboration with HAL.
- **Previous Variants**:
  - **Tejas Mk1**: Initial production variant, limited production.

- **Tejas Mk1A**: Improved variant with **enhanced avionics, radar, weapons systems, maintainability, and survivability**.
- **Future**: Tejas Mk2 and Advanced Medium Combat Aircraft (AMCA) for next-generation needs.

TEJAS MK1A

- The **Tejas Mk1A** is an upgraded variant of India's **Light Combat Aircraft (LCA) Tejas**, developed **by Hindustan Aeronautics Limited (HAL)**.
- **Purpose:** This version is aimed to enhance operational and combat capabilities, survivability and maintainability over the **baseline Mk1**.
- **Capabilities:**
  - **Active Electronically Scanned Array (AESA) radar** integration.
  - **Electronic Warfare Suite (EWS)** — radar-warning and self-protection jamming.
  - Upgraded **Flight Control Computer (DFCC Mk1A)** for better maneuverability and stability.
  - Missile compatibility- **Beyond Visual Range (BVR) missiles**, Air-to-Air and Air-to-Ground missiles and **Advanced Short Range Air-to-Air Missiles (ASRAAM)**.
  - Planned integration of **Combined Interrogator and Transponder (CIT)**, **Software Defined Radio (SDR)** and **Operating Data Link (ODL)** with existing onboard avionics.

LCA TEJAS

The LCA Tejas programme, initiated by the **Government of India in 1984**, aimed to replace the ageing MiG-21 fighter jets. The programme is managed by the **Aeronautical Development Agency (ADA)**.

FEATURES:

- Lightest, smallest, and tailless multi-role supersonic fighter in its class.
- Capable of carrying a variety of air-to-air, air-to-surface, and precision-guided weapons.
- Maximum payload capacity of 4000 kg.
- Maximum speed: Mach 1.8.
- Range: 3,000 km.

VARIANTS OF TEJAS:

- **Tejas Trainer**: 2-seater operational conversion trainer for training air force pilots.
- **LCA Navy:** Twin- and single-seat carrier-capable for the Indian Navy.
- **LCA Tejas Navy MK2**: This is phase 2 of the LCA Navy variant.
- **LCA Tejas Mk-1A:** This is an improvement over the LCA Tejas Mk1 with a higher thrust engine.

KEY FEATURES OF TEJAS MK1A

AIRFRAME & AERODYNAMICS

- **Lightweight composite airframe** (carbon-fiber reinforced).
- **High maneuverability and agility**, suitable for dogfights.
- **Low radar cross-section** for stealth characteristics.

AVIONICS & SYSTEMS

- **Fly-by-wire flight control system** for stability and precision.
- **Advanced cockpit** with **glass cockpit displays, HUD, and HOTAS** (Hands-On Throttle and Stick).
- **Modern radar systems**:
    - Multi-mode radar (Israeli EL/M-2032) initially.
    - Indigenous **Uttam AESA radar** to enhance target detection, tracking, and engagement.
- **Electronic warfare (EW) suite**: Improves survivability against modern threats.

WEAPONS CAPABILITY

- **Air-to-Air**: Short and medium-range missiles (Astra, Python, Derby).
- **Air-to-Ground**: Precision-guided munitions, bombs, rockets.
- **Multi-role operations**: Interception, ground attack, reconnaissance, anti-ship missions.

PERFORMANCE

- **Engine**: Single **GE F404-IN20 turbofan**.
- **Max speed**: Mach 1.8.
- **Service ceiling**: 15,200 m.

- **Combat radius**: ~500–700 km depending on mission profile.

OPERATIONAL ADVANTAGES

- **Improved maintainability**: Easier to service with reduced downtime.
- **High mission adaptability** for diverse combat scenarios.
- **Indigenous content**: 60–70% components made in India, promoting **Make in India**.

STRATEGIC SIGNIFICANCE

- **Strengthening IAF capabilities**: Replaces aging MiG-21 fleet.
- **Defense self-reliance**: Reduces dependency on foreign imports.
- **Geopolitical impact**: Enhances India's **air power deterrence** in South Asia and Indo-Pacific.

CHALLENGES

- Scaling up production to meet **IAF requirements (~83 Mk1A aircraft)**.
- Integration of **advanced avionics and indigenous weapon systems**.
- Ensuring **operational readiness and maintenance efficiency**.

WAY FORWARD

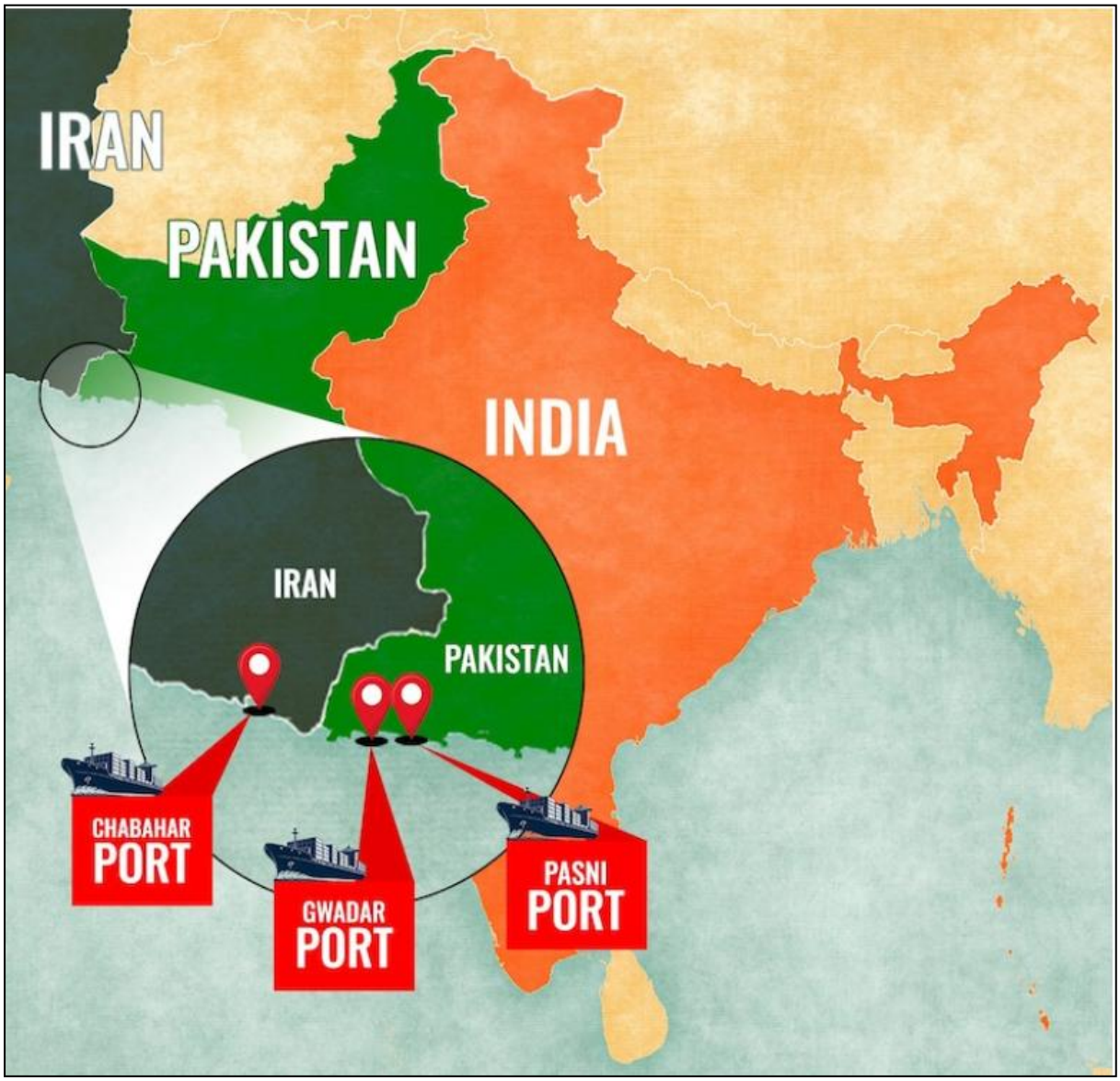
- **Mass production** and delivery of remaining Mk1A aircraft.
- Development of **Tejas Mk2** with higher payload and more powerful engine.
- Integration of **indigenous AESA radar and EW suite**.
- Export potential under **Make in India initiative**.

CONCLUSION

- **Induction of Tejas Mk1A** is a landmark achievement in India's **fighter aircraft programme**.
- Strengthens **national security, indigenous capabilities, and technological self-reliance**.
- Lays the foundation for **next-generation indigenous fighters** like Tejas Mk2 and AMCA.

14 PORT OF PASNI

Pakistan has reportedly offered the US to build a port at Pasni, near Gwadar in Balochistan, giving Washington potential maritime access clos to Iran's border.



INTRODUCTION

- **Event**: Pakistan has reportedly offered the **United States** access to develop a **port at Pasni** in Balochistan.
- **Location**: Pasni lies on the **Makran Coast**, about **170 km from Gwadar**, in southern Balochistan.
- **Significance**: Could provide the US **maritime presence near Iran**, affecting Indo-Pacific and Persian Gulf dynamics.

BACKGROUND

GWADAR PORT (PAKISTAN)

- Developed under **China-Pakistan Economic Corridor (CPEC)**.
- Strategically located near **Strait of Hormuz**, a vital oil transit chokepoint.
- Controlled by **China Overseas Port Holding Company (COPHC)**, giving China strategic maritime leverage.

CHABAHAR PORT (IRAN)

- Developed by **India in Iran** to ensure **access to Afghanistan and Central Asia** bypassing Pakistan.
- Strategically located about **170 km west of Gwadar**.
- India has invested in **port infrastructure and railway connectivity** to Afghan border.

PASNI PORT (PAKISTAN)

- Smaller than Gwadar, natural deep-water potential.
- Underdeveloped commercially, mainly **fishing and minor trade**.
- Pakistan offering it to the US could **counterbalance Gwadar's Chinese control**.

STRATEGIC SIGNIFICANCE

- **US Perspective**
  - **Access near Iran**: Enables surveillance and presence in the **northern Arabian Sea**.
  - **Counter China**: Pasni could act as a **strategic foil to Chinese Gwadar port**.

- **Pakistan Perspective**
    - Economic: Potential **US investment in infrastructure and jobs** in Balochistan.
    - Strategic leverage: **Balance between US and China**; diversify maritime partnerships.
- **India's Perspective**
    - **Chabahar vs Gwadar dynamic**:
        - Chabahar strengthens **India-Iran-Afghanistan connectivity**, bypassing Pakistan.
        - US presence at Pasni could **support regional maritime monitoring**, but also **enhance Pakistan-China-US alignment**, complicating Indian interests.
    - Need to **monitor strategic balance along Makran coast**.
- **Iran's Perspective**
    - Proximity to Iran's **Chabahar port** could lead to **regional tensions**.
    - Iran may perceive **Pasni-US collaboration as a threat to its maritime security**.

CHALLENGES

- **Local Opposition**: Baloch nationalist groups may resist foreign control, as seen in Gwadar.
- **US-China Tensions**: Pasni development could increase **strategic friction in the Indo-Pacific**.

- **Security Concerns**: Protecting port and access routes from insurgency and terrorism.

WAY FORWARD

- **Diplomatic Management**
  - Pakistan must **balance relations with US, China, and Iran** carefully.
- **India's Strategic Response**
  - Strengthen **Chabahar connectivity** and **maritime monitoring in Arabian Sea**.
  - Maintain **regional alliances for security and trade**.
- **Economic Development**
  - Proper development of Pasni could generate **employment and economic growth** alongside strategic use.

CONCLUSION

- **Pasni port offer to US** is a strategic move by Pakistan to **balance Chinese dominance at Gwadar**.
- **India-Iran-India connectivity via Chabahar** remains a counterweight to Gwadar and Pasni developments.
- The trilateral dynamics of **Gwadar-Pasni-Chabahar** highlight the **strategic importance of Makran coast and the northern Arabian Sea** in regional geopolitics.

15 INS SUTLEJ

INS Sutlej arrived at Port Louis to conduct the 18th Joint Hydrographic Survey in Mauritius.

INTRODUCTION

- **Event**: Indian Navy's **INS Sutlej** arrived at **Port Louis, Mauritius**, to conduct the **18th Joint Hydrographic Survey**.
- **Significance**: Enhances **bilateral maritime cooperation, hydrographic data sharing, and safe navigation** in the Indian Ocean Region (IOR).
- **Location**: Mauritius, a key island nation in the **Western Indian Ocean**, strategically located along major sea lanes.

INS SUTLEJ

- **Name**: INS Sutlej (J17)
- **Type**: **Hydrographic Survey Ship (HSS)** of the Indian Navy
- **Commissioned**: 11 January 2001
- **Primary Role**: Conducting **hydrographic and oceanographic surveys**, mapping the seabed, coastal areas, and ports for safe navigation and maritime infrastructure planning.
- **Homeport**: Mumbai, India

SPECIFICATIONS

Feature	Details
Displacement	~1,900 tonnes
Length	70 meters
Beam	11.5 meters
Draft	3.65 meters
Propulsion	Diesel engines, twin shafts
Speed	16 knots (max)
Crew	~100 personnel, including officers, sailors, and hydrographers
Endurance	~6,000 nautical miles at 12 knots

KEY CAPABILITIES

HYDROGRAPHIC & OCEANOGRAPHIC SURVEY

- Equipped with **state-of-the-art survey sensors**:
  - Multi-beam echo sounders (for deep-sea mapping)
  - Side-scan sonar (for seabed imaging)
  - Single-beam echo sounders (for shallow water)
  - Tide gauges and current meters
- **Charting capabilities**: Produces **navigational charts for coastal waters, ports, and offshore infrastructure**.

NAVIGATION & COMMUNICATION

- **Integrated bridge systems** with radar, GPS, and navigational aids.
- Advanced **GMDSS (Global Maritime Distress and Safety System)**.

SCIENTIFIC & RESEARCH FUNCTIONS

- Conducts **oceanographic, bathymetric, and environmental surveys**.
- Supports **research in marine biodiversity, seabed geology, and coastal erosion**.
- Data contributes to **blue economy, port planning, and disaster management**.

OPERATIONAL ROLE

- **Bilateral Cooperation**: Conducts **joint hydrographic surveys with friendly countries** such as Mauritius, Seychelles, Maldives, Sri Lanka.
- **Safe Navigation**: Helps update **nautical charts** for commercial shipping and naval operations.
- **Blue Economy Support**: Provides **scientific data for fisheries, offshore exploration, and coastal infrastructure**.
- **Disaster Preparedness**: Survey data assists in **tsunami risk assessment and disaster response planning**.
- It is equipped with advanced systems including:
    - **Multi-beam swath echo sounder** and **side-scan sonars** – for high-precision seabed mapping.
    - **Differential GPS** and **motion sensors** – for navigational accuracy.
    - **Sea gravimeter, magnetometer, and oceanographic sensors** – for geophysical and environmental data.
    - **Automated data logging system** – for real-time digital survey processing.

STRATEGIC SIGNIFICANCE

- **India's Maritime Diplomacy**:
    - Strengthens relations with Indian Ocean littoral states through **capacity building and technical support**.
    - Reinforces India's **role as a net security provider in the Indian Ocean Region (IOR)** under the **SAGAR initiative**.
- **Naval Operations Support**:
    - Hydrographic data is critical for **amphibious operations, anti-submarine warfare, and safe deployment of naval assets**.
- **Regional Influence**:
    - Promotes India's **strategic presence in the IOR**, countering influence from other powers like China.

ACHIEVEMENTS

- **Joint Surveys**: Conducted **18+ joint hydrographic surveys** with Mauritius, Seychelles, and Sri Lanka.

- **Technological Edge**: Upgraded survey equipment over the years to remain **aligned with modern hydrographic standards (IHO S-44)**.
- **Training Platform**: Provides **hands-on training for Indian and partner nation hydrographers**.

CONCLUSION

- **INS Sutlej** is a **key asset of the Indian Navy**, playing a dual role in **maritime security and scientific research**.
- Through joint surveys and data sharing, it strengthens **India's strategic influence in the Indian Ocean Region**, promotes the **blue economy**, and ensures **safe navigation for military and commercial ships**.
- It exemplifies **India's commitment to regional cooperation, disaster preparedness, and capacity building**.

16 AI FOR INCLUSIVE SOCIETAL DEVELOPMENT

NITI Aayog released a study titled ***"AI for Inclusive Societal Development"***, a first-of-its-kind effort to systematically explore how **Artificial Intelligence (AI) and frontier technologies** can be harnessed to transform the lives and livelihoods of India's **informal workers.** The report proposes a **National Mission "Digital ShramSetu",** envisioned as a technology-driven bridge to formalize and uplift the informal workforce.

WHAT IS THE MISSION DIGITAL SHRAMSETU?

About: Mission Digital ShramSetu is a transformative initiative proposed by NITI Aayog to digitize and empower India's informal workforce by leveraging cutting-edge technologies like **AI, blockchain**, **robotics**, and **immersive learning**.

OBJECTIVES:

- **Empowerment Through Technology**: Utilize technology to create **verifiable digital identities for workers**, enabling access to timely payments, skill certifications, and social security benefits.
- **Inclusive Skilling**: Develop adaptive, multilingual, and offline-compatible training modules to upskill workers.
- **Federated Credentialing System**: Establish a **decentralized trust model allowing training providers,** employers, and government bodies to issue and verify worker credentials in real-time.
- **Smart Contracts for Fair Compensation**: Implement **blockchain-based smart contracts** to ensure **transparent and timely payments** to informal workers, reducing disputes and delays.
- **Grassroots Innovation and Outreach**: Encourage state-level programs and partnerships with local institutions to promote digital literacy and facilitate the adoption of technology.

GOVERNANCE AND STRUCTURE:

- **Apex Governing Body**: Chaired by the **Prime Minister**, with key ministries involved in policy and budget decisions.
- **Sectoral Task Forces**: Focused on sectors like **agriculture**, **healthcare**, **retail**, and **construction**, tasked with **solution design** and **implementation**.
- **State Coordination Units**: To ensure **local adaptation** and effective **on-ground execution**.

WHAT IS THE CURRENT STATE OF INFORMAL WORKERS IN INDIA?

- **Informal Workforce Size:** Around **490 million people**, representing **about 85%** of India's total labour force.
- **Economic Contribution:** The informal sector contributes roughly **45% of India's Gross Domestic Product (GDP)**.
- **Productivity Levels:** Average productivity of informal workers is around **USD 5 per hour**, less than half the national average of **USD11 per hour**.
- **Per Capita Income:** The average informal worker earns about **USD 1,800 per year (2025)**.
- **Female Workforce Participation:** Women's participation in the informal trade sector remains very low at **15% (excluding agriculture)**, compared with **37% national average** and **47% global average**.
- **Social Protection Coverage:** Only **48% of informal workers** currently have access to social security benefits.

INFORMAL WORKERS

- According to the **International Labour Organization (ILO)**, informal employment refers to **jobs not protected by labour laws, taxation, or social security**, lacking benefits like paid leave or severance pay.
- **Informal workers** include **self-employed, casual, temporary, or family workers** without formal contracts or social protection, even if they work in the formal sector.

- India's **Formalisation Targets:** By **2047**, India aims to **formalise 73.2% of currently informal enterprises** and **reduce the informal sector's share to 40%**.
- **India's Schemes for Informal Labourers:**
    - Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)
    - Pradhan Mantri Shram Yogi Maan-dhan (PM-SYM)
    - Atal Pension Yojana
    - eShram Portal

WHAT ARE THE CHALLENGES FACED BY THE INFORMAL WORKFORCE?

- **Financial Fragility and Volatility:** The lack of **formal contracts and trusted identities** causes delayed or **inconsistent wages, leading to financial instability.**
    - Additionally, the absence of **verifiable income and complex loan procedures** prevent workers from accessing timely finance, while reliance on exploitative **informal lending sources** with high-interest rates further exacerbates their financial challenges.
- **Market Access and Demand Linkages:** Informal workers operate on the fringes of the market, with **no consistent demand**, or digital presence, resulting in **chronic income instability and underemployment.**
    - Migrant workers face difficulties finding work across regions because they **don't have portable digital identities or job-matching systems**, leading to exploitation by intermediaries.
- **Skilling and Adoption:** Many informal workers rely on **traditional, outdated methods and lack access to formal training,** which limits their growth and productivity.
    - **Formal and adaptive training programs are scarce**, and low digital literacy and inaccessible tools make it difficult for workers to adopt new technologies, further hindering their professional development.
    - **Social Protection and Occupational Safety:** Workers struggle to benefit from social schemes due to a lack of awareness, digital barriers and non-portable records.
- **Productivity Gaps:** The lack of workflow optimization and access to digital tools results in wasted effort, low productivity, and no performance visibility, which directly impacts income potential.

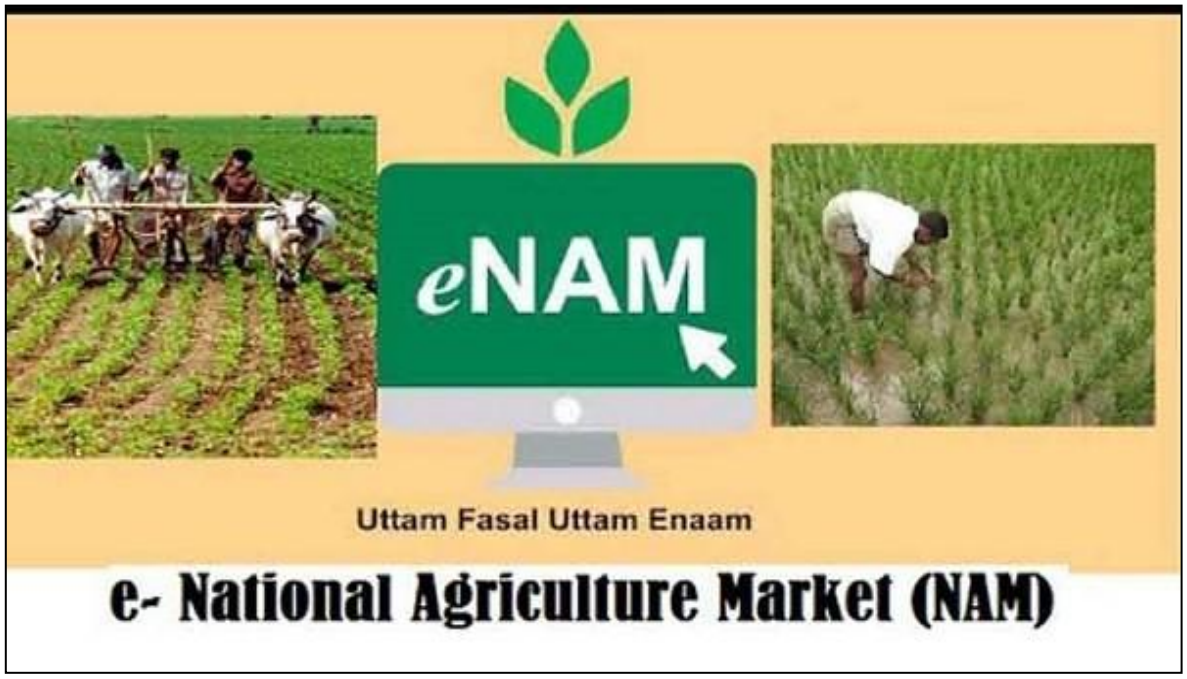
HOW AI TECHNOLOGY CAN TRANSFORM INFORMAL LIVELIHOODS?

Technology	Use
Affordable Smartphones with AI Features	Enables multimodal, multilingual interactions (voice, text, image) for informal workers to access digital platforms and services in their native language.
5G Connectivity	Provides high-speed internet access to over 740 million Indians by 2030, enabling scalable digital services in urban and rural areas.
Distributed Ledger Technology (DLT)	Ensures secure, transparent transactions and verified identities across platforms, enabling trust and transparency in the informal economy.
AI and Robotics for Task Automation	Automates tasks like fault detection, inspections, and repairs, enhancing productivity and safety, especially in hazardous work environments.
Augmented Reality (AR)	Provides immersive, hands-on training for informal workers like artisans, helping them improve skills through virtual workshops and real-time feedback.
Generative AI Knowledge Systems	Provides on-demand, task-specific knowledge to informal workers, offering real-time guidance tailored to their job needs (e.g., loom blueprints, dye recipes).

Smart Contracts for Payment Automation	Automates milestone-based payments through self-executing contracts, ensuring timely and transparent wage disbursements and reducing disputes.
AI-Powered Wearable Safety Gear	Monitors worker health and safety in real-time, detecting hazards and providing alerts to prevent accidents and ensure compliance with safety standards.
IoT and AI for Precision Farming	Uses Internet of Things (IoT) sensors and AI systems to monitor soil, climate, and irrigation, enabling more efficient, sustainable farming practices for informal agricultural workers.
Digital Wallets and Verifiable Credentials	Allows informal workers to store and share secure, tamper-proof digital credentials (e.g., work history, skills, certificates) for job and loan access.
Exoskeletons (Wearable Powered Devices)	Provides wearable exoskeletons that reduce physical strain and fatigue for workers by supporting their natural movements, enabling longer working hours and safer work in physically demanding jobs.

17 NATIONAL AGRICULTURE MARKET (E-NAM)

Ministry of Agriculture and Farmers' Welfare has expanded the National Agriculture Market (e-NAM) by including 9 additional commodities, increasing the total tradable agricultural products on the platform to 247 from 238.



INTRODUCTION

- **Event**: Ministry of Agriculture and Farmers' Welfare has expanded the **National Agriculture Market (e-NAM)** by including **9 additional commodities**, taking the total number of tradable agricultural products to **247** (previously 238).
- **Significance**: Strengthens **digital agriculture infrastructure**, enhances **farmer income**, reduces dependence on middlemen, and promotes **transparent price discovery**.

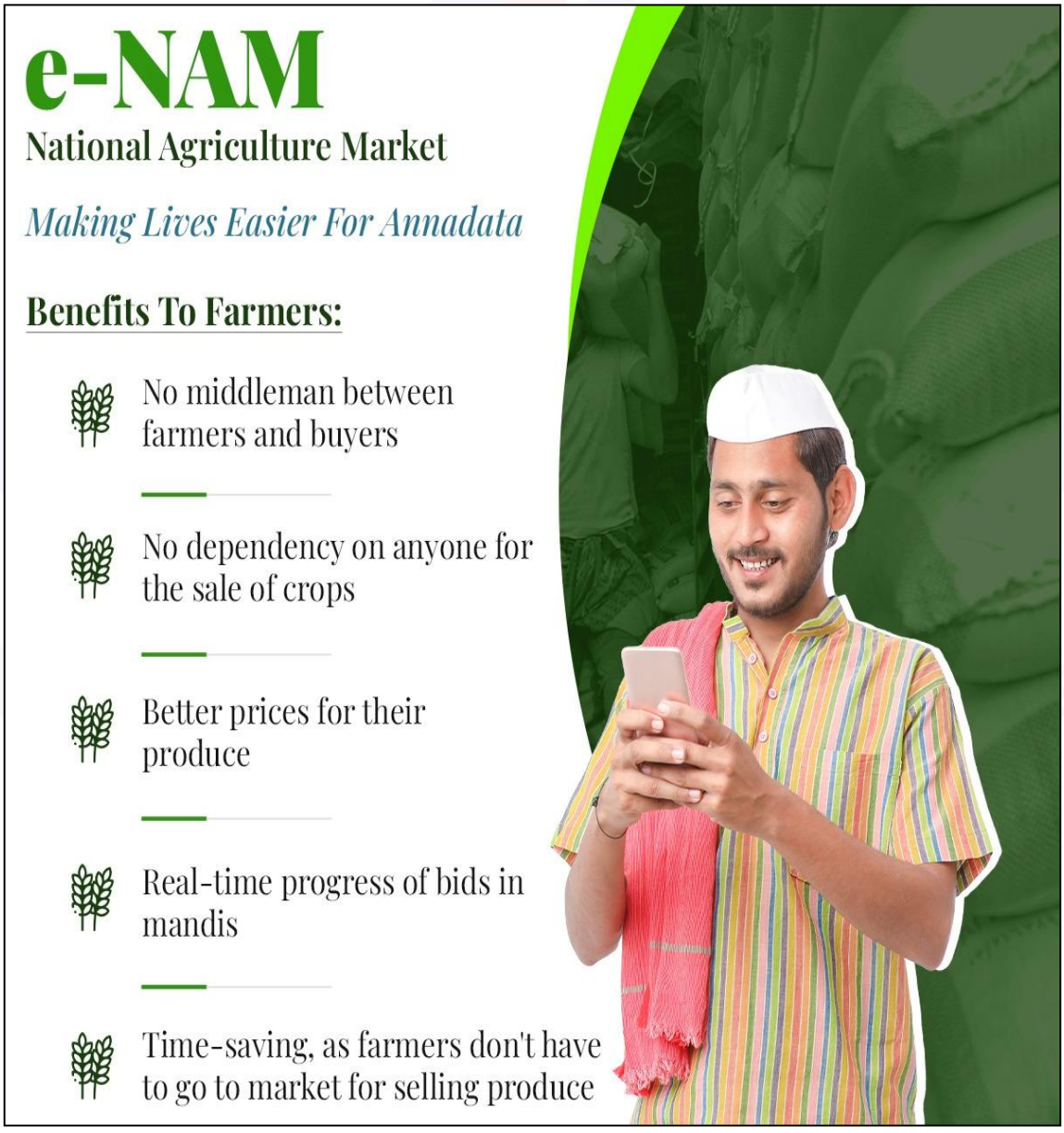
BACKGROUND

- **Launch of e-NAM**: April 2016, by **Prime Minister Narendra Modi**.
- **Objective**: Integrate **APMC (Agricultural Produce Market Committees) mandis** across India to create a **pan-India digital marketplace**.
- **Original Coverage**: Started with **21 states and 1 union territory**, **585 mandis**, trading mostly cereals, pulses, fruits, and vegetables.

Fact: By 2025, e-NAM has expanded to **1,000+ mandis across 20+ states**, with **247 tradable commodities**.

KEY FEATURES OF E-NAM

- **Digital Trading Platform**: Farmers can **list their produce online**, receive bids from buyers nationally, and sell at competitive prices.
- **Transparent Price Discovery**: Prices are determined **based on demand-supply**, reducing exploitation by intermediaries.
- **Direct Payments**: Trade settlement happens through **digital bank transfers**, minimizing delays.
- **Quality Standardization**: e-NAM promotes **grading and standardization of produce**, e.g., **Wheat (A1 grade), Rice (Pusa Basmati 1121)**.
- **Real-time Market Data**: Farmers access **daily price trends** from multiple mandis across India.



SIGNIFICANCE OF ADDING 9 COMMODITIES

- **Expansion of Market Access**: Enables farmers of additional crops to access **national buyers**, improving price realization.
- **Examples of newly added commodities**:
    - **Masoor dal (pulses)** – grown extensively in Madhya Pradesh and Uttar Pradesh.
    - **Coconut** – grown in Kerala, Karnataka, Tamil Nadu.
    - **Moringa leaves (drumstick)** – majorly cultivated in Andhra Pradesh and Tamil Nadu.
- **Economic Impact**: Increased competitive bidding helps **reduce price fluctuations** and stabilize farmer income.

INDIA-SPECIFIC FACTS & ACHIEVEMENTS

- **Farmer Participation**: Over **1 crore farmers** currently registered on e-NAM.
- **Trade Volume**: Since inception, e-NAM has facilitated **trades worth over ₹1 lakh crore**.
- **State Examples**:
    - **Madhya Pradesh**: Largest contributor to e-NAM trading; wheat and soybeans are major commodities.
    - **Punjab and Haryana**: Wheat and paddy trading; integration helps farmers **avoid storage losses**.
    - **Odisha and Kerala**: Integration of fruits and vegetables improves **fresh produce marketing**.
- **Price Benefits**: Farmers have reported **5–15% higher prices** compared to local APMC mandis due to **pan-India competition**.

STRATEGIC IMPORTANCE

- **Agricultural Reforms**: Strengthens the **government's push for market reforms** under the **Farm Acts 2020 (though repealed, the digital market remains active)**.
- **Digital India Alignment**: Facilitates **technology-driven agriculture**, bridging urban-rural digital divide.
- **Boost to Exports**: Standardization and digital traceability make Indian produce, such as **Basmati rice, spices, and pulses**, more competitive globally.

- **Inter-State Trade**: Reduces **regional price disparities**, e.g., sugarcane price in UP vs Maharashtra.

CHALLENGES

- **Digital Literacy**: Farmers in remote areas, e.g., tribal farmers in Chhattisgarh, require **training to use e-NAM app**.
- **Infrastructure Gaps**: Some mandis still lack **weighbridges, grading machines, and internet connectivity**.
- **Awareness Issues**: Many small farmers are unaware of **e-NAM benefits**, requiring **government outreach programs**.

WAY FORWARD

- **Full Commodity Integration**: Include **all agricultural produce, horticulture, and livestock products**.
- **Farmer Training Programs**: Conduct **state-specific workshops** on digital trading.
- **Infrastructure Upgradation**: Improve **cold storage, warehouses, grading centers**, particularly in eastern and northeastern states.
- **Promotion of Inter-State Trade**: Encourage states to **remove barriers for cross-border digital sales**.
- **Policy Support**: Provide **incentives for adopting e-NAM**, especially for small and marginal farmers.

CONCLUSION

- **e-NAM expansion** strengthens India's **digital agricultural ecosystem** and ensures **better price realization** for farmers.
- With **247 commodities**, it provides **pan-India market access**, promotes **technology adoption**, and aligns with India's vision of **modern, inclusive, and resilient agriculture**.
- Examples from **Punjab, MP, Kerala, Odisha** show tangible benefits in terms of **income enhancement, market access, and reduced middlemen exploitation**.

18 VIKSIT BHARAT BUILDATHON 2025

Viksit Bharat Buildathon 2025 is being organised by the **Ministry of Education** in collaboration with **Atal Innovation Mission (NITI Aayog)**.

VIKSIT BHARAT BUILDATHON 2025

It is a **nationwide innovation initiative** designed to foster a **culture of creativity and problem-solving** among **students of classes 6 to 12**, aligning with the **National Education Policy (NEP) 2020**.

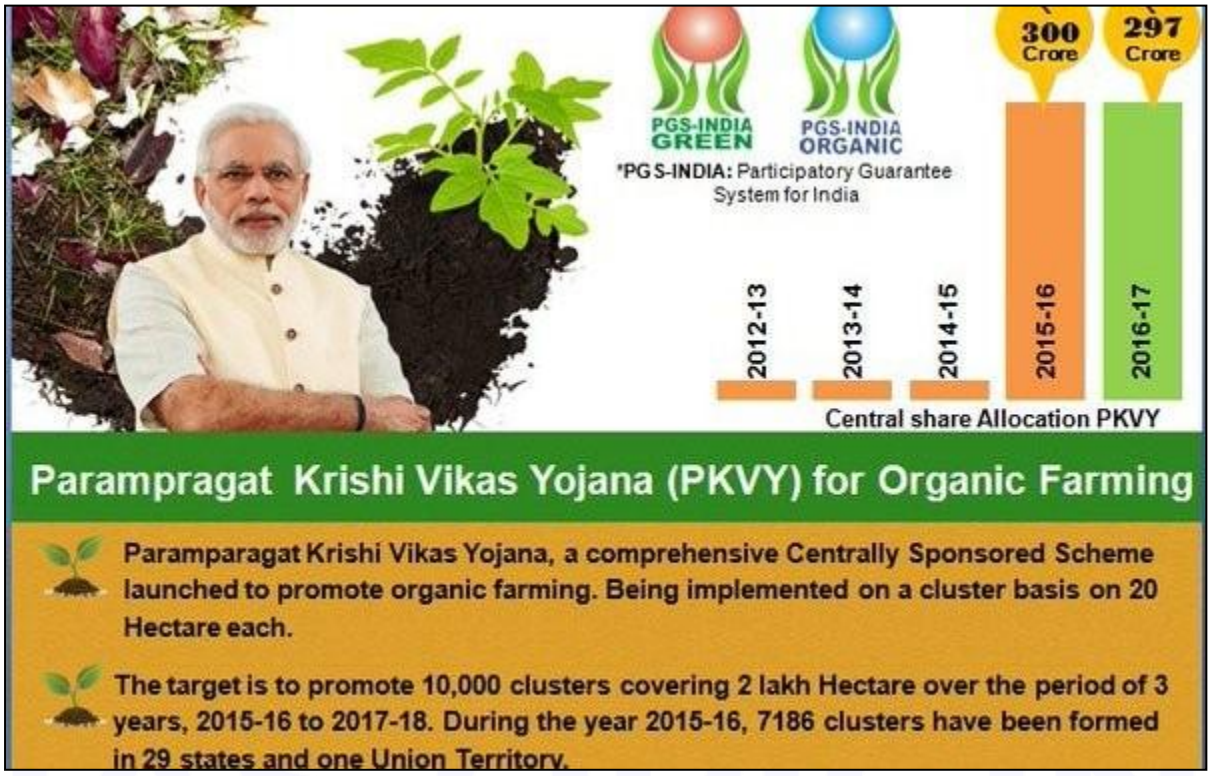
- **Objective:** To encourage students to **create ideas and prototypes**, preparing them to contribute to a **prosperous and self-reliant India (Atmanirbhar Bharat)**.
- **Themes:** It is centered around four pivotal **national themes**: **Atmanirbhar Bharat**, **Swadeshi**, **Vocal for Local**, and **Samriddh Bharat**.
- **Inclusive Participation:** It has a special focus on including **students** from **Aspirational Districts**, **Tribal Regions**, and **Remote Areas** to ensure **wide-reaching impact**.
- **Awards and Support:** It offers an **awards pool of Rs. 1 Crore** to **National Level** winners, **State level** winners and **District level** winners.

19 NAVYA INITIATIVE

The **Nurturing Aspirations through Vocational Training for Young Adolescent Girls (NAVYA)** initiative, launched under **Pradhan Mantri Kaushal Vikas Yojana (PMKVY) 4.0**, aims to empower adolescent girls aged 16-18 by providing them with vocational training in emerging job sectors.

20 PARAMPARAGAT KRISHI VIKAS YOJANA (PKVY)

Paramparagat Krishi Vikas Yojana (PKVY), launched in 2015 under the National Mission for Sustainable Agriculture, has emerged as a flagship initiative to promote organic farming in India.



WHAT IS ORGANIC FARMING?

- Organic farming is a sustainable agriculture system that excludes synthetic inputs like chemical fertilizers and pesticides.
- It relies on natural resources like crop residues, farmyard manure, and compost to maintain soil health and manage pests and diseases.

ORGANIC FARMING IN INDIA

- **India ranks at 4th place** in terms of certified area globally as per the report published by International Federation of Organic Agriculture Movements (IFOAM) Statistics 2022.
- **Madhya Pradesh** has the largest area under organic certification followed by Maharashtra, Rajasthan, Gujarat and Karnataka.
    - **Sikkim** is India's first fully organic state, with implementing organic practices on around 75,000 hectares of agricultural land.

- **India ranks first** globally in terms of number of farmers practicing organic farming.
- **The exports of India's organic products** stood at $708 million in 2022-23 and considering the global market size of around $138 billion, there is a tremendous scope to increase the organic exports in the near future.

ADVANTAGES OF ORGANIC FARMING

- **Healthier Food Products:** Organic farming results in food products that are free from harmful chemical residues with higher levels of essential nutrients.
- **Enhanced Soil Health:** Organic farming methods focus on building and maintaining soil health by increasing organic matter content, microbial activity, and nutrient cycling.
- **Economic Opportunities:** Organic farming provides economic benefits to farmers through premium prices for organic products, access to niche markets, and reduced input costs over the long term.
- **Climate Change Mitigation:** Organic farming practices such as composting and organic soil management contribute to carbon sequestration in the soil, helping to mitigate climate change by reducing greenhouse gas emissions.
- **Biodiversity Conservation:** Organic farming practices support biodiversity by creating habitats for beneficial insects, birds, and other wildlife.

ORGANIC CERTIFICATIONS SYSTEMS IN INDIA

- **National Programme for Organic Production (NPOP):** It is under the Ministry of Commerce and Industry for development of the export market.
    - It is a **third-party certification programme** where the production and handling of activities at all stages such as production, processing, trading and export requirements for organic products is covered.
- **Participatory Guarantee System for India (PGS-India):** Operated under the Ministry of Agriculture & Farmers Welfare, this is a farmer-centric, community-based certification.
    - **Farmers and producers collectively participate** in decision-making, peer inspections, and mutual verification of practices, ultimately declaring the produce as organic.
- Food Safety Regulation has made it mandatory for organic products to be certified under NPOP or PGS for being sold in the domestic market under the **Jaivik Bharat logo.**

PARAMPARAGAT KRISHI VIKAS YOJANA (PKVY)

- The schemes stress on **end-to-end support to farmers** engaged in organic farming i.e. from **production to processing, certification and marketing** and **post-harvest management.**
- **The objective** of the PKVY is to advance a scalable model of eco-agriculture that integrates **low-cost, chemical-free techniques** with farmer-led collectives, enhancing **food safety, income generation**, and environmental sustainability.
- **Cluster Model:** Farmers are mobilised in groups of **20 hectares** to collectively adopt organic practices, ensuring uniform standards and cost-effectiveness.
- Under the scheme farmers adopting organic farming practices are being assisted with **₹31,500 per hectare** for a **three-year period.**

OTHER INITIATIVES FOR ORGANIC FARMING

- **Mission Organic Value Chain Development for North Eastern Region (MOVCDNER):** The scheme is being implemented exclusively in the NE States to support farmers engaged in organic farming.
- **Jaivik Kheti portal** is a one stop solution for facilitating organic farmers to sell their organic produce and promoting organic farming and its benefits. This portal caters various stakeholders like local groups, individual farmers, buyers and input suppliers.
- **In 2020–21,** the Government launched the **Large Area Certification (LAC) programme** to fast-track certification in regions where chemical farming has never been practiced (tribal belts, islands, eco-preserved zones).
    - The LAC reduces the conversion period from 2–3 years to a few months.

WAY AHEAD

- Scale up PKVY from small clusters to large, connected organic belts that create rural hubs of sustainable farming.
- Invest in region-specific research, farmer training, and grassroots innovations to make organic practices more practical and profitable.
- Encourage rural youth to turn into “green entrepreneurs” through organic processing, eco-tourism, and start-ups linked to organic value chains.

21 LEPROSY IN INDIA

India's leprosy prevalence rate has fallen from **57.2 per 10,000 population** in 1981 to just **0.57 in 2025.**

WHAT IS LEPROSY?

- **Leprosy, or Hansen's disease,** is a chronic infectious disease caused by **bacteria Mycobacterium leprae.**
- **Symptoms** include discoloured skin patches, lack of ability to feel touch, pressure, pain, heat and cold, muscle weakness, non-healing ulcers, deformities particularly in hands, feet and face and inability to close eyes and poor vision.
- **Leprosy is transmitted** through droplets from the nose and mouth during close and frequent contact with untreated cases.
- Leprosy can be **multibacillary or paucibacillary.** It refers to classifications based on the number of Mycobacterium leprae bacteria present and the severity of the disease.
    - While **multibacillary leprosy shows a high density** of bacilli on slit-skin smear examination, **paucibacillary leprosy cases show only a few** or no bacilli on slit-skin smear examination.
- The introduction of **Multidrug Therapy (MDT) in 1983** in India revolutionized treatment of leprosy.

- Early diagnosis and treatment with MDT can prevent disabilities and deformities.

NATIONAL LEPROSY ERADICATION PROGRAMME (NLEP)

- The NLEP is a centrally sponsored scheme under the **National Health Mission (NHM).**
- **Major Initiatives under NLEP:**
  - **National Strategic Plan and Roadmap for Leprosy 2023-27:** The strategy document and roadmap outline the strategic interventions and lay out a clear-cut roadmap to achieve the goal of interruption in transmission of leprosy by 2027.
  - **Leprosy screening** has been integrated with the activities of comprehensive primary health care under **Ayushman Bharat Yojana** for screening of people above **30 years of age.**
  - **Nikusth 2.0:** A revamped web-based ICT portal for data recording, reporting, and monitoring of leprosy activities for further strengthening services related to diagnosis, treatment, and follow-up of leprosy patients was launched in **2023.**

INTERNATIONAL RECOGNITION & PARTNERSHIPS

- In the **World Health Assembly Commitment (1991)**, India committed to the World Health Assembly's goal of eliminating leprosy as a public health problem by the year 2000.
- WHO supported India's **Modified Leprosy Elimination Campaigns (MLECs),** diagnostic protocol shifts, and Special Action Projects for hard-to-reach populations.
- It also piloted the **COMBI (Communication for Behavioural Impact) strategy** in **Bihar.**

22 NAMCHIK NAMPHUK COAL BLOCK

Arunachal Pradesh has launched its first commercial coal mining project at the **Namchik-Namphuk coal block** in Changlang district, marking a milestone in Northeast India's resource development and energy self-reliance.

NAMCHIK-NAMPHUK COAL BLOCK

- **Location:** Changlang district, southeastern Arunachal Pradesh, part of the Upper Assam coal belt region.
- **Reserves:** Estimated 1.5 crore tonnes of coal, enabling long-term production viability.
- **Economic Impact:** Expected to generate ₹100 crore annual revenue for the state.
- **Environmental Features:** Operates under Mission Green Coal Regions, focusing on land reclamation, afforestation, and eco-responsible mining.
- **Social Impact:** Creation of local employment; reduction of illegal mining activities.
- **Strategic Alignment:** Supports the PM EAST vision — Empower, Act, Strengthen, Transform — for balanced Northeast development.

COMMERCIAL COAL MINING IN INDIA

- **Definition:** Allows private players to mine coal and sell it in the open market, ending Coal India Ltd.'s monopoly.
- **Policy Origin:** Introduced under the Coal Mines (Special Provisions) Act, 2015.

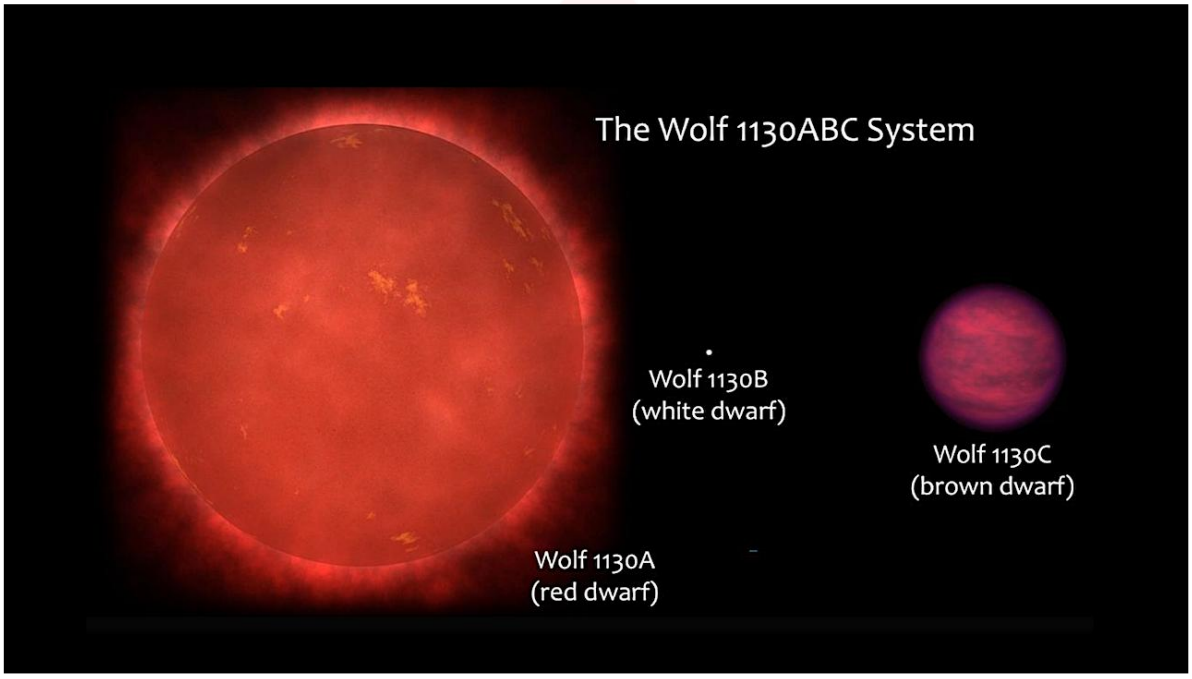
- Operationalized in 2020 through AatmaNirbhar Bharat reforms.

- **Objectives:** Boost domestic coal production and cut imports.
  - Encourage private investment, adoption of advanced mining technology.
- **Governing Laws:** Mines and Minerals (Development and Regulation) Act, 1957
  - Coal Mines (Special Provisions) Act, 2015
  - Related environmental and land laws.

23 PHOSPHINE

INTRODUCTION

- **Event**: Astronomers have detected **trace amounts of phosphine (PH_3)** in the atmosphere of a **brown dwarf** named **Wolf 1130C**, located **dozens of light-years from Earth**.
- **Significance**: This is the **first detection of phosphine in a brown dwarf**, sparking discussions about **astrochemistry, planetary atmospheres, and the potential for prebiotic chemistry beyond Earth**.



BACKGROUND

- **Brown Dwarf**:
  - Brown dwarfs are **sub-stellar objects** with masses between **planets and stars** (~13–80 Jupiter masses).
  - They **cannot sustain hydrogen fusion**, unlike normal stars, but can fuse deuterium for a short period.
  - Wolf 1130C is a **T-type brown dwarf**, characterized by **cool atmospheres (~500–1,500 K)** and complex chemical compositions.
- **Phosphine (PH_3)**:
  - A **colorless, flammable gas** composed of **phosphorus and hydrogen**.
  - On Earth, PH_3 is associated with **anaerobic ecosystems**, **industrial processes**, and **microbial activity**.

- Its detection elsewhere is significant because on Earth, **biological activity is the primary natural source**.

DISCOVERY DETAILS

- **Detection Method**:
  - Using **high-resolution spectroscopy**, astronomers observed **specific absorption lines** of PH_3 in the infrared spectrum of Wolf 1130C.
  - Instruments: Likely involved **ground-based telescopes** with **advanced spectrographs** capable of identifying trace gases.
- **Atmospheric Conditions**:
  - Brown dwarfs have **high pressure and temperature gradients**.
  - PH_3 is expected to be **unstable in such environments**, indicating it is **likely produced deep in the atmosphere and transported upwards**.

SIGNIFICANCE

- **Astrochemical Implications**:
  - Indicates the **presence of phosphorus-based chemistry** in sub-stellar atmospheres.
  - Expands understanding of **chemical diversity in brown dwarfs and exoplanets**.
- **Clues About Planetary Atmospheres**:
  - Phosphine is also observed in **Jupiter and Saturn**, produced under **high-pressure hydrogen atmospheres**.
  - Studying brown dwarfs helps **model exoplanet atmospheres**, particularly gas giants.
- **Potential for Life?**
  - While PH_3 detection on Earth is often **linked to microbes**, in brown dwarfs it is likely **abiotic**, formed via **high-pressure, high-temperature chemical reactions**.
  - It **does not imply life**, but demonstrates that **complex molecules can form in diverse environments**.

CONTEXT IN ASTRONOMY

- **Previous Detections**:
  - PH_3 was previously observed in **Jupiter and Saturn**.

- Controversial detection in **Venus' atmosphere (2020)** sparked debates on **potential biosignatures**.

- **Brown Dwarfs as Laboratories**:
  - Serve as **natural laboratories** to study **atmospheric chemistry** under conditions not found on Earth.
  - Help refine **models of exoplanet atmospheres**, aiding the search for **habitability indicators**.

CHALLENGES & RESEARCH OUTLOOK

- **Detection Challenges**:
  - PH_3 is **highly reactive**, and its spectral lines can overlap with other molecules.
  - Requires **high-resolution infrared spectroscopy** and **sophisticated data modeling**.
- **Future Prospects**:
  - **James Webb Space Telescope (JWST)** and next-generation **ELT (Extremely Large Telescope)** can study **brown dwarfs and exoplanets in greater detail**.
  - PH_3 mapping can help understand **atmospheric dynamics, convection, and chemical processes**.

CONCLUSION

- The detection of **phosphine in Wolf 1130C** represents a **major milestone in the study of brown dwarf atmospheres and astrochemistry**.
- While it **does not confirm life**, it demonstrates that **complex molecules can form in extreme environments**, enhancing our understanding of **planetary and sub-stellar chemistry**.
- This discovery **strengthens the connection between planetary science, chemistry, and the search for life beyond Earth**.

24 GIFT CITY

Union Finance Minister Nirmala Sitharaman launched a **Foreign Currency Settlement System (FCSS)** at the International Financial Services Centre (IFSC) in **Gujarat International Finance Tec-City (GIFT City).**

ABOUT

- **Aim:** To reduce settlement time dramatically, enhance liquidity management, lower settlement risk, and improve operational efficiency.
- **Need for the System:**
    - Currently, foreign currency transactions in **GIFT IFSC are processed via correspondent banking routes.**
    - This means an initiating bank uses multiple Nostro account relationships (accounts held with foreign banks) and intermediaries to route funds. That chain of relay can lead to settlement lags of 36 to 48 hours.
- Under the new system, Indian banks operating in **GIFT IFSC can directly clear and settle international trades in foreign currencies within India.**
    - It reduces the need for Nostro accounts and multiple intermediaries used in the correspondent banking route.

FOREIGN CURRENCY SETTLEMENT SYSTEM (FCSS)

- A local settlement bank (selected via bidding) will serve as the **settlement hub.**
    - **Member IFSC Banking Units (IBUs)** will open accounts with this settlement bank.

- Inter-bank foreign currency transactions will be settled **directly via these accounts, bypassing the multi-leg Nostro chain.**

- Initially, the system will support **US dollar transactions,** with scope to add other foreign currencies over time.
- The system will operate under the **regulatory framework of the Payment and Settlement Systems (PSS) Act, 2007,** and is authorised by International Financial Services Centres Authority (IFSCA).
- **The software** is being developed by **Indian Financial Technology & Allied Services (IFTAS),** a wholly-owned subsidiary of the Reserve Bank of India.

SIGNIFICANCE

- **Faster settlements:** Earlier, settlements took 36–48 hours through the traditional correspondent banking system, involving foreign intermediaries.
- **Real Time Transactions:** Transactions in foreign currencies (like USD, Euro, Yen) can now be settled in real time or near real time within India.
- This places GIFT City among **select global financial hubs** such as Hong Kong, Tokyo, and Manila that have local infrastructure for foreign currency settlement.

GIFT CITY

- **GIFT City is India's first special economic zone,** which is designed to host institutions dealing in global finance, insurance, fintech, and capital markets.
- The project was first conceived in **2007** and was **established in 2015.**
- The idea was to create a city-within-a-city where companies could transact in **foreign currencies, follow global regulations, and attract international players.**

- **The IFSCA**, which was set up in **2020**, regulates all activities inside the GIFT City, very similar to how Sebi, RBI, IRDAI, and PFRDA operate for their respective sectors.

NEED FOR THE GIFT CITY

- Before GIFT City, many Indian companies raised funds or managed offshore investments through hubs such as Singapore or Mauritius, largely because of **friendlier tax and regulatory frameworks there.**
- **India was losing potential revenue** and global financial influence as a result.
- The idea behind GIFT City was to **bring those offshore activities back onshore** by offering a similar ecosystem within India, but with international standards of ease and flexibility.

ACHIEVEMENTS OF GIFT CITY SO FAR

- As of mid-2025, it hosts nearly 1,000 registered entities, a mix of Indian and foreign banks, insurance firms, asset management companies, and capital market intermediaries.
- GIFT City is also home to India's first aircraft and ship leasing units, following the government's push to develop the leasing and financing ecosystem domestically.
- Several global players, including aircraft lessors, fund managers, and fintech startups, have set up operations there.

25 93RD AIR FORCE DAY

INTRODUCTION

- **Event**: The **93rd Air Force Day** of India was celebrated on **October 8, 2025**.
- **Significance**: Marks the **formation of the Indian Air Force (IAF)** on **October 8, 1932**, and celebrates its **achievements, modernization, and operational readiness**.
- **Theme 2025**: **"Valour, Vigilance, Victory"** (hypothetical theme aligning with modern IAF ethos).

BACKGROUND

- **Indian Air Force (IAF)**:
  - Established: **8 October 1932** under the **Indian Air Force Act**.
  - Founder: **Shahaji Maharaj** and early British officers guided the initial organization.
  - Role: **Air defense, strategic deterrence, humanitarian aid, disaster relief**, and **support to the Indian Armed Forces**.
- **IAF Today**:
  - One of the **largest air forces in the world**.
  - Operates **fighter jets, transport aircraft, helicopters, and UAVs**.
  - Engaged in **modernization programs** like **LCA Tejas induction, Rafale jets, and S-400 missile system integration**.

CELEBRATIONS OF AIR FORCE DAY

- **Parades & Flypasts**:
  - Held at **Hindon Air Force Station (Ghaziabad, UP)** and other key air bases.
  - Flypasts showcase **fighter jets (Su-30MKI, Mirage 2000, Tejas), transport aircraft (C-130J, C-17), and helicopters (Dhruv, Apache, Chinook)**.
- **Awards & Honors**:
  - **Gallantry awards**, **service medals**, and **commendation cards** are conferred on IAF personnel for exceptional service.
- **Demonstrations**:
  - Aerobatic displays by the **Surya Kiran and Sarang teams**.
  - Live demonstrations of **combat maneuvers, rescue operations, and precision bombing**.

STRATEGIC SIGNIFICANCE

- **Air Power in National Security**:
  - Acts as a **first line of defense**, ensuring **sovereignty and territorial integrity**.
  - Enhances **joint operations with the Army and Navy** for **tri-service synergy**.
- **Modernization & Indigenous Capability**:
  - Induction of **LCA Tejas Mk1A** and upgrades in **AWACS, UAVs, and missile systems** strengthen **self-reliance in defense**.
  - Supports India's **strategic deterrence and power projection** in the region.

INDIA-SPECIFIC FACTS

- **IAF Personnel Strength**: Approximately **1.5 lakh active personnel**.
- **Aircraft Strength**: Over **700+ aircraft**, including **300+ combat aircraft**.
- **Operations**:
  - **Operation Meghdoot (Siachen Glacier)** – logistical air support.
  - **Operation Safed Sagar (Kargil, 1999)** – high-altitude precision bombing.

- **Humanitarian Missions** – COVID-19 logistics, disaster relief in Kerala floods and Nepal earthquakes.

- **Indigenous Projects**:
  - **HAL Tejas**, **HTT-40 trainer aircraft**, **Rustom UAV**, and **Astra missile** program.

CHALLENGES

- **Aging Fleet**: Many legacy aircraft like **MiG-21 and MiG-27** have been retired, needing replacement.
- **Technological Edge**: Continuous modernization required to maintain **air superiority in the region**, particularly vis-à-vis China and Pakistan.
- **Infrastructure Expansion**: Need for **additional airbases, runways, and training facilities**, especially in the **northern and northeastern borders**.

WAY FORWARD

- **Indigenous Development**: Accelerate programs like **Tejas Mk2, AMCA, and UAV swarm technology**.
- **Jointness with Other Services**: Strengthen **tri-service operations** for integrated warfare.
- **Cyber & Space Integration**: Incorporate **cybersecurity, satellite surveillance, and space-based assets** into operations.
- **Global Collaboration**: Engage in **multinational exercises** like **Red Flag (USA), Garuda (France), and Desert Eagle (UAE)**.

26 ABHIDHAMMA DIVAS

The International Buddhist Confederation (IBC), in collaboration with Gautam Buddha University (GBU), Antarrashtriya Baudh Shodh Sansthan and the Ministry of Culture celebrated **International Abhidhamma Day.**

BACKGROUND

- Abhidhamma Divas commemorates the day when Lord Buddha descended from the celestial realm, Tāvatiṃsa-devaloka, to Sankassiya (now Sankisa Basantapur) in Uttar Pradesh.
- The Asokan Elephant Pillar, a historical marker at the site, marks this significant event.
- According to Theravāda Buddhist texts, Lord Buddha spent three months teaching the Abhidhamma to the deities in Tāvatiṃsa, including his mother.

Do you know?

- India, the birthplace of Buddhism, holds a deep spiritual and cultural connection to the life and teachings of Gautam Buddha, especially through sacred sites like Bodh Gaya.
- These places symbolize his journey to enlightenment and inspire seekers toward peace and self-discovery.
- At the heart of his teachings is the Abhidhamma, a profound philosophical text that emphasizes mental discipline, self-awareness, and inner transformation beyond ethical conduct.

INTERNATIONAL ABHIDHAMMA DIVAS

- It is celebrated worldwide to honor the Abhidhamma's timeless relevance in guiding ethical conduct and mental discipline.
- It highlights India's enduring connection to Buddhism and its role in preserving and promoting the Buddha's legacy, serving as a bridge between ancient wisdom and modern spiritual practice.

ABOUT ABHIDHAMMA PITAKA

- The Abhidhamma Pitaka explains how the mind & matter work, and gives a deep analysis of human thoughts, emotions, & behaviour.
- It was compiled in the 3rd Buddhist council, during the reign of Ashoka.
- It is one of the three main Buddhist scriptures (Tripitaka) in Theravada Buddhism, along with Vinaya Pitaka (rules for monks and nuns) and Sutta Pitaka – teachings and sermons of Buddha.

TEACHINGS OF ABHIDHAMMA

- The Abhidhamma, known as the "Higher Teaching" of the Buddha, offers a rigorous and analytical exploration of mind and matter, distinct from the everyday language of the Sutta Piṭaka.
- It presents a detailed framework for understanding existence, including birth, death, and mental processes, using a specialized Pali vocabulary—such as citta

(consciousness), cetasika (mental factors), rūpa (materiality), and nibbāna (liberation).

- Traditionally taught by the Buddha in the Tavatimsa heaven and later elaborated by his disciple Sariputta, the Abhidhamma Piṭaka comprises seven treatises, including the Paññhāna, which deeply analyzes causal relationships.
- These texts form the foundation of Buddhist philosophy and psychology, serving as vital tools for practitioners seeking insight and spiritual growth.

GOVERNMENT SUPPORT AND EFFORTS

- Abhidhamma's profound teachings are preserved through the ancient Pali language, recognized as a Classical Language by the Government of India for its literary and historical significance in Buddhism and Jainism.
- Pali, shaped from various dialects around 500 B.C., is the medium for the entire Buddhist canon, including the **Vinaya Pitaka (outlines ethical monastic rules)**, Sutta Pitaka (a rich compilation of the Buddha's discourses), and Abhidhamma Pitaka (delves into ethics, psychology, and the intricate analysis of mind and reality).
- Pali literature also includes the **Jataka tales** (recount the stories of the Buddha's previous lives, reflecting shared moral values prevalent among the Indian populace).

27 EUROPE'S GROWING ROLE IN INDIA'S DIPLOMACY

British PM Keir Starmer's visit to India, new EFTA trade pact, and EU trade negotiations indicate Europe's growing role in India's diplomacy.

TRIGGERS FOR WESTERN PLURALISM:

- **US Policy Shifts under Trump:** "America First" nationalism questioned alliances and security commitments.
    - It undermined the global institutions and trade norms.
- **Internal Divisions within the West:** The western countries have disagreements on various global issues such as Russia, China, trade, and technology.
    - Europe itself begins to develop its own geopolitical act rather than remain a mere extension of the US within the so-called "collective West."
- **Europe's Response:** It has called for strategic autonomy and continental sovereignty.
    - European Commission President Ursula von der Leyen declared that "Europe must be prepared to stand on its own feet — economically, technologically, and militarily.

INDIA-EU RELATIONS

- **Political cooperation:** India-EU relations date to the early **1960s,** and a cooperation agreement signed in **1994** took the bilateral relationship beyond trade and economic cooperation.
    - **The first India-EU Summit, in 2000**, marked a landmark in the evolution of the relationship.
    - At the **5th India-EU Summit at The Hague in 2004**, the relationship was upgraded to a **'Strategic Partnership'.**
- **Economic cooperation:** India's bilateral trade in goods with the **EU was USD 137.41 billion in 2023-24**, making it the largest trading partner of India for goods.
    - **EU is India's largest trading partner** for goods, 17% of India's exports go to the EU and 9% of EU exports come to India.
- **India-EU Free Trade Agreement (FTA) Negotiations:**
    - **Negotiation Resumption:** Talks resumed in 2022 after an 8-year hiatus .

- **Objective:** To finalize a comprehensive trade agreement covering goods, services, investments, and geographical indications.
- Prime Minister Narendra Modi and the European Commission President agreed to seal the deal **by the end of this year.**

- **Other areas of cooperation:**
  - **The India-EU Water Partnership (IEWP),** established in 2016, aims to enhance technological, scientific, and policy frameworks in water management.
  - **In 2020**, there was an **agreement for research and development cooperation** in the peaceful uses of nuclear energy between the **European Atomic Energy Community and the Government of India.**
  - India and the EU established the **Trade and Technology Council (TTC)** in 2023. The TTC is a forum for the two parties to collaborate on trade, technology, and security. The TTC's goals.
- **India's Two Levels of Engagement**
  - **EU as a bloc:** Regular summits, strategic dialogues on trade, tech, security, foreign policy.
  - **Bilateral with major EU members:** Deepening ties with France, Germany, Nordic and Eastern European countries.

FACTORS SHAPING INDIA-EUROPE RELATIONS:

- **Geopolitical Shifts and Strategic Autonomy:** Return of war in Europe (Russia–Ukraine) and the global erosion of multilateralism.
  - Europe seeking greater strategic autonomy from the US especially post-Trump era.
  - India aims to maintain a multipolar world order while diversifying its partnerships beyond the US, Russia, and China.
- **Trade and Economic Cooperation:** EU is one of India's largest trade and investment partners.
  - India and EU are keen on concluding India–EU Free Trade Agreement (FTA) and Investment Agreement.
  - IMEC (India–Middle East–Europe Corridor) provides opportunities for strategic connectivity and trade.
- **Technology and Digital Sovereignty:** Both have the shared interest in promoting digital technologies as public goods.

    - India can benefit from Europe's strengths in deep tech, semiconductors, and digital manufacturing.

- **Defence and Strategic Cooperation:** Europe is a key arms supplier to India.
    - India seeks joint development, co-production, and technology transfer.
    - Europe is rearming due to the Ukraine war; India is pursuing Atmanirbharta (self-reliance).
- **Indo-Pacific and Maritime Strategy:** Europe increasingly views the Indo-Pacific as a strategic priority.
    - India is working with France, Germany, and others to promote free and open Indo-Pacific.

CHALLENGES IN THE INDIA – EU RELATIONS

- **India's Stand on Ukraine War:** Europe expects India to be more critical of Russia; India maintains strategic neutrality.
- **EU's Stand on Pakistan and Terrorism:** India expects the EU to hold Pakistan accountable for state-sponsored terrorism.
- **Slow Progress on Trade Agreements:** The India–EU Free Trade Agreement (FTA) negotiations have faced multiple deadlocks.
- **Carbon Border Adjustment Mechanism (CBAM)** imposed by the EU creates additional trade barriers for India.
- **Human Rights and Normative Pressure:** EU often adopts a prescriptive stance on India's internal matters (e.g., Kashmir, CAA, farm laws).
    - India views this as interference in domestic affairs, causing diplomatic friction.
- **Regulatory and Standards Barriers:** EU's strict regulations on data privacy, digital taxation, environmental standards, and labour laws are hurdles for Indian exporters and tech firms.
- **Media stereotypes and limited public awareness in Europe with respect to India** hinder people-to-people ties.

WAY AHEAD

- **Fast-Track Trade and Investment Agreements:** Conclude the long-pending India–EU Free Trade Agreement and Investment Protection Agreement.
- **Deepen Strategic and Defence Cooperation:** Move beyond buyer-seller relationship to joint development and co-production of defence technologies.

- **Expand Mobility and Education Partnerships:** Finalise a comprehensive mobility agreement for skilled professionals, students, and researchers.
- **Build Resilient Supply Chains:** Diversify away from China by promoting trusted, transparent supply chains.
    - Leverage initiatives like IMEC (India-Middle East-Europe Corridor) for logistics, energy, and trade.
- **Enhance People-to-People and Cultural Ties:** Promote tourism, media engagement, and cultural exchanges to break stereotypes and deepen mutual understanding.

CONCLUSION

- The evolving Western pluralism, marked by Europe's rearmament and diversified trade creates both opportunities and challenges for India.
- It expands India's diplomatic space while demanding faster domestic adaptation to leverage economic and strategic advantages in a more multipolar world.

28 SUPERMOON

The Supermoon, also known as the Harvest Moon, was observed recently.

INTRODUCTION

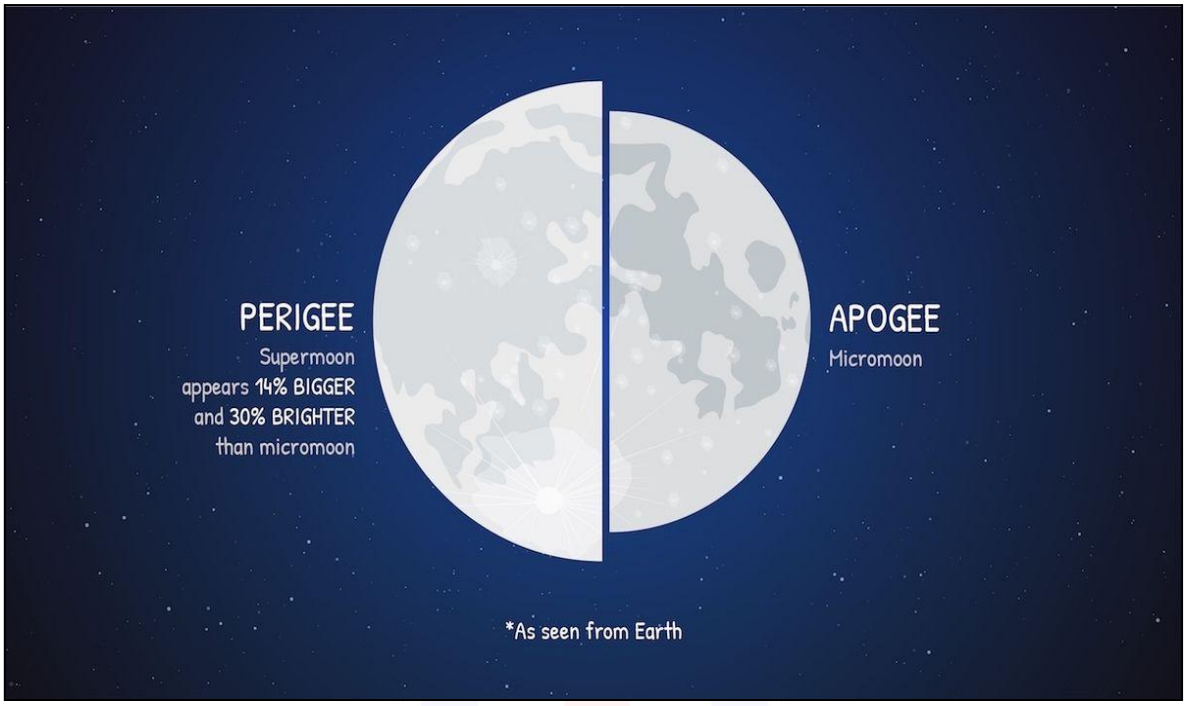
- **Definition**: A **Supermoon** occurs when a **full moon or new moon coincides with the moon's closest approach to Earth (perigee)** in its elliptical orbit.
- **Significance**: Appears **larger and brighter than usual**, typically **14% larger and 30% brighter** than a normal full moon.
- **Relevance**: Observed globally and often **covered in astronomy and current affairs segments**.

ASTRONOMICAL BACKGROUND

- **Moon's Orbit**:
  - The Moon follows an **elliptical orbit** around Earth, with distances ranging from **perigee (~363,000 km)** to **apogee (~405,000 km)**.
  - When the Moon is at **perigee**, it appears **closer to Earth**, creating the Supermoon phenomenon.

TYPES OF SUPERMOONS:

- **Full Moon Supermoon** – Brightest and largest visible moon, ideal for observation.
- **New Moon Supermoon** – Occurs during new moon, invisible to naked eye but can cause **slightly stronger tidal effects**.



FEATURES AND OBSERVATIONS

- **Visual Impact**:
  - Appears **14% larger** in diameter compared to a regular full moon.
  - Appears **30% brighter**, making it highly photogenic.
- **Tidal Effects**:
  - Higher gravitational pull leads to **'perigean spring tides'** – slightly higher than usual tides.
  - Coastal regions may observe **marginally increased sea levels**.
- **Astronomical Significance**:
  - Provides opportunity for **amateur and professional astronomers** to study **lunar surface features**.
  - Helps in **public outreach and education about celestial mechanics**.

INDIA-SPECIFIC CONTEXT

- Supermoons are **visible across India**, depending on **weather and location**.
- **Observatories**: Institutions like **IUCAA (Pune), PRL (Ahmedabad), and ISRO centers** conduct **public viewing sessions**.
- **Cultural Significance**: Full moons, including Supermoons, are associated with **festivals, rituals, and agriculture calendars**.

CHALLENGES & MISCONCEPTIONS

- **Exaggeration in Media**: Often reported as "moon appearing **gigantic like 3–4 times normal size**," which is **scientifically inaccurate**.
- **Earthquake Myths**: No concrete evidence links **Supermoon to earthquakes**, though tidal stress is slightly increased.
- **Observation Challenges**: Cloud cover and pollution can reduce visibility in **urban areas**.

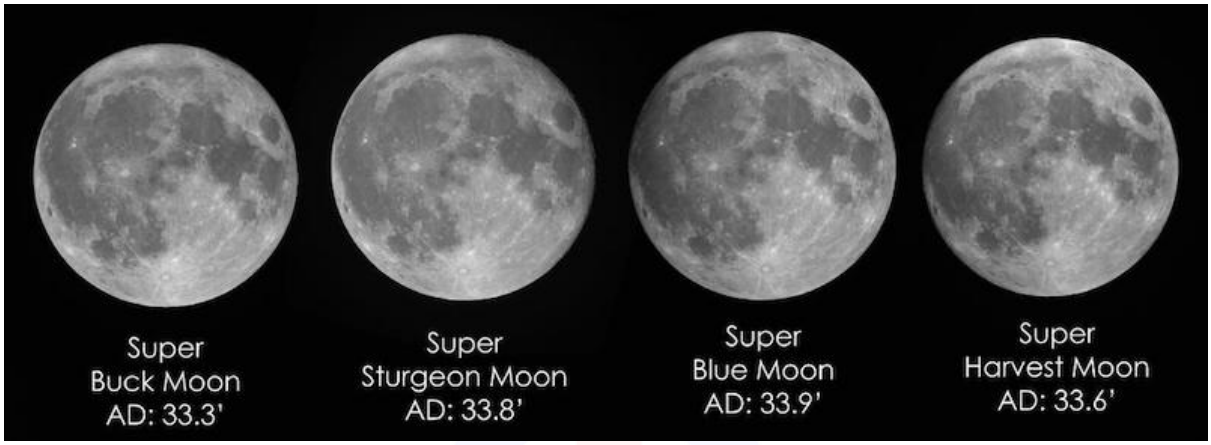
WAY FORWARD / EDUCATIONAL IMPORTANCE

- **Astronomy Education**: Promote **awareness of lunar cycles, orbits, and celestial mechanics**.
- **Public Engagement**: Observing Supermoons can **inspire students and youth** toward science and space research.
- **Scientific Research**: Helps **refine lunar distance measurements**, **study tidal impacts**, and prepare for **space missions**.

CONCLUSION

- A **Supermoon** is a **full moon appearing larger and brighter** due to its proximity to Earth.

- While primarily a **visual and astronomical phenomenon**, it provides **opportunities for research, education, and public engagement**.
- It also underscores the **dynamic interactions between Earth and its natural satellite**, with minor but observable effects on **tides and ecosystems**.

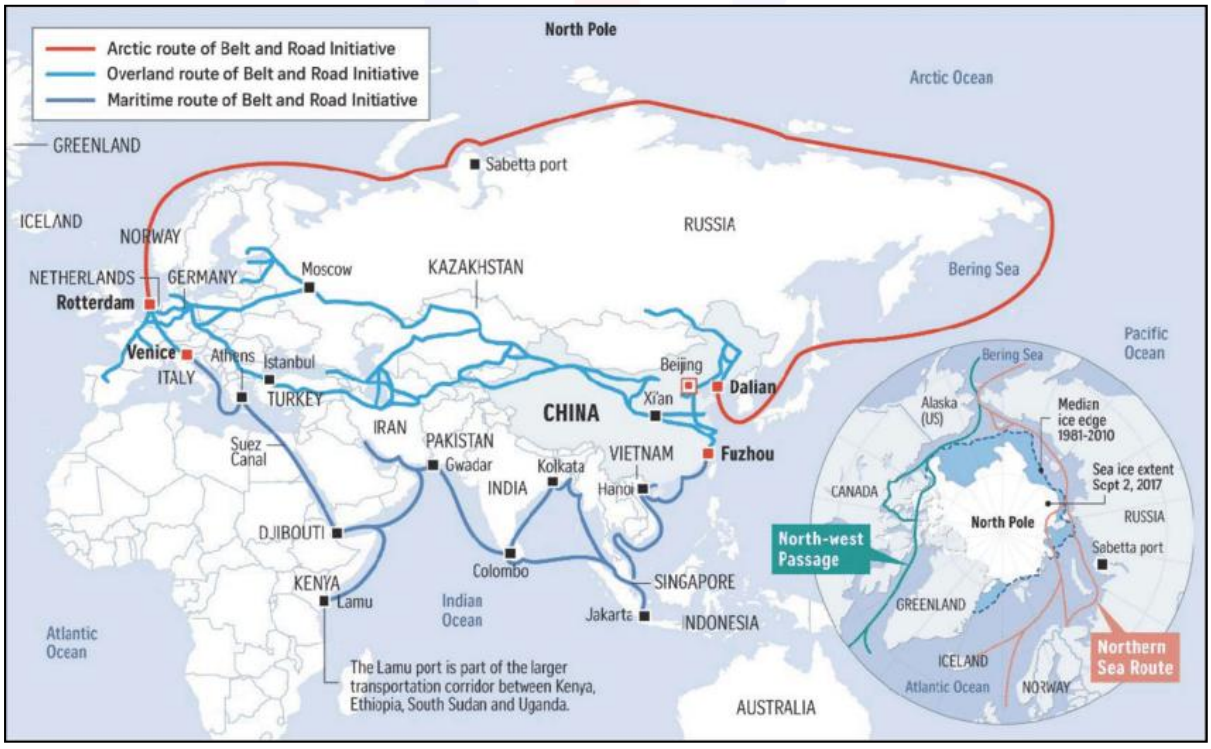


29 POLAR SILK ROAD

The Chinese ship **"Istanbul Bridge"** became the first commercial vessel to sail from **Ningbo-Zhoushan (China) to Felixstowe (UK)** via the Arctic in 18 days, marking the operational launch of the **Polar Silk Route.**

INTRODUCTION

- **Definition**: The **Polar Silk Road** is China's strategic initiative to establish and develop **shipping and trade routes across the Arctic**, linking Asia, Europe, and North America through the **Northern Sea Route (NSR)** and other Arctic corridors.
- **Origin of Term**: Coined by **China** as part of its **Belt and Road Initiative (BRI)** expansion into the Arctic region.
- **Significance**: Offers **shorter maritime routes**, access to **Arctic resources**, and a platform for **geopolitical influence in the Arctic**.



BACKGROUND

- **Arctic Geography**:
  - The Arctic Ocean is **largely frozen**, with ice coverage reducing due to **climate change**.
  - Key routes:

- **Northern Sea Route (NSR)** – Along Russia's Arctic coast.
- **Transpolar Sea Route (TSR)** – Across the central Arctic Ocean.
- **Northwest Passage (NWP)** – Along Canada's Arctic Archipelago.

- **China's Arctic Interest**:
  - China is a **non-Arctic state**, but calls itself a **"Near-Arctic State"**.
  - Focus areas include: **shipping, resource exploration (oil, gas, minerals), scientific research**, and **geopolitical influence**.

OBJECTIVES OF THE POLAR SILK ROAD

- **Trade Efficiency**:
  - NSR can **cut shipping distances between China and Europe by 40%** compared to the **Suez Canal route**.
  - Reduces **fuel consumption, shipping time, and costs**.
- **Resource Access**:
  - Arctic region rich in **hydrocarbons, rare earth elements, and fisheries**.
  - China aims to secure **strategic resources for energy security**.
- **Geopolitical Influence**:
  - Participation in **Arctic governance** (e.g., Arctic Council observer status).
  - Enhances China's **global trade footprint** and counters **Western dominance** in the Arctic.
- **Scientific and Environmental Research**:
  - China invests in **icebreakers, polar research stations, and satellites** for navigation, climate study, and maritime safety.

KEY FEATURES

- **Infrastructure**: Development of **ports, ice-class vessels, and Arctic navigation technologies**.
- **International Collaboration**: Partnerships with **Russia, Norway, Finland**, and other Arctic stakeholders.
- **Maritime Routes**:
  - **Northern Sea Route (NSR)** – primary route for Polar Silk Road.
  - **Transpolar Sea Route** – potential long-term route as ice recedes.

- **Policy Framework**: China's **Arctic Policy (2018)** supports **"Polar Silk Road" development** and Arctic scientific exploration.

CHALLENGES

- **Environmental**:
  - Arctic is ecologically fragile; melting ice and shipping pose **threats to biodiversity**.
- **Geopolitical Tensions**:
  - Canada, Russia, and the US have **sovereignty and security concerns**.
  - Disputes over **navigation rights and shipping regulations**.
- **Technical & Operational**:
  - Harsh conditions require **ice-class vessels, icebreakers, and specialized navigation**.
- **Economic Feasibility**:
  - Shorter routes are **seasonal**, limited to **3–4 months per year** due to ice coverage.

WAY FORWARD

- **China-Russia Cooperation**: Strengthening **joint ventures in Arctic shipping and infrastructure**.
- **Technological Investment**: Develop **nuclear-powered icebreakers, satellite communication, and weather forecasting systems**.
- **Environmental Safeguards**: Ensure **sustainable shipping practices** to minimize ecological damage.

- **Global Engagement**: Work with **Arctic Council observers and international maritime organizations** for **regulatory compliance**.

INDIA'S PERSPECTIVE

- India is an **observer in the Arctic Council** since 2013.
- Interest areas:
  - **Climate research, Arctic shipping routes, and natural resources**.
  - Monitoring China's Polar Silk Road for **geopolitical and economic implications**.
- Opportunity for India: **collaborative scientific missions, satellite monitoring, and trade studies**.

CONCLUSION

- The **Polar Silk Road** represents China's strategy to **expand global trade networks, secure Arctic resources, and assert influence** in a strategically important region.
- While it offers **economic and technological opportunities**, it also raises **geopolitical, environmental, and operational challenges**.
- Countries like India must **monitor, collaborate, and engage scientifically** to safeguard interests in the evolving Arctic scenario.

30 OPERATION HAECHI-VI

The **Central Bureau of Investigation (CBI)** has arrested eight accused and identified 45 suspects as part of Interpol's **Operation HAECHI-VI**.

OPERATION HAECHI-VI

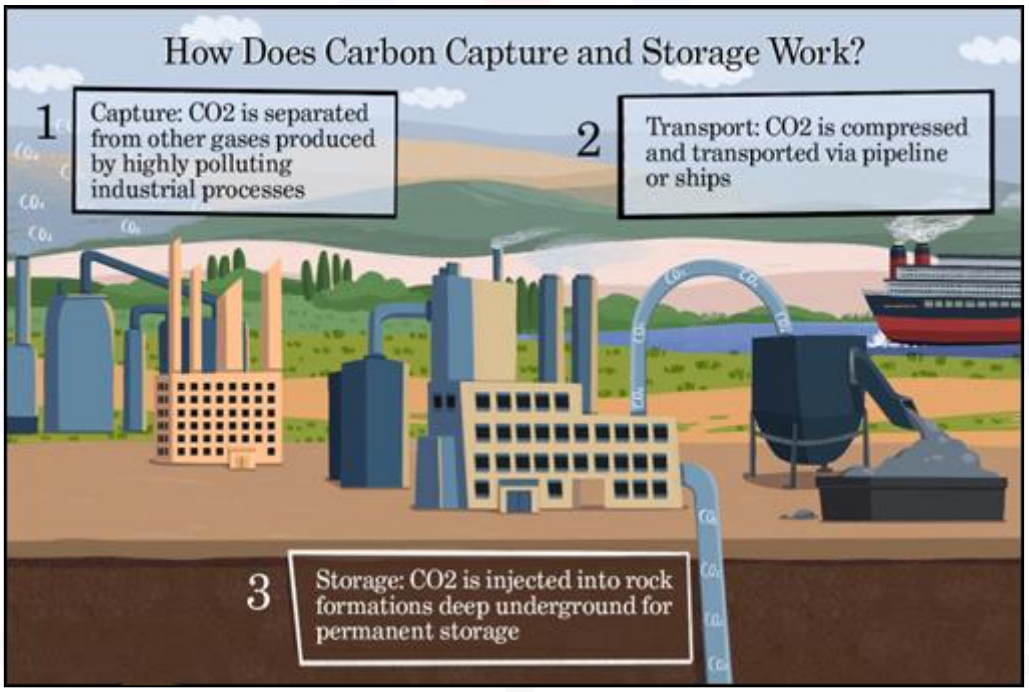
- The operation focused on **seven categories of offences:** cyber-enabled financial crime, voice phishing, love and romance scams, online sextortion, investment fraud, money laundering linked to illegal online gambling, business email compromise, and e-commerce fraud.
- Investigators worked together to detect and disrupt **online fraud as well as money laundering activities**, blocking over **68,000 associated bank accounts** and freezing close to 400 cryptocurrency wallets.

31 CARBON CAPTURE AND STORAGE (CCS)

A new report by Climate Analytics warns that Asia's growing reliance on **carbon capture and storage (CCS)** could backfire, locking the region into prolonged fossil fuel use and adding up to 25 billion tonnes of CO_2 emissions by 2050.

INTRODUCTION

- **Definition**: **Carbon Capture and Storage (CCS)** is a **climate change mitigation technology** aimed at **capturing carbon dioxide (CO_2) emissions from large point sources**, such as **power plants and industrial facilities**, and **storing it underground or using it in industrial processes** to prevent its release into the atmosphere.
- **Purpose**: To **reduce greenhouse gas (GHG) emissions**, helping countries meet **Paris Agreement targets** and limit **global warming to 1.5–2°C**.



COMPONENTS OF CCS

CCS involves **three main stages**:

- **Capture**:
  - CO_2 is separated from other gases in **power plants, cement factories, steel plants, and refineries**.
  - Techniques include:
    - **Post-combustion capture**: CO_2 removed from flue gases.

    - **Pre-combustion capture**: Fuel is converted to a gas mixture; CO_2 separated before combustion.
    - **Oxy-fuel combustion**: Fuel burned in pure oxygen; flue gas mostly CO_2 and water, easier to capture.

- **Transport**:
    - Captured CO_2 is transported to storage sites, usually via **pipelines**, but also **ships** or **trucks** for smaller volumes.
- **Storage (Sequestration)**:
    - CO_2 is **injected into deep geological formations**, typically at depths **>800 meters**.
    - Storage options:
        - **Depleted oil and gas fields** – often used in **Enhanced Oil Recovery (EOR)**.
        - **Deep saline aquifers** – large capacity, widely available.
        - **Unmineable coal seams** – CO_2 can displace methane for **enhanced coalbed methane recovery**.
    - CO_2 can also be **mineralized** or converted into **solid carbonates** for long-term storage.

GLOBAL SCENARIO

- **Operational Projects**: Over **30 commercial-scale CCS facilities worldwide** (e.g., Boundary Dam, Canada; Sleipner, Norway).
- **CO_2 Stored**: Approximately **40 million tonnes/year globally**.
- **Key Players**: USA, Canada, Norway, UK, Australia, and some Middle Eastern countries.

INDIA'S CONTEXT

- **Need for CCS in India**:
    - India's **coal-dependent energy sector** contributes significantly to CO_2 emissions.
    - Industrial hubs (cement, steel, refining) emit large amounts of CO_2.
    - CCS can help India achieve **Net Zero by 2070** target and **reduce carbon intensity** of GDP.
- **Current Initiatives**:

- **Coal India Limited and NTPC** are exploring pilot CCS projects.
- Studies focus on **saline aquifers in Gujarat, Rajasthan, and Mumbai offshore basins** for geological storage.
- Collaboration with **IEA and international research institutes** for technology transfer.

BENEFITS

- **Climate Mitigation**: Reduces CO_2 emissions from industrial and power sectors.
- **Enhanced Oil Recovery (EOR)**: Stored CO_2 can increase oil production in mature fields.
- **Industrial Competitiveness**: Helps high-emission industries comply with **carbon regulations**.
- **Energy Transition**: Facilitates **continued use of fossil fuels while minimizing emissions** during transition to renewables.

CHALLENGES

- **High Costs**: Capture, transport, and storage infrastructure is expensive.
- **Energy Intensive**: CO_2 capture requires significant energy, reducing plant efficiency.
- **Storage Risks**: Potential **leakage** could negate benefits; long-term monitoring needed.
- **Regulatory & Legal Issues**: Ownership of underground CO_2, liability in case of leakage, and cross-border transport need robust frameworks.
- **Public Acceptance**: Concerns over **safety and environmental risks**.

WAY FORWARD

- **Policy Support**:
  - Incentives, subsidies, and **carbon pricing mechanisms** to make CCS economically viable.
- **Technology Innovation**:
  - Development of **low-cost capture technologies**, **direct air capture (DAC)**, and **solid sorbent materials**.
- **Integration with Renewable Energy**:
  - CCS can complement **bioenergy (BECCS)** for **negative emissions**.

- **International Collaboration**:
    - Sharing expertise and funding for **pilot projects in developing countries**.

CONCLUSION

- **CCS is a key climate mitigation technology**, particularly for countries with **large fossil fuel-based industries**.
- While challenges remain in **cost, infrastructure, and safety**, it is essential for **meeting emission targets and achieving sustainable development goals**.
- Integration of CCS with **renewables and energy efficiency measures** can create a **holistic approach to India's Net Zero pathway**.

32 SURROGACY (REGULATION) ACT

In a landmark judgment, the Supreme Court ruled that the age restrictions under the **Surrogacy (Regulation) Act, 2021**, **cannot be applied retrospectively** to couples who had frozen embryos and initiated the surrogacy process before the Act came into force.

SUPREME COURT OBSERVATIONS

- **Doctrine of Fairness:** Retrospective laws that impair vested rights or impose new burdens violate the principle of fairness and legal certainty.
- **Right to Privacy and Bodily Autonomy:** Derived from K.S. Puttaswamy (2017), reproductive decisions fall within the private domain of individuals as reproductive autonomy is a part of the fundamental right to life and personal liberty under Article 21
- **Gender and Equality Lens:** Restrictive interpretation disproportionately affects women, who already face biological and social constraints in reproductive choices.

ABOUT THE SURROGACY (REGULATION) ACT, 2021

- **Objective:** To regulate surrogacy procedures in India and permit only altruistic surrogacy; commercial surrogacy is prohibited.
- **Intending couple eligibility (prospective):** Indian citizens, married ≥5 years; woman 23–50, man 26–55; medical infertility required.

- **Surrogate eligibility:** A married woman with at least one child of her own and should be aged 25–35 years.
- **Institutional architecture:** National/State Surrogacy Boards; Appropriate Authorities for licensing, compliance, and ethics.
- **Penalties:** Commercial surrogacy, embryo/gamete sale can attract up to 10 years' imprisonment and fines up to ₹10 lakh.

33 SOLAR DIMMING IN INDIA

A recent joint study **published in Nature's Scientific Reports** shows **India's sunlight hours are shrinking** due to **pollution and cloud buildup** threatening the country's solar energy ambitions.

SOLAR DIMMING

- **Solar dimming** refers to the **reduction in solar radiation reaching the Earth's surface**, often due to **aerosols, particulate matter, cloud cover, and atmospheric pollution**.
- **Significance**: Affects **climate, agriculture, hydrology, and solar energy generation**.
- **Context in India**: India has witnessed significant solar dimming in recent decades, especially over **industrialized and urban regions**, due to rapid **urbanization and air pollution**.

CAUSES OF SOLAR DIMMING

- **Atmospheric Aerosols**:
    - Dust, smoke, black carbon, and sulfate aerosols scatter and absorb sunlight.
    - Major contributors in India: **vehicular emissions, industrial emissions, biomass burning, and dust storms**.
- **Cloud Cover and Monsoon Patterns**:
    - Changes in cloud density and rainfall patterns during the **monsoon season** can temporarily reduce solar radiation.
- **Anthropogenic Pollution**:
    - Industrial growth, **coal-fired power plants**, and urban smog reduce **surface insolation**.

- **Land-Use Changes**:
    - Deforestation, urban heat islands, and agricultural practices influence **surface albedo** and local radiation balance.

OBSERVED TRENDS IN INDIA

- **Historical Observations**:
    - Satellite and ground-based data show a **decline in surface solar radiation of 2–4% per decade** in northern and central India (1970–2000).
    - **Northern India**, especially the Indo-Gangetic Plain, shows **higher dimming** due to dense aerosol loading.
- **Recent Developments**:
    - Reduction in air pollution during **COVID-19 lockdowns (2020)** temporarily **increased solar radiation**, confirming pollution as a key factor.
    - Some regions, like southern India, show **"brightening" trends** due to improved air quality.

IMPACTS OF SOLAR DIMMING

- **Climate Change**:
    - Reduces **surface temperatures** locally, creating **regional cooling** even while global warming continues.
    - Alters **monsoon circulation** and rainfall patterns.
- **Agriculture**:
    - Reduced sunlight affects **crop growth, photosynthesis, and yield**, especially in **rice, wheat, and pulses**.

- **Solar Energy Generation**:
  - Decreased insolation reduces the **efficiency of solar photovoltaic (PV) systems**.
  - Impacts India's **renewable energy targets under the National Solar Mission**.
- **Hydrology and Water Cycle**:
  - Reduced radiation affects **evapotranspiration**, influencing **soil moisture, groundwater recharge, and river flows**.
- **Human Health**:
  - High aerosol concentration causing solar dimming also leads to **respiratory and cardiovascular diseases**.

INDIA-SPECIFIC FACTS

- **Key Polluted Regions**: Indo-Gangetic Plain, Delhi NCR, Mumbai, and industrial belts of Uttar Pradesh and West Bengal.
- **Major Aerosols**: Black carbon from **biomass burning**, industrial SO_2, vehicular NOx, and dust.
- **Studies**:
  - Indian Institute of Tropical Meteorology (IITM) reports a **0.5–1 W/m^2 per year reduction in solar radiation** in northern India.
  - NASA satellite data confirm **significant dimming over urban-industrial zones**.

CHALLENGES

- **Monitoring Gaps**: Limited **ground-based solar radiation measurement stations** in remote areas.
- **Pollution Control**: Industrial emissions, vehicular pollution, and crop residue burning are difficult to manage.
- **Climate Modelling**: Incorporating **aerosol-cloud interactions and dimming effects** into climate models is complex.

WAY FORWARD

- **Air Quality Management**:
  - Strict implementation of **National Clean Air Programme (NCAP)**.

- Promotion of **electric vehicles, cleaner fuels, and industrial emission control**.

- **Afforestation and Urban Planning**:
  - Increase green cover to **reduce dust and improve local albedo**.
- **Renewable Energy Adaptation**:
  - Use **high-efficiency solar panels** and **tracking systems** to mitigate dimming impacts.
- **Research and Monitoring**:
  - Expand **surface radiation networks** and use **satellite observations** for real-time assessment.
  - Study **interactions between aerosols, clouds, and radiation** to improve climate projections.

CONCLUSION

- **Solar dimming in India** is primarily caused by **aerosols, pollution, and land-use changes**, with significant **climatic, agricultural, and energy implications**.
- Addressing it requires **integrated strategies** combining **pollution control, renewable energy adaptation, and research**.
- Monitoring and mitigating solar dimming are essential to **achieve sustainable development, energy security, and climate resilience** in India.

34 WORLD MENTAL HEALTH DAY

On October 10, every year, World Mental Health Day highlights the extent of mental illness in the world.

ABOUT

- **Global Mental Health Issue (as per WHO):** More than a billion people are living with mental health disorders.
    - An estimated 727,000 people across all ages lost their lives to suicide in 2021, with one suicide death happening in over 20 suicide attempts.
    - Suicide accounts for one in every 100 deaths globally.
    - **Most Common Mental Health Disorders:** Anxiety and depressive disorders together accounted for more than two-thirds of all mental health conditions in 2021.
- **Between 2011 and 2021,** the number of people living with mental disorders increased faster than the global population.
    - **Mental Health in India:** India has a 13.7% lifetime prevalence of mental disorders in the country.
    - **According to the latest NCRB data,** 1,71,418 suicides were reported in India in 2023, a 0.3% increase from 2022, with Maharashtra recording the highest number.
- **Even more alarming,** student suicides reached 13,892, a 64.9% rise over the past decade.

RISE IN MENTAL HEALTH ISSUES AMONG YOUTH

- **Excessive internet & social media use:** Leads to anxiety, sleep disorders, and attention issues.
- **Lack of family engagement:** Weak social support systems negatively impact emotional well-being.
- **Hostile workplaces & long working hours:** Cause burnout, stress, and reduced productivity.
- **Unhealthy lifestyle choices:** Ultra-processed foods and lack of physical activity worsen mental and physical health.

UNDERSTANDING MENTAL WELLBEING

The India's National mental health survey defines mental well-being as a multidimensional concept that includes:

- **Emotional health:** Managing stress and emotions effectively.
- **Social health:** Building healthy relationships and a supportive community.
- **Cognitive health:** Enhancing focus, decision-making, and problem-solving abilities.
- **Physical health:** Maintaining overall fitness through a healthy lifestyle.

CHALLENGES IN PSYCHIATRIC HEALTHCARE IN INDIA

- **Poor Conditions in Psychiatric Hospitals:** Often associated with cruelty, neglect, abuse, and substandard living conditions.
    - Reflects systemic neglect and inadequate accountability mechanisms.
- **Scant Funding:** Mental health receives extremely low budget allocation, about 1% of the total health budget, with most going to institutions rather than community-based care.
- **Shortage of Trained Personnel:** India's mental health workforce remains scarce; with only 0.75 psychiatrists and 0.12 psychologists for a 1,00,000 population, India falls short of World Health Organization (WHO) guidelines requiring at least three psychiatrists for 1,00,000 people.
- **Disproportionate distribution:** Few psychiatrists at district HQs, almost none in towns/villages.
    - This leads to an urban-rural mental healthcare divide.
- **Accessibility & Economic Barriers:** Medicines are unavailable in rural/interior areas.
    - Travel to seek care leads to loss of wages, unaffordable for poor families.
    - Patients with severe mental illness are usually non-earning members, worsening their financial strain.

KEY INITIATIVES BY THE GOVERNMENT OF INDIA

- **Mental Healthcare Act, 2017:** The act **decriminalized suicide attempts** in India and also included WHO guidelines in the categorization of mental illnesses.
    - The most significant provision in the act was **"advance directives",** which allowed individuals with mental illnesses to decide the course of their treatment.

    - It also **restricted the use of electro-convulsive therapy (ECT)** and banned its use on minors, finally introducing measures to tackle stigma in Indian society.

- **Rights of Persons with Disabilities Act, 2017:** The Act acknowledges mental illness as a disability and seeks to enhance the Rights and Entitlements of the Disabled.
- **In Sukdeb Saha vs State of Andhra Pradesh,** the Supreme Court of India reinforced mental health as a **fundamental right under Article 21,** thereby legally binding the government to ensure accessible, affordable and quality mental health care.
- **District Mental Health Programme (DMHP):** Delivered in 767 districts, offering services like suicide prevention, stress management, and counseling.
- **National Tele Mental Health Programme (NTMHP):** Launched in 2022 to provide access to mental health services through 53 Tele MANAS Cells across 36 states/UTs.
- **Expansion of Mental Health Capacity:** Strengthening mental health services and educational resources in medical colleges and hospitals.

REFORM MEASURES NEEDED

- Raise mental health spending to 5% of total health expenditure (WHO benchmark).
- Train and deploy mid-level mental health providers to strengthen rural access.
- Integrate mental health fully into primary care and universal insurance schemes.
- Establish monitoring and evaluation systems with district-level accountability.
- Expand anti-stigma and awareness campaigns, especially in schools and workplaces.
- Improve coordination among ministries to ensure a unified mental health strategy.

CONCLUSION

- India's mental health ecosystem faces a triple deficit — in funding, workforce, and governance.
- Bridging these gaps requires policy integration, decentralised service delivery, and social destigmatisation, aligning with global best practices and WHO guidelines.

35 ATACAMA DESERT

A rare burst of winter rains has triggered the **"desierto florido" phenomenon in Chile's Atacama Desert**, turning one of Earth's driest landscapes into sweeping carpets of **fuchsia wildflowers** visible from space.

INTRODUCTION

- **Location**: The **Atacama Desert** is located in **northern Chile**, along the **Pacific coast of South America**, extending into parts of **Peru, Bolivia, and Argentina**.
- **Significance**: Known as **the driest desert on Earth**, it receives **less than 1 mm of rainfall annually in some regions**.
- **Global Recognition**: Due to its **extreme aridity and unique geology**, it is often used as an **analogue for Martian conditions** in scientific research.

GEOGRAPHICAL FEATURES

- **Coordinates**: Roughly between **18°S to 30°S latitude**.
- **Area**: Approximately **105,000 km^2**.
- **Topography**:
  - Comprises **salt flats, sand dunes, volcanic peaks, and high plateaus**.
  - Includes the **Atacama Plateau (Altiplano)** and **coastal mountains**.
- **Climate**:
  - Extremely arid, with **high evaporation rates**.
  - Strong **diurnal temperature variation**: Hot during the day, cold at night.
  - Some areas have **fog and dew**, providing limited moisture.

CAUSES OF ARIDITY

- **Rain Shadow Effect**:
    - The **Andes Mountains** block **moisture-laden winds from the Amazon Basin**, causing a dry rain shadow.
- **Cold Ocean Currents**:
    - The **Humboldt Current** brings cold water along the coast, stabilizing the atmosphere and **reducing cloud formation**.
- **Subtropical High Pressure**:
    - Located in a **high-pressure zone**, leading to **descending air** that inhibits rainfall.

FLORA AND FAUNA

- **Adaptations**: Only species that can survive **extreme aridity and high salinity** exist.
- **Flora**: Cacti, salt-tolerant shrubs, and lichens.
- **Fauna**: Small mammals, reptiles, and insects; **fog-nourished species** thrive in coastal areas.
- **Unique Features**: Some microorganisms survive in **hyper-arid soils** and **salt flats**, useful for astrobiology research.

ECONOMIC AND SCIENTIFIC IMPORTANCE

- **Mining**:
  - Rich in **copper, lithium, silver, and nitrates**.
  - Chile's **copper production** heavily depends on mines in the Atacama region.
- **Astronomy**:
  - Clear skies, **low humidity**, and high altitude make it ideal for **observatories**.
  - Hosts **ALMA (Atacama Large Millimeter/submillimeter Array)** and other international telescopes.
- **Tourism**:
  - Attracts visitors to **Valle de la Luna, salt flats, and geysers**.
- **Climate Research**:
  - Serves as a **Mars analogue** for studying **extreme environments, planetary geology, and astrobiology**.

ENVIRONMENTAL CHALLENGES

- **Water Scarcity**: Limited natural water sources; dependent on **fog capture and aquifers**.
- **Climate Change**: Increased mining and human activity may exacerbate **ecosystem stress**.
- **Soil Degradation**: Fragile soil is easily disturbed by human or mining activity.

FUCHSIA FLOWER BLOOM (DESIERTO FLORIDO)

- Native to Chile's Atacama Desert, where it is locally known as **"pata de guanaco".** It thrives in one of the **driest places on Earth.**
- **Cistanthe longiscapa** is an annual herb that completes its life cycle rapidly following sporadic rains. Seeds **remain dormant underground for years**, germinating quickly after rare precipitation, enabling it to take full advantage of brief moisture availability.
- The species employs **Crassulacean Acid Metabolism (CAM) photosynthesis**, a highly efficient water-conserving process. Unlike typical plants, it opens its stomata at night to capture carbon dioxide and stores it as malic acid.

36 APPOINTMENT OF DISTRICT JUDGES

The Supreme Court unanimously held that **judicial officers** who have completed **seven years of practice as advocates before joining the service** will be eligible for **direct recruitment as District Judges under Article 233.**

ELIGIBILITY EXPANSION FOR DISTRICT JUDGES

- Previously, only practising lawyers with seven years' experience could be directly appointed; **in-service judicial officers were excluded.**
- The Court held that **Article 233(2)** provides for qualification for advocates but does not specify any separate qualification for in-service candidates.

APPOINTMENT OF DISTRICT JUDGES

- **Authority of Appointment:** District judges are appointed by the Governor of the State, but only after consulting the High Court of that state.
    - This ensures judicial independence, giving the High Court a significant role in selection.
- **Eligibility:** Traditionally, appointments were made from:
    - Members of the State Judicial Service (subordinate judicial officers), or practicing advocates with a minimum of 7 years' experience.
    - Recent judicial interpretations have clarified that judicial officers with 7 years of prior Bar experience before joining the judicial service are also eligible for elevation to District Judge.

37 UN TO CUT 25% OF ITS GLOBAL PEACEKEEPING FORCE

The United Nations is going to reduce its global peacekeeping operations by 25%, with 13,000–14,000 personnel expected to withdraw from nine missions due to significant U.S. funding cuts.

UN PEACEKEEPING

- It is a key mechanism used by the United Nations to maintain global peace and security.
    - It operates alongside other UN efforts, including conflict prevention, peacemaking, peace enforcement, and peacebuilding.
- **Origin:** It began in 1948 with the creation of the United Nations Truce Supervision Organization (UNTSO) to monitor ceasefires in the Middle East.
    - Initially unarmed and focused on observation, missions remained limited during the Cold War due to global tensions.
- **Expansion:** The 1990s saw a major expansion, with the UN deploying multidimensional operations that integrated military, political, and humanitarian efforts to address civil conflicts, support governance, and protect human rights.
- **Women in Peacekeeping:** Women are vital to conflict resolution and peacebuilding, as they foster community trust, prevent sexual violence, and promote inclusive, sustainable peace by engaging effectively with local populations, especially women and children.

INDIA'S CONTRIBUTIONS

- India has played a significant role in **UN peacekeeping** since its participation in the **Korean operation in 1953**, reflecting its deep-rooted commitment to non-violence and global peace, inspired by Mahatma Gandhi and the ancient principle of **"Vasudhaiva Kutumbakam"**—the belief that the world is one family.
- India has been a key contributor to global peace and security, with over 2,90,000 peacekeepers serving in more than **50 UN missions.**
- India has led the way in integrating women into UN peacekeeping, notably deploying the first all-female Formed Police Unit to Liberia in 2007, which boosted local security and empowered women.
- As of February 2025, over 150 Indian women peacekeepers serve in six key missions, reflecting India's strong commitment to gender parity and the crucial role of women in global peace and security.

38 PLUTONIUM MANAGEMENT AND DISPOSITION AGREEMENT (PMDA)

Russia's lower house of parliament approved withdrawal from the **Plutonium Management and Disposition Agreement (PMDA)** with the United States.

INTRODUCTION

- **Definition**: The **Plutonium Management and Disposition Agreement (PMDA)** is a **bilateral treaty between the United States and Russia** aimed at **limiting the production and stockpiling of weapons-grade plutonium**, and ensuring **its safe, transparent, and irreversible disposition**.
- **Purpose**: To reduce the risk of **nuclear proliferation** and promote **global nuclear security**.

BACKGROUND

- **Cold War Legacy**:
  - After the Cold War, both the US and Russia had **excess weapons-grade plutonium**, raising concerns about proliferation.
- **Initial Agreement**:
  - Signed on **September 1, 2000**.
  - Replaced earlier agreements focused on nuclear weapons reduction.

- **Entry into Force**:
  - Came into effect in **July 2011**, following ratification by both countries.

OBJECTIVES OF PMDA

- **Reduction of Weapons-Grade Plutonium**:
  - Both countries agreed to **dispose of 34 metric tons** each of **plutonium from dismantled nuclear weapons**.
- **Disposition Methods**:
  - Plutonium is converted into **mixed oxide (MOX) fuel** for use in nuclear reactors.
  - Ensures **irreversible transformation from weapons-usable material to civilian fuel**.
- **Transparency and Verification**:
  - Regular **inspection and verification mechanisms** to ensure compliance.
  - Facilitates **mutual trust and non-proliferation objectives**.

MECHANISMS OF PLUTONIUM DISPOSITION

- **MOX Fuel Fabrication**:
  - Weapons-grade plutonium is **blended with uranium** to form MOX fuel.
  - Can be safely used in **civilian nuclear reactors** to generate electricity.
- **Irradiation in Reactors**:
  - MOX fuel undergoes **fission in reactors**, destroying weapons-grade characteristics.
  - Reduces proliferation risk, while contributing to **energy generation**.
- **Monitoring**:
  - **IAEA and national authorities** monitor the conversion and reactor usage.

CHALLENGES

- **Technical Complexity**:
  - Fabrication of MOX fuel and its reactor use require **advanced technology**.
- **Political and Economic Hurdles**:

- Funding delays, domestic political changes, and differing priorities slowed implementation.

- **Trust Deficit**:
  - Mutual verification is critical to overcome **historical suspicion** between the US and Russia.
- **Environmental and Safety Concerns**:
  - Handling plutonium poses **radiation risks**, requiring stringent **safety measures**.

GLOBAL SIGNIFICANCE

- **Nuclear Non-Proliferation**: PMDA contributes to **NPT (Non-Proliferation Treaty) objectives** by reducing excess weapons material.
- **Confidence-Building**: Enhances **strategic stability** between nuclear powers.
- **Template for Other Agreements**: Offers a **framework for managing surplus fissile material** in other countries.

INDIA'S RELEVANCE

- **Nuclear Security Awareness**: India, as a nuclear power, monitors such agreements for **fissile material management** and **non-proliferation trends**.
- **Fissile Material Management**: India has its own mechanisms for **plutonium management under IAEA safeguards** for civil nuclear reactors.
- **Strategic Lessons**: PMDA demonstrates **bilateral cooperation** to reduce **proliferation risks**, which is relevant to India-US, India-Russia, and multilateral negotiations.

CONCLUSION

- The **Plutonium Management and Disposition Agreement (PMDA)** is a **cornerstone in global nuclear security**, reducing excess weapons-grade plutonium while **promoting safe civilian use**.
- Its **technical, political, and verification mechanisms** provide a **model for managing fissile materials globally**, contributing to **non-proliferation and strategic stability**.

39 SAKSHAM

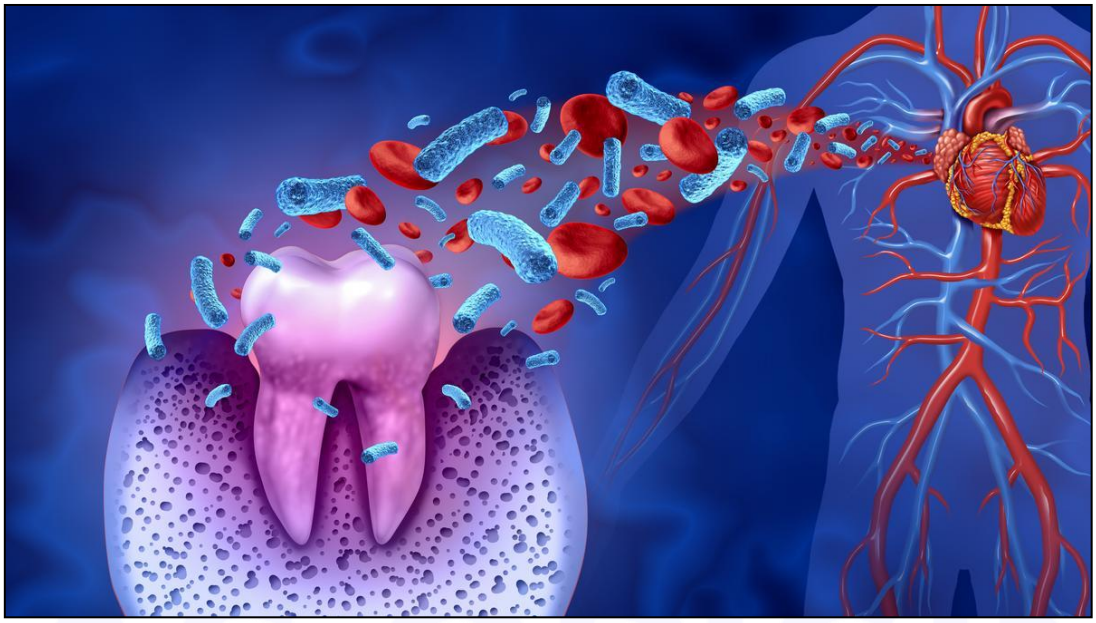
The Indian Army has initiated the procurement of **SAKSHAM (Situational Awareness for Kinetic Soft and Hard Kill Assets Management).**

ABOUT

- It is an indigenously developed **Counter-Unmanned Aerial System (CUAS) Grid System,** to bolster operational readiness against emerging drone threats.
- It is a **modular Command and Control (C2) system** that integrates real-time sensor data, AI-driven analytics, and counter-drone capabilities to secure the **Tactical Battlefield Space (TBS).**
    - TBS is an airspace domain extending up to 3,000 metres (10,000 feet) above ground level.
- It was developed in collaboration with **Bharat Electronics Limited (BEL).**

40 VIRIDANS STREPTOCOCCI: ORAL BACTERIA LINKED TO HEART ATTACKS

A recent study conducted by researchers at Tampere University, Finland, has revealed a surprising connection between oral bacteria and heart attacks. The study examined coronary arteries from 121 sudden-death autopsies and found that Viridans streptococci were present in about 42% of both autopsy and surgical cases, making them the most frequently detected bacterial species



VIRIDANS STREPTOCOCCI

- **Viridans streptococci** are a group of **gram-positive cocci** commonly found in the **oral cavity**, but also present in the **gastrointestinal, respiratory, and female genital tracts**. Normally harmless, they are part of the body's **commensal microbiota**.
- However, under certain conditions, they can turn pathogenic, being **a leading cause of infective endocarditis (IE)** an infection that affects the inner lining of the heart, especially in individuals with **previously damaged cardiac tissue**.

VIRIDANS STREPTOCOCCAL BIOFILM FORMATION

- The bacteria have the ability to form **biofilms** sticky, protective layers that allow them to adhere to surfaces such as **atherosclerotic plaques** (fatty buildups inside arteries).
- Within these biofilms, bacteria remain **hidden from the immune system**, enabling them to persist undetected for long periods.

LINK BETWEEN ORAL BACTERIA AND HEART DISEASE:

The study highlights how **biofilm-forming Viridans streptococci** can play a **direct role in triggering heart attacks**:

- **Biofilm Stability:** The bacteria remain embedded deep within arterial plaques, shielded from immune response.
- **Biofilm Disruption:** Over time, fragments of the biofilm can **break loose**.
- **Inflammation Trigger:** When released, these bacteria provoke **inflammation in the arterial wall**, weakening the **fibrous cap** that covers the fatty plaque.
- **Plaque Rupture:** The weakened cap eventually **ruptures**, leading to **clot formation**, which can **block blood flow** and cause a **heart attack**.

SIGNIFICANCE OF THE STUDY:

- The findings underscore the **link between oral health and cardiovascular health**, suggesting that **oral bacteria may be silent contributors to heart disease**.
- The presence of Viridans streptococci in coronary plaques demonstrates the importance of **maintaining good oral hygiene** to reduce systemic inflammation and cardiac risk.

CONCLUSION

The Tampere University study provides crucial evidence that the **mouth-heart connection** is not merely coincidental but biologically plausible.

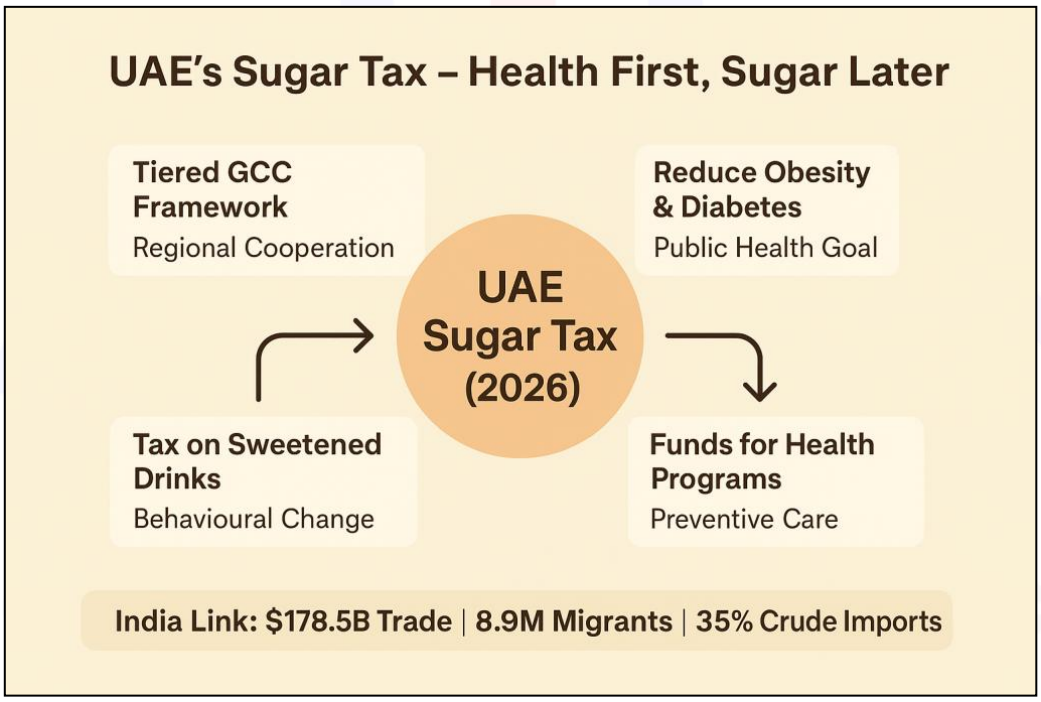
By forming biofilms within arterial plaques, **Viridans streptococci** act as hidden players in the development of **atherosclerosis and heart attacks** — highlighting how **preventive dental care** may play an unexpected role in **cardiovascular protection**.

41 UAE INTRODUCES SUGAR TAX TO PROMOTE PUBLIC HEALTH

The United Arab Emirates (UAE) has announced that it will implement a sugar tax on sweetened beverages starting January 1, 2026. The move aims to reduce high sugar consumption and associated health risks such as obesity, diabetes, and cardiovascular diseases. This initiative aligns with the Gulf Cooperation Council (GCC)'s regional framework for a tiered excise on sugar-sweetened beverages (SSBs).

SUGAR TAX

- A **sugar tax** is a **fiscal measure** that increases the retail price of sugary drinks through taxation to **discourage excessive sugar intake** and **encourage healthier choices** among consumers.
- Globally, countries like the **UK, Mexico, and South Africa** have introduced similar taxes with measurable declines in sugary drink consumption.



OBJECTIVES:

- Reduce sugar-related health issues.
- Encourage product reformulation by beverage companies.
- Generate revenue for public health and awareness programs.
- In the UAE, this step forms part of a broader **"Healthier UAE Vision"**, which also targets smoking and trans-fat consumption.

INDIA'S APPROACH

- India already imposes one of the world's **highest tax burdens on sugary drinks**, including:
  - **28% GST**,
  - **40% Sin Tax**, and
  - **12% Compensation Cess**.
- Together, these aim to discourage consumption and offset healthcare costs linked to **lifestyle diseases**. India's measures align with the **World Health Organization's (WHO)** recommendation to use fiscal tools for improving public health outcomes.

ABOUT THE GULF COOPERATION COUNCIL (GCC)

- The **GCC** is a **regional political and economic alliance** formed in **1981** to strengthen **political, financial, and security cooperation** among its six members — **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE**.
- **Security Arm:** *Peninsula Shield Force* (established 1984).
- **Regional Policy:** Increasingly focused on economic diversification, health, and sustainability.

INDIA–GCC RELATIONS

- **Trade:** Reached **$178.56 billion in FY2025**, forming **15.4% of India's global trade**.
- **Energy Security:** GCC supplies **~35% of India's crude oil** and **~70% of its imported natural gas**.

- **Diaspora:** Over **8.9 million Indians** live in GCC nations, contributing **38% of India's total remittances (FY2024)**.
- Thus, UAE's fiscal and health policies have indirect implications for **India's trade, employment, and economic engagement** in the Gulf.

SIGNIFICANCE

- The UAE's sugar tax reflects a growing global shift towards **preventive healthcare through economic policy**.
- For India and other developing nations, it underscores the importance of **integrating fiscal instruments with public health strategies** to curb **non-communicable diseases (NCDs)** and reduce healthcare costs.

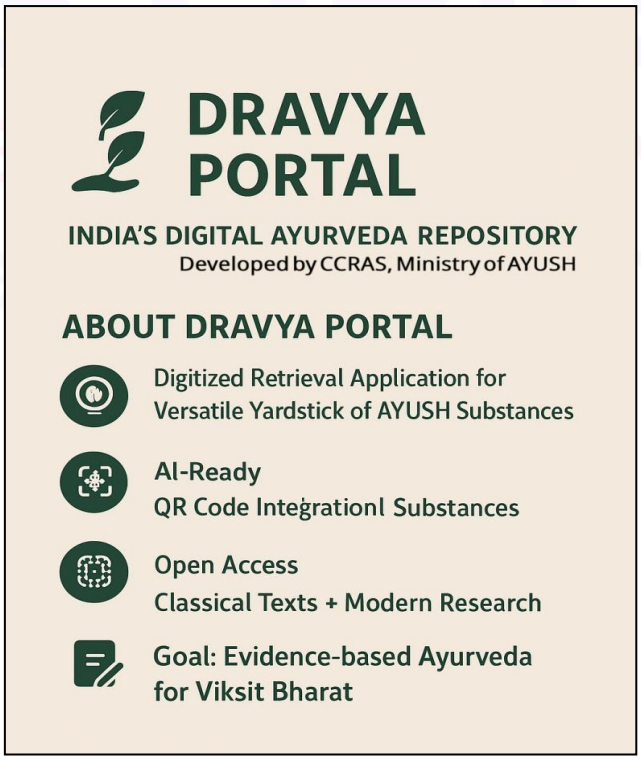
42 DRAVYA PORTAL: DIGITISING INDIA'S AYURVEDIC KNOWLEDGE BASE

The Ministry of Ayush, through the Central Council for Research in Ayurvedic Sciences (CCRAS), has launched the DRAVYA Portal — Digitized Retrieval Application for Versatile Yardstick of AYUSH Substances. The portal serves as India's largest digital repository of Ayurvedic ingredients and products, aimed at modernising and standardising traditional medicinal knowledge.

In its **first phase**, the DRAVYA Portal will catalogue information on **100 key medicinal substances**, integrating both classical Ayurvedic knowledge and modern scientific validation.

DRAVYA PORTAL

- Digitized Retrieval Application for Versatile Yardstick of AYUSH Substances (DRAVYA)
- **Developed by:** Central Council for Research in Ayurvedic Sciences (CCRAS), under the Ministry of Ayush.
- **Objective:** To create a comprehensive and dynamic database on Ayurvedic raw materials, formulations, and therapeutic properties.
- **Coverage:** Combines information from **classical Ayurvedic texts**, **scientific literature**, and **field studies**.



KEY FEATURES:

- **AI-Ready Framework:** Designed to integrate with the **Ayush Grid** and upcoming digital health initiatives for evidence-based research.
- **Comprehensive Search:** Users can explore medicinal substances used across Ayurveda and other AYUSH systems.
- **Multi-Domain Data:** Each entry includes details on **pharmacotherapeutics, botany, chemistry, pharmacology, and safety**.
- **QR Code Integration:** Enables standardised information display in medicinal plant gardens, herbariums, and research repositories.
- **Dynamic and Open Access:** The portal continuously evolves with verified data from modern research and classical sources.

SIGNIFICANCE:

- **Knowledge Preservation:** Bridges traditional Ayurvedic wisdom with modern scientific validation.
- **Standardization:** Facilitates evidence-based policymaking and quality assurance in herbal drugs.
- **Research & Innovation:** Supports AI-driven drug discovery and formulation development.
- **Global Collaboration:** Positions India as a leader in **digital traditional medicine data architecture** under the *One Health* framework.

WAY FORWARD

- Integration with **Pharmacopoeia Commission for Indian Medicine & Homoeopathy (PCIM&H)** for standard drug codification.
- Expansion to cover **5000+ medicinal substances** over subsequent phases. Promotion of **interdisciplinary research** between Ayurveda, biotechnology, and pharmacology sectors.

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