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Foreword

Dear Aspirants,

This magazine by the Plutus IAS team is designed in such a fashion that it holistically covers all the relevant and important topics for the Civil Services Exam to make aspirants exam-ready. Plutus IAS Current Affairs Magazine is a secondary source of information; the newspaper will remain the primary source for the preparation of Current Affairs.

Now, Current Affairs are no longer merely current; they are Contemporary Affairs. Questions asked in both Prelims as well as the Mains assess the conceptual clarity of an aspirant. This magazine is prepared with the aim of helping you understand the interlinkages of both Static and Dynamic news events and internalize the concepts required to crack this examination.

The Plutus IAS team wishes you all the best. Prepare for the UPSC Civil Services Examination with a calm, composed, or serene mind and some patience to crack this examination in one go.

Team
Plutus IAS

Sources:
The Hindu | The Indian Express | The Economic Times | Press Information Bureau | PRS Legislative Research | IDSA: Institute for Defense Studies and Analysis | Yojana and Kurukshetra | Lok Sabha and Rajya Sabha Debates.

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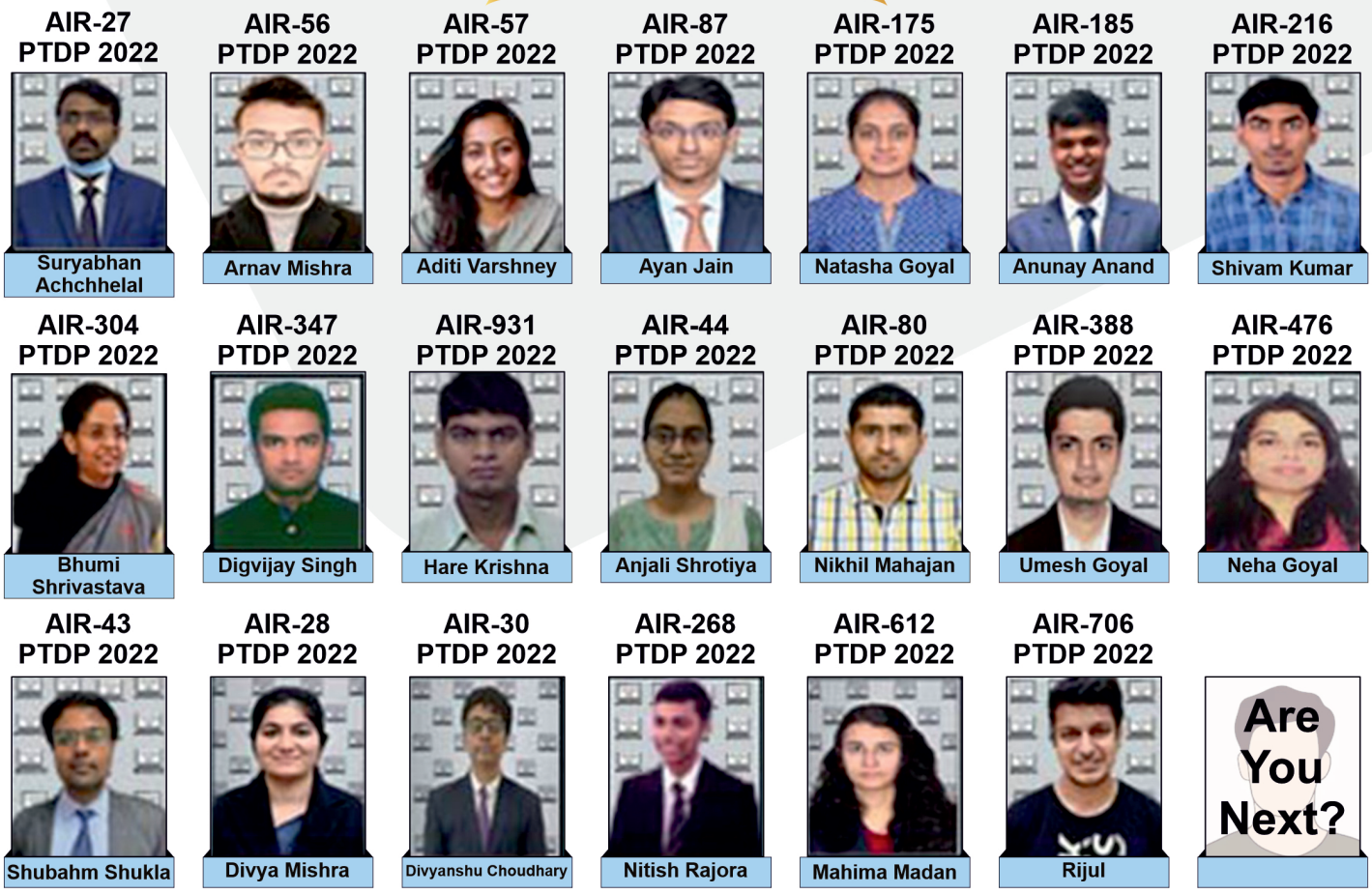

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SEPTEMBER 2025
CURRENT AFFAIRS

CONTENTS

SENIOR ADVOCATE DESIGNATION IN INDIA: REFORMING FOR TRANSPARENCY, EQUITY, AND EXCELLENCE

WHY IN THE NEWS?

The Supreme Court gave a key judgment revisiting earlier cases on senior lawyer designation. Though overlooked as an internal court issue, it raised concerns about inequality in the legal profession, elitism, and the fairness of classifying lawyers under Section 16 of the Advocates Act, 1961.

CONSTITUTIONAL AND LEGAL CONCERNS

1. **Vague Criteria under Section 16:** Section 16 of the Advocates Act classifies advocates into "senior" and "others" based on subjective terms like "ability" and "standing at the Bar," without clear legal benchmarks.
2. **Concerns Under Article 14:** The classification may violate Article 14 by enabling unequal treatment among similarly qualified lawyers, lacking a justifiable or objective basis.
3. **Fails Reasonable Classification Test:** Section 16 arguably does not meet the test of intelligible differentia and rational nexus, making the classification legally questionable.
4. **Indira Jaising Case (2017):** The Supreme Court upheld the designation process but admitted flaws in transparency and recommended reforms like fixed selection committees and point-based criteria.
5. **Limited Scope in 2025 Jitender Judgment:** The Court reaffirmed Section 16's validity but did not evaluate its constitutional soundness or refer the issue to a larger Bench.
6. **Impact on Equality and Access:** Privileges given to senior advocates—like pre-audience—can marginalize others and compromise equal access to justice.
7. **Need for Re-examination:** Legal experts urge a review of Section 16 to ensure it aligns with modern values of inclusiveness, fairness, and equal opportunity in the legal profession.

INSTITUTIONAL AND PROCEDURAL ISSUES

1. **Opaque Selection Process under Supreme Court Rules:** The 2013 Supreme Court Rules (Order IV, Rule 2) outline an application-based, point-evaluation system for senior advocate designation. However, the process lacks transparency and is seen as discretionary.
2. **Vague and Subjective Criteria:** Terms like "standing at the Bar" or "ability" are undefined, allowing wide interpretation by judges or committees, resulting in inconsistent and arbitrary decisions.
3. **Excessive Judicial Discretion:** Judges often rely on personal familiarity, courtroom visibility, and reputation, unintentionally favoring lawyers from elite urban settings over equally qualified but lesser-known advocates.
4. **Lack of Transparency and Accountability:** There is little public disclosure on how candidates are evaluated, how points are awarded, or why applications are rejected, undermining faith in the process.

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5. **Elite Networks and Unequal Access:** Lawyers with connections to powerful chambers or senior judges often benefit, while equally capable advocates from lower courts or marginalized communities are overlooked.

6. **Non-Diverse Selection Committees:** Many selection panels lack diversity across caste, gender, and region, reinforcing structural biases and limiting inclusive representation.

7. **No Independent Oversight Mechanism:** Unlike judicial appointments, the senior designation process lacks external review or third-party accountability, leaving space for favoritism and institutional opacity.

SOCIO-ECONOMIC AND REPRESENTATION ISSUES

1. **Underrepresentation of Marginalized Groups:** Women, Dalits, OBCs, and rural-background lawyers remain significantly underrepresented among senior advocates.

2. **Bias Toward Urban Practitioners:** Advocates practicing in metro cities like Delhi or Mumbai have more visibility, leading to better chances of designation.

3. **Language and Vernacular Disadvantage:** Non-English-speaking lawyers face systemic exclusion, especially in higher courts where proceedings are mostly in English.

4. **Class and Caste-Based Disparities:** Elite networks and caste privilege continue to dominate judicial recognition and client inflow.

5. **Lack of Role Models and Mentors:** Marginalized lawyers often lack access to mentors who can guide them through the complex professional ladder.

6. **Exclusion from High-Profile Cases:** Senior designation boosts chances of getting constitutional or high-value cases, a cycle that leaves many behind.

7. **Public Perception of Elitism:** A visibly exclusive legal profession affects trust in justice delivery and undermines inclusivity in the judiciary.

EDUCATION AND ACCESS BARRIERS

1. **High Cost of Legal Education:** Top law schools (NLUs) are expensive, excluding students from economically weaker sections.

2. **Language Barriers:** English-centric instruction marginalizes talented students from vernacular-medium schools.

3. **Digital and Infrastructure Divide:** Lack of internet access and academic support in rural areas hinders competitive preparation.

4. **Disparity Between NLUs and Local Law Colleges:** Students from regional colleges lack exposure, internships, and alumni networks compared to NLU graduates.

5. **Coaching and Preparation Gaps:** Access to CLAT coaching or internships is limited for first-generation or rural learners.

6. **Inadequate Faculty and Training:** Many local law institutions suffer from poor faculty quality and outdated curricula.

7. **Need for Capacity Building:** Legal aid clinics, regional research centres, and skill-development programs can help bridge the educational divide.

COMPARATIVE AND INTERNATIONAL PRACTICES

1. **United Kingdom – Queen's Counsel (QC):** Transparent application system with criteria like merit, ethics, and public interest involvement.

2. **United States – Informal Hierarchy:** No formal "senior advocate" status; reputation and case history matter more than titles.

3. **Canada and Australia:** Use independent committees with published guidelines and diversity representation.

4. **Emphasis on Peer Review:** Many jurisdictions involve external review by practicing lawyers or clients for accountability.

5. **Clear Benchmarks and Public Disclosure:** Global best practices include openness in scores, reasons for selection, and public listing of criteria.

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6. **Inclusion of Diversity Goals:** Some countries mandate minimum gender or minority representation in legal honours or appointments.
7. **Learning for India:** Adopting these models could reduce discretion, increase fairness, and democratize access to recognition.

JUDICIAL REFORM AND POLICY NEEDS

1. **Independent Selection Committee:** Introduce panels with judges, lawyers, academics, and public representatives for balanced evaluation.
2. **Fixed Evaluation Criteria:** Create detailed guidelines for assessing merit—number of cases argued, quality of arguments, pro bono work, etc.
3. **Avoid Judicial Monopoly:** Reduce excessive discretion by spreading decision-making across institutions.
4. **Periodic Review of Rules:** Review and update the designation framework every 5 years to adapt to changing legal needs.
5. **Legislative vs. Judicial Reform Debate:** Clarify whether Parliament should amend Section 16 or whether reform lies with the judiciary alone.
6. **Bar Council's Role:** Empower Bar Councils to frame equitable policies, monitor outcomes, and report exclusion patterns.
7. **Adopt National Guidelines:** Bring uniformity across High Courts and Supreme Court through a central framework.

ETHICAL AND PROFESSIONAL CONSIDERATIONS

1. **Merit vs. Proximity to Power:** Designation should reflect legal excellence, not personal connections or visibility.
2. **Distorted Client Perceptions:** Clients often equate seniority with quality, regardless of real merit, affecting fair legal representation.
3. **Fee Disparities and Access Issues:** Senior advocates charge disproportionately high fees, limiting their availability for ordinary litigants.
4. **Prestige over Performance:** The title sometimes rewards perception over consistent performance or public service.
5. **Loss of Equal Opportunity Ethos:** Preferential treatment given to senior advocates weakens the foundation of a level-playing legal profession.
6. **Moral Responsibility of Senior Advocates:** They should mentor juniors, take up pro bono work, and help diversify the profession.
7. **Need for Code of Conduct:** Introduce ethical standards for senior advocates regarding fairness, inclusivity, and client accessibility.

WAY FORWARD

1. **Transparent, Merit-Based Criteria:** Ensure uniform and measurable evaluation of applications for senior designation.
2. **Diverse Selection Committees:** Include women, marginalized groups, and independent members to ensure inclusive decisions.
3. **Equal Recognition for Regional Talent:** Recognize high-quality lawyers from trial courts and regional benches.
4. **Strengthen Regional Legal Education:** Invest in regional law schools, scholarships, and skill-based vernacular programs.
5. **Public Disclosure and Accountability:** Make evaluation methods and results transparent to build public confidence.
6. **Periodic Review Mechanism:** Establish a system for reviewing and revalidating senior advocate status every few years.
7. **Judicial and Legislative Synergy:** Encourage collaboration between the judiciary and legislature to align legal recognition with constitutional values.

CONCLUSION

The designation of senior advocates under Section 16 of the Advocates Act, while intended to recognize legal excellence, has evolved into a process marked by opacity, elitism, and structural inequality.

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Judicial discretion without adequate checks, lack of transparency, and underrepresentation of diverse voices raise serious constitutional and institutional concerns. While courts have acknowledged some flaws, meaningful reform remains overdue. A transparent, inclusive, and merit-based system—backed by judicial accountability, diverse representation, and educational upliftment—is essential to uphold the principles of equality and access to justice. Revisiting this framework is not just a legal necessity but a democratic imperative.

JUDICIAL POWER PLAY: ROSTER ALLOCATION AND THE SUPREME COURT'S ROLE

WHY IN THE NEWS?

The Supreme Court's recent censure of an Allahabad High Court judge for an "absurd" order has reignited debate over the extent of the apex court's authority in the internal functioning of High Courts, especially concerning the 'Master of the Roster' powers vested in a High Court Chief Justice. This raises constitutional questions on judicial independence, hierarchy, and the scope of Supreme Court powers under Articles 141 and 142.

BACKGROUND

1. **Incident:** An SC Bench led by Justices J.B. Pardiwala and R. Mahadevan ordered that Justice Prashant Kumar of the Allahabad HC be assigned only alongside a senior judge and excluded from criminal case rosters until retirement, following a disputed judgment.
2. **Reaction:** Chief Justice Arun Bhansali of the Allahabad HC and sections of the Bar expressed concern, viewing it as intrusion into the CJ's administrative prerogatives.
3. **Subsequent Clarification:** After communication from CJI B.R. Gavai, the SC modified its order, clarifying it had no intent to override the 'Master of the Roster' principle.

KEY CONSTITUTIONAL AND JUDICIAL CONCEPTS

1. **Master of the Roster**

   Meaning: The sole administrative authority of the Chief Justice (SC or HC) to form benches, allocate cases, and determine judicial work distribution.

Important Precedents:

State of Rajasthan v. Prakash Chand (1998) – Only the CJ decides bench constitution and case allocation.

State of Rajasthan v. Devi Dayal (1959) – CJ determines single-judge or division bench jurisdiction.

Mayavaram Financial Corporation (Madras HC, 1991) – CJ holds inherent authority to assign judicial business.

2. **Position of the Supreme Court in Judicial Hierarchy**

   Article 141: The law declared by SC is binding on all courts.

   Article 142: Empowers SC to pass orders necessary for "complete justice," even beyond procedural limitations.

   Tirupati Balaji Developers (2004) – Describes SC as the "elder brother" in judicial functioning but without direct administrative control over HCs.

3. **Judicial Independence and Oversight:** High Courts enjoy constitutional autonomy but operate within a unified judicial structure, allowing SC intervention only in rare circumstances where the rule of law is at risk.

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CORE ISSUES EMERGING

1. **Extent of SC Powers:** Can SC legitimately give directions affecting a HC CJ's administrative prerogatives on roster allocation?
2. **Maintaining Standards vs Autonomy:** How to ensure judicial discipline without encroaching upon HC independence.
3. **Use of Article 142:** Whether preventive administrative steps to avoid recurring judicial errors fall within its ambit.
4. **Internal Judicial Separation of Powers:** Balancing hierarchy with institutional equality.

IN-HOUSE PROCESSES VS PUBLIC INTERVENTION

Formal Pathways:

Impeachment by Parliament for serious misconduct or incapacity.

In-house inquiry for less severe matters.

The SC's Approach Here:

Issued a public directive in open court instead of confidentially addressing the matter.

The intent was corrective — through mentoring and bench pairing — rather than punitive removal from office.

SUGGESTED WAY FORWARD

1. **Establish Clear Protocols:** Define situations where SC may intervene in HC administrative matters without breaching autonomy.
2. **Strengthen In-House Mechanisms:** Improve internal grievance and correctional processes to handle such cases discreetly.
3. **Capacity Building for Judges:** Introduce continuous training, peer reviews, and mentorship programmes, particularly for handling sensitive cases.
4. **Mutual Respect for Roles:** Retain the CJ's control over rosters while recognising SC's exceptional power to act in the interest of justice.

CONCLUSION

The 'Master of the Roster' rule is a cornerstone of judicial independence in India, ensuring that case allocation remains free from external influence. However, it cannot be viewed as an absolute bar to Supreme Court intervention when an extraordinary situation threatens the credibility of the judiciary or the uniformity of legal standards. Article 142 gives the SC a rare and powerful corrective tool — but one that must be exercised with restraint, keeping institutional harmony and constitutional boundaries intact.

WITHDRAWING TO REFORM: THE ROAD TO A CLEARER INCOME TAX LAW

WHY IN THE NEWS?

On 8 August 2025, Finance Minister Nirmala Sitharaman informed the Lok Sabha (India's lower house of Parliament) that the Income-Tax Bill, 2025 was being withdrawn. This decision came after extensive scrutiny and recommendations from a Parliamentary Select Committee.

TIMELINE OF KEY EVENTS

1. **13 February 2025:** The Income-Tax Bill, 2025, was first introduced in the Lok Sabha.
2. **21 July 2025:** A Lok Sabha Select Committee, chaired by MP Baijayant Panda, submitted its detailed report after examining the bill.
3. **8 August 2025:** The Finance Minister officially moved to withdraw the original bill, and the motion was accepted.
4. **11 August 2025:** The government is expected to introduce a revised version of the bill.

COMPARISON: INCOME-TAX ACT, 1961 VS INCOME-TAX BILL, 2025

Aspect	Income-Tax Act, 1961	Income-Tax Bill, 2025 (Withdrawn Draft)
Origin & Age	Enacted in 1961, over 60 years old	Introduced in 2025 to modernize the tax law
Language & Structure	Legalistic, technical, complex	Plain language, modern structure, easier to read
Organization	Not chaptered logically; harder for users	Reorganised into chapters & schedules, better navigation
Computation Style	Word-heavy, less use of formulas	More use of tables & formulas for computation clarity
Clarity for Taxpayers	High legal complexity; needs professionals to interpret	Simpler for individual taxpayers and professionals
Assessment & Appeals	Outdated and cumbersome dispute resolution pathways	Introduces streamlined assessment and modern appeal systems
Refunds & Late Returns	Some strict rules, limited flexibility	Relaxed rules—refunds allowed even after due date (as per committee suggestion)
Definition Consistency	Many outdated or scattered definitions	Attempted consistency, though initial draft had cross-reference issues
Headline Tax Rates	Set periodically via amendments	No change proposed to rates in 2025 draft—focus was structure, not rates
Treatment of Charities	Preserved certain exemptions for religious trusts	Initial draft widened tax net, committee suggested restoring exemptions
House Property Taxation	Well-settled provisions	Draft risked increasing tax on vacant houses—committee flagged and suggested correction
Drafting Errors	Well-tested over decades	2025 draft had many errors and ambiguities (as per Select Committee)
Compliance Burden	High paperwork and interpretation needed	Lower compliance goal: easier forms and filing
Current Status	Still in force	Withdrawn on 8 August 2025; revised version coming on 11 August 2025

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WHAT WAS IN THE 2025 BILL?

1. **Re-organisation & Plain-Language Drafting**

   Laws were to be reorganized into clear chapters and schedules.

   Increased use of tables and formulas to reduce ambiguity and litigation.

2. **Administrative Streamlining**

   Clearer timelines and processes for collection, recovery, and appeal.

   Introduction of alternative dispute resolution pathways.

3. **No Major Change in Tax Rates**

   The bill did not propose changes to headline tax rates.

   The focus was on clarity and simplification, not rate adjustments.

4. **Focus on Specific Technical Areas**

   Topics like residency rules, TDS/TCS mechanics, and charitable trust rules were highlighted for scrutiny and refinement.

WHY WAS THE BILL WITHDRAWN?

The bill was referred to a Parliamentary Select Committee, which is a standard process for complex bills. The Committee's mandate was to:

Gather feedback from stakeholders such as tax professionals, industry groups, and authorities.

Identify problems in drafting and implementation.

Recommend necessary changes.

KEY FINDINGS BY THE COMMITTEE:

Found many drafting mistakes, unclear wording, and potentially harmful rules.

Recommended hundreds of changes, including:

Fixing drafting errors.Retaining some existing tax benefits.

Making the law easier to understand.

WHY NOT JUST AMEND IT?

Making hundreds of amendments in Parliament would be slow and chaotic. It was simpler and more efficient to withdraw the entire bill and introduce a fresh version with all corrections included.

EXAMPLES OF COMMITTEE RECOMMENDATIONSS

1. **Charities / Anonymous Donations**

   Original draft taxed anonymous donations to religious-cum-charitable trusts.

   Committee recommended preserving the previous exemption to protect such trusts.

2. **Vacant House Property Taxation**

   Original wording could have led to increased taxes on vacant properties.

   Recommended redrafting to retain earlier tax positions and prevent undue burden.

3. **Refunds and Late Returns**

   Original bill disallowed refunds for late filers.

   Committee proposed allowing refunds even if returns are filed after the due date.

4. **Definitions and Drafting Errors**

   Noted missing or inconsistent definitions (e.g., “capital asset”, “beneficial owner”).

   Recommended precise redrafting to ensure clarity.

5. **Lower Compliance Burden**

   Suggested simplifying forms and rules for individuals, businesses, and professionals.

WHAT THIS MEANS FOR YOU

1. **No Immediate Changes:** The 1961 Income Tax Act still applies for now.
2. **Clearer Future Law:** The revised bill is expected to be easier to understand and implement, reducing confusion and surprises.

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3. **Targeted Relief:** If you own property, run a charity, or are a salaried taxpayer, the new provisions could offer direct benefits.

CONCLUSION

The withdrawal of the Income-Tax Bill, 2025, reflects the government's responsiveness to detailed scrutiny and stakeholder feedback. The revised version, expected soon, aims to bring a modern, clearer, and more user-friendly income tax law for India, without sudden shocks to taxpayers. All eyes are now on 11 August 2025, when the corrected draft will be introduced.

NOMINATED MLAS IN UNION TERRITORIES: CONSTITUTIONAL POSITION AND CHALLENGES

WHY IN THE NEWS?

The issue of who decides nominations to Union Territory Assemblies has come under focus after the Union Home Ministry's affidavit before the Jammu & Kashmir and Ladakh High Court. The Ministry argued that the Lieutenant Governor (LG) of J&K can nominate five members to the Legislative Assembly without consulting the Council of Ministers. This raised questions about democratic accountability in UTs with legislatures such as J&K, Delhi, and Puducherry.

CONSTITUTIONAL FRAMEWORK: NOMINATED MEMBERS IN THE INDIAN LEGISLATURES

1. **Lok Sabha (Article 331 – repealed in 2020):** Earlier allowed the President to nominate up to two Anglo-Indian members; this provision was removed by the 104th Constitutional Amendment Act, 2019.

2. **Rajya Sabha (Article 80):** The President can nominate 12 members from fields such as literature, science, art, and social service, on the aid and advice of the Union Council of Ministers.

3. **State Legislative Assemblies (Article 333 – repealed in 2020):** Governors could nominate one Anglo-Indian member to State Assemblies; discontinued by the 104th Amendment.

4. **State Legislative Councils (Article 171):** Nearly one-sixth of members are nominated by the Governor on the advice of the State Council of Ministers, usually from fields of literature, science, art, cooperative movement, and social service.

5. **Union Territories with Legislatures:** The Delhi Assembly (GNCTD Act, 1991) has no provision for nomination, whereas the Puducherry Assembly (Government of UTs Act, 1963) allows up to 3 nominated members.

6. **Jammu & Kashmir Reorganisation Act, 2019 (amended 2023):** Provides for 5 nominated members: two women, two Kashmiri migrants, and one displaced person from Pakistan-occupied Kashmir.

7. **Role of President and Governors:** In Parliament and State legislatures, nominations are made formally by the President/Governors, but always based on the aid and advice of the Council of Ministers (Union or State).

8. **Elected vs Nominated Members:** Elected members represent the direct mandate of the people, while nominated members are meant to bring specialised knowledge, inclusivity (minorities, migrants, women), or cultural representation into legislatures.

UNION TERRITORIES AND GOVERNING ACTS

1. **Delhi – GNCTD Act, 1991:** Provides for 70 elected members; no provision for nominated MLAs.

2. **Puducherry – UTs Act, 1963:** Allows 30 elected members and up to 3 nominated members by the Union Government.

3. **J&K – Reorganisation Act, 2019:** Provides for 90 elected MLAs and empowers LG to nominate 5 special members.

4. **Source of Power:** In Puducherry, nominations are made by the Union Government, while in J&K, by the LG.

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5. **Delhi's Exception:** No nominations, reflecting its distinct constitutional setup.
6. **Parliament's Role:** Nomination powers in UTs are determined by Parliamentary Acts, unlike States.
7. **Legal-Political Tensions:** These variations have led to disputes, e.g., in Puducherry and Delhi, over Centre vs UT powers.

JUDICIAL INTERPRETATION

1. **Lakshminarayanan Case (2018):** Madras HC upheld Union Govt's power to nominate 3 members in Puducherry.
2. **Court's Recommendation:** Suggested statutory clarity on procedure and authority for nominations.
3. **Supreme Court's Reversal (2019):** Set aside HC recommendations, affirming Union Govt's discretion.
4. **Impact on UTs:** Reduced role of elected governments in nomination processes.
5. **Delhi Case (2023):** SC introduced the 'Triple Chain of Command' to strengthen accountability.
6. **LG's Limitation:** Held that the LG must follow the advice of the Council of Ministers, except in reserved matters.
7. **Wider Implication:** Doctrine can extend to nominations, ensuring democratic oversight in UT legislatures.

TRIPLE CHAIN OF ACCOUNTABILITY

1. **Concept Introduced:** The Supreme Court (2023) framed the "triple chain of command" for democracy.
2. **First Link:** Civil servants accountable to Ministers for day-to-day governance.
3. **Second Link:** Ministers accountable to the Legislature through debates, motions, and questions.
4. **Third Link:** Legislature accountable to the Electorate, representing the people's mandate.
5. **Purpose:** Ensures continuous democratic accountability and avoids unchecked authority.
6. **Relevance for UTs:** Implies LGs should act on the aid and advice of elected governments in nominations.
7. **Safeguarding Democracy:** Prevents nominated MLAs from distorting electoral outcomes in small Assemblies.

DEMOCRATIC CONCERNS

1. **Risk of Majority Distortion:** In smaller Assemblies such as Puducherry or J&K, nominated MLAs can tilt the balance of power, raising concerns about democratic legitimacy.
2. **Undermining Electoral Mandate:** The presence of nominated members risks diluting the will of the electorate by giving unelected individuals decision-making power.
3. **Union vs Elected Government Tensions:** Political differences between the ruling party at the Centre and the UT government often lead to clashes over nomination powers.
4. **Weakening Local Autonomy:** Excessive use of nomination provisions may restrict the ability of UTs to act independently in their governance.
5. **Possibility of Partisan Appointments:** Nominations may be misused by the Union government to insert political allies rather than experts.
6. **Erosion of Accountability:** Unlike elected members, nominated MLAs are not directly accountable to the people, creating a democratic gap.
7. **Public Distrust in Institutions:** Frequent conflicts over nominations can reduce citizens' trust in representative institutions.

SPECIAL CASE OF JAMMU & KASHMIR

1. **Transition from State to UT:** The 2019 reorganisation transformed J&K into a UT, reducing its legislative autonomy compared to its earlier statehood status.

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2. **Constitutional Promise of Statehood:** The Government of India has assured restoration of statehood, but delays fuel uncertainty and democratic discontent.

3. **Representation for Women:** The provision to nominate women members seeks to address gender underrepresentation in the UT's Assembly.

4. **Migrants' Representation:** Nominations for migrants, including Kashmiri Pandits, aim to ensure voices of displaced populations are not excluded.

5. **PoK Displaced Persons:** Special seats are earmarked for those displaced from Pakistan-occupied Kashmir, reflecting J&K's unique political context.

6. **Role of the Lieutenant Governor:** While the LG has nomination powers, democratic principles demand acting on the advice of the elected Council of Ministers.

7. **Symbol of Federal Sensitivity:** J&K nominations highlight the need for balancing national security concerns with democratic aspirations of local people.

CENTRE–STATE/UT RELATIONS IN FEDERALISM

1. **Asymmetry in Federal Structure:** Nomination powers in UTs highlight the asymmetrical nature of Indian federalism, unlike states which enjoy greater autonomy.

2. **Governor vs LG Role:** In states, Governors act on the advice of the Council of Ministers, whereas UT LGs often exercise more discretion, creating imbalances.

3. **Union Supremacy in UTs:** The Centre retains greater control over UTs, with nomination powers reflecting this dominance.

4. **Democratic Deficit in UTs:** The nominated MLAs reduce the effective role of elected representatives in shaping policies, weakening federal democracy.

5. **Comparative Perspective:** Unlike states where nomination is limited to experts (e.g., Anglo-Indian representation earlier), UT nominations often serve political purposes.

6. **Conflict Potential:** Divergent political alignments between Centre and UT governments often turn nomination into a site of conflict.

7. **Autonomy vs Centralisation Debate:** The tension reflects a larger constitutional debate on whether UTs should be autonomous mini-states or centrally governed territories.

WAY FORWARD

1. **Clear Statutory Guidelines:** Parliament should frame unambiguous rules on who can be nominated, preventing arbitrary use of discretion.

2. **Aid and Advice Principle:** LGs must act on the advice of the elected Council of Ministers to preserve democratic accountability.

3. **Limit Union Interference:** Nominations should not be used as tools of central political control but as mechanisms for expertise and representation.

4. **Transparency in Selection:** The process of nominating MLAs should be made transparent to prevent misuse for partisan gains.

5. **Strengthening UT Democracy:** Provisions must ensure that the electoral mandate remains primary, with nominations only supplementing it.

6. **Inclusive Representation:** Nominations should genuinely reflect underrepresented groups such as women, minorities, and displaced persons.

7. **Restoration of J&K Statehood:** As a democratic necessity, statehood must be restored to J&K to ensure greater legislative autonomy and people's trust.

8. **Balancing Federal Principles:** A middle path must be found that safeguards Union interests without eroding the democratic rights of UT legislatures.

CONCLUSION

The question of nominated members in Union Territory legislatures strikes at the core of India's democratic and federal design. While the

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constitutional framework recognizes the need for inclusivity, expertise, and special representation, the misuse of nomination powers risks undermining the electoral mandate and weakening local autonomy. Judicial interpretations, especially the "triple chain of accountability," underscore that real authority must ultimately rest with the elected representatives, not unelected appointees. The case of Jammu & Kashmir further highlights the sensitivities involved in balancing national imperatives with democratic aspirations

Prelims Questions

Q1. With reference to the designation of Senior Advocates in India, consider the following statements:

1. The Advocates Act, 1961 provides for the classification of advocates as Senior and other advocates.
2. Only the Supreme Court has the authority to designate Senior Advocates.
3. The process for designation involves a point-based system under the Supreme Court Rules, 2013.

Which of the above statements is/are correct?

A. 1 and 2 only B. 1 and 3 only

C. 2 and 3 only D. 1, 2 and 3

Q2. With reference to the "Master of the Roster" principle in the Indian judiciary, consider the following statements:

1. It grants the President of India the authority to assign cases to benches in the Supreme Court and High Courts.
2. It is based on judicial pronouncements and not explicitly mentioned in the Constitution.
3. Only the Chief Justice (of SC or HC) has the exclusive power to constitute benches and allocate cases.

Which of the statements given above is/are correct?

A. 1 and 2 only B. 2 and 3 only

C. 1 and 3 only D. 3 only

Q3. With reference to the Income Tax Bill, 2025, consider the following statements:

1. It proposed major changes in headline income tax rates for individual taxpayers.
2. It aimed to simplify the structure of the Income Tax Act, 1961 by reorganising provisions and using plain language.
3. It was referred to a Parliamentary Select Committee before withdrawal.

Which of the statements given above is/are correct?

A. 1 only B. 2 and 3 only

C. 2 only D. 1, 2, and 3

Q4. With reference to nominated members in the legislatures of India, consider the following statements:

1. The Constitution provides for the President to nominate members to both the Lok Sabha and the Rajya Sabha.
2. In Union Territories with legislatures, nominated members enjoy the same voting rights as elected MLAs.
3. The Governor of a State nominates members to the Legislative Council purely at his discretion.

Which of the statements given above is/are correct?

A. 1 and 2 only B. 2 and 3 only

C. 1 only D. 1, 2 and 3

Answer Key

1. B	2. B	3.B	4. A

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Mains Questions

Q1. The process of designating Senior Advocates in India has drawn criticism for its lack of transparency, institutional bias, and underrepresentation of marginalized groups. Critically examine the legal framework, challenges, and the need for reforms in the senior advocate designation process.

(250 words, 15 marks)

Q2. Discuss the constitutional basis, judicial precedents, and limitations of the 'Master of the Roster' principle in India. In light of recent controversies, critically analyse whether the Supreme Court can intervene in the internal administrative functions of High Courts without undermining judicial independence.

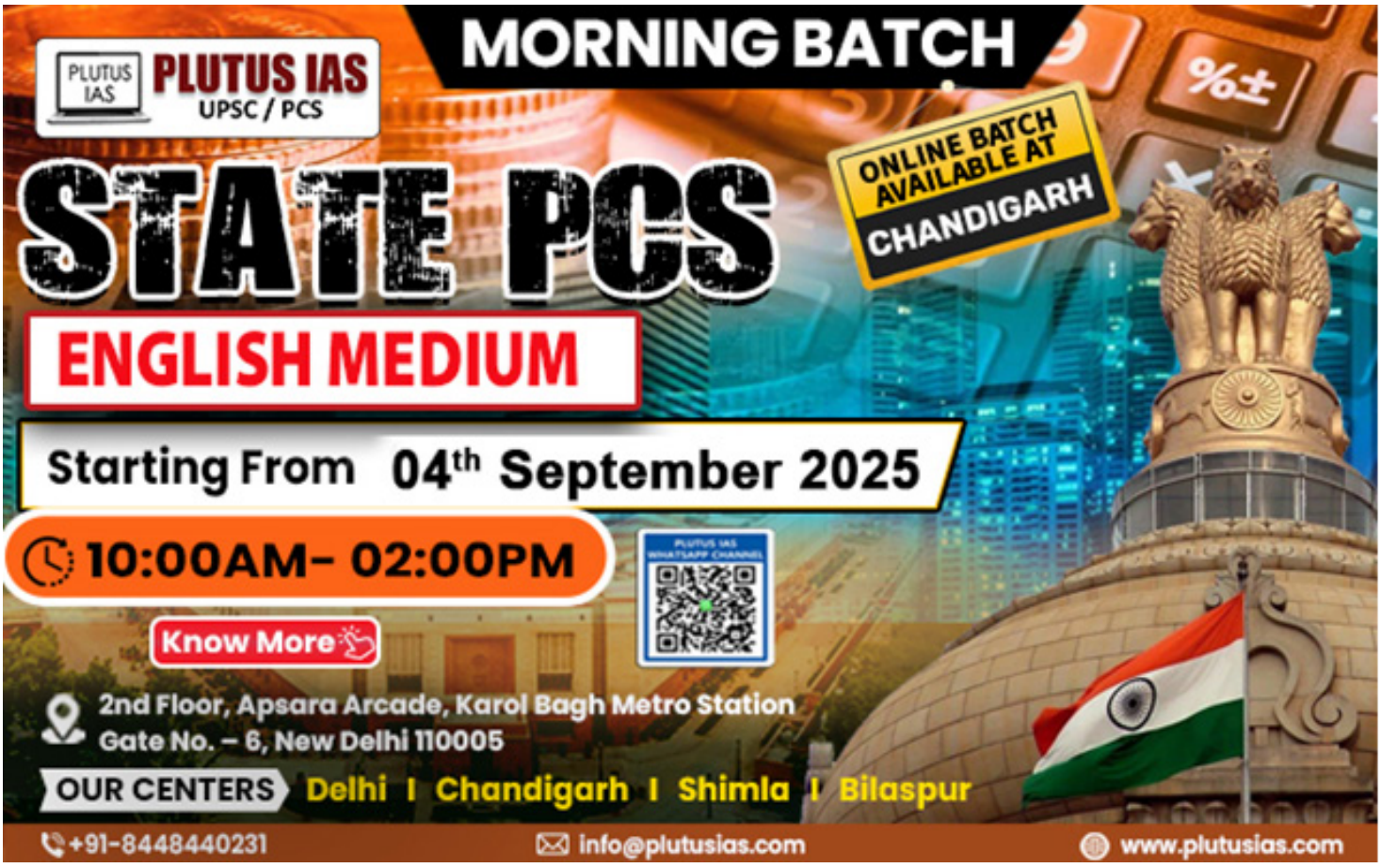
(250 words, 15 marks)

Q3. The withdrawal of the Income Tax Bill, 2025 reflects the balancing act between legislative urgency and the need for thorough scrutiny." Discuss in the context of tax reform in India

(250 words, 15 marks)

Q. The provision of nominated members in Union Territory legislatures has often led to tensions between the elected government and the Union. Discuss the constitutional framework, judicial interpretations, and democratic concerns arising out of such nominations. Suggest measures to ensure accountability and protect the federal balance.

(250 words, 15 marks)



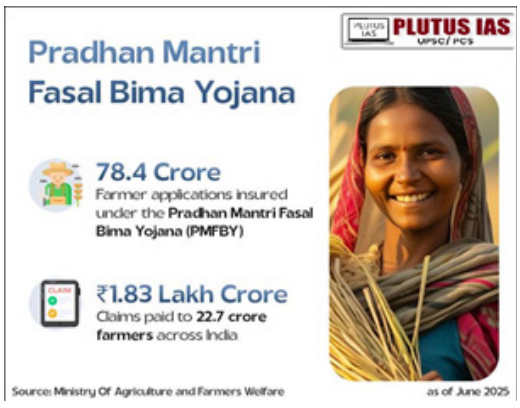
EMPOWERING ANNADATAS: PRADHAN MANTRI FASAL BIMA YOJANA

WHY IN THE NEWS?

The Pradhan Mantri Fasal Bima Yojana (PMFBY), launched on 18 February 2016, has once again come into focus for its role in safeguarding farmers against crop losses caused by natural calamities. Recent success stories, like that of Kerala farmer Shri Lal Krishnesh—who received multiple times his premium as compensation after floods and crop damage in 2022 and 2023—highlight the scheme's effectiveness. PMFBY provides affordable, comprehensive crop insurance covering the entire crop cycle, ensuring financial stability for farmers. Its "One Nation, One Crop, One Premium" model ensures fairness and uniformity in premium rates. The scheme has been pivotal in reducing farmers' risk, encouraging investment in better seeds, technology, and sustainable practices.

ACHIEVEMENTS UNDER THE SCHEME

Total number of farmers enrolled has increased from 3.17 crore in 2022-23 to 4.19 crore in 2024-25, i.e. an increase of 32%.

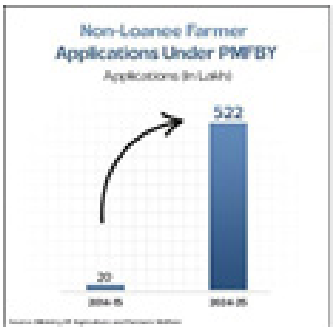


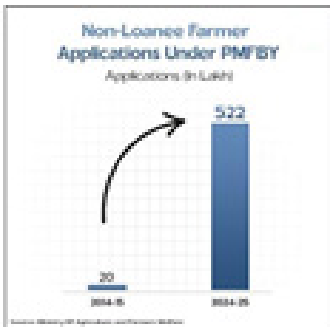
Since inception in 2016 till 2024-25 (as on 30.06.2025), a total of 78.407 crore farmer applications have been insured under PMFBY.

Out of these applications, 22.667 crore farmers received claims totaling₹1.83 lakh crore.

As compared to erstwhile crop insurance schemes, coverage of farmer applications has increased from 371 lakh in 2014-15 to 1510 lakh in 2024-25.

Number of non-loanee farmer applications has increased from 20 lakh in 2014-15 to 522 lakh in 2024-25.





Witnessing the success and potential of the scheme, the Union Cabinet in January 2025 approved the continuation of Pradhan Mantri Fasal Bima Yojana and Restructured Weather Based Crop Insurance Scheme till 2025-26 with a total budget of ₹69,515.71 crore.

STRENGTHENING THE PRADHAN MANTRI FASAL BIMA YOJANA

Since its launch in 2016, the Government has undertaken several measures to strengthen the Pradhan Mantri Fasal Bima Yojana (PMFBY), with a focus on enhancing transparency, accountability and timely settlement of claims. These efforts have led to significant improvements in the scheme's implementation.

As a result, both the area covered and the number of farmers enrolled have reached record levels in 2024–25. A total of 4.19 crore farmers have been enrolled under the scheme, marking the highest enrolment since inception. Out of the total farmer applications enrolled under the scheme in 2024-25,6.5%, 17.6% and 48% are pertaining to tenant, marginal and loanee farmers respectively.

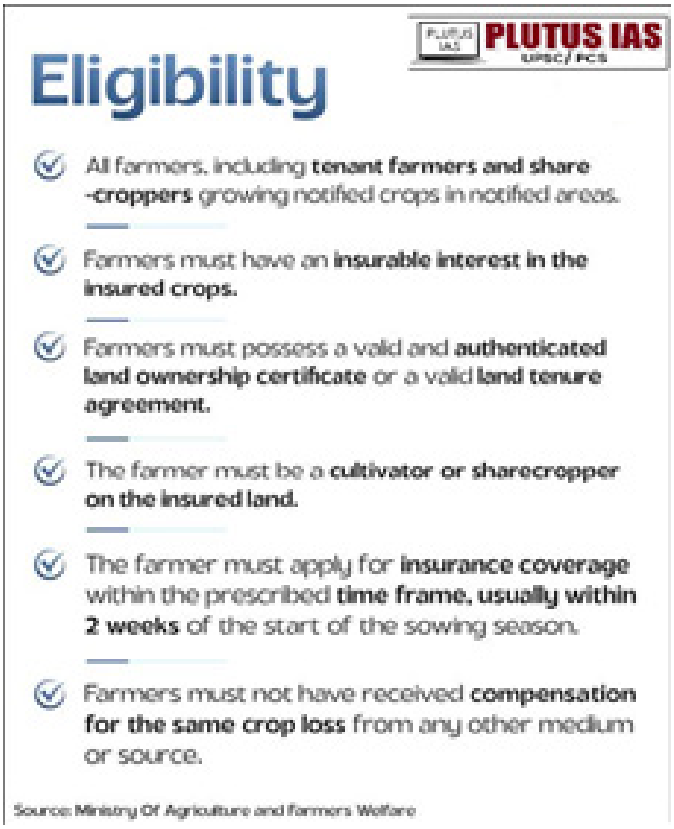
PMFBY is now the largest crop insurance scheme in the world in terms of farmer applications. In addition, several States have waived the farmer's share of the premium, significantly reducing the financial burden on farmers and encouraging wider participation in the scheme.

OBJECTIVES

BENEFITS

1. **Affordable Premiums:** The maximum premium payable by the farmer will be 2% for the Kharif food and oilseed crops. For rabi food and oilseeds crop, it is 1.5% and for yearly commercial or horticultural crops it will be 5%. The remaining part (95% to 98.5%) of the actuarial premium is borne jointly by the Central and State Governments on 50:50 basis, except for North Eastern States (from Kharif 2020) and Himalayan States (from Kharif 2023) where it is shared in the ratio of 90:10.
2. **Comprehensive Coverage:** The scheme covers natural disasters (droughts, floods), pests, and diseases. Post-harvest losses due to local risks like hailstorms and landslides are also included.
3. **Timely Compensation:** PMFBY aims to process claims within two months of the harvest to ensure that farmers get the compensation quickly, preventing them from falling into debt traps.
4. **Technology-Driven Implementation:** PMFBY integrates advanced technologies like satellite imaging, drones, and mobile apps for precise estimation of crop loss, ensuring accurate claim settlements.

ELIGIBILITY



Category	Eligibility	Enrollment	Special Notes
Non-Loanee Farmers	- Farmers with non-standard KCC scheme-linked crop loans - Farmers who have not taken any crop loans	Voluntary enrollment under PMFBY to mitigate risk and claim insurance benefits	Includes all farmers without crop loans; can join PMFBY on their own
Loanee Farmers	- Farmers sanctioned loans from financial institutions (FIs) for Seasonal Agricultural Operations (SAO)	Mandatory enrollment under PMFBY	Premiums deducted from SAO crop loans; crop loans against collateral like fixed deposits, gold/jewel loans, or mortgage loans without insurable interest on the land are not covered

RISKS COVERED

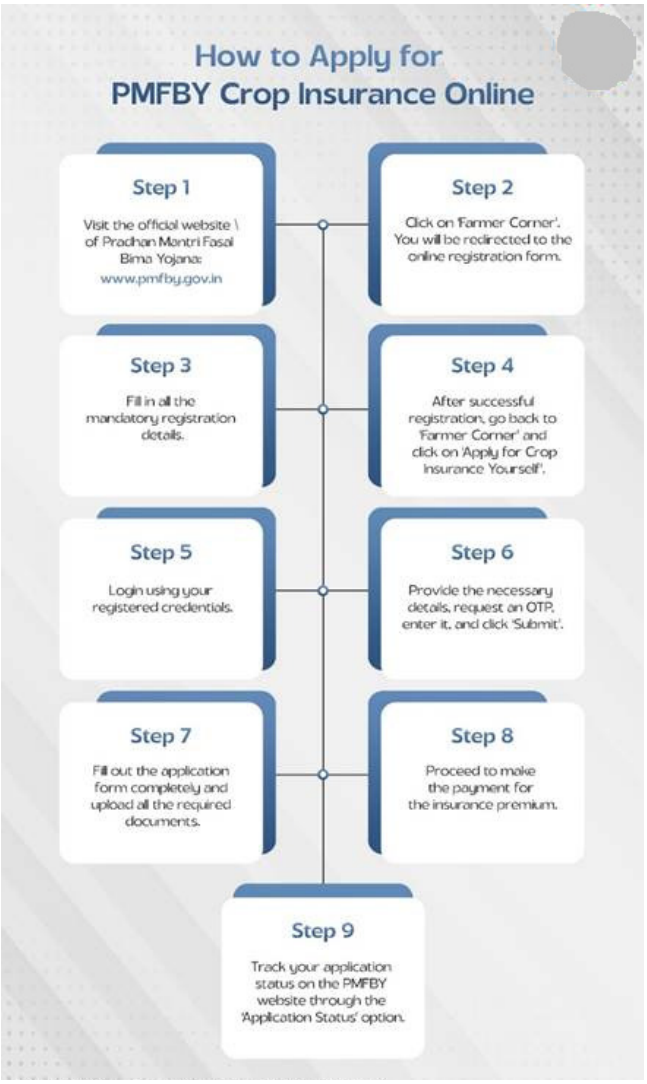
1. **Yield Losses (Standing Crops):** The Government provides this insurance coverage for yield losses that fall under the non-preventable risks, such as Natural Fire and Lightning: Storm, Hailstorm, Tornado etc.: Flood, Inundation and Landslide; Pests/ Diseases, etc.; Drought etc.
2. **Prevented Sowing:** Cases may arise where most of the farmers (insured) of notified areas may want to plant or sow. In such cases, they have to bear the expenditure for that cause and are restricted from planting or sowing insured crops because of unfavorable weather conditions. These farmers will then become eligible for the indemnity claims of up to a maximum of 25% of the sum insured.
3. **Post-harvest Losses:** The Government provides for post-harvest losses on an individual farm basis. The Government offers coverage of up to 14 days (maximum) from harvesting for crops that are stored in "cut and spread" condition. It means that the Government covers farmers who have put the crops to become sun-baked in the field after harvesting that have been destroyed due to cyclone or cyclonic rains occurred across the country.
4. **Localized Calamities:** The Government provides for localized calamities on an individual farm basis. Risks such as loss or damage arising from identified localized hazards, such as hailstorms, landslides, and inundation impacting separated farmlands in the notified area comes under this coverage.

KEY GOVERNMENT INITIATIVES TO STRENGTHEN PMFBY IMPLEMENTATION

Initiative	Description	Impact
National Crop Insurance Portal (NCIP)	Online farmer enrolment, data sharing, monitoring, and direct transfer of claims	Improves transparency, speeds up claim settlement
Digi Claim Module (from Kharif 2022)	Links NCIP with PFMS and insurance company systems; auto 12% penalty for delayed claims (from Kharif 2024)	Ensures timely payment, penalises delays
Separate Central Premium Subsidy	Central share of premium subsidy released directly, independent of the State share	Farmers receive claims faster
Mandatory ESCROW Account (from Kharif 2025)	States must deposit premium share in advance	Avoids delays in claim processing

Technology Integration	CCE-Agri mobile app for yield data; State land records linked to NCIP; insurers attend CCEs	Enhances accuracy, reduces disputes
Awareness Drives	Campaigns by States, insurers, banks, CSCs, PRIs to promote PMFBY	Increases farmer participation
Crop Insurance Week / Fasal Bima Saptah	Bi-annual awareness week (from Kharif 2021) with village-level Fasal Bima Pathshalas	Educates farmers at the grassroots level
Meri Policy Mere Haath	Special camps to distribute crop insurance policy receipts at the village/GP level	Improves access to policy details
KRPH – KrishiRakshak Portal & Helpline (14447)	An online portal and a toll-free number for grievances with ticket tracking	Strengthens the grievance redressal system

APPLICATION PROCESS



CONCLUSION

The Pradhan Mantri Fasal Bima Yojana (PMFBY) has transformed India's agricultural safety net by providing affordable premiums and extensive risk coverage, including yield losses, post-harvest losses and localized calamities. The scheme ensures timely compensation and stabilises farmers' income. By adopting advanced technologies such as satellite imagery, drones, mobile data capture and weather monitoring, PMFBY has improved transparency, accuracy and efficiency in crop loss assessment. Growing participation of non-loanee and marginal farmers reflects the increasing trust in the scheme.

SOIL HEALTH CARD: "SWASTH DHARAA, KHET HARAA" OVER 25 CRORE SOIL HEALTH CARDS DISTRIBUTED ACROSS THE COUNTRY

WHY IN THE NEWS?

The Soil Health Card Scheme, launched in 2015 during the International Year of Soils, has completed a decade of implementation and achieved significant milestones. By July 2025, more than 25 crore cards have been distributed to farmers across the country, enabling balanced use of fertilisers and improved

soil management. The Government has provided ₹1706.18 crore to States and UTs to support the scheme, which was merged with Rashtriya Krishi Vikas Yojana in 2022–23 as 'Soil Health and Fertility'. Large-scale soil mapping has also been undertaken, covering nearly 290 lakh hectares, including 40 aspirational districts. Additionally, 1,987 village-level soil fertility maps have been created across 21 States and UTs to guide farmers in adopting sustainable practices.

UNDERSTANDING SOIL HEALTH CARD

A Soil Health Card is a printed report given to farmers for each of their land holdings. It shows the condition of the soil by testing 12 key parameters, namely Nitrogen, Phosphorus, Potassium, Sulphur (Macro-nutrients); Zinc, Iron, Copper, Manganese, Boron (Micro - nutrients); and pH (Acidity or Basicity), EC (Electrical Conductivity) and OC (Organic Carbon). The scheme helps farmers understand what their soil needs through regular testing and provides guidance every 2 years. Each card gives farmers a clear picture of the nutrient status of their land. It also suggests the right amount of fertilisers, bio-fertilisers, organic inputs, and soil treatments to help them take better care of their soil over time.

SOIL SAMPLING AND TESTING PROCESS

Soil samples are taken from a depth of 15–20 cm using a V-shaped cut, collected from four corners and the centre of the field. Samples are collected in a grid of 2.5 hectares in irrigated areas and 10 hectares in rain-fed areas using GPS tools and revenue maps. Sampling is done after harvest of Rabi and Kharif crops, or when there is no standing crop in the field. Trained personnel, agriculture department staff, or students from agricultural colleges collect the samples.

QUALITY ASSURANCE AND COSTS

1% of the samples are cross-checked in referral laboratories for quality assurance.

The central government provides ₹190 per sample to cover costs for collection, testing, soil health card generation, and distribution.

CARD VALIDITY

A Soil Health Card is issued once every 3 years.

The next card in the following cycle captures changes in soil health over time.

OBJECTIVES OF SOIL HEALTH CARD SCHEME

Objective	Details
Regular Soil Health Assessment	Provide every farmer with a Soil Health Card once every two years to identify nutrient gaps and improve fertiliser practices.
Strengthening Soil Testing Infrastructure	Enhance Soil Testing Laboratories, involve agricultural students, and collaborate with ICAR and State Agricultural Universities.
Uniform Sampling & Fertiliser Recommendations	Use uniform sampling methods across states and design fertiliser recommendations at taluka/block level.
Promotion of Nutrient Management	Encourage soil test-based nutrient management to improve nutrient-use efficiency in crops.
Financial Assistance for Farmers	Support farmers to correct nutrient deficiencies and adopt balanced, integrated nutrient management practices.

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Capacity Building & Training	Train district/state officers and progressive farmers to spread awareness on proper nutrient use at grassroots level.

Source: Ministry of Agriculture & Farmers Welfare

APPLICATION PROCESS

SOIL HEALTH CARD PORTAL

The Soil Health Card Portal is an online and mobile-based platform created for the Ministry of Agriculture and Farmers Welfare, Government of India. It helps generate Soil Health Cards in a standard format that can be used across the country. The cards are available in 22 languages, 5 dialects, and in local units to make them easy for farmers to understand

SOIL TESTING LABORATORIES

As part of the scheme, soil samples are collected from various farms and tested in approved Soil Testing Laboratories (SLT). These tests follow the guidelines set under the scheme. The results are then uploaded to the National Soil Health Card portal. This portal is used to register samples, store test reports and create Soil Health Cards. It also provides fertiliser recommendations and helps track the overall progress of the programme.

The guidelines for setting up Village Level Soil Testing Labs (VLSTLs) were released on 22.06.2023.

These labs can be established by rural youth or community-based groups such as Self Help Groups (SHGs), schools, and agricultural universities.

Individuals applying must be between 18 and 27 years of age.

Self Help Groups and Farmer Producer Organisations (FPO) are also eligible to apply.

Applications are reviewed and approved by the District Level Executive Committee.

As of February 2025, a total of 665 village-level soil testing labs has been set up across 17 states in India.

SCHOOL SOIL HEALTH PROGRAMME

The Department of Agriculture and Farmers Welfare set up soil health labs in 20 schoolsin rural areas as part of a pilot programme. Learning modules were prepared for students from Classes 6 to 12, as well as for teachers. The aim is to make students aware about soil health for sustainable agriculture practices. These were shared with schools to support the training process.

Both students and teachers were trained to collect soil samples, carry out tests, and generate Soil Health Cards using a mobile app developed specially for this programme. School students collected the soil, tested it in the lab, and created the health cards. They also played a key role in sharing the recommendations of these cards with farmers, helping them understand how to use fertilisers wisely and choose the right crops. As of 24th July 2025, 1,021 schools are implementing the School Soil Health Programme, with 1,000 soil testing labs set up and 132,525 students enrolled.

TECHNOLOGICAL ADVANCEMENTS

Technological Advancement	Details
Upgraded SHC Portal with GIS	Portal now includes Geographic Information System (GIS), enabling soil test results to be viewed on interactive maps.
Mobile Application (SHC Mobile App)	Introduced for ease of use by farmers and officials; ensures smooth implementation and monitoring.
Restricted Soil Sample Collection	App restricts collection to the designated village-level operator's area, ensuring accuracy and accountability.
Automatic Geo-Tagging	Captures exact latitude and longitude of soil sample location, removing manual entry errors.
Unique QR Code for Samples	Each soil sample is assigned a QR code linking it directly to test results on the portal.
Automated Result Uploads	Geo-tagged laboratories upload test results directly to the central system, ensuring transparency and tamper-proof records.
Digital Workflow (Post-April 2023)	All soil samples collected via the mobile app; SHCs generated through upgraded digital portal.
Developed by NIC	Entire system created as a web-based workflow application by the National Informatics Centre (NIC) for nationwide digitisation.

CONCLUSION

The Soil Health Card Scheme has transformed how farmers think about their land. It has brought scientific understanding into hands of millions of farmers, helping them make better decisions and improve their livelihoods. The data-driven approach of the scheme has reduced input costs, boosted productivity, and promoted long-term soil care. By connecting testing labs, digital tools, schools, and communities, the scheme has created a robust

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system that puts the farmer at the centre. As India moves towards climate-resilient and sustainable agriculture, the Soil Health Card Scheme remains a model of how data, awareness, and grassroots support can together lead to real change. Continued investment and innovation under the scheme will be key to building a future where Indian soils stay fertile, healthy, and productive for generations to come.

Source: PIB

Prelims Questions

Q1. With reference to the Pradhan Mantri Fasal Bima Yojana (PMFBY), consider the following statements:

1. The maximum premium payable by farmers is 2% for Kharif crops, 1.5% for Rabi crops, and 5% for commercial/horticultural crops.
2. Non-loanee farmers are mandatorily enrolled under PMFBY.
3. From Kharif 2024, a penalty of 12% is imposed on delayed claim payments.
4. Post-harvest losses due to cyclones are covered for a maximum of 14 days from harvesting.

Which of the statements given above are correct?

(a) 1 and 3 only (b) 1, 3 and 4 only

(c) 2 and 4 only (d) 1, 2, 3 and 4

Q2. With reference to the Soil Health Card Scheme, consider the following statements:

1. It was launched in 2015 during the International Year of Soils.
2. A Soil Health Card contains information on both macro and micronutrients of soil.
3. The scheme has been merged with Rashtriya Krishi Vikas Yojana as 'Soil Health and Fertility' since 2022–23.

Which of the statements given above is/are correct?

(a) 1 and 2 only (b) 2 and 3 only

(c) 1 and 3 only (d) 1, 2, and 3

Answer Key

1. B	2. D

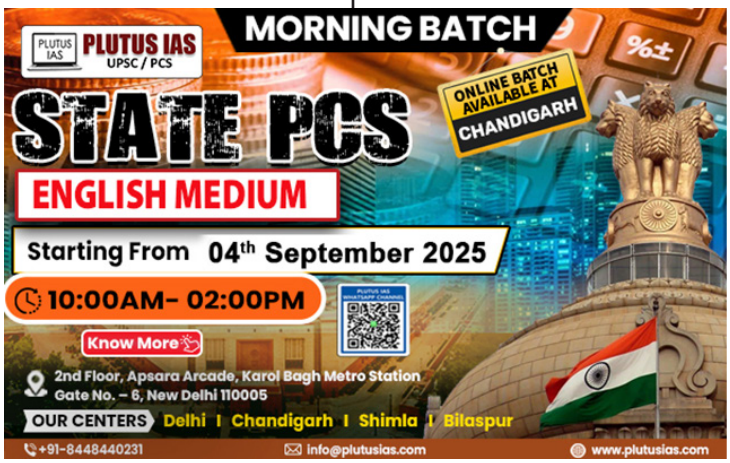
Mains Questions

Q1. Discuss the significance of the Pradhan Mantri Fasal Bima Yojana (PMFBY) in enhancing farmers' resilience against climate and market risks. Evaluate recent reforms and technological interventions aimed at improving its implementation

(250 words, 15 marks)

Q. The Soil Health Card Scheme has completed a decade of implementation in 2025. Discuss its objectives, technological advancements, and role in promoting sustainable agriculture in India.

(250 words, 15 marks)



INDIA–UK CETA: UNLOCKING THE SERVICES TRADE POTENTIAL

WHY IN THE NEWS?

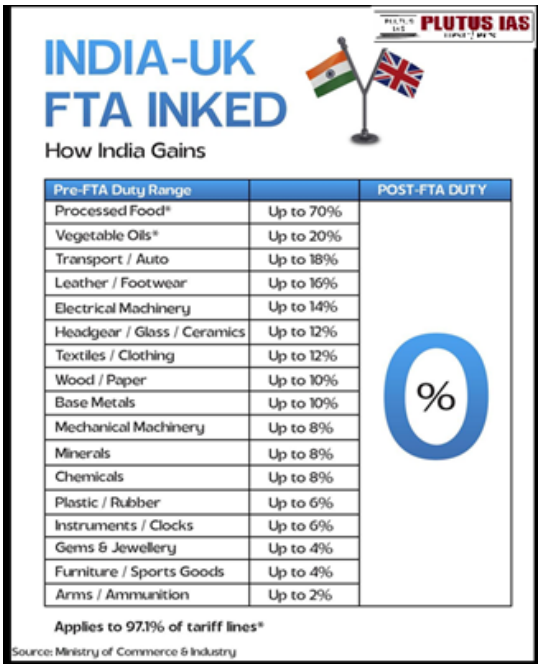
India and the United Kingdom have signed the Comprehensive Economic and Trade Agreement (CETA), a bilateral free trade agreement marking a major milestone in their longstanding partnership. The agreement was signed by Commerce and Industry Minister Shri Piyush Goyal and UK Secretary of State for Business and Trade Mr. Jonathan Reynolds in the presence of Prime Minister Shri Narendra Modi and UK Prime Minister Sir Keir Starmer. This follows the successful conclusion of negotiations announced on May 6, 2025, and reflects the shared ambition of two major economies to deepen economic ties. Bilateral trade has already reached USD 56 billion, with a target to double this by 2030.

India-UK bilateral annual trade ~USD 56 billion

Total merchandise trade ~ USD 23 billion

Total services trade ~ USD 33 billion

The agreement goes beyond goods and addresses services, a core strength of India's economy. India exported over USD 19.8 billion in services to the UK in 2023, and CETA promises to expand this further In a first by UK, mobility for professionals across IT



healthcare, finance, and education is being eased with CETA providing for streamlined entry for Contractual Service Suppliers, Business Visitors, Intra-Corporate Transferees, Independent Professionals (e.g., yoga instructors, chefs, and musicians). Another major breakthrough is the Double Contribution Convention that will save Indian firms and workers more than INR 4,000 crore by removing the need for dual social security contributions.

With measures that promote mobility, innovation, and inclusivity, CETA is expected to create jobs, boost exports, and strengthen India–UK economic resilience.

In words of the Commerce and Industry Minister, Shri Piyush Goyal – "This FTA will serve as a catalyst for inclusive growth, benefiting farmers, artisans, workers, MSMEs, startups, and innovators while safeguarding India's core interests and accelerating our journey towards becoming a global economic powerhouse."

India has opened 89.5 % of its tariff lines, covering 91 % of UK's exports, safeguarding sensitive sectors and strategically important products where domestic capability is being built. Elimination of duties will make a range of imported products more affordable for consumers, offering greater variety and quality at competitive prices.

KEY FEATURES OF THE AGREEMENT

KEY FEATURES OF THE INDIA–UK COMPREHENSIVE ECONOMIC AND TRADE AGREEMENT (CETA)

Feature	Details
1. Comprehensive Tariff Elimination	- 99% of tariff lines for Indian exports to the UK to enjoy zero-duty access. - Key beneficiaries: Textiles, Leather, Marine Products, Gems & Jewellery, Toys, Chemicals, Engineering Goods, Agri-products. - Sensitive sectors protected: Dairy, cereals, millets, pulses, gold, certain vegetables, smartphones. - Gradual liberalization over 5–10 years for sectors aligned with Make in India and PLI schemes. - Bilateral safeguard measures to counter sudden import surges.
2. Simplified Rules of Origin	- Exporters can self-certify product origin. - No origin certificate required for consignments valued below £1,000. - Product-Specific Rules (PSRs) customized for Indian supply chains.
3. Boost to Services and Professional Mobility	- UK grants access in 137 sub-sectors (IT, finance, education, healthcare, etc.). - India grants access in 108 sub-sectors. - Temporary entry provisions for Indian professionals in 5 categories: ICTs, investors, Contractual Service Suppliers (CSS), etc. - No Economic Needs Test (ENT) or quotas on Indian professional movement. - 1,800 Indian cultural professionals (chefs, yoga instructors, musicians) allowed entry annually.

4. Double Contribution Convention (DCC)	- Exemption from UK social security contributions for up to 3 years for Indian professionals and companies. - Beneficiaries: Approx. 75,000 workers and 900+ Indian companies. - Estimated savings: Over ₹4,000 crore (≈ USD 500 million).

Sector-Wise Gains

INDIA–UK CETA: AGRICULTURE AND ALLIED GOODS

Aspect	Details
Tariff Coverage	- 1,437 agriculture tariff lines (14.8% of total). - 985 food processing tariff lines (10.1% of total). - Extensive zero-duty market access for Indian agri and food products.
Trade Volume & Potential	- India's agri exports (2022–23): USD 45.05 billion (up from USD 41.3 bn in 2020–21). - India's global agri exports: USD 36.63 billion. - UK's agri imports: USD 37.52 billion. - UK imports only USD 811 million worth of agri goods from India → huge growth potential.
High-Value Agri Exports to UK	- Tea, mangoes, grapes, spices, marine products, etc. - Indian farmers to fetch premium prices in UK market.
Processed Food Trade Potential	- India's global processed food exports: USD 14.07 billion. - UK's processed food imports: USD 50.68 billion. - Indian share in UK: USD 309.5 million only → large untapped market. - Exports of agri and processed food expected to rise by over 50% in next 3 years.
Market Parity Achieved	- India gains equal access with major exporters: EU, South Africa, Turkey, Canada, Peru, Vietnam. - Eliminates competitive disadvantage caused by UK's FTAs with other nations.
India's Competitive Gains	- Fresh Grapes: Compete with Brazil, Egypt, South Africa. - Processed Food Preparations: Compete with US, China, Thailand. - Bakery Products: Outdo US, China, Vietnam. - Preserved Fruits/Nuts: Beat Turkey, Pakistan, South Africa. - Chilled Vegetables: Outperform US, Brazil, China. - Prepared Sauces: Compete strongly with US, Japan, Malaysia.
State-Level Benefits	- Maharashtra: Grapes, onions. - Gujarat: Groundnut, cotton. - Kerala: Spices. - North-Eastern States: Horticulture. - APEDA's State-specific agri-export plans aligned with FTA → equitable regional benefits.

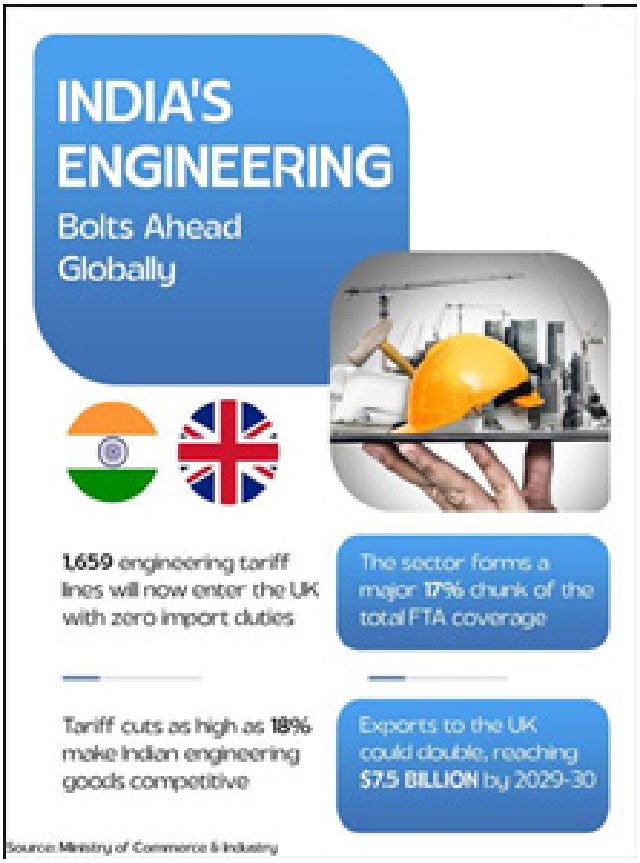
PLANTATION, OILSEEDS, AND MARINE PRODUCTS

Sector	Key Features & Benefits
Plantation Sector (Tea, Coffee, Spices)	- Current UK Market Share: UK accounts for 1.7% of India's coffee, 5.6% of tea, and 2.9% of spice exports. - Zero-duty access to the UK will catalyze exponential growth in these segments. - Instant Coffee Gains: Duty-free access gives level playing field against EU competitors (Germany, Spain, Netherlands). - Value Addition Focus: Boosts exports of Indian instant coffee and other value-added plantation products.
Oilseeds (Under IO-PEPC)	- Market Expansion: UK presents new consumer base for Indian oilseed exporters. - Enhanced Competitiveness: Reduced tariffs and simplified processes improve cost competitiveness. - Opportunity for increased export volumes and wider global footprint.

Marine Products	- Current Export Volume: USD 8.09 billion (2022–23); major items: fish, shrimp, cuttlefish. - UK Demand: High-value UK market for frozen seafood like shrimp and white fish, driven by diaspora and demand for ready-to-cook items. - Tariff Elimination: Removes UK duties (4.2–8.5% range), increasing price realization and procurement rates for fisherfolk. - Employment Gains: Seafood processing units (especially in Kerala, Andhra Pradesh, Tamil Nadu) employ thousands of women. - Market Potential: UK's marine imports: USD 5.4 billion; India's share: just 2.25% → huge untapped potential. - Geographic Advantage: Coastal states like Kerala, Andhra Pradesh, Gujarat, Tamil Nadu, Odisha to gain from export-led growth.

ENGINEERING GOODS

Aspect	Details
Tariff Coverage	- 1,659 tariff lines – highest among all sectors, comprising 17.0% of total product lines. - Covers a wide range of items: machinery, components, equipment, etc.
UK Market Importance	- UK is India's 6th largest engineering goods export market. - 11.7% export growth in 2024–25 over the previous year.
Trade Gap & Potential	- India's global engineering exports: USD 77.79 billion. - UK's engineering imports: USD 193.52 billion. - India's exports to UK: just USD 4.28 billion → huge scope for expansion.
Export Doubling Outlook	- With tariff elimination (previously up to 18%), exports to UK could double to USD 7.5+ billion by 2029–30. - Aligns with India's target of USD 300 billion in engineering exports by 2030.
MSME Support – Iron & Steel	- Zero tariffs improve price competitiveness and allow MSMEs to scale. - Greater access to UK's industrial buyers.
Duty-Free Machinery Access	- Enhances MSME integration into UK supply chains in renewables, automotive electronics, industrial automation, etc.
Aerospace & Defence Push	- Full tariff liberalization supports Make in India in high-tech sectors like aerospace, defence manufacturing.
Growth Forecast (CAGR)	- Electric machinery, auto parts, industrial equipment, construction machinery expected to grow at 12–20% CAGR.
Strategic Role of UK	- UK's cooperation is critical in helping India achieve USD 300 billion engineering export target by 2030. - The FTA cements UK's role as a strategic trade partner.



INDIA–UK CETA: GAINS IN THE SERVICES SECTOR

1. **Economic Significance:** Services Sector Contribution: 55% of India's GVA; 81% of UK's economy.

   India's Trade Surplus: $6.6 bn (Exports: $19.8 bn, Imports: $13.2 bn).

   Best-in-class FTA: One of the most ambitious service trade packages signed by the UK.

2. **Market Access Commitments**

   India's Gains: UK opened 137 sub-sectors across all 12 major service sectors, covering 99% of India's interests.

   Includes IT/ITeS, finance, healthcare, education, legal, telecom, aviation, etc.

   UK's Gains: India liberalized 108 sub-sectors—accounting, auditing, telecom (100% FDI), air transport services, and more.

3. **Digital and Professional Benefits**

   IT & Digital Services: Indian firms benefit from simplified access to UK's $200 bn digital services market.

   Indian Start-ups: Gain from reduced compliance costs and broader access.

   Global Capability Centres (GCCs): Boost to India's position as a global service hub.

4. **Professional Mobility**

   Mutual Recognition Agreements: Within 12 months—for professions like nursing, accountancy, architecture.

   Temporary Entry Commitments:

   Business Visitors: 90 days

   Intra-Corporate Transferees: 3 years (+ extension)

   Contractual Service Suppliers: 12 months in 24 (33 sub-sectors)

   Independent Professionals: 12 months in 24 (16 sub-sectors)

   No Economic Needs Test or numerical caps

   Special Quota: 1,800 slots/year for Indian chefs, yoga instructors, classical artists.

5. **Double Contribution Convention (DCC)**

   Eliminates dual social security payments for short-term assignments (up to 36 months).

   Benefits 75,000+ Indian professionals and saves Indian firms ~$500 million/year.

6. **Sectoral Highlights**

   IT/ITeS: Enhanced UK access, lower compliance, smoother talent mobility, push to emerging tech.

   Start-ups: Easier scaling, fewer regulatory hurdles.

   Healthcare & Education: Mutual collaboration, cross-border institutions, EdTech expansion.

   Financial Services: Fair treatment, fintech growth, increased UK investments in India.

7. **Strategic Safeguards by India:** Sensitive sectors like dairy, cereals, gold, smartphones, automobiles, and MSMEs are protected. Calibrated tariff liberalization over 5–10 years in key sectors.

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INDIA–UK CETA: CROSS-SECTOR IMPACT – STRENGTHENING RESILIENCE AND INCLUSIVE GROWTH

Impact Area	Key Features & Benefits
Supply Chains & Competitiveness	- Streamlined trade procedures, reduced compliance burden. - Enhanced integration into global value chains (GVCs). - Labour-intensive sectors (textiles, footwear, processed food) gain duty-free access → boosts rural employment and production.
Digital Transformation & Innovation	- Strong focus on paperless trade, e-certification, and digital trade facilitation. - Benefits startups and MSMEs by making cross-border trade simpler and faster. - Provisions protect data privacy and consumer rights in the digital economy.
Green Growth & Sustainability	- Promotes environmental cooperation and clean technologies. - Encourages investment in renewables and sustainable production practices. - Aligns trade with climate and green growth objectives.
Skilling & Workforce Development	- Predictable mobility pathways for professionals/workers. - Supports skill development and knowledge exchange. - Mutual recognition of qualifications for engineers, architects, healthcare workers, etc.
Social & Economic Inclusion	- Focused on inclusivity: empowers women, youth, and under-represented groups. - Enhances access to global value chains for diverse communities. - Provisions on gender equality and innovation cooperation to ensure equitable trade benefits.

CONCLUSION

The India–UK Comprehensive Economic and Trade Agreement (CETA) represents a landmark achievement in India's trade diplomacy, combining economic ambition with strategic foresight. It not only opens up substantial opportunities across key sectors such as agriculture, engineering goods, and services, but also reflects India's commitment to inclusive, green, and resilient trade. With provisions on tariff elimination, services liberalization, digital cooperation, and professional mobility, the agreement is poised to double bilateral trade by 2030 and significantly boost India's export competitiveness.

TARIFF DIPLOMACY: A NEW FRONT IN INDIA–U.S. BILATERAL RELATIONS

WHY IN THE NEWS?

The United States has imposed a steep 50% tariff on Indian imports, citing India's continued energy trade with Russia. This is the highest tariff rate the US has applied to any country in 2025. The move is widely seen as an attempt to pressure India into signing a more US-favoured trade agreement. India has condemned the action as unfair and politically motivated. Experts warn that these tariffs could impact India's GDP, exports, and its broader strategic autonomy in foreign policy.

GEOPOLITICAL SHIFTS

1. **Trade as a Geopolitical Weapon:** The 50% US tariff on Indian goods goes beyond economic concerns—it is a calculated move to realign India's global partnerships, especially its continued cooperation with Russia.
2. **Challenge to Strategic Autonomy:** The tariff episode highlights increasing tension between India's pursuit of strategic autonomy and the US's expectations of alignment, revealing a deeper conflict in their worldviews.
3. **BRICS and Dollar Hegemony:** India's active role in BRICS and its support for alternative currency systems and payment mechanisms are seen by Washington as undermining the dollar-dominated financial order.
4. **Pressure to Isolate Russia:** India's continued defence and energy deals with Russia, despite global sanctions, have become a focal point of American pressure, reflected in both tariffs and threats of penalties.
5. **Transactional vs Strategic Ties:** The shift in US diplomacy from strategic cooperation to transactional pressure tactics undermines the long-term trust needed for stable bilateral relations.
6. **Global South Leadership Dilemma:** As a key voice of the Global South, India faces growing pressure to pick sides in a polarizing world, even as it tries to maintain inclusive, multipolar engagement.
7. **Need for Diplomatic Balancing:** India must carefully balance its ties with the US, Russia, and emerging powers while safeguarding its independent foreign policy and long-term geopolitical interests.

STRAIN ON BILATERAL RELATIONS

1. **Tariff Escalation to 50%:** The US has imposed a total of 50% tariffs on Indian goods (August 2025), the highest for any country, drastically impacting bilateral trade worth $131.84 billion (FY 2024–25).
2. **Shift from Strategic to Transactional Approach:** The US, under President Trump, has moved from strategic engagement (e.g., QUAD cooperation, defence pacts) to hard bargaining focused on trade deficits and political compliance.
3. **Collapse of Trade Talks Momentum:** The long-pending Bilateral Trade Agreement (BTA) negotiations have stalled, as coercive tariff tactics override mutual trust-building efforts.
4. **India's Measured Response:** The Indian Ministry of Commerce described the move as "unfair, unjustified, and unreasonable," yet avoided retaliatory measures, aiming to keep communication channels open.
5. **Sectoral Vulnerabilities Create Tensions:** Export sectors like textiles, gems & jewellery, and chemicals, worth $8 billion, are disproportionately affected, sparking concern among Indian industries and exporters.
6. **US Trade Deficit Politics:** India's trade surplus with the US stood at $45.7 billion in 2024, which the Trump administration cites as a reason for tariff hikes, disregarding broader economic interdependence.
7. **Policy Asymmetry Grows:** While India is liberalising through FTAs with the UK and EU, the US is adopting protectionist measures, increasing strategic incoherence between the two partners.
8. **Trust Deficit Widens:** The tariff war risks damaging long-term cooperation on critical fronts like semiconductors, clean energy, and defense, weakening the strategic depth of India-US relations.

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ECONOMIC DIPLOMACY DIMENSION

1. **Tariffs as Backdoor Sanctions:** The US's 50% tariff mimics economic sanctions, targeting India's continued trade with Russia without invoking formal sanctions.
2. **Undermining Multilateral Trade Norms:** The US justifies its tariffs under "national security" clauses, bypassing WTO protocols, raising concerns of unilateralism.
3. **India's Diversification Push:** India is accelerating trade diversification toward EU, ASEAN, and Africa to reduce reliance on US markets.
4. **FTA Strategy in Motion:** India is actively negotiating FTAs with the EU and UK, aiming to secure tariff-free access and hedge against US protectionism.
5. **Export Competitiveness via Atmanirbhar Bharat:** Schemes like PLI (Production-Linked Incentives) are being ramped up to boost self-reliance and global competitiveness.
6. **Diplomatic Channels for Damage Control:** India is using quiet backchannel diplomacy and economic forums like IPEF and QUAD to de-escalate tensions.
7. **Short-Term Impact on Exports:** Sectors like pharma, textiles, and IT may face near-term losses, with India's exports to the US valued at $78.5 billion (FY2024).

INTERNATIONAL LEGAL & INSTITUTIONAL DIMENSION

1. **National Security Loophole Exploitation:** The US invokes national security to justify tariffs—a gray area under WTO law, yet increasingly misused.
2. **WTO Dispute Mechanism in Paralysis:** The WTO Appellate Body has been defunct since 2019 due to US blockage, denying India legal recourse.
3. **India's WTO Complaint Strategy:** India may still file a formal complaint, as it has done in past trade disputes with the US (e.g., solar panels, steel tariffs).
4. **Need for WTO Reform:** The situation underscores India's advocacy for restoring the dispute settlement system and reforming global trade rules.
5. **Multilateral Alliances as a Legal Hedge:** India is engaging in plurilateral groupings like G-33, BRICS, and the Global South to create collective pressure.
6. **Strategic Use of Retaliatory Tariffs:** India may impose calibrated counter-tariffs, as it did in 2019 post-US steel/aluminum tariff hike, aligning with WTO principles.
7. **Erosion of the Rules-Based Order:** The episode reflects a growing breakdown of post-WWII trade architecture, with middle powers like India most vulnerable.

US DOMESTIC POLITICS DIMENSION

1. **Election-Year Populism:** Tariff announcements are often timed with election cycles, aimed at appealing to protectionist and nationalist voter bases.
2. **Targeting Swing States:** Sectors affected by trade (like manufacturing) are crucial in swing states, influencing trade policy rhetoric.
3. **"America First" Redux:** Trump revives his core narrative of economic nationalism, portraying trade as a zero-sum game.
4. **India as a Visible Target:** As a rising economy with a trade surplus with the US, India becomes a symbolic target to show 'toughness'.
5. **Bipartisan Trade Skepticism:** Even beyond Trump, skepticism of trade deals and globalisation has bipartisan support in the US.
6. **Appeasement of Domestic Industries:** Tariffs aim to placate domestic lobbies, such as steel or pharmaceuticals, which see India as a competitor.
7. **Erosion of Multilateralism:** US politics increasingly favour bilateral hard-bargaining over multilateral cooperation, straining WTO frameworks.

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STRATEGIC AUTONOMY & FOREIGN POLICY DOCTRINE

1. **Non-Alignment 2.0:** India reaffirms its stance of multi-alignment, avoiding entanglement in any one bloc's geopolitical rivalry.
2. **Issue-Based Alliances:** India selectively partners with countries based on strategic interests, not ideological alignment (e.g., Quad, BRICS, SCO).
3. **Recalibrating Doctrine:** Current events push India to redefine its foreign policy doctrine to better assert its strategic interests.
4. **Strengthening Regional Influence:** Active role in IPEF, IMEC, BIMSTEC reflects India's desire to lead in the Indo-Pacific.
5. **Strategic Decoupling Management:** India must navigate pressures to decouple from adversarial powers while securing national interest.
6. **Assertive Economic Diplomacy:** Shifting from reactive to proactive stance in trade negotiations and strategic communication.
7. **Balancing Major Powers:** India aims to deepen ties with EU, Japan, ASEAN to offset US volatility and Chinese assertiveness.

GLOBAL SOUTH AND MULTIPOLAR WORLD ORDER

1. **Tariffs as Precedent:** US coercive economic actions signal risks for developing nations with independent trade policies.
2. **India's Role as Spokesperson:** India, with its G20 leadership and South-South cooperation history, must amplify Global South concerns.
3. **Shift to Power-Centric Order:** Incidents show decline of norms-based multilateralism and rise of transactional, interest-driven geopolitics.
4. **Risk of Neo-Colonialism:** Tariff threats resemble coercive tools used to maintain dominance over emerging economies.
5. **Promoting South-South Trade:** Strengthening ties within the Global South could reduce vulnerability to great power coercion.
6. **Championing WTO Reform:** India must push for democratization and revival of global institutions for fairer trade dispute resolution.
7. **Multipolarity as Shield:** A robust multipolar order with diverse partnerships can buffer smaller nations against economic bullying.

SUPPLY CHAINS AND STRATEGIC PARTNERSHIPS

1. **India as China+1 Option:** US companies increasingly view India as an alternative to overdependence on China.
2. **Tariffs Disrupt Confidence:** Protectionist measures contradict Washington's goal of building resilient supply chains with India.
3. **Semiconductor & Tech Setback:** Collaborations in chip manufacturing, AI, and clean tech may suffer due to mistrust.
4. **Energy and Climate Tech:** Tariff tensions could delay joint clean energy initiatives like solar, hydrogen, and battery storage.
5. **Investment Rethink:** American investors may perceive India as risky if bilateral ties remain unstable.
6. **Decoupling Backfire:** Punitive tariffs risk pushing India closer to other major powers like the EU, Russia, or China.
7. **Supply Chain Resilience Loss:** US weakens the very alliances it needs for resilient, diversified global supply chains.

SOFT POWER AND PERCEPTION MANAGEMENT

1. **Trust Deficit:** Tariff threats create doubts about US reliability as a stable long-term partner for India.
2. **Narrative Control Battle:** India and the US both vie to shape global opinion—whether tariffs are coercion or policy.
3. **Investor Communication:** India must reassure global investors that it remains committed to open, rules-based trade.

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4. **Diaspora Dynamics:** US-India people-to-people ties may suffer from political rhetoric impacting perceptions.

5. **Public Diplomacy Leverage:** India should amplify its soft power through culture, technology, and democratic values amid tension.

6. **Framing the Dispute:** India must frame its position as principled and cooperative, not defensive, to global audiences.

7. **Global South Sympathy:** India can rally diplomatic support by aligning with nations affected by similar US trade actions.

CONCLUSION

The US's imposition of steep tariffs on Indian goods marks a critical turning point in bilateral relations, exposing the fragility of strategic partnerships in an era of transactional diplomacy. While the move reflects Washington's shifting geopolitical priorities and domestic political compulsions, it also underscores India's urgent need to recalibrate its foreign policy and trade doctrine. For New Delhi, the challenge lies in maintaining strategic autonomy without isolating key partners, especially as it aspires to lead the Global South and shape a multipolar world order. With high stakes for exports, supply chains, and global perception, India must respond with calibrated diplomacy, deeper regional integration, and assertive multilateral engagement to protect its economic interests and geopolitical standing.

INDIA–US RELATIONS: EVOLVING STRATEGIC, ECONOMIC, AND GEOPOLITICAL DIMENSIONS

WHY IN THE NEWS?

On 27 August 2025, US President Donald Trump's decision to double tariffs on Indian exports from 25% to 50% will take effect, posing a significant challenge to India's trade and economy. While the measure delivers an immediate blow to exporters, the 21-day lead time before implementation gives India a brief opportunity to negotiate relief. The move has triggered intense discussions within Indian industry, with expectations of targeted government support to mitigate the impact.

BACKDROP AND CONTEXT

1. **October 2024 India:** China Disengagement: Significantly lowered immediate border tensions but did not result in a full withdrawal or resolution of the LAC standoff.

2. **Timing Before US Elections:** Helped reduce diplomatic friction at a sensitive moment in American politics, preventing the border issue from becoming an international flashpoint.

3. **Persistent Structural Mistrust:** The disengagement did not address the deeper strategic distrust that defines India–China relations.

4. **Two and a Half Decades of India:** US Engagement: Progressed from the civil nuclear deal (2005–2008) to institutionalised strategic dialogues and defence cooperation frameworks.

5. **Layered Security Partnerships:** Active participation in the Quad, counter-terrorism collaborations, and defence technology sharing arrangements.

6. **Economic Convergence with the US:** Steady growth in bilateral trade, services linkages, and US FDI in India's technology and manufacturing sectors.

7. **Impact of US Domestic Politics:** Protectionist sentiment and electoral pressures increasingly shape American foreign policy towards India.

8. **Strategic Balancing Act:** India must simultaneously manage continental threats from China and seize maritime economic opportunities with the West.

SHIFTS IN INDIA'S STRATEGIC ORIENTATION

1. **Gradual Westward Pivot:** Steady shift away from traditional Russia–China alignment towards closer strategic, economic, and technological engagement with the US, EU, and allied democracies.
2. **High-Value Strategic Platforms:** Active role in westward-focused groupings like the Quad (Indo-Pacific security), I2U2 (West Asia cooperation), and IMEC (connectivity to Europe via Middle East).
3. **Recalibrated ASEAN Approach:** Greater caution toward ASEAN, viewed in parts as indirectly aligned with China's economic influence.
4. **Economic Realignment:** Withdrawal from RCEP to safeguard domestic industries from trade imbalances and Chinese market dominance.
5. **Technology-Security Independence:** Indigenous 5G rollout and exclusion of Huawei and ZTE to secure telecom networks.
6. **Supply Chain Security:** Phasing out Chinese-origin CCTV and telecom equipment from critical infrastructure.
7. **Press Note 3 Safeguards:** Tightened FDI norms for land-border countries to curb Chinese strategic investments.
8. **Westward Trade Route Integration:** Expanding maritime and overland connectivity towards energy and consumer markets in the West.

TRUMP'S IMPACT ON INDIA–US RELATIONS

1. **Trade Protectionism:** Imposition of 25% tariffs on Indian goods, eroding price competitiveness in the US market.
2. **Confrontational Public Rhetoric:** Sharp criticism of India's trade practices using politically charged, populist language.
3. **Transactional Diplomacy:** Reducing the relationship to bargaining terms ("bazaar diplomacy") rather than strategic partnership.
4. **Risk to Strategic Momentum:** Possible slowdown in defence, technology, and intelligence-sharing cooperation.
5. **Leadership-Centric Ties:** Overemphasis on leader-to-leader chemistry, making ties vulnerable to political changes.
6. **Investor Confidence Erosion:** Uncertainty in trade relations deterring long-term foreign investments.
7. **Strain on Strategic Patience:** Forcing India to rethink the resilience of its US engagement strategy.
8. **Need for Insulation Mechanisms:** Developing frameworks to shield bilateral ties from short-term political cycles in Washington.

CHINA'S STRATEGIC AND ECONOMIC COUNTERMEASURES

1. **Blocking Multilateral Access:** Persistent veto of India's Nuclear Suppliers Group (NSG) membership bid.
2. **Pakistan Alignment:** Strengthened defence cooperation with Pakistan, including active support during Operation Sindoor.
3. **Critical Mineral Restrictions:** Limiting rare earth and critical mineral exports vital to India's EV and renewable energy sectors.
4. **Industrial Input Delays:** Slowing or halting delivery of manufacturing equipment to constrain India's industrial growth.
5. **GVC Containment:** Strategically blocking India's entry into high-value global value chains in electronics, automotive, and renewables.
6. **Infrastructure Supply Disruption:** Denying or delaying tunnel-boring machines and specialised inputs for major projects.
7. **Technology Denial:** Restricting skilled human capital exchange and access to proprietary technologies.
8. **Export Dominance Protection:** Preventing the rise of India as a competitive alternative in global manufacturing markets.

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RUSSIA'S REDUCED STRATEGIC VALUE

1. **Post-Ukraine Realignment:** Moscow's growing strategic dependence on Beijing limits its freedom of action in Asia.
2. **Half-Friend Phenomenon:** Declining ability to act as an independent power in regional security affairs.
3. **Diversified Defence Sourcing:** Increasing procurement from the US, France, and Israel to reduce overreliance on Russia.
4. **Declining Reliability:** Persistent delays and cancellations in delivering key defence platforms.
5. **Economic Constraints:** Sanctions severely restrict Russia's trade flexibility with India.
6. **Weak Diplomatic Influence:** Limited capacity to mediate between India and China.
7. **Reduced Energy Leverage:** Oil imports remain economically useful but lack strategic depth.
8. **Eroding Strategic Hedge:** Loss of Russia as a balancing force in Asian geopolitics.

RISKS OF 'REBOUND DIPLOMACY'

1. **Perception of Opportunism:** Abrupt outreach to China or Russia could appear reactive, not strategic.
2. **Credibility Loss:** Sudden shifts undermine India's image as a consistent partner.
3. **Persistent Chinese Distrust:** Beijing unlikely to reverse its view of India's westward tilt.
4. **Russian Limitations:** Lack of autonomy makes Moscow an unreliable fallback partner.
5. **Negotiating Weakness:** A desperate pivot risks eroding India's bargaining position.
6. **Economic Risks:** China could extract disproportionate concessions in trade or investment.
7. **Diplomatic Whiplash:** Frequent realignments damage the foundations of long-term partnerships.
8. **Historical Lessons:** Post-1962 and post-1971 shifts produced mixed and short-lived gains.

TRADE AND ECONOMIC STRATEGY

1. **FTA Acceleration:** Conclude EU agreement by year-end to diversify markets.
2. **GCC Integration:** Lock in energy and investment flows through a comprehensive trade pact.
3. **Avoid Negotiation Fatigue:** Streamline processes to prevent multi-year FTA delays.
4. **Global Value Chain Entry:** Use FTAs as gateways to high-value manufacturing and services.
5. **New Market Access:** Proactively engage Africa and Latin America for trade diversification.
6. **Domestic Reform Linkages:** Pair trade pacts with regulatory simplification and tax reform.
7. **Private Sector Enablement:** Reduce tariff and bureaucratic hurdles for exporters.
8. **Digital Economy Provisions:** Include AI, fintech, and data governance in trade deals.

STRATEGIC AUTONOMY REALITY VS PERCEPTION

1. **Global Scepticism:** US and China both question India's independence of strategic choice.
2. **Beyond Market Size:** Build influence through capabilities, not just consumer potential.
3. **Indigenous Defence Capability:** Invest in domestic systems for credible deterrence.
4. **Technology Leadership:** Focus on AI, semiconductors, and clean tech as strategic assets.
5. **Supply Chain Independence:** Diversify sourcing in critical sectors like energy, electronics, and minerals.
6. **Multi-Vector Engagement:** Avoid overdependence on any single bloc or alliance.
7. **Institutional Consistency:** Ensure policy stability across political cycles.

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8. **Strategic Signalling:** Clearly communicate red lines, commitments, and partnership priorities.

GEOPOLITICAL GAME PLAN FOR THE FUTURE

1. **Pakistan Disruption Strategy:** Use diplomatic, intelligence, and economic tools to keep adversary destabilised.
2. **China Containment Networks:** Deepen Indo-Pacific partnerships with like-minded democracies.
3. **Alliance Flexibility:** Maintain manoeuvrability by avoiding overcommitment.
4. **Technology Sovereignty:** Secure IP rights and nurture innovation ecosystems.
5. **Energy Diversification:** Expand renewables and diversify fossil fuel import sources.
6. **Maritime Dominance:** Enhance naval presence in key Indian Ocean chokepoints.
7. **Regional Leadership:** Project India as a stabilising force in South Asia.
8. **Counter-Coercion Tools:** Develop economic and diplomatic responses to external pressure.

WAY FORWARD

1. **Deepen Westward Economic Integration:** Finalise trade agreements with EU, UK, and GCC.
2. **Partner Diversification:** Expand trade and investment ties with Africa and Latin America.
3. **Reduce China Dependency:** Incentivise domestic alternatives for critical imports and supply chains.
4. **Reform Trade Institutions:** Modernise FTA negotiation and closure processes.
5. **Boost Manufacturing R&D:** Enhance PLI schemes with stronger innovation incentives.
6. **Leverage External Shocks:** Use tariff wars or supply disruptions as reform triggers.
7. **Empower Private Sector:** Simplify taxes and regulations to accelerate competitiveness.
8. **Practice Strategic Patience:** Maintain consistent policy direction despite short-term turbulence.

CONCLUSION

Trump's tariff hike exposes the fragility of India–US economic ties and the risks of overdependence on one market. India must insulate strategic partnerships from electoral swings, diversify trade links, and turn this shock into reform momentum—boosting manufacturing, securing supply chains, and strengthening strategic autonomy in an increasingly multipolar world.

INDIA–RUSSIA TIES AT CROSSROADS: BALANCING TRADITION WITH EMERGING REALITIES

WHY IN THE NEWS?

External Affairs Minister (EAM) S. Jaishankar is on a three-day visit (19–21 August 2025) to Russia, where he will co-chair the 26th Session of the India–Russia Inter-Governmental Commission on Trade, Economic, Scientific, Technological and Cultural Cooperation (IRIGC-TEC) in Moscow on 20 August.

INDIA–RUSSIA INTER-GOVERNMENTAL COMMISSION (IRIGC-TEC)

Origin & Mechanism

1. Established in 1994 as the main institutional framework for bilateral cooperation.
2. Co-chaired by India's External Affairs Minister and Russia's First Deputy PM.

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3. Meets annually, with multiple working groups & sub-groups across sectors.

4. Complements the India–Russia Annual Summit at the leadership level.

KEY FOCUS AREAS OF IRIGC-TEC

1. **Trade & Economy:** Diversify trade beyond energy/defence; promote investments; resolve payment hurdles; strengthen INSTC & Chennai–Vladivostok corridor.

2. **Energy:** Secure oil & gas supplies; expand Kudankulam nuclear plant; explore LNG, renewables & green hydrogen cooperation.

3. **Defence & Security:** Joint production (AK-203, BrahMos); spare parts & servicing; regular military exercises & counter-terrorism cooperation.

4. **Science & Technology:** Collaboration in AI, biotech, pharma, IT; expand ISRO–Roscosmos partnership in satellites & space missions.

5. **Culture & Education:** Student exchanges, scholarships, medical/engineering studies; tourism, yoga, films & language promotion.

6. **Multilateral & Regional:** Coordination in BRICS, SCO, G20, UN; joint approach on Central Asia, Afghanistan, Indo-Pacific.

STRATEGIC SIGNIFICANCE OF THE VISIT

1. **Reaffirming Special Partnership:** The visit highlights the depth of the India–Russia "Special and Privileged Strategic Partnership", showcasing resilience built over decades in defence, energy, and culture.

2. **Balancing Geopolitics:** Despite global divisions over the Ukraine conflict, India has maintained robust engagement with Russia, reflecting strategic autonomy in its foreign policy.

3. **Energy Security:** Russian oil and gas imports help India manage energy costs, crucial for sustaining economic growth and inflation control.

4. **Defence Dependence:** Around 60–70% of India's defence inventory is Russian-origin, making cooperation essential for operational readiness.

5. **Economic Diversification:** The visit signals a push to expand trade into IT, pharmaceuticals, and agriculture, reducing over-reliance on hydrocarbons.

6. **Connectivity & Logistics:** Progress on the INSTC and Chennai–Vladivostok maritime corridor aims to cut transport costs and boost Eurasian trade links.

7. **Future Diplomacy:** Sets the stage for President Putin's visit to India, likely to result in new agreements on trade, defence, and energy.

TRADE & ECONOMIC COOPERATION

1. **Bilateral Trade Growth:** Trade reached $65 billion in 2024–25, marking an unprecedented surge, largely due to discounted crude imports.

2. **Investment Promotion:** Both sides are seeking mutual investments in energy, infrastructure, and technology sectors.

3. **Payment Mechanisms:** Dialogue on rupee–ruble trade and alternate banking systems is vital to bypass Western sanctions.

4. **Energy Imports:** Russia is now among India's top three crude suppliers, contributing to reduced energy import bills.

5. **Agriculture & Fertilizers:** Russia is a key source of fertilizers and agricultural products, ensuring food and farm security in India.

6. **Technology & Pharma:** Indian IT companies and pharmaceutical exports to Russia are expanding, complementing energy trade.

7. **Business Forum Role:** The India–Russia Business Forum facilitates B2B links, identifying new sectors like startups, fintech, and digital trade.

DEFENCE & ENERGY DIMENSIONS

1. **Legacy Defence Ties:** India–Russia defence cooperation spans decades, covering aircraft, submarines, tanks, and missiles.

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2. **Joint Ventures:** The AK-203 rifles factory in Amethi and BrahMos missile JV represent co-production models boosting self-reliance.
3. **Air Defence Systems:** Delivery of the S-400 system bolsters India's air defence shield against regional threats.
4. **Spare Parts & Maintenance:** Agreements ensure continuity of Russian-origin systems like Sukhoi aircraft and T-90 tanks.
5. **Nuclear Cooperation:** Russia's role in building the Kudankulam Nuclear Plant and supplying reactors supports India's clean energy goals.
6. **Oil & Gas Supplies:** Russian crude is a lifeline during global oil volatility, enabling India to secure affordable energy.
7. **Energy Transition:** India–Russia exploring LNG, hydrogen, and renewables, signaling a shift towards long-term sustainability.

DIPLOMATIC ENGAGEMENTS & HIGH-LEVEL EXCHANGES

1. **Talks with Lavrov:** Regular FM-level discussions strengthen coordination on global challenges, from Ukraine to the Indo-Pacific.
2. **SCO Engagement:** India and Russia align on Eurasian connectivity, counterterrorism, and regional stability within the SCO framework.
3. **BRICS Interaction:** At the recent BRICS Summit, both countries reaffirmed support for multipolarity and de-dollarization.
4. **Foreign Office Consultations:** The Misri–Rudenko consultations earlier in 2025 ensured policy continuity and groundwork for this visit.
5. **Leadership-level Trust:** Regular Modi–Putin meetings reinforce strategic trust and long-term vision.
6. **Annual Summit Tradition:** This visit prepares ground for the next annual summit in India, continuing a tradition since 2000.
7. **Confidence Building:** Frequent exchanges act as a stabilizer amid global uncertainties, keeping bilateral momentum intact.

GEOPOLITICAL CONTEXT

1. **Multi-Alignment Policy:** India carefully balances Western partnerships and Russia ties, demonstrating flexible diplomacy.
2. **Strategic Autonomy:** The visit shows India will not align exclusively with any bloc, preserving room to maneuver in global affairs.
3. **Russia's Asia Pivot:** With Western sanctions isolating Russia, India becomes a critical Asian partner, alongside China.
4. **China Factor:** Close Russia–China ties push India to deepen its engagement with Moscow to maintain balance in Eurasia.
5. **Central Asia Linkages:** Both nations seek security cooperation in Afghanistan and Central Asia, countering instability and extremism.
6. **Multilateral Forums:** India–Russia align positions in BRICS, SCO, and G20, promoting global south cooperation and governance reforms.
7. **Energy & Security Architecture:** Partnership helps shape a multipolar, rules-based world order, resisting dominance by any single bloc.

CULTURAL & PEOPLE-TO-PEOPLE TIES

1. **Historical Linkages:** India and Russia share a legacy of civilizational bonds, dating back to early travellers and scholars. Russian intellectuals admired Indian spirituality, while Indians looked at Russian literature as a window into modern thought.
2. **Cinema & Literature:** Bollywood movies like Awara and Disco Dancer became household names in Russia, while works of Tolstoy, Pushkin, and Dostoevsky are widely read in India. These cultural exchanges helped cement people-to-people warmth.
3. **Educational Exchange:** Over 18,000 Indian students, especially in medical universities of Russia, keep educational linkages alive. Joint research in space, technology, and medicine is also being explored.

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4. **Space Cooperation:** India's first cosmonaut Rakesh Sharma flew aboard a Soviet spacecraft in 1984, symbolizing trust and collaboration in sensitive areas. New cooperation is being explored in Gaganyaan and space technology.

5. **Yoga & Ayurveda:** Russia celebrates the International Day of Yoga with enthusiasm. Demand for Ayurveda, Indian cuisine, and cultural festivals is increasing among the Russian middle class.

6. **Indian Diaspora:** Though small in number (~15,000), the Indian diaspora plays a key role in academia, IT, and trade sectors, fostering trust between the two nations.

7. **Tourism & Language:** Both sides are planning cultural centres, language exchange programmes, and visa facilitation to boost tourism and people-to-people engagement.

CHALLENGES IN THE RELATIONSHIP

1. **Energy Dependence:** Nearly 35% of India's crude oil imports in 2024–25 came from Russia. Overreliance poses risks if sanctions intensify or prices fluctuate.

2. **Sanctions Impact:** Western sanctions on Russia create barriers in banking, insurance, and logistics. Even the rupee–ruble trade settlement has faced technical hurdles.

3. **Connectivity Issues:** INSTC and the Vladivostok–Chennai maritime corridor are progressing slowly due to lack of funding and geopolitical bottlenecks in Central Asia.

4. **China Factor:** Russia's growing alignment with China, especially after Ukraine war sanctions, raises concerns for India which has its own tense relations with Beijing.

5. **Defence Diversification:** India is increasingly sourcing defence equipment from France, US, and Israel, reducing dependence on Russia. This could weaken the traditional "pillar" of ties.

6. **Private Sector Gaps:** Beyond state-led mega projects in oil, gas, and defence, Indian private firms show little presence in Russia due to market risks and regulatory hurdles.

7. **Non-Energy Trade Weakness:** Despite record overall trade, sectors like pharma, agriculture, and IT are underperforming. Balance of trade is also heavily skewed in Russia's favour.

WAY FORWARD

1. **Trade Diversification:** India must expand exports to Russia in pharmaceuticals, IT, machinery, and agricultural goods to balance trade and reduce dependence on oil.

2. **Tech Collaboration:** Joint investments in artificial intelligence, fintech, cybersecurity, nuclear energy, and green hydrogen can make ties future-oriented.

3. **Connectivity Projects:** Completing the INSTC and Vladivostok–Chennai corridor will reduce transport costs by nearly 30% and open new trade routes to Eurasia.

4. **Financial Mechanisms:** Developing robust rupee–ruble or digital currency settlement systems will protect bilateral trade from Western sanctions.

5. **Multilateral Platforms:** Deeper coordination in BRICS, SCO, G20, and UN reforms can help both nations amplify their voices in shaping a multipolar world order.

6. **Joint Ventures:** New collaborations in fertilizers, nuclear reactors (like Kudankulam), renewable energy, and oil refining can further enhance economic synergy.

7. **High-Level Diplomacy:** Regular leader-level visits, including President Putin's expected visit to India, will help sustain momentum and provide political guidance to overcome challenges.

CONCLUSION

The 26th IRIGC-TEC underscores the enduring depth of the India–Russia Special and Privileged Strategic Partnership, which has stood resilient amid changing global dynamics. The visit highlights India's pursuit of strategic autonomy, balancing ties with Russia while engaging other major powers. With energy security, defence cooperation, and technology

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exchanges at its core, the partnership continues to serve India's long-term national interests. It also reinforces India's role as an independent actor in shaping a multipolar world order. Thus, the commission acts as both a continuity of trust and a roadmap for future collaboration.

Prelims Questions

Q1. With reference to the India–UK Comprehensive Economic and Trade Agreement (CETA), consider the following statements:

1. The agreement covers both goods and services sectors.
2. India has secured access to the UK market in more than 130 services sub-sectors.
3. The agreement allows permanent residency to Indian professionals working in the UK.

Which of the statements given above is/ are correct?

(a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (c) 1, 2 and 3

Q2. With reference to recent developments in India's trade relations, consider the following statements:

1. The United States has recently imposed higher tariffs on Indian steel and aluminium under the national security clause.
2. India has invoked the WTO dispute resolution mechanism in response to all recent tariff hikes by the U.S.
3. The Atmanirbhar Bharat initiative focuses solely on import substitution and not on export competitiveness.

Which of the statements given above is/ are correct?

(a) 1 only (b) 1 and 3 only
(c) 2 and 3 only (d) 1, 2 and 3

Q3. Consider the following statements about India–US relations:

1. India is a member of the Quad along with the US, Japan, and Australia.
2. The India–US civil nuclear agreement was signed in 2005 and operationalised in 2008.
3. The US is India's largest trading partner in goods and services.

Which of the statements given above is/ are correct?

(a) 1 and 2 only (b) 2 and 3 only
(c) 1 and 3 only (d) 1, 2 and 3

Q4. Consider the following statements regarding the India–Russia Inter-Governmental Commission on Trade, Economic, Scientific, Technological and Cultural Cooperation (IRIGC-TEC):

1. It was established in 1994 as the main institutional mechanism for India–Russia bilateral cooperation.
2. It is co-chaired by the Prime Minister of India and the President of Russia.
3. The Commission meets annually and operates through multiple working groups and sub-groups.

Which of the statements given above is/ are correct?

(a) 1 and 2 only (b) 1 and 3 only
(c) 2 and 3 only (d) 1, 2 and 3

Answer Key

1. (a)	2. (b)	3.(d)	4. (b)

Mains Questions

Q1. Discuss the major gains for India in the services sector under the India–UK Comprehensive Economic and Trade Agreement (CETA). How does this

agreement support India's broader strategic and economic objectives?

(250 words, 15 marks)

Q2. Examine the recent US tariff hikes on Indian exports and analyse their implications on India's strategic autonomy, economic diplomacy, and multilateral trade positioning. What should be India's calibrated response to safeguard its interests?

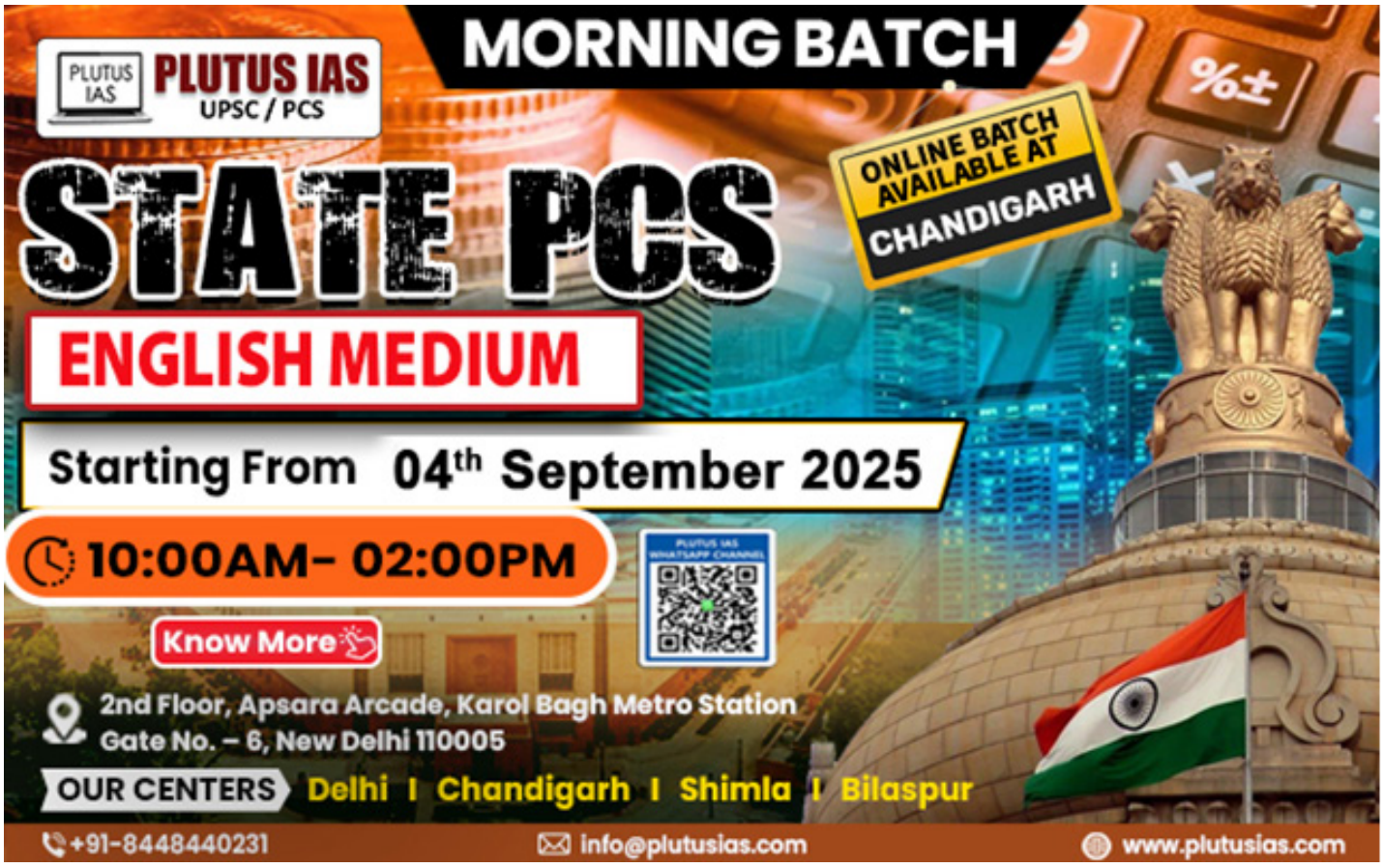
(250 words, 15 marks)

Q3. India's partnership with the United States has evolved over the last two decades into a multi-dimensional strategic relationship. In light of recent trade tensions, critically examine the challenges and opportunities in sustaining this partnership.

(250 words, 15 marks)

Q4. Examine the significance of the India–Russia Inter-Governmental Commission (IRIGC-TEC) in the context of evolving global geopolitics. How does it shape India's energy security and strategic autonomy?

(250 words, 15 marks)



PM E-DRIVE 2024–26: A GAME CHANGER FOR ELECTRIC TRUCKING IN INDIA

WHY IN THE NEWS?

The Government of India has launched the PM E-DRIVE scheme, the country's first dedicated initiative to promote electric trucks. With a budget of ₹500 crore, it aims to support the purchase of 5,600 electric trucks, with 20% of the funds earmarked for Delhi. The scheme will run from October 1, 2024, to March 31, 2026, and subsumes the earlier EMPS-2024 scheme. It also provides graded incentives for electric two-wheelers, three-wheelers, and cargo vehicles. A digital e-voucher system has been introduced to ensure transparency in availing demand incentives. Additionally, the scheme focuses on expanding public EV charging stations to address range anxiety.

OBJECTIVES OF THE SCHEME

1. **Boost Adoption of Electric Trucks:** Encourage large-scale adoption of electric trucks and commercial EVs across India's freight and logistics sectors.
2. **Reduce Diesel Dependency:** Lessen reliance on diesel-based freight transport to cut fuel imports and carbon emissions.
3. **Promote Scrapping of Polluting Vehicles:** Incentivize the phasing out of old, high-emission diesel trucks by linking benefits to vehicle scrappage.
4. **Align with Net Zero Goals:** Support India's broader climate goal of achieving Net Zero by 2070 through sustainable mobility.
5. **Improve Urban Air Quality:** Target improved air quality in cities, especially in high-pollution zones like Delhi.
6. **Ensure Affordability Through Incentives:** Offer structured financial subsidies to make EVs cost-effective for individuals and fleet operators.
7. **Support Domestic EV Manufacturing:** Encourage indigenous manufacturing of EVs, motors, and batteries under the Make in India initiative.
8. **Strengthen EV Infrastructure Ecosystem:** Develop supporting infrastructure such as EV public charging stations and a digital e-voucher system for smoother adoption.

KEY FEATURES OF PM E-DRIVE SCHEME

Category	Details
Financial Allocation & Duration	- Total outlay of ₹500 crore for 5,600 electric trucks - Scheme valid from Oct 1, 2024 to Mar 31, 2026 - 20% of funds reserved for Delhi-registered trucks

Eligibility Criteria	- Battery warranty: 5 years or 5 lakh km (whichever is earlier) - Vehicle & motor warranty: 5 years or 2.5 lakh km - Mandatory scrapping of old diesel trucks for availing incentives
Vehicle-Wise Subsidy Structure	- Two-wheelers: ₹5,000/kWh (max ₹10,000) in Year 1; ₹2,500/kWh (max ₹5,000) in Year 2 - Three-wheelers: ₹25,000 in Year 1; ₹12,500 in Year 2 - L5 cargo three-wheelers: ₹50,000 in Year 1; ₹25,000 in Year 2
e-Voucher System	- One vehicle per Aadhaar permitted - e-Voucher auto-generated at sale - Voucher required for OEM reimbursement of incentives from the government
Charging Infrastructure Push	- Promotion of Electric Vehicle Public Charging Stations (EVPCS) - Focus on cities with high EV penetration and key freight corridors - Aims to reduce range anxiety and strengthen EV ecosystem

INTEGRATION WITH OTHER SCHEMES

1. **Merger of Existing Schemes:** Subsumes the Electric Mobility Promotion Scheme (EMPS-2024) to unify efforts under a single framework for EV promotion.
2. **Extension of FAME Benefits:** Complements FAME I & II by offering financial support to electric trucks, previously excluded from the scheme.
3. **Alignment with NEMMP Goals:** Supports the National Electric Mobility Mission Plan (NEMMP) aimed at reducing fossil fuel use and promoting EV adoption.
4. **Strengthening the Vehicle Scrappage Policy:** Reinforces the scrappage ecosystem by mandating scrapping of old diesel trucks to access incentives.
5. **Support to Make in India and Atmanirbhar Bharat:** Promotes domestic EV and component manufacturing, reducing dependence on imported technologies.
6. **Synergy with State EV Policies:** Acts as a central booster to various state-level EV initiatives, ensuring coordinated national progress.
7. **Contribution to Global Climate Commitments:** Reinforces India's role in global climate action, especially under the Paris Agreement, by pushing for low-carbon freight mobility.

SIGNIFICANCE OF THE SCHEME

1. **India's First EV Scheme for Freight Transport:** Marks a pioneering effort to electrify heavy-duty transport, filling a major policy void.
2. **Targeted Urban Pollution Reduction:** Aims to reduce emissions in urban freight corridors, which are major sources of vehicular pollution.
3. **Transition from Diesel to Clean Energy:** Encourages the shift to electric mobility, cutting down both carbon emissions and noise pollution.
4. **Push to Domestic Manufacturing:** Strengthens the Make in India initiative by promoting local innovation and MSME participation in the EV sector.
5. **Enhancement of Energy Security:** Reduces dependence on diesel imports, supporting India's broader goals of energy self-reliance.
6. **Financial Viability for Users:** Improves the cost-effectiveness of EV ownership through time-bound demand incentives for trucks and cargo vehicles.
7. **Blueprint for Future EV Policies:** Establishes a scalable model through innovations like e-vouchers and public charging infrastructure support.

CHALLENGES & CONCERNS

1. **Limited Budget Allocation:** The ₹500 crore fund may not be sufficient to make a large-scale

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impact, especially considering the vast size of India's commercial freight sector.

2. **OEM Readiness & Compliance:** Not all Original Equipment Manufacturers (OEMs) may be technologically or financially prepared to offer the required 5-year battery and motor warranties.
3. **Charging Infrastructure Deficit:** Public EV charging stations are still lacking in Tier-II and Tier-III cities, as well as along major freight highways.
4. **Affordability for Small Operators:** Even with subsidies, the upfront cost of electric trucks remains high for small fleet operators and individual truck owners.
5. **Low Awareness & Digital Divide:** Many beneficiaries may not be aware of the e-voucher process or lack digital access to claim benefits smoothly.
6. **Battery Supply Chain Issues:** Dependence on imported lithium-ion batteries and raw materials could create supply disruptions or cost escalations.
7. **Implementation & Monitoring Gaps:** Effective on-ground monitoring, disbursal of incentives, and coordination with state transport departments may pose operational challenges.

WAY FORWARD

1. **Enhance Budgetary Support:** Future Union Budgets should consider scaling up the outlay to expand scheme coverage and extend support to more segments.
2. **Promote Private Investment in Charging Stations:** Encourage PPP models and private players to build and operate EV public charging stations (EVPCS) across transport corridors.
3. **Inclusion of Long-Haul & Inter-State Fleets:** Expand the scheme's scope to cover long-distance logistics operators, including cold chain and bulk carriers.
4. **Simplify Access to Incentives:** Create a single-window digital platform for e-vouchers and document uploads to make it user-friendly and inclusive.
5. **Strengthen Vehicle Scrappage Infrastructure:** Expand certified scrapping centres and streamline scrappage procedures to make it easy for truck owners to transition.
6. **Support Local Battery Manufacturing:** Incentivize indigenous battery production and recycling ecosystems to reduce import dependency.
7. **Capacity Building for OEMs & Dealers:** Train EV manufacturers, dealers, and local transport offices to ensure compliance with scheme guidelines and effective implementation.

CONCLUSION

The PM E-DRIVE Scheme represents a significant milestone in India's electric mobility journey, marking the first targeted effort to electrify the freight and commercial vehicle sector. By subsuming existing schemes and introducing new mechanisms like e-vouchers and focused incentives, the initiative aims to bridge critical gaps in policy, affordability, and infrastructure. While challenges like limited funding, OEM preparedness, and infrastructure bottlenecks persist, the scheme lays a strong foundational framework for cleaner, energy-efficient logistics. If backed by sustained policy support, industry participation, and infrastructure scaling, PM E-DRIVE can emerge as a game-changer in India's path toward net-zero emissions, urban air quality improvement, and energy self-reliance.

INDIA'S WETLAND RENAISSANCE: A MODEL FOR THE WORLD

WHY IN THE NEWS?

India showcased its pioneering wetland conservation model at the 15th Conference of the Parties (COP15) to the Ramsar Convention on Wetlands, held at Victoria Falls, Zimbabwe. The country highlighted the rejuvenation of over 68,827 small wetlands in a single year, achieved through an innovative blend of community participation, technological integration, and policy convergence. This achievement underscores India's commitment to sustainable environmental management, aligned with both national priorities and global environmental obligations.

ENVIRONMENTAL AND ECOLOGICAL IMPACT

1. **Biodiversity Conservation:** Revived wetlands serve as habitats for migratory birds, amphibians, and endangered species, boosting regional biodiversity.
2. **Groundwater Recharge:** Wetlands function as natural aquifers, storing rainwater and slowly releasing it, helping sustain agriculture and drinking water supplies.
3. **Climate Regulation:** Wetland vegetation and water surfaces moderate temperatures, influence local weather patterns, and reduce heat island effects.
4. **Carbon Sink Potential:** Marshes and peatlands absorb large volumes of carbon dioxide, playing a role in mitigating greenhouse gas emissions.
5. **Flood Mitigation:** Wetlands absorb excess rainwater and surface runoff, reducing the frequency and severity of floods in vulnerable areas.
6. **Water Quality Enhancement:** They act as natural filters, removing pollutants and sediments, thus improving the health of downstream water bodies.
7. **Restoration of Ecological Cycles:** Wetland rejuvenation revives natural hydrological patterns, nutrient cycles, and wildlife corridors essential for ecosystem stability.

INTEGRATION OF TECHNOLOGY AND INNOVATION

1. **GIS-Based Mapping:** Geospatial tools have helped map, classify, and prioritize wetlands for targeted restoration based on ecological value.
2. **Remote Sensing Tools:** Satellite data enables the monitoring of seasonal changes, encroachments, and degradation across wetland areas.
3. **National Wetlands Portal:** A centralized digital platform allows data aggregation, progress tracking, and public access to conservation initiatives.
4. **Citizen Engagement through Apps:** Mobile applications enable community reporting, crowdsourced data, and grievance redressal related to wetland misuse.
5. **AI and Predictive Modelling:** Artificial Intelligence aids in forecasting ecological threats and identifying sites needing urgent intervention.
6. **Hydrological Simulation:** Scientific models simulate water inflow, retention, and discharge, helping design sustainable water management strategies.
7. **IoT-Based Monitoring:** Internet of Things devices measure real-time parameters like water level, pH, and pollution to ensure adaptive management.

ROLE OF COMMUNITIES AND CULTURAL SIGNIFICANCE

1. **Local Governance Participation:** Gram Panchayats and Urban Local Bodies take ownership of wetland conservation under centrally sponsored schemes.
2. **Empowerment of Women and SHGs:** Self-help groups, especially those led by women, are engaged in plant nurseries, water body maintenance, and income generation.

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3. **Youth and Volunteer Engagement:** Eco-clubs and school children are involved in awareness drives and eco-restoration efforts.
4. **Revival of Traditional Knowledge:** Indigenous systems like johads, kunds, and ahars are being revitalized with community wisdom and historical practices.
5. **Cultural and Religious Ties:** Many wetlands hold ritual and festival value, ensuring communities protect them as part of their spiritual traditions.
6. **Participatory Mapping Exercises:** Communities help define wetland boundaries, creating a sense of custodianship and social monitoring.
7. **Environmental Awareness and Stewardship:** Involving locals fosters a sense of collective responsibility, reducing misuse and ensuring long-term sustainability.

LIVELIHOOD GENERATION AND ECONOMIC BENEFITS

1. **Enhanced Inland Fisheries:** Rejuvenated wetlands support fish production, improving nutrition and income, especially for marginal communities.
2. **Floriculture and Wetland Farming:** Cultivation of lotus, reeds, and medicinal plants creates local value chains and boosts household incomes.
3. **Duck and Livestock Integration:** Ducks thrive in wetland ecosystems, contributing to egg and meat production, while wetlands support seasonal grazing.
4. **Nature-Based Tourism:** Ramsar sites are promoted as eco-tourism hubs, supporting local homestays, guides, and hospitality workers.
5. **Rural Job Creation:** Restoration activities under MGNREGS have generated lakhs of employment opportunities in waterbody management.
6. **Promotion of Green Enterprises:** Wetland-linked microenterprises, including handicrafts and food processing, are giving rise to rural entrepreneurship.
7. **Improved Agricultural Output:** Wetlands improve soil moisture and irrigation, enabling farmers to adopt multi-cropping and water-saving practices.

INSTITUTIONAL FRAMEWORK AND POLICY INITIATIVES

1. **Wetlands (Conservation and Management) Rules, 2017:** Establish a legal foundation for identifying, notifying, and managing wetlands through State Wetland Authorities.
2. **National Wetland Committee and Authorities:** Provide inter-agency coordination, expert advice, and policy guidance to ensure compliance and strategic planning.
3. **State Wetland Authorities (SWAs):** These function as nodal bodies for inventorying, monitoring, and approving wetland restoration projects.
4. **National Plan for Conservation of Aquatic Ecosystems (NPCA):** Offers central financial and technical support for state-led conservation of wetlands and urban lakes.
5. **Amrit Dharohar Scheme:** Focuses on community-led eco-tourism, biodiversity conservation, and sustainable management of Ramsar sites.
6. **Mission Amrit Sarovar:** Targets the creation and rejuvenation of 75 water bodies per district, promoting water security and local employment.
7. **Convergent Implementation Mechanism:** Collaboration between ministries of Environment, Jal Shakti, Rural Development, and others ensures integrated execution.

GLOBAL ENVIRONMENTAL LEADERSHIP AND DIPLOMACY

1. **Ramsar Convention Participation:** India has shown strong engagement at COP15 and earlier summits, advocating for wetland protection in multilateral forums.
2. **Highest Ramsar Sites in Asia:** With 80 designated Ramsar wetlands, India leads in Asia, showcasing proactive site identification and management.

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3. **Contribution to Ramsar Strategic Plan:** Aligning domestic actions with the 2016–2024 Ramsar Strategic Plan, India supports global wetland conservation targets.
4. **Model for Global South:** India's low-cost, community-driven model serves as a template for countries in Africa, Latin America, and Southeast Asia.
5. **Alignment with MEAs (Multilateral Environmental Agreements):** Wetland protection complements India's commitments to the Convention on Biological Diversity (CBD) and UNFCCC.
6. **South-South Cooperation Advocacy:** India promotes knoswledge-sharing and capacity building through diplomatic channels, aiding wetland management in other developing countries.
7. **Environmental Diplomacy through Leadership Initiatives:** India's hosting of global events and bilateral engagements positions it as a climate-resilient, ecosystem-restoring nation.

CLIMATE CHANGE AND NATURAL RESILIENCE

1. **Carbon Sequestration Capacity:** Peatlands and marshes store more carbon per hectare than forests, supporting India's carbon sink goals.
2. **Flood and Drought Buffering:** Wetlands moderate the hydrological cycle, protecting communities during both floods and dry spells.
3. **Support to NDC Implementation:** Restoration projects contribute to India's Nationally Determined Contributions under the Paris Agreement.
4. **Integration with NAFCC Projects:** Wetlands are included in projects funded by the National Adaptation Fund for Climate Change, promoting ecosystem-based adaptation.
5. **Climate-Proofing Coastal and Arid Zones:** In states like Gujarat and Tamil Nadu, wetlands bolster resilience to salinization, sea-level rise, and droughts.
6. **Heatwave and Urban Resilience:** Urban wetlands reduce surface temperatures and improve air quality, helping cities cope with heat extremes.
7. **Nature-Based Infrastructure Approach:** Wetland ecosystems are now part of disaster risk reduction and climate-proof urban planning in India.

ALIGNMENT WITH SUSTAINABLE DEVELOPMENT GOALS (SDSGS)

1. **SDG 6 – Clean Water and Sanitation:** Rejuvenated wetlands improve surface and groundwater quality, ensuring safe water access for nearby communities.
2. **SDG 13 – Climate Action:** Wetlands absorb emissions and provide cost-effective climate adaptation through biodiversity and hydrological functions.
3. **SDG 15 – Life on Land:** Restoration enhances habitat connectivity and supports species diversity in fragile ecosystems.
4. **SDG 1 – No Poverty:** Livelihoods generated through eco-tourism, fisheries, and MGNREGS work contribute to poverty alleviation.
5. **SDG 8 – Decent Work and Economic Growth:** Local wetland economies enable job creation, especially for women and youth, in green sectors.
6. **SDG 11 – Sustainable Cities:** Urban wetland projects, such as Pallikaranai Marsh in Chennai, enhance urban sustainability and public health.
7. **SDG 17 – Partnerships for the Goals:** Cross-sector partnersships between government, academia, civil society, and international bodies reinforce outcomes.

SCIENTIFIC RESEARCH, DATA, AND INSTITUTIONAL CAPACITY

1. **National Wetland Inventory and Assessment (NWIA):** This scientific database maps over 2 lakh wetlands, categorizing them by size, function, and vulnerability.
2. **Involvement of Research Institutions:** Bodies like Wildlife Institute of India (WII), SACON, and NIOT support restoration through ecological and hydrological research.
3. **State Wetland Authorities Capacity Building:** Officials receive regular training on adaptive management, GIS tools, and biodiversity monitoring.

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4. **Knowledge Repositories and Documentation:** Case studies, manuals, and toolkits on wetland restoration are published to encourage replication and standardization.
5. **Citizen Science and Data Crowdsourcing:** Public participation in monitoring enhances data richness and spreads environmental literacy.
6. **Performance-Based Monitoring Systems:** Scientific frameworks are used to measure biodiversity gains, water quality improvements, and socio-economic benefits.
7. **Evidence-Based Policy Integration:** Research outcomes directly inform policy changes, such as urban wetland zoning or species protection measures.

CONCLUSION

India's rejuvenation of over 68,000 wetlands within a year reflects a holistic model of environmental stewardship, blending technology, community participation, and policy support. These efforts enhance biodiversity, water security, climate resilience, and livelihoods. India's proactive role in global platforms like the Ramsar Convention and its alignment with SDGs position it as a leader in nature-based solutions. To sustain this progress, continued investment, stronger enforcement, and integration of wetlands into broader development and climate strategies are essential.

INDIA'S DEEP OCEAN MISSION: A LEAP INTO THE BLUE FRONTIER

WHY IN THE NEWS?

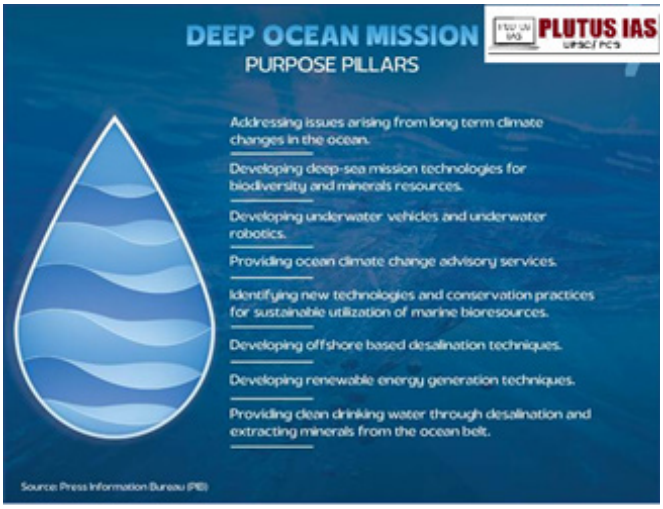
The Deep Ocean Mission, launched on 7 September 2021 by the Ministry of Earth Sciences, has gained focus as India pushes its Blue Economy agenda. With an outlay of ₹4077 crore over five years, the mission seeks to explore deep-sea resources and develop related technologies. It aligns with the UN's Decade of Ocean Science (2021–2030) for sustainable development. India's vast coastline and maritime potential make it a key driver in tapping ocean wealth. The mission is central to the government's Vision of New India 2030, where the Blue Economy is a core growth dimension.

THE MISSION – EXPLORING THE UNKNOWN

The deep sea, still full of mysteries, holds not just the secrets of human origins but also clues to our long-term sustenance and preservation. To unlock its hidden potential, India's Deep Ocean Mission was launched on 07.09.2021 by the Ministry of Earth Sciences (MoES) with an aim to develop technologies for exploring and sustainably utilising the deep ocean's living and non-living wealth.

With an overall investment of ₹4077 crore spread across five years, this mission isn't a one-time dive - it will unfold in phases and is designed as a full-throttle national project, driving forward India's Blue Economy, which includes all marine-based industries - from fishing and shipping to biotechnology and tourism.

Exploring these depths could provide solutions to global challenges like climate change. Considering this, the United Nations named the 2021-2030 decade as the 'Decade of Ocean Science for Sustainable Development'. India's unique geography, with 7517 km of coastline, nine coastal states, and 1382 islands, gives it an edge in the sector. This is why, in the Vision of New India by 2030, the Government has placed Blue Economy among the ten core growth dimensions.



MISSION COMPONENTS

1. **Development of Technologies for Deep Sea Mining, and Manned Submersible:** India is building a manned submersible to take three

people down to 6000 meters in the ocean. Alongside, an Integrated Mining System will be developed to extract polymetallic nodules from the deep sea in the Central Indian Ocean. These efforts will support future commercial mineral exploration, once global rules are set by the International Seabed Authority.

2. **Development of Ocean Climate Change Advisory Services:** An observations and model suite will be developed to study and forecast key climate variables from seasonal to decadal scales. This proof-of-concept initiative aims to enhance understanding of climate trends and contribute to the Blue Economy focusing on promoting coastal tourism.

3. **Technological innovations for exploration and conservation of deep-sea biodiversity:** The core focus is on bio-prospecting deep-sea flora, fauna, and microbes, alongside research into the sustainable use of deep-sea biological resources. This initiative will advance the Blue Economy priority area of marine fisheries and allied services.

4. **Deep Ocean Survey and Exploration:** This initiative focuses on identifying multi-metal hydrothermal sulphide sites along the Indian Ocean mid-oceanic ridges and supports deep-sea resource exploration under the Blue Economy.

5. **Energy and freshwater from the Ocean:** This proof-of-concept proposes studies and engineering design for an offshore Ocean Thermal Energy Conversion (OTEC) powered desalination plant, supporting the Blue Economy focus on offshore energy development.

6. **Advanced Marine Station for Ocean Biology:** This component focuses on building talent and innovation in ocean biology and engineering, turning research into industrial products via on-site incubators. It supports marine biology, blue trade, and manufacturing under the Blue Economy.

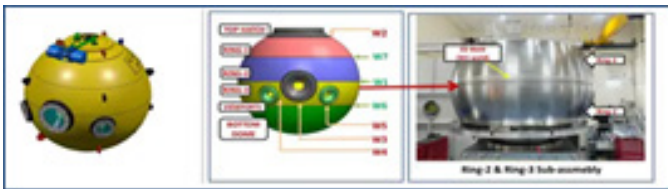
PROJECT SAMUDRAYAAN – THE DEEP-SEA LEAP

India launched the Samudrayaan Project, under the umbrella of Deep Ocean Mission, to work on its first component of deep-sea exploration through a manned submersible.

MATSYA 6000, a self-propelled manned submersible capable of transporting three individuals to depths of up to 6,000 meters beneath the ocean surface, is being developed under this project. Equipped with a comprehensive array of scientific instruments and exploration tools, this advanced vehicle will enable extensive deep-sea research. The submersible is built to work for 12 hours of operational period and sustain up to 96 hours in emergency scenarios. It features advance systems like a high-density Li-Po battery, underwater acoustic telephone, drop-weight emergency escape mechanisms, and bio-vests for crew safety and health monitoring.

THE TECHNOLOGY

1. The vehicle is a spherical titanium-alloy vessel (Ti6Al4V - ELI grade) with a diameter of 2260 mm and wall thickness of 80 mm, designed to withstand 600 bar pressure and temperatures as low as -3°C.
2. The titanium vessel has been constructed by a special welding process called high-penetration Electron Beam Welding (EBW) process developed by the Liquid Propulsion Systems Centre (LPSC) of Indian Space Research Organisation (ISRO). Perfection of the process was achieved after 700 trials.
3. The welding quality has been further tested by very advanced techniques like a combination of Non-Destructive Evaluation (NDE) methods such as Time-of-Flight Diffraction (TOFD) and Dual Linear Array (DLA) Phased Array Ultrasonic Testing (PAUT)



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This Human Occupied Vehicle (HOV), is being developed through a collaboration between National Institute of Ocean Technology (NIOT), MoES and Vikram Sarabhai Space Centre (VSSC), ISRO. Significant progress has been achieved so far in this initiative.

THE TRIALS: VOYAGE OF VALIDATION

1. **Dry and Wet Trials of Matsya 6000**

   Integrated Dry Tests: Matsya first underwent integrated dry tests across a 500-meter operational range, ensuring smooth system integration within its exo-structure.

   Wet Trials (Jan–Feb 2025): Conducted at L&T Shipyard, Kattupalli Port, Chennai, these trials validated power and control systems, flotation and stability, navigation, communication, forward–reverse motion, and human safety mechanisms.

   Scientific Payload Testing: Advanced oceanographic sensors were tested and confirmed functional.

   Demonstration Phase: Eight dives were carried out – five unmanned dives followed by five manned dives, each rigorously qualifying the life support system.

2. **India's First-Ever 5000 m Deep-Sea Venture**

   Date & Collaboration: On 5–6 August 2025, India achieved a major milestone in collaboration with IFREMER (French Marine Research Institute).

   Location: The expedition was conducted in the Atlantic Ocean using IFREMER's submersible Nautile.

   Indian Aquanauts: Senior Scientist Shri Raju Ramesh and Cdr. Jatinder Pal Singh (Retd) from NIOT, Chennai, completed seven-hour dives to a depth of 5000 m, placing India among an elite group of fewer than half a dozen nations with such capability.

3. **Key Outcomes and Learnings**

   Pre-dive preparation and piloting operations.

   Habitability and buoyancy management.

   Manipulator-based interventions (flag placement, sample collection).

   Deployment and retrieval during dives.

   Trajectory tracking and onboard system management.

   Operating acoustic communication systems.

   End-to-end planning and execution of deep-sea operational procedures.

This Indo-French research expedition supports 'MATSYA – 6000' development highlighting milestones like realisation and testing of the titanium hull, syntactic foam, VBS, and drop-weight mechanism, open ocean testing of subsystems and certification, shallow water demonstration up to 500 meters by early 2026, research vessel augmentation with LARS, integration and deep-water tests by mid-2027 and scientific explorations using MATSYA-6000 during 2027–28.

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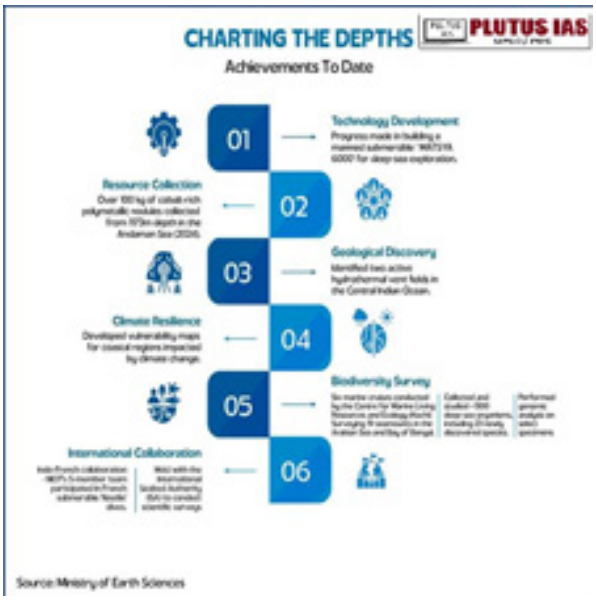
DEEP OCEAN MISSION: STORY TILL NOW



India has made notable strides in developing indigenous deep-sea technologies, including vehicles and pressure-resistant materials, with successful trials already in progress. In December 2022, the Ocean Mineral Explorer (OMe 6000), an autonomous vehicle, explored mineral-rich zones at a depth of 5,271 meters in the Central Indian Ocean Basin Polymetallic Manganese Nodule (PMN) site. Using the research vessel SagarNidhi, it surveyed 14 sq. km and mapped a detailed 1 km × 0.5 km area to assess polymetallic nodule distribution and deep-sea biodiversity, laying the groundwork for future exploration and resource mapping.

CONCLUSION

The Deep Ocean Mission, with its pioneering Samudrayaan Project, marks a transformative leap in India's scientific and strategic capabilities. By venturing into the depths of the ocean, India is not only unlocking vast reserves of minerals, biodiversity, and energy, but also positioning itself among the few nations with advanced deep-sea exploration technology as enshrined in Prime Minister's vision of 'Samudra Manthan'. The development of a manned submersible reflects India's growing expertise in marine engineering and innovation. This initiative supports key pillars of the Blue Economy and also fosters indigenous technology, boosts marine-based industries, and creates new opportunities for research, enterprise, and employment. The Deep Ocean Mission is not just a dive into the unknown - it's a bold stride toward a resilient, resource-rich, and future-ready India.

Prelims Questions

Q1. Consider the following statements regarding the PM E-DRIVE Scheme:

1. The scheme is India's first dedicated initiative for electric trucks.
2. It subsumes the Electric Mobility Promotion Scheme (EMPS) 2024.
3. Only vehicles manufactured in India are eligible under this scheme.
4. The scheme mandates scrapping of old diesel trucks to avail incentives.

Which of the above statements are correct?

A. 1, 2 and 3 B. 1, 2 and 4
C. 2 and 3 only D. 1 and 4 only

Q2. Which of the following statements regarding India's wetland conservation efforts is/are correct?

1. India has the highest number of Ramsar Sites in the world.
2. The "Amrit Dharohar" scheme promotes community-led eco-tourism and biodiversity conservation at Ramsar Sites.
3. GIS-based mapping and hydrological simulation have been integrated into India's wetland rejuvenation strategy.

Select the correct answer using the code below:

A. 1 and 2 only B. 2 and 3 only
C. 1 and 3 only D. 1, 2 and 3

Q3. Consider the following statements about India's Deep Ocean Mission:

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1. It is being implemented by the Ministry of Earth Sciences.
2. MATSYA 6000 submersible is designed to carry three people to a depth of 6000 m.
3. One of its components focuses on generating freshwater using Ocean Thermal Energy Conversion (OTEC).

Which of the above statements is/are correct?

A. 1 and 2 only B. 2 and 3 only
C. 1 and 3 only D. 1, 2 and 3

Answer Key

1. B	2. B	3.D

Mains Questions

Q1. The launch of the PM E-DRIVE Scheme marks a policy shift in India's electric mobility mission. Critically examine its objectives, key features, significance, and challenges in the context of achieving clean and sustainable freight transport.

(250 words, 15 marks)

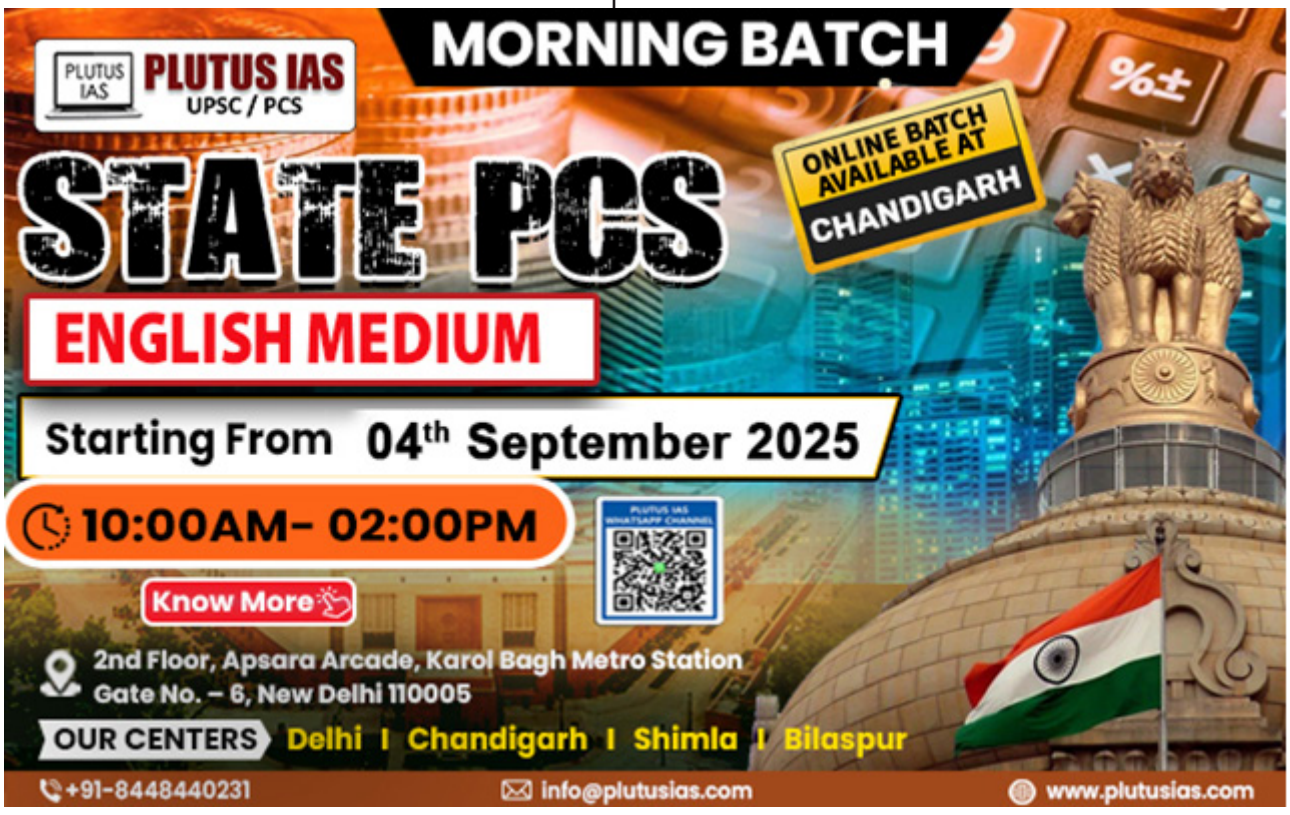
Q2. India's model of wetland rejuvenation, demonstrated at COP15 of the Ramsar Convention, is a convergence of ecological restoration, community engagement, and technological innovation.

Discuss how this model contributes to environmental sustainability and climate resilience.

(250 words, 15 marks)

Q3. The Deep Ocean Mission reflects India's scientific ambition and strategic preparedness in harnessing ocean wealth. Discuss its significance for the Blue Economy, technological innovation, and sustainable development.

(250 words, 15 marks)



POLICING THE PEAKS: ARUNACHAL'S NEW BATTALION TO TACKLE BORDER AND INTERNAL THREATS

WHY IN THE NEWS?

The Arunachal Pradesh government has approved the creation of a new Arunachal Armed Police Battalion (AAPBN) to strengthen internal security and reduce dependence on Central Armed Police Forces (CAPFs). This India Reserve Battalion can be deployed across India if required by the Ministry of Home Affairs. The move aims to boost state policing capacity and ensure quicker response to security challenges. It is also expected to enhance public safety in remote and sensitive regions. Additionally, it will generate employment opportunities for local youth in the security sector.

NEED FOR STRENGTHENING INTERNAL SECURITY

1. **Porous International Borders:** Arunachal shares over 1,600 km of borders with China, Myanmar, and Bhutan, making it vulnerable to illegal infiltration, smuggling, and external threats.
2. **Chinese Territorial Claims:** China continues to claim parts of Arunachal as "South Tibet", increasing the strategic sensitivity of the region.
3. **Spillover of Insurgency:** Insurgents from neighbouring Nagaland, Assam, and Myanmar-based groups often cross into Arunachal for shelter or transit.
3. **Weak Local Policing:** Difficult terrain and limited infrastructure hinder effective police presence in remote areas.
4. **Security Gaps in Border Villages:** Several border villages lack sufficient patrolling, making them prone to external influence and migration.
5. **Tensions from Ethnic Conflicts:** Historical grievances and demands for autonomy by local tribes can escalate into security issues if not managed.
6. **Need for Rapid Response Forces:** Localised armed police can respond faster to unrest than distant CAPFs.
7. **Support to Development Projects:** Internal security is essential for smooth implementation of development and connectivity initiatives in border areas.

ROLE OF ARUNACHAL ARMED POLICE BATTALION (AAPBN)

1. **Crowd Control and Riot Management:** The battalion will assist in managing protests, festivals, or community tensions.
2. **Counter-Insurgency Operations:** AAPBN will be trained to operate in forested, high-altitude regions for anti-insurgency tasks.
3. **Border Area Patrolling:** It will help in securing sensitive and disputed border regions where civil police presence is weak.

4. **Disaster Relief and Rescue:** The battalion can provide logistical and security support during natural disasters like landslides and floods.
5. **Special Protection Duties:** It can offer security for VVIPs, major installations, and high-value projects like highways and hydropower plants.
6. **Aid to Civil Administration:** During law and order breakdowns or emergencies, AAPBN can support the district police and civil authorities.
7. **Reducing CAPF Dependence:** The battalion allows Arunachal to rely less on Central Armed Police Forces, fostering self-sufficiency.
8. **Psychological Assurance:** Enhanced visible presence of trained security forces helps build public confidence in state capability.

INDIA RESERVE BATTALION MODEL

1. **MHA-Sanctioned Structure:** India Reserve (IR) Battalions are sanctioned by the Ministry of Home Affairs and raised by state governments.
2. **Flexible Deployment:** They can be deployed both within the home state and across India as per central orders.
3. **Training Par with CAPFs:** IR battalions receive rigorous training similar to BSF or CRPF in counter-insurgency and disaster response.
4. **Financial Support by Centre:** The central government provides assistance for raising infrastructure, arms, and initial salaries.
5. **Used During National Crises:** IR battalions from other states have been deployed in J&K, Naxal areas, and riot-hit zones.
6. **Rapid Mobilisation Units:** Their structure enables swift movement and deployment to conflict zones.
7. **State Capacity Building Tool:** Acts as a reserve force to boost state-level internal security without needing regular paramilitary deployment.

PUBLIC SAFETY AND ADMINISTRATIVE IMPACT

1. **Enhanced Grassroots Policing:** AAPBN will fill the policing vacuum in far-flung regions where traditional police are absent.
2. **Quick Reaction Force:** Enables prompt response to crises such as mob violence, blockades, or targeted attacks.
3. **Support to Civil Authority:** Provides logistical and human resource support during elections, festivals, and security operations.
4. **Check on Cross-Border Crimes:** Strengthened presence in vulnerable areas will deter smuggling, human trafficking, and narcotics movement.
5. **Improved Law and Order in Towns:** Urban areas will benefit from better law enforcement and reduced strain on existing police.
6. **Surveillance and Intelligence:** Battalion presence helps gather grassroots intelligence and builds local rapport.
7. **Boost to Tourism Safety:** Visible police presence reassures tourists, boosting the state's adventure and eco-tourism sectors.
8. **Faster Case Resolution:** With better-equipped personnel, crimes in tribal and border areas can be investigated more efficiently.

EMPLOYMENT AND LOCAL YOUTH EMPOWERMENT

1. **Recruitment from Tribal Communities:** Special emphasis on hiring youth from local tribes, ensuring representation and inclusivity.
2. **Job Creation in Remote Areas:** Employment in the security sector offers stable income and skill-building for remote populations.
3. **Skill Development:** Training programs instil discipline, communication, and modern policing skills among recruits.
4. **Reducing Youth Alienation:** Active involvement in governance through police service can reduce insurgency recruitment.
5. **Socio-Economic Mobility:** Employed youth support their families, creating a ripple effect in rural development.
6. **Role Models for Others:** Successful officers from local communities can inspire more youth to join mainstream service.
7. **Gender Inclusivity:** Opportunity to recruit women into state armed police, improving gender balance.

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8. **Post-Retirement Benefits:** Government service offers pensions, housing, and education benefits, enhancing long-term welfare.

STRATEGIC SIGNIFICANCE OF ARUNACHAL PRADESH

1. **Geopolitical Tensions with China:** Frequent PLA incursions and Beijing's refusal to recognise Arunachal's status make it a security hotspot.
2. **Tawang Sector Sensitivity:** AAPBN presence near Tawang can enhance surveillance in the strategically crucial region.
3. **India's Forward Posture:** Strengthening local security is part of India's broader policy to match Chinese infrastructure near LAC.
4. **Buffer Against External Influence:** Security presence can counter Chinese propaganda and subversion activities in border villages.
5. **Facilitating Strategic Projects:** Projects like the Frontier Highway and Border Area Development Program require secure conditions.
6. **Boosting Defence Logistics:** A well-trained state police can assist the army in non-combat tasks like route clearing and local coordination.
7. **Part of Act East Vision:** Security in the Northeast is essential for economic connectivity with Southeast Asia.
8. **Support for Village Clusters:** AAPBN can help maintain law and order in new model villages being developed under Vibrant Villages Programme.

CHALLENGES IN IMPLEMENTATION

1. **Funding Constraints:** High initial and recurring costs for infrastructure, salaries, and training.
2. **Logistics in Difficult Terrain:** Poor road connectivity may delay mobilisation or affect efficiency.
3. **Shortage of Trainers:** Limited access to experienced trainers for high-altitude, jungle warfare, and tech-based policing.
4. **Retention Issues:** Youth from remote areas may seek opportunities outside the state, affecting battalion stability.
5. **Inter-agency Coordination:** Effective functioning needs smooth coordination between civil police, AAPBN, army, and CAPFs.
6. **Risk of Militarisation:** Overuse in civil situations could lead to human rights issues or public distrust.
7. **Cultural Sensitivities:** Local customs and community dynamics must be respected during operations.
8. **Sustained Political Support:** Political will is essential for continuous funding, reforms, and community trust-building.

WAY FORWARD

1. **Technology Integration:** Use of drones, bodycams, GPS-based patrolling, and AI-assisted surveillance for efficiency.
2. **Focused Training Institutes:** Establish dedicated training academies in the Northeast for specialised terrain policing.
3. **Community Policing Model:** Encourage community engagement through tribal elders, local leaders, and peace committees.
4. **Women's Participation:** Recruit and train more women officers to improve inclusivity and public trust.
5. **Centre–State Security Synergy:** Regular joint exercises and information-sharing with central forces like CRPF, ITBP.
6. **Periodic Performance Review:** Independent audits and public feedback to evaluate battalion effectiveness.
7. **Integration with Smart Policing Initiatives:** Link battalion operations to Crime and Criminal Tracking Network (CCTNS).
8. **Long-term Decentralised Security Strategy:** Empower local units for proactive, intelligence-led policing rooted in local realities.

CONCLUSION

The creation of a new Arunachal Armed Police Battalion is a strategic step toward enhancing internal security, reducing reliance on central forces, and addressing unique border challenges. It strengthens local policing, empowers youth through employ-

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ment, and supports national interests in a geopolitically sensitive region. With proper implementation, training, and community engagement, the AAPBN can become a vital pillar of decentralized and responsive security in the Northeast.

Prelims Questions

Q. With reference to India Reserve Battalions (IRBs), consider the following statements:

1. They are raised by the state governments with financial support from the Ministry of Home Affairs.
2. IRBs can only be deployed within the boundaries of the state that raises them.
3. They are part of the Central Armed Police Forces (CAPFs).

Which of the statements given above is/ are correct?

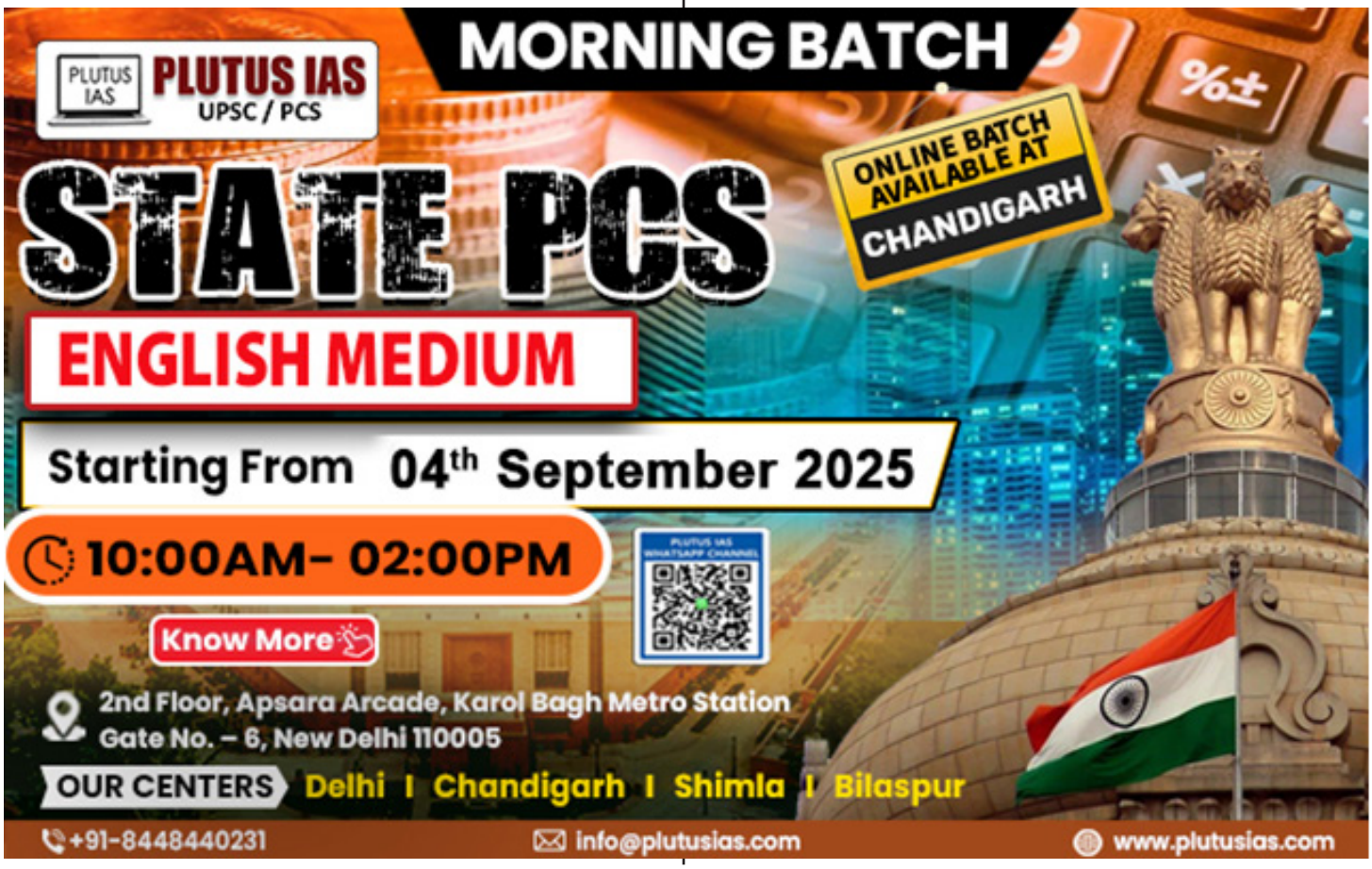
A. 1 only B. 1 and 2 only
C. 1 and 3 only D. 2 and 3 only

Answer: A

Mains Questions

Q. Discuss the significance of India Reserve Battalions in addressing state-level security challenges. How do they complement the role of Central Armed Police Forces (CAPFs) in maintaining internal security?

(250 words, 15 marks)



WINTER FOG EXPERIMENT (WIFEX): A DECADE OF SCIENTIFIC INNOVATION AND POLICY IMPACT

WHY IN THE NEWS?

The Winter Fog Experiment (WiFEX), launched in 2015 at Delhi's Indira Gandhi International Airport (IGIA), has successfully completed 10 years of pioneering research on dense winter fog in North India. It is recognized as one of the most comprehensive long-term fog studies globally, focusing on the Indo-Gangetic Plain. WiFEX has significantly advanced scientific understanding of fog dynamics, variability, and microphysics. The insights gained have led to the development of high-resolution fog forecasting models with operational applications in aviation and transport.

ABOUT WINTER FOG EXPERIMENT (WIFEX)

Feature	Details
Purpose	To study the formation, dynamics, and variability of dense winter fog over the Indo-Gangetic Plain
Launch Year	2015
Location	IGI Airport, New Delhi; later expanded to Jewar Airport (Noida) and Hisar (Haryana)
Lead Institution	Indian Institute of Tropical Meteorology (IITM), Pune
Under Ministry	Ministry of Earth Sciences (MoES)
Supporting Agencies	- India Meteorological Department (IMD) - National Centre for Medium Range Weather Forecasting (NCMRWF)

OBJECTIVES OF WIFEX

1. **To Understand Fog Microphysics:** Study the physical structure of fog, including temperature inversion, humidity levels, and turbulence patterns.
2. **To Analyze Fog Variability:** Explore how fog patterns differ spatially and temporally across the Indo-Gangetic Plain.
3. **To Develop High-Accuracy Forecasting Models:** Design and refine fog forecasting tools for nowcasting (0–6 hours) and short-term prediction at fine resolution.
4. **To Improve Transport Safety:** Reduce the risk of flight delays, train slowdowns, and road accidents caused by poor visibility.
5. **To Assist in Disaster Preparedness:** Integrate fog forecasting with early warning systems and disaster risk reduction strategies.
6. **To Enable Science-Policy Convergence:** Provide scientific data to inform aviation authorities, urban planners, and climate policymakers.
7. **To Build Indigenous Capability:** Strengthen India's self-reliant forecasting systems by generating region-specific data and models.

KEY FEATURES OF WIFEX

1. **Advanced Instrumentation Deployment:** Use of micrometeorological towers, ceilometers, and LIDAR to monitor fog parameters.

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2. **High-Frequency Real-Time Monitoring:** Sensors collect continuous data on temperature profiles, wind speed, turbulence, and aerosols.
3. **Comprehensive Data Capture:** Records include soil heat flux, relative humidity, visibility range, and pollutant concentration.
4. **Strategic Location Network:** Started at IGI Airport (Delhi) and later expanded to Jewar (Noida) and Hisar (Haryana).
5. **Focus on Fog Life Cycle:** Models the entire fog cycle—formation, intensification, duration, and dissipation—under varying weather conditions.
6. **Environmental Interaction Study:** Examines the influence of urban heat islands, pollution, and land-use change on fog intensity.
7. **Operational Forecasting Output:** Developed a 3-km resolution probabilistic fog prediction model with 85% accuracy for very dense fog events.

MAJOR OUTCOMES OF WIFEX

Category	Details
High-Resolution Fog Forecasting Model	Resolution: 3 km grid scale Accuracy: Over 85% for very dense fog (visibility < 200 m) Utility: Predicts onset time, duration, and dispersal of fog
Operational Benefits	- Reduces flight delays and diversions - Improves runway safety and passenger planning - Enables localized fog alerts for airports and air traffic control
Scientific Insights	- Clarified role of aerosols and particulate matter - Highlighted impact of urban heat islands on fog formation - Assessed influence of land-use changes such as urbanization and deforestation

LINKAGES OF WIFEX WITH BROADER ISSUES

1. **Climate Change and Extreme Weather:** Rising emissions and temperature fluctuations due to climate change are increasing the frequency and intensity of dense fog episodes over the Indo-Gangetic Plain.
2. **Urbanization and Heat Islands:** Unplanned urban growth contributes to urban heat islands, which affect local temperature gradients and fog formation dynamics—studied deeply under WiFEX.
3. **Air Pollution and Smog Formation:** WiFEX revealed strong correlations between particulate pollution (PM2.5, PM10) and fog/smog formation, especially during winter.
4. **Disaster Risk Reduction (DRR):** WiFEX data contributes to early warning systems under NDMA and IMD, reducing visibility-related accidents and economic losses.
5. **Transport and Infrastructure Planning:** Helps civil aviation, railways, and highways in planning for fog-related disruptions and in improving resilience of critical infrastructure.
6. **Science-Policy Integration:** The program bridges the gap between scientific research and public policy, helping formulate effective responses to weather and visibility-related risks.
7. **Sustainable Urban Planning:** WiFEX insights can guide urban design, green infrastructure, and pollution control measures to reduce fog-enhancing conditions in cities.

CHALLENGES

1. **Data Gaps in Rural and Remote Areas:** Limited installation of meteorological equipment in smaller airports and non-urban regions leads to forecasting blind spots.
2. **Rapid and Unplanned Urbanisation:** Uncontrolled construction and vehicular emissions alter microclimates, making fog behaviour less predictable.
3. **Lack of Public Awareness:** Low fog forecast literacy among the public and transport operators limits the effective use of warnings.
4. **Integration with Transport Systems:** Operational integration of fog alerts with aviation, rail, and road traffic systems remains inadequate or fragmented.

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5. **Technological and Infrastructure Limitations:** High-cost instruments and maintenance challenges limit coverage and performance in extreme weather conditions.
6. **Variability in Local Terrain and Meteorology:** Regional variations in topography, land-use, and pollution make it difficult to apply a single predictive model across India.
7. **Limited International Cooperation:** Lack of sustained cross-border data exchange and research coordination with neighboring fog-affected countries like Pakistan, Nepal, and Bangladesh.

WAY FORWARD

1. **Runway-Specific Forecasting Expansion:** Extend fog models to provide localized, real-time forecasts for multiple airports, especially those frequently affected during winter.
2. **Integration of AI and Machine Learning:** Leverage AI/ML algorithms to improve the accuracy and adaptability of fog prediction models based on evolving atmospheric patterns.
3. **Geographical Expansion to Vulnerable Regions:** Expand WiFEX to cover eastern India, northeastern states, and Himalayan foothills, where fog events are increasing in frequency.
4. **Collaboration with Global Forecasting Agencies:** Partner with international meteorological institutions for data sharing, model comparison, and joint research.
5. **Incorporation into National Transport Planning:** Integrate fog forecast tools into railway and highway management systems for better traffic flow and accident prevention.
6. **Upgradation of Instrumentation and Network:** Install next-gen fog sensors and expand the automated observation network to capture real-time data in finer detail.
7. **Public Communication and Advisory Systems:** Develop user-friendly mobile apps, dashboards, and SMS alert systems to deliver fog advisories to commuters and transport operators.

CONCLUSION

The Winter Fog Experiment (WiFEX) stands as a pioneering initiative in India's atmospheric science and disaster preparedness landscape. Over a decade, it has transformed fog from an unpredictable hazard into a scientifically understood phenomenon, enabling actionable early warnings and safer transport operations. Its success lies in the convergence of high-end instrumentation, scientific rigor, and policy relevance. As climate change, air pollution, and urban expansion intensify fog-related risks, WiFEX offers a scalable, data-driven model for mitigating their impacts

LEAP BEYOND: ELEVATING INDIA'S SPACE SAGA

WHY IN THE NEWS?

India's space programme, spearheaded by the Indian Space Research Organisation (ISRO), has transformed the nation into a prominent power in global space exploration. From the historic launch of Aryabhata, India's first satellite in 1975, the country has progressed to pioneering cost-effective satellite launches with the PSLV, delivering over 400 foreign satellites into orbit. The turning point for India's space program came in 2014 with the introduction of major space reforms. Under the leadership of the Prime Minister, the government initiated a series of policy changes aimed at opening up the space sector to private participation and international collaboration. These reforms were a game-changer, unlocking India's space potential and setting the stage for a quantum leap forward.

"Space is not just a destination. It is a declaration of curiosity, courage, and collective progress. India's space journey reflects this spirit. From launching a small rocket in 1963, to becoming the first nation to land near the South Pole of Moon, our journey has been remarkable."– Prime Minister Narendra Modi

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INDIA'S SPACE ACHIEVEMENTS

India's space programme, led by the Indian Space Research Organisation (ISRO), is undergoing a transformation marked by bold ambitions, technological innovation, and increasing global collaboration.

Over 400 satellites for 34 nations have been launched on India's launch vehicles.

INDIA'S FIRST HUMAN SPACEFLIGHT TO THE INTERNATIONAL SPACE STATION: AXIOM-4 MISSION

The successful culmination of the Axiom Mission 4 (Ax-4) marks a transformative chapter in India's space journey. Launched on 25th June 2025, this historic mission enabled India, Poland, and Hungary to conduct their first government-sponsored human spaceflights in over four decades, with all three nations achieving human presence aboard the International Space Station (ISS) for the first time. Spearheaded by Axiom Space, this mission exemplifies the growing democratization of access to space and the strengthening of national space capabilities through international collaboration.

INDIA'S LANDMARK HUMAN SPACEFLIGHT MILESTONE

Group Captain Shubhanshu Shukla, representing India as the Mission Pilot, became the first Indian astronaut to travel to the ISS, marking a defining achievement in the nation's human spaceflight history. His journey and 18-day stay aboard the ISS signal a new era of Indian ambitions in low-Earth orbit exploration. After a 22.5-hour return journey, the crew returned to Earth aboard the SpaceX Dragon capsule 'Grace', which splashed down in the Pacific Ocean off the coast of San Diego at approximately 3 PM IST on 15th July 2025.

This mission lays a strong foundation for India's upcoming Gaganyaan programme and the long-term vision of establishing the Bharatiya Antariksha Station, highlighting India's commitment to sustained human presence in space.

SCIENTIFIC CONTRIBUTIONS AND EXPERIMENTS ONBOARD ISS

1. **Microalgae Experiment:** Three strains of microalgae were studied under artificial light to evaluate the effects of microgravity on their growth and behaviour.
2. **Seed Sprouting in Space:** Moong and methi seeds were successfully sprouted through controlled hydration. The results hold promise for developing space-based nutritional strategies.
3. **Tardigrade Strain Study:** An Indian strain of dormant tardigrades was revived and observed in microgravity, offering insights into biological survival under extreme space conditions.
4. **Myogenesis and Metabolic Supplements:** The experiment studied muscle cell behavior and the

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role of nutritional supplements in countering muscle degradation in microgravity.

5. **Cyanobacteria Growth:** The growth of cyanobacteria in urea and nitrate media was monitored to assess their use in life support systems and bioengineering applications in space.
6. **Human-Machine Interface Testing:** A series of web-based assessments analyzed how microgravity influences human interaction with electronic displays, aiming to improve user interfaces for astronauts.
7. **Space Agriculture Studies:** Seeds of crops like rice, cowpea, sesame, brinjal, and tomato were passively exposed to space. Upon return, they will be cultivated to examine possible inherited traits or adaptations due to space exposure.

GAGANYAAN PROGRAMME: INDIA'S LEAP INTO HUMAN SPACEFLIGHT

India's space ambitions took a major leap forward with the Gaganyaan Programme, the country's first indigenous human spaceflight initiative, approved with a substantial financial outlay of ₹20,193 crore. Spearheaded by the Indian Space Research Organisation (ISRO), this flagship mission aims to send Indian astronauts into Low Earth Orbit (LEO), marking a defining milestone in India's journey as a spacefaring nation.

This investment supports key technology development activities and a total of eight planned missions, including both uncrewed and crewed flights. Four Indian Air Force test pilots have been selected and have completed their physical, psychological, and generic spaceflight training-

Gp Capt. PB Nair

Gp Capt. Ajit Krishnan

Gp Capt. Angad Pratap

Gp Capt. S Shukla

They are set to become India's first astronauts in independent spaceflight, marking a new chapter in national scientific achievement. Before the crewed mission, three uncrewed test flights will take place, with first one scheduled for this year from Sriharikota. After successful testing, the crewed mission will follow. Additionally, astronauts will undergo rigorous physical and training modules to ensure mission readiness.

As of May 2025, the programme entered its final phase with the first human spaceflight now scheduled for the first quarter of 2027. Currently, the Human-rated LVM3 vehicle, the Crew Escape System, and the Crew Module and Service Module are all undergoing final stages of testing and integration, while training of astronauts is also progressing steadily.

Scientific focus: Developing and validating technologies necessary for safe human spaceflight, along with laying the groundwork for advanced space science research in microgravity environments. The mission includes precursor and demonstration missions, which are essential for the future construction and operation of the Bharatiya Antariksh Station (BAS), India's planned space station. These scientific objectives are closely aligned with India's broader vision during Amrit Kaal, for space exploration. Additionally, the program is expected to spur increased industrial participation and economic activity, generating employment, particularly in high-tech fields related to space and allied industries.

Safety of Human Spaceflight: When an object with high velocity re-enters the Earth's atmosphere, it generates significant heat. To address this, ISRO is developing and demonstrating advanced thermal protection systems to ensure safe re-entry. In the final phase, the spacecraft will be slowed to a precise, controlled velocity using parachutes, ensuring a safe and accurate landing.

CHANDRAYAAN

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1. **Chandrayaan-1:** Launched on October 22, 2008, Chandrayaan-1 was India's first mission to the Moon.

   It orbited the Moon, deployed the Moon Impact Probe, and performed high-resolution mapping and mineralogical studies. Chandrayaan-1 confirmed the presence of water molecules at the lunar poles and marked India's entry into deep space exploration.

2. **Chandrayaan-2:** Launched on July 22, 2019, Chandrayaan-2 comprised an orbiter, lander (Vikram), and rover (Pragyan).

   Although the lander did not achieve a soft landing, the mission was a success in terms of scientific data collection and technological advancements. The mission expanded India's lunar capabilities and scientific research.

3. **Chandrayaan-3:** Launched on July 14, 2023, Chandrayaan-3 marked a historic achievement for India as it successfully landed near the Moon's south pole.

   This mission made India the first country to achieve a soft landing in this region, which is of great scientific interest due to its permanently shadowed craters that may contain water ice.

   The lander (Vikram) and rover (Pragyan) successfully explored the surface, conducting thermal, seismic, and chemical analyses. Chandrayaan-3 made India the first country to land on the lunar south pole and furthered scientific knowledge of lunar soil and the environment.

4. **Chandrayaan-4:** Building on the success of Chandrayaan-3, Chandrayaan-4 will have a 9,200 kg satellite, this mission will involve sample collection and further experiments on the Moon's south pole.

   The mission's complexity and scale highlight India's growing capabilities in lunar exploration.

   Due to its size, it will be launched in two Mark III rockets, assembled in five modules with two stacks.

   These modules will dock in Earth's orbit, where the propulsion system will be separated. Four modules will travel to the Moon's orbit, with two eventually landing on the surface. The sample return module will only return to Earth, docking with the other two modules in lunar orbit.

MARS ORBITER MISSION (MANGALYAAN): A MILESTONE IN PLANETARY EXPLORATION

The Mars Orbiter Mission (MOM), popularly known as Mangalyaan, was India's first interplanetary mission, launched aboard PSLV-C25 on 5th November 2013. With its success, India became the first Asian country and fourth space agency globally to reach Mars orbit—on 23rd September 2014—and did so in the first attempt, earning international acclaim for cost-effectiveness and mission planning

Technological Objectives

Design and operation of a Mars orbiter capable of:

1. Earth-bound manoeuvres, 300-day cruise, and Mars Orbit Insertion
2. On-orbit operations around Mars
3. Development of deep space communication, navigation, and mission management systems
4. Incorporation of autonomous systems to handle contingencies

Scientific Objectives

1. Study of Mars' surface features, topography, mineralogy, and atmosphere using indigenous instruments

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2. Mars Colour Camera captured over 500 images, aiding planetary research
3. Enabling scientific data generation and research opportunities for Indian scientists

NAVIC (NAVIGATION WITH INDIAN CONSTELLATION)

NavIC is a satellite-based navigational system, developed by the Indian Space Research Organisation (ISRO), which enables users to determine their precise geographic location and track their movements anywhere in India and 1500 km beyond India's territorial boundary.[15] NavIC can help in navigation on land, air, sea and also in disaster management. NavIC satellites are placed in geostationary orbit (GEO) & geosynchronous orbit (GSO) with an altitude of about 36,000 km; GPS satellites are placed in medium earth orbit (MEO) with an altitude of about 20,000 km

INDIA'S SPACE SECTOR: POLICY, INVESTMENT, AND PRIVATE SECTOR GROWTH

Category	Details
FDI Policy (2024)	100% FDI allowed under revised policy: • Up to 74% (Automatic): Satellites, data products, ground/user segments • Up to 49% (Automatic): Launch vehicles, spaceports • Up to 100% (Automatic): Components & subsystems • Beyond limits: Government route
India Space Policy 2023	Encourages private participation across entire space value chain—manufacturing, launches, services, and ground infrastructure
Space Vision 2047	Long-term roadmap for: • Bharatiya Antariksha Station (BAS) • Crewed lunar missions • Next-gen launch vehicles • Venus and deep space missions
Key Institutions	• IN-SPACe (2020): Nodal agency for private participation • Antrix Corp (1992): Original commercial arm • NSIL: Commercialisation & industry support using ISRO tech
Budget Growth	Increased from ₹5,615 Cr (2013–14) to ₹13,416 Cr (2025–26) – nearly tripled in a decade
Mission Successes	• Over 100 successful ISRO launches in 11 years
Private Sector Growth	• 328+ space startups emerged • Supported by policy reforms, VC fund, and IN-SPACe facilitation
Innovation Initiatives	• SpaDeX Mission: Tackling space debris • Growth of high-tech jobs and industrial participation driven by open policy ecosystem

WAY FORWARD

1. **PSLV-C61/EOS-09 Mission:** PSLV will launch EOS-09, a state-of-the-art microwave remote sensing satellite with a C-band synthetic aperture radar, capable of imaging surface features day and night in all weather.
2. **TV-D2 Mission:** The second Test Vehicle mission will demonstrate Gaganyaan Crew Escape System by simulating an abort scenario. The Crew Module will separate and descend using thrusters and parachutes before sea splashdown, followed by recovery operations.
3. **GSLV-F16/NISAR Mission:** The NASA-ISRO NISAR Earth science satellite, using dual L & S band RADAR, will monitor Earth's ecosystems and hazards. ISRO provides the satellite bus, integration, testing, launch vehicle, and S-band payload; NASA supplies the L-band payload, antenna, recorder, and GPS.
4. **LVM3-M5/BlueBird Block-2 Mission:** A commercial launch for AST SpaceMobile Inc., USA, of BlueBird Block-2 satellites under agreement with NSIL.

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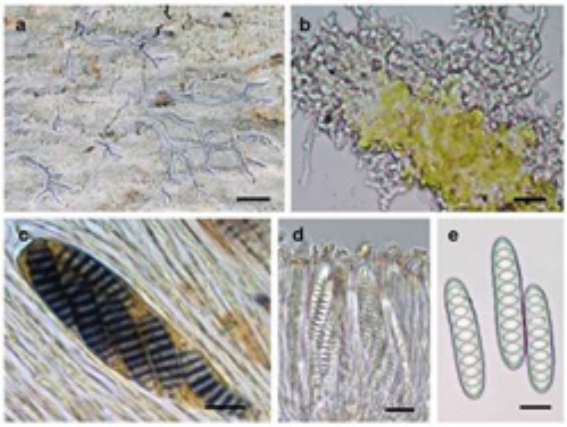
CONCLUSION

India's space programme stands at a defining moment in its history, as it transitions from a journey of exploration to a mission of leadership. Group Captain Shubhanshu Shukla's pioneering role aboard Axiom Mission 4 is more than a personal milestone, it is a national triumph that reflects India's evolving capabilities and global stature in space science. Through cutting-edge research, strategic partnerships, and a robust vision encapsulated in initiatives like Gaganyaan and the Bharatiya Antariksh Station, India is laying the groundwork for a sustained human presence in space. The convergence of policy reforms, private sector participation, and technological ambition ensures that the space sector will not only drive scientific progress but also fuel innovation and economic growth. As India prepares for its first independent human spaceflight and ventures towards the Moon and beyond, it signals to the world that the future of space will be shaped by nations that dare to dream and have the resolve to act, and India is firmly among them.

HIDDEN TREASURES OF THE WESTERN GHATS: A NEW LICHEN SPECIES ADDS TO INDIA'S BIODIVERSITY WEALTH

WHY IN THE NEWS?



India has discovered a new species of lichen, Allographa effusosoredica, in the ecologically rich Western Ghats. This breakthrough was made by scientists from MACS-Agharkar Research Institute, Pune. The lichen shows unique morphological and chemical traits, including the rare presence of norstictic acid. The discovery combines traditional taxonomy with advanced molecular tools. It adds to India's growing contribution to biodiversity and lichenology research.

INTRODUCTION: A NEW DISCOVERY FROM THE WESTERN GHATS:

1. **New Species Identified:** Indian scientists have discovered a new lichen species, Allographa effusosoredica, in the ecologically rich Western Ghats, showcasing ongoing biodiversity exploration in India.
2. **Unique Morphological Traits:** This lichen displays a crustose growth form with striking effuse soredia and rare chemical features, including the presence of norstictic acid.
3. **Research by Agharkar Institute:** The discovery was led by MACS-Agharkar Research Institute, Pune, using a combination of classical taxonomy and modern molecular analysis.
4. **Significance of the Western Ghats:** As a UNESCO World Heritage Site, the Western Ghats are recognized globally for their high levels of biodiversity, endemic species, and ecological significance.
5. **Ecological Role of Lichens:** Lichens contribute significantly to ecosystems, forming soil, recycling nutrients, and serving as bioindicators of environmental health.
6. **Rare Algal Symbiont Identified:** The lichen was found to be in symbiosis with a rare algal partner, Trentepohlia, expanding scientific understanding of tropical lichen biology.
7. **Conservation and Scientific Value:** The discovery underlines the urgent need to conserve fragile ecosystems like the Western Ghats and encourages further biotic research for environmental sustainability.

UNDERSTANDING LICHENS: SYMBIOSIS IN NATURE

1. **Composite Organisms:** Lichens are formed by a symbiotic association between a fungus and a photosynthetic partner—either green algae or cyanobacteria.

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2. **Dual Functionality:** The fungal component provides structure and protection, while the photobiont performs photosynthesis to provide nutrients for both partners.
3. **Colonizers of Extreme Environments:** Lichens are capable of growing in harsh and nutrient-poor conditions, such as bare rocks, deserts, and high altitudes.
4. **Soil Formation Agents:** By breaking down rock surfaces and contributing organic matter, lichens aid in the formation of soil in barren landscapes.
5. **Bioindicators of Air Quality:** Lichens are highly sensitive to pollutants like sulfur dioxide, making them natural indicators of air and ecosystem health.
6. **Ecological Contributions:** They play important roles in ecosystems by fixing nitrogen, cycling nutrients, and contributing to overall biodiversity.
7. **Food and Shelter for Fauna:** Many animals, including insects, birds, and small mammals, depend on lichens for food, nesting material, or camouflage.

SCIENTIFIC DETAILS OF THE NEW SPECIES

1. **Taxonomic Classification:** The species is classified under the genus Allographa, known for script lichens with complex morphological traits.
2. **Species Naming:** Named Allographa effusosoredica, derived from its distinctive effuse soredia and morphological features.
3. **Crustose Growth Form:** The lichen exhibits a crustose (crust-like) thallus tightly attached to the substrate, a key identification trait.
4. **Effuse Soredia:** Characterized by widespread, powdery soredia across the surface, which aid in vegetative reproduction.
5. **Unique Ascomata Features:** The lichen produces lirellae (elongated fruiting bodies), typical of script lichens, but with distinct ornamentation.
6. **Chemical Composition:** Contains norstictic acid, a rare secondary metabolite detectable via chemical spot tests and chromatography.
7. **Diagnostic Traits:** Combination of morphology, chemistry, and molecular data confirms its novelty within Allographa.

METHODOLOGY AND TOOLS USED

1. **Field Surveys:** Specimens were collected from specific forest patches of the Western Ghats known for high lichen diversity.
2. **Classical Taxonomy:** Detailed morphological comparisons were made using existing herbarium records and taxonomic keys.
3. **Microscopy Studies:** Light microscopy was used to observe reproductive structures, thallus texture, and algal cells.
4. **DNA Barcoding:** Molecular markers (e.g., ITS region) were sequenced to distinguish the new species from similar taxa.
5. **Phylogenetic Analysis:** DNA sequences were used to construct evolutionary trees confirming the lichen's placement within Allographa.
6. **Chemical Spot Tests:** Reagents like KOH and C were used for preliminary chemical profiling of the lichen substances.
7. **Thin-Layer Chromatography (TLC):** TLC provided precise identification of secondary metabolites, including norstictic acid.

SIGNIFICANCE OF THE DISCOVERY

1. **Enriches Genus Allographa:** Adds a new species to this globally distributed genus, expanding its known diversity and range.
2. **Strengthens India's Biodiversity Records:** Highlights the rich, underdocumented lichen diversity of the Indian tropics, especially the Western Ghats.
3. **Conservation Relevance:** Reinforces the ecological value of lesser-known organisms and their habitats for conservation planning.
4. **Supports Taxonomic Research:** Boosts efforts in cryptogamic botany and fungal taxonomy, areas with limited research attention.
5. **Global Scientific Interest:** Findings contribute to international lichen databases like Index Fungorum and MycoBank.

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6. **Promotes Interdisciplinary Research:** Combines taxonomy, molecular biology, and chemistry, encouraging cross-disciplinary ecological studies.
7. **Baseline for Future Studies:** Provides a reference point for ecological monitoring, climate impact studies, and conservation assessments.

PHOTOBIONT PARTNER: TRENTEPOHLIA SPECIES

1. **Identification of Algal Partner:** Microscopic observation and DNA sequencing confirmed Trentepohlia as the photobiont partner.
2. **Genus Characteristics:** Trentepohlia is a filamentous green alga commonly associated with tropical lichens and known for its orange hue.
3. **Mutualistic Role:** Provides essential carbohydrates via photosynthesis to the fungal partner in exchange for shelter and moisture.
4. **Climate Adaptation Clues:** Understanding this photobiont helps decode how lichens survive in warm, humid environments like the Ghats.
5. **Ecological Indicator:** Presence of Trentepohlia may indicate specific microclimatic or ecological conditions useful for habitat studies.
6. **Contribution to Algal Taxonomy:** Findings contribute valuable data to the classification and ecology of lichen-forming algae in India.
7. **Tool for Climate Resilience Studies:** Study of photobionts aids in predicting lichen vulnerability or resilience to climate change and pollution stressors.

ROLE OF INDIAN SCIENTIFIC INSTITUTIONS

1. **Leading Research by MACS-ARI:** The MACS-Agharkar Research Institute spearheaded the discovery, emphasizing India's strength in biosystematics.
2. **Support from DST:** The Department of Science & Technology (DST) funded and promoted this biodiversity research under national science missions.
3. **Emphasis on Molecular Tools:** Institutions now blend traditional taxonomy with modern techniques like DNA barcoding and phylogenetics.
4. **Revival of Classical Taxonomy:** Herbarium-based research and field identification are being integrated with molecular data.
5. **Capacity Building in Taxonomy:** Indian institutions are training the next generation of researchers in lichenology and species discovery.
6. **Bioprospecting for Bioactives:** Lichens are explored for novel compounds in pharmaceuticals, aided by Indian biotech labs.
7. **Strengthening Global Collaboration:** Such discoveries connect Indian research to global conservation databases and taxonomic networks.

LICHENS AS CLIMATE AND POLLUTION BIOINDICATORS

1. **Natural Sensitivity to Air Quality:** Lichens absorb nutrients from air, making them highly sensitive to pollution levels.
2. **Tools for Urban Air Monitoring:** They serve as inexpensive and reliable indicators of air quality in cities and industrial zones.
3. **Reflect Ecosystem Stress:** A decline in lichen diversity signals environmental degradation and climate-related stress.
4. **Cost-Effective Monitoring Alternatives:** Lichen surveys complement high-tech sensors in remote or protected natural areas.
5. **Indicators of Climate Shifts:** Changes in their distribution help track the effects of rising temperatures and altered rainfall.
6. **Role in Carbon and Nitrogen Cycles:** As nitrogen-fixers and organic matter accumulators, lichens reflect changes in nutrient cycling.
7. **Influence on Environmental Policy:** Their indicator role is valuable for shaping climate resilience and environmental monitoring programs.

CONSERVATION IMPLICATIONS

1. **Highlighting Hidden Biodiversity:** New species discoveries stress the ecological importance of often-neglected organisms like lichens.

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2. **Urgent Need for Protection:** Lichen habitats are vulnerable to deforestation, mining, and expanding development activities.
3. **Conservation of Endemic Species:** Many lichens have narrow habitat ranges and are highly susceptible to habitat changes.
4. **Inclusion in Protected Areas:** Lichen-rich zones must be identified and included in India's protected biodiversity reserves.
5. **Lichens in Climate Action Plans:** Their climate sensitivity can inform conservation strategies aligned with climate adaptation.
6. **Community Engagement in Conservation:** Local communities can be partners in identifying, preserving, and monitoring lichen-rich ecosystems.
7. **Data for Biodiversity Policy:** Findings support improved biodiversity mapping and threat assessment for better policy implementation.

CONCLUSION

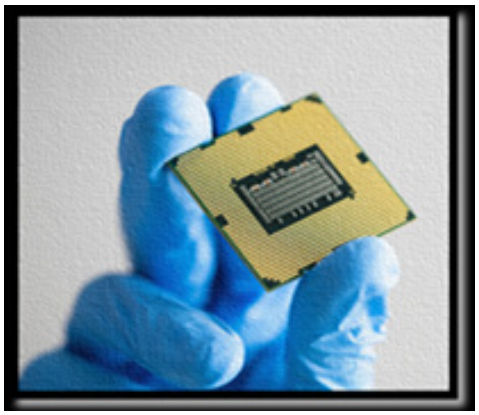
The discovery of Allographa effusosoredica from the Western Ghats is a testament to India's growing capabilities in biodiversity research, particularly in the underexplored field of lichenology. It highlights the importance of integrating classical taxonomy with advanced molecular and chemical tools to uncover hidden facets of nature. This breakthrough enriches scientific knowledge and reinforces lichens' ecological significance as climate and pollution bioindicators. Moreover, it emphasizes the urgency of conserving fragile ecosystems like the Western Ghats, which continue to yield new and valuable insights into global biodiversity.

SEMICON INDIA 2025: SHOWCASING STRENGTH IN SEMICONDUCTOR ECOSYSTEM

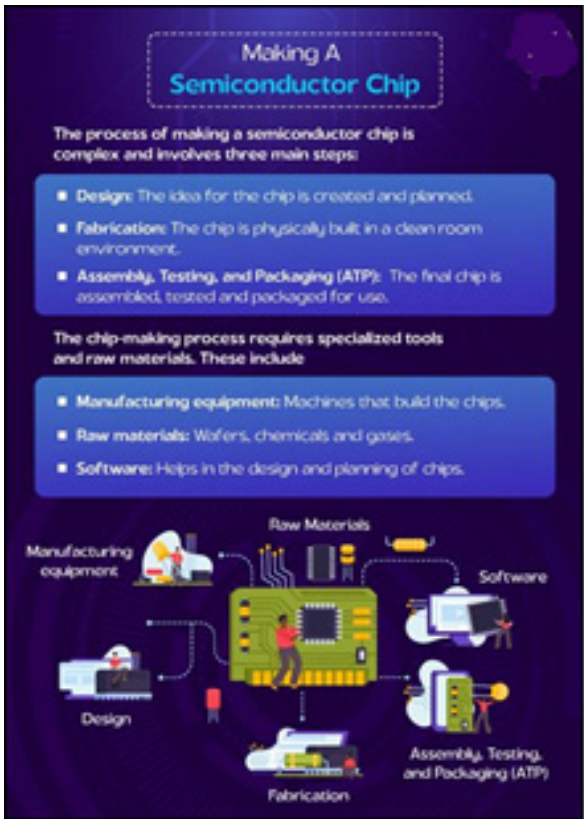
WHY IN THE NEWS?

Semiconductors have recently gained national and global attention due to their critical role in powering modern technologies—from smartphones and computers to satellites and defence systems. With India's push for self-reliance under the Semiconductor Mission and the successful use of indigenous semiconductor-based technology in missions like Chandrayaan-3, where the Vikram lander used Indian-made chips and AI for autonomous landing, the spotlight is back on this tiny yet powerful innovation shaping the future of digital infrastructure and strategic capabilities.

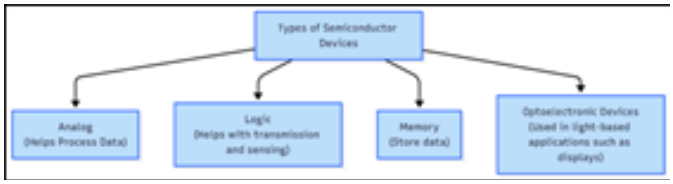
"Today's India inspires confidence in the world… When the chips are down, you can bet on India"- Prime Minister Narendra Modi.



These chips are therefore the backbone of modern electronics, enabling the functioning of devices such as smartphones, computers, electric vehicles, satellites and even defence systems like Aaksh teer.



The chips are made from semiconductor material and can store, process, and transfer information, helping devices perform tasks such as calling, storing data, or sensing electrical signals. Each chip contains millions (or even billions) of microscale switches called transistors, which control electrical signals much like brain cells pass messages in our bodies. It also has other tiny components like resistors, capacitors, and wiring. Together, these elements process and move information.



WHY SEMICONDUCTOR INDUSTRY MATTERS: A STRATEGIC CONTEXT

Semiconductors are the foundation of modern technology, powering key sectors like healthcare, transport, communication, defence, and space. As digitalisation and automation accelerate, these chips have become vital for economic resilience and strategic autonomy. The global chip shortage post-COVID-19 and the Russia-Ukraine war exposed vulnerabilities in supply chains, disrupting industries worldwide. Rising demand for faster, efficient, and compact chips is driven by growing digitisation, smart devices, AI, and cloud computing. Semiconductors now enable real-time data processing and decision-making across systems. Currently, the industry is dominated by a few nations—Taiwan, South Korea, Japan, China, and the U.S.—with Taiwan alone producing over 60% of global chips and nearly 90% of advanced ones. This dependence has raised concerns over supply chain risks, prompting countries like the U.S., EU, and Japan to boost domestic manufacturing. India is emerging as a key player in this global shift. Through the India Semiconductor Mission, PLI schemes, and global partnerships, it aims to build a strong semiconductor ecosystem. With its growing digital economy and skilled workforce, India is well-positioned to become a trusted and strategic hub in the evolving global semiconductor landscape.

INDIA AS A PLAYER IN THE SEMICONDUCTOR MARKET

With global chip demand rising and supply chains vulnerable due to geographic concentration, India is positioning itself as a key player in diversifying semiconductor manufacturing. Strategic initiatives like including Electronics Systems Design and Manufacturing (ESDM) under Make in India, along with the India Semiconductor Mission and Semicon India programme, have laid the foundation for a robust domestic ecosystem.

The global semiconductor market is projected to reach USD 1 trillion by 2030, with India expected to claim a significant sh are. India has the potential to contribute across the three core pillars of the semiconductor supply chain:

Equipment – leveraging a strong MSME base to manufacture critical components;

Materials – being rich in essential chemicals, minerals, and gases;

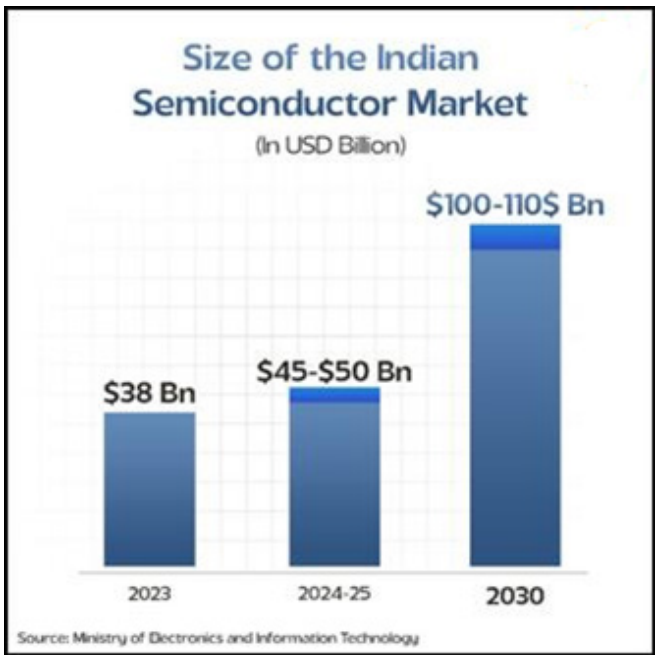
Services – offering advanced capabilities in R&D, logistics, and a skilled talent pool in AI, cloud computing, IoT, and big data.

In May 2025, the Union Minister for Electronics & IT, Railways, and Information & Broadcasting, Shri Ashwini Vaishnaw, inaugurated two state-of-the-art semiconductor design facilities in Noida and Bengaluru. These centres are India's first to focus

on advanced 3-nanometer chip design, marking a significant milestone in the nation's semiconductor innovation journey.

INDIA SEMICONDUCTOR MISSION (ISM)

Launched in December 2021 with a ₹76,000 crore outlay, the India Semiconductor Mission (ISM) aims to boost domestic capabilities in chip fabrication, display manufacturing, and design. It seeks to position India as a global hub for electronics manufacturing by integrating into global value chains. Led by industry experts, ISM serves as the nodal agency for implementing semiconductor and display schemes, fostering a robust and self-reliant ecosystem.



MISSION FOCUS OF ISM

Set up Chip Manufacturing plants(fabs)

Create packaging and testing units

Supporting startups in chip design

Training young engineers

Bring Global companies to invest in India

OBJECTIVES OF THE INDIA SEMICONDUCTOR MISSION (ISM)

1. **Ecosystem Development:** Create a long-term strategy for sustainable semiconductor and display manufacturing and design in India.
2. **Secure Supply Chain:** Develop a trusted and secure semiconductor supply chain, including raw materials, chemicals, gases, and equipment.
3. **Support for Design Start-ups:** Boost the semiconductor design industry by providing EDA tools, foundry access, and early-stage support.
4. **Indigenous IP Generation:** Promote the creation of domestic intellectual property in semiconductors and displays.
5. **Technology Transfer (ToT):** Encourage and facilitate transfer of advanced technologies to India.
6. **Economies of Scale:** Establish mechanisms to scale manufacturing and reduce costs.
7. **Advanced R&D:** Support cutting-edge research through grants, Centres of Excellence, and global collaborations.
8. **Collaborations & Skill Development:** Foster national and international partnerships for research, commercialization, and workforce training.

KEY SCHEMES UNDER THE INDIA SEMICONDUCTOR MISSION (ISM)

1. **Semiconductor Fabs Scheme:** Up to 50% fiscal support for setting up semiconductor fabs targeting 28nm and mature nodes. Aims to meet domestic and global chip demand.

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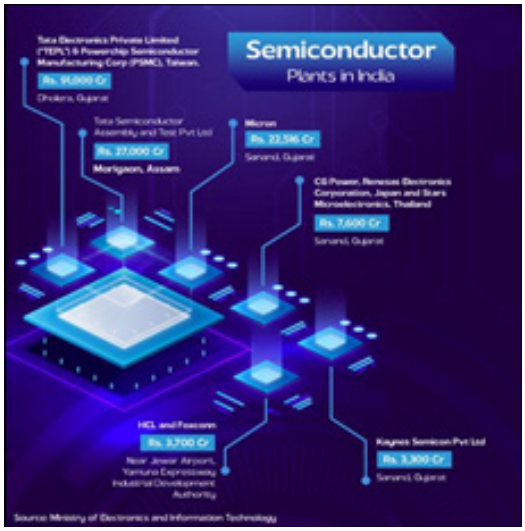
2. **Display Fabs Scheme:** Provides up to 50% support for AMOLED and LCD display units. Seeks to reduce imports and boost local display manufacturing.
3. **Compound Semiconductors & ATMP/OSAT Scheme:** Supports units for compound semiconductors, MEMS, and chip packaging/ testing (ATMP/OSAT) with up to 50% funding. Strengthens the full semiconductor value chain.
4. **Design Linked Incentive (DLI) Scheme:** ₹1000 crore outlay to support design startups and MSMEs. Offers R&D reimbursement, design tool access, and up to ₹15 crore per company.

   ₹234 crore already committed to 22 startups for chip designs in sectors like CCTV, telecom, satellites, and automobiles.

STRATEGIC COLLABORATIONS UNDER ISM

1. **Lam Research & IISc:** MoU to train 60,000 engineers using the Semiverse simulation platform over the next decade.
2. **Future Skills Program:** Government initiative to train 20,000 engineers in Madhya Pradesh in semiconductor-related skills.
3. **Micron & IIT Roorkee:** Partnership to promote innovation and develop a skilled workforce in chip design and manufacturing.



4. **IBM Collaboration:** Offers Indian students and professionals access to advanced labs, internships, and research centres to enhance industry-aligned skills.
5. **Purdue University:** MoU for collaborative R&D, talent development, and commercialization in semiconductors and display technologies, bridging academia and industry.

MAPPING INDIA'S SEMICONDUCTOR ECOSYSTEM

Date	Company	Location	Investment	Output Capacity
Jun 2023	Micron Technology	Sanand, Gujarat	₹22,516 crore	ATMP Facility (phased ramp-up)
Feb 2024	Tata Electronics (TEPL) & PSMC (Taiwan)	Dholera, Gujarat	~₹91,000 crore	50,000 wafers/month
Feb 2024	CG Power & Industrial with Renesas & Stars	Sanand, Gujarat	~₹7,600 crore	15 million chips/day
Feb 2024	Tata Semiconductor Assembly and Test (TSAT)	Morigaon, Assam	₹27,000 crore	48 million chips/day
Sept 2024	Kaynes Semicon Pvt Ltd	Sanand, Gujarat	₹3,307 crore	6.33 million chips/day
May 2025	HCL-Foxconn Joint Venture	Jewar, Uttar Pradesh	₹3,700 crore	20,000 wafers/month (36 million units/year)

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SEMICON INDIA: SHOWCASING INDIA'S SEMICONDUCTOR LEADERSHIP

As part of its ₹76,000 crore India Semiconductor Mission (ISM), the government launched SEMICON India, a flagship initiative to position India as a global semiconductor hub. Organized in partnership with SEMI (Semiconductor Equipment and Materials International), the platform brings together global industry leaders, policymakers, academia, and startups to foster investment, innovation, and strategic collaboration.

SEMICON INDIA 2025 FEATURES:

1. Record stakeholder participation across the supply chain
2. First-ever Global Pavilions, Country Roundtables, and Design Startup Pavilion
3. Major focus on Skilling Initiatives and Research Commercialization
4. Over 300 exhibiting companies from 18 countries and regions
5. Targeted at business leaders, innovators, researchers, engineers, students, and industry professionals
6. SEMICON India plays a crucial role in advancing India's semiconductor ambitions through global partnerships, Skill development, and innovation promotion.

KEY FEATURES OF SEMICON INDIA 2025

1. **Wider Stakeholder Participation:** With over 300 exhibitors from 18 countries, this edition marks a major leap in global engagement, reflecting India's growing stature in the semiconductor ecosystem.
2. **International Pavilions:** For the first time, four country pavilions—Japan, South Korea, Singapore, and Malaysia—will showcase their capabilities and foster partnerships.
3. **Country Roundtables:** Eight high-level roundtables will facilitate strategic dialogue between government, industry leaders, and companies from India and partner nations.
4. **Workforce Development Pavilion:** With the sector projected to need 1 million skilled professionals by 2030, this pavilion will focus on career counselling, skilling, and mentoring for students and engineers.
5. **Semiconductor Design Startup Pavilion:** A dedicated space to promote chip design startups, alongside participation from nine state governments, up from six last year.
6. **Additional Features:** Includes Startup Pavilion, B2B forums, and initiatives to strengthen India's talent pipeline and innovation ecosystem.

CONCLUSION

India's electronic industry is growing rapidly, with semiconductors at the heart of this transformation. To meet rising demand and reduce import dependence, the government has launched strategic initiatives like the India Semiconductor Mission, the SEMICON India Programme, and global partnerships such as iCET. These efforts signal India's shift from a consumer to a key player in the global semiconductor value chain. As approved facilities begin operations and new projects take shape, the country is positioning itself as a trusted hub for semiconductor manufacturing, strengthening its digital economy, national security, and technological self-reliance. From dependence to dominance, the chip revolution is real and its happening right here, right now in Bharat.

NISAR: INDIA–US RADAR EYE REDEFINING EARTH OBSERVATION AND DISASTER MANAGEMENT

WHY IN THE NEWS?

The NASA-ISRO Synthetic Aperture Radar (NISAR) satellite, jointly developed by ISRO and NASA, was successfully launched in 2025, marking a major milestone in Earth observation technology. Designed to provide centimetre-level accuracy, it can scan nearly all land and ice surfaces twice every 12 days and generate an unprecedented 80 TB of data per day—three times more than existing systems.

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BACKGROUND & EVOLUTION OF REMOTE SENSING

1. **Early Beginnings (1957):** Remote sensing began with the launch of Sputnik 1, using optical sensors for basic Earth observation.
2. **Shift to Advanced Sensors:** Optical systems evolved to capture high-resolution images, but were limited by weather, light conditions, and cloud cover.
3. **Introduction of Radar Imaging:** Synthetic Aperture Radar (SAR) technology enabled all-weather, day-night imaging by using microwaves instead of visible light.
4. **Advantages of Radar:** Ability to penetrate clouds, smoke, haze, and vegetation, and detect surface changes with high precision.
5. **Persistent Gaps in Existing Systems:** Previous satellites faced constraints such as low revisit frequency, limited area coverage, and smaller data volumes.
6. **Resolution & Timeliness Challenge:** Many older systems could not provide both centimetre-level accuracy and near-real-time data simultaneously.
7. **How NISAR Addresses These:** By combining L-band and S-band SAR, scanning almost all land and ice every 12 days, generating 80 TB/day, and offering unmatched detail for global monitoring.

ABOUT NISAR

Aspect	Details
Launch Year & Collaboration	2025, joint mission between ISRO (India) and NASA (USA)
Data Generation Capacity	80 TB/day — three times more than existing Earth observation systems
Coverage	Scans nearly all land & ice surfaces twice every 12 days
Accuracy	Centimetre-level precision for detecting surface changes
Unique Capabilities	Dual-frequency SAR (L-band & S-band) for all-weather, day-night imaging; penetrates clouds, smoke, and vegetation; enables detailed environmental, agricultural, and disaster monitoring

KEY TECHNOLOGICAL FEATURES

1. **Dual Synthetic Aperture Radars (SARs):** Equipped with L-band (long wavelength) for terrain undulations, forest density, and carbon stock mapping, and S-band (short wavelength) for soil moisture, crop conditions, and water bodies.
2. **All-Weather, Day-Night Imaging:** Operates regardless of sunlight or cloud cover, ensuring continuous data flow.
3. **Penetration Capability:** Microwaves can penetrate clouds, smoke, haze, and even dense vegetation, capturing hidden surface features.
4. **High-Precision Terrain Mapping:** Detects minute changes in the Earth's surface, useful for land subsidence and fault line monitoring.
5. **Environmental Change Detection:** Identifies subtle changes in vegetation cover, ice sheets, and water bodies over time.
6. **Near Real-Time Data Transmission:** Enables rapid delivery of information for time-sensitive applications like disaster response.
7. **Global Coverage with High Resolution:** Combines wide-area scanning with centimetre-level accuracy, a major leap from earlier satellites.

APPLICATIONS & IMPACT

1. **Disaster Management:** Monitors floods, landslides, cyclones, and earthquakes for faster emergency alerts. Enables rapid damage assessment to guide relief operations efficiently.
2. **Climate & Environmental Monitoring:** Tracks glacier retreat and ice-sheet melting, aiding climate change studies. Maps forest cover and measures carbon stocks for climate policy

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support. Monitors biodiversity habitats, helping protect endangered species.

3. **Agriculture:** Measures soil moisture and tracks crop maturity stages for better yield prediction. Assists in irrigation planning and water resource management.
4. **Urban & Infrastructure Planning:** Detects land subsidence in urban areas, preventing infrastructure damage. Monitors coastal erosion, guiding shoreline protection measures.

SIGNIFICANCE FOR INDIA

1. **Boost to Climate Resilience:** Provides precise data for predicting and mitigating extreme weather events, floods, and droughts.
2. **Food Security Enhancement:** Improves crop monitoring, yield forecasting, and irrigation planning for sustainable agriculture.
3. **Support for Smart Agriculture:** Integrates with Digital India initiatives for AI-based farming and real-time field advisories.
4. **Disaster Management in Vulnerable States:** Critical for states like Assam, Uttarakhand, and Odisha prone to floods, earthquakes, and cyclones.
5. **Integration with Flagship Schemes:** Enhances effectiveness of PMFBY, PMKSY, Soil Health Card Scheme, and Smart Cities Mission.
6. **Urban Planning Support:** Helps prevent infrastructure losses by detecting land subsidence and monitoring construction zones.
7. **Scientific Advancement:** Strengthens India's standing in global Earth science research and climate modelling.

GLOBAL & STRATEGIC IMPORTANCE

1. **Contribution to Global Climate Models:** Supplies high-resolution SAR data for climate change projections.
2. **Support for UN Sustainable Development Goals (SDGs):** Facilitates progress tracking for goals on climate action, life on land, and food security.
3. **Strengthening Global Disaster Response Systems:** Enables coordinated humanitarian responses with near-real-time data.
4. **Space Diplomacy:** Symbolises strong ISRO–NASA partnership, boosting India's space diplomacy profile.
5. **Scientific Collaboration:** Opens opportunities for joint research with international universities and agencies.
6. **Data for Global Agriculture Monitoring:** Supports FAO and other agencies in global food security planning.
7. **Showcasing India's Technological Leadership:** Positions India as a key player in high-precision Earth observation systems.

CHALLENGES & CONSIDERATIONS

1. **Massive Data Handling:** Requires storage and processing systems for 80 TB/day data flow.
2. **Need for Advanced Analytics:** Integration of AI and big data tools to convert raw data into actionable insights.
3. **Infrastructure Gaps:** Upgradation of ground stations and communication networks for timely data relay.
4. **Cybersecurity Risks:** Ensuring protection of sensitive geospatial data from cyber threats.
5. **Data Sharing Protocols:** Establishing clear policies for international and domestic data distribution.
6. **Capacity Building:** Training state disaster agencies, farmers, and researchers to utilise SAR data effectively.
7. **Cost of Utilisation:** Ensuring that high-tech applications remain affordable for local administrations and communities.

WAY FORWARD

1. **National Geospatial Integration:** Merge NISAR outputs with existing Indian geospatial data platforms like Bhuvan and NRSC.
2. **Promote Startups & Innovators:** Encourage private sector to build NISAR-based apps for agriculture, disaster, and environment.
3. **AI-Driven Solutions:** Invest in AI models for automated interpretation of SAR images.

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4. **Expand International Cooperation:** Share selective data with neighbouring countries for regional disaster risk reduction.
5. **Public Awareness Campaigns:** Educate communities on using early warnings and environmental insights from NISAR.
6. **Academic Engagement:** Integrate NISAR data into university research for climate science, geology, and agriculture.
7. **Regular Performance Reviews:** Monitor mission efficiency and upgrade data delivery mechanisms for maximum utility.

CONCLUSION

NISAR represents a paradigm shift in Earth observation by combining advanced dual-frequency radar technology with unprecedented data generation and global coverage. Its ability to deliver high-resolution, near-real-time insights has the potential to revolutionise disaster preparedness, strengthen environmental protection measures, and accelerate progress towards sustainable development goals. Beyond its scientific and practical benefits, NISAR stands as a powerful symbol of technological excellence and the growing depth of Indo–US space cooperation, showcasing how collaborative innovation can address some of the most pressing challenges facing our planet.

SPACE AS THE NEW BATTLEFIELD: THE GOLDEN DOME DEFENCE PLAN

WHY IN THE NEWS?

The Golden Dome missile defense shield, a $175 billion U.S. program announced by former President Donald Trump, has drawn attention for its ambitious plan to build a multi-layered space and land-based defence network. It seeks to intercept ICBMs, hypersonic weapons, and cruise missiles during their boost and midcourse phases. The Pentagon presented its blueprint to defence contractors, with firms like SpaceX, Lockheed Martin, and L3Harris as key contenders. The system is being compared to both Israel's Iron Dome and Reagan's Star Wars initiative. However, doubts remain over its feasibility, funding, and impact on global strategic stability.

HISTORICAL CONTEXT

1. **Cold War roots:** Missile defence ideas emerged during the U.S.–Soviet rivalry, where the fear of nuclear-tipped ICBMs led to early defence research.
2. **ABM Treaty (1972):** The U.S. and USSR agreed to limit missile defences to maintain Mutually Assured Destruction (MAD), preventing destabilization.
3. **Reagan's SDI (1983):** Popularly called Star Wars, it envisioned space-based lasers and interceptors to neutralize Soviet nuclear missiles.
4. **SDI challenges:** The program collapsed due to high costs, unproven technology, treaty violations, and political opposition.
5. **Post-Cold War efforts:** The U.S. pursued limited systems like National Missile Defence and withdrew from the ABM Treaty in 2002 to develop larger-scale defences.
6. **Current U.S. systems:** Ground-Based Midcourse Defence (GMD), THAAD, Aegis, and Patriot provide layered but regionally limited coverage.
7. **Israeli Iron Dome inspiration (2011):** Its battlefield success against rockets and drones influenced Trump's vision for a nationwide U.S. shield.

CONCEPT AND OBJECTIVES

1. **Core aim:** Build a comprehensive homeland defence shield against evolving threats like ICBMs, hypersonics, and cruise missiles.

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2. **Four-layer architecture:** Space-based interceptors, enhanced GMD, new land-based sites, and limited-area/population defence.
3. **Space-based intercept layer:** Hundreds of satellites with sensors, interceptors, or lasers to strike missiles during their early trajectory.
4. **Boost-phase focus:** Attempt to destroy missiles during their slow, predictable climb, a breakthrough compared to existing midcourse-only systems.
5. **Enhanced GMD:** Existing interceptors in California and Alaska upgraded with better kill vehicles and sensors for midcourse interception.
6. **New land-based layers:** Five new interceptor sites (3 in continental U.S., 1 in Hawaii, 1 in Alaska) for added redundancy.
7. **Limited area/population defence:** Integration of Patriot systems, new radars, and common launchers to shield cities and critical infrastructure.

TECHNOLOGICAL ASPECTS

1. **Space-based sensors:** A constellation of satellites to provide continuous global tracking of missile launches.
2. **Space-based interceptors:** Orbital weapons or platforms capable of striking ICBMs in the boost or midcourse phase.
3. **Directed-energy weapons:** Use of lasers or high-powered microwaves to destroy missiles at high speed without running out of ammunition.
4. **Artificial Intelligence (AI):** AI-enabled autonomous tracking and decision-making to handle multiple simultaneous threats.
5. **Satellite constellations:** Modeled after systems like Starlink, ensuring redundancy and rapid data-sharing across nodes.
6. **Major challenges:** Boost-phase interception is extremely difficult because it requires precise timing and positioning.
7. **Hypersonic tracking issues:** Differentiating between real warheads, decoys, and hypersonic glide vehicles remains a key technological hurdle.

STRATEGIC & SECURITY SIGNIFICANCE

1. **Homeland protection:** Provides the U.S. with a shield against nuclear and missile attacks, a long-standing strategic goal.
2. **Counter to adversaries:** Directly aimed at the missile arsenals of China, Russia, North Korea, and Iran.
3. **Deterrence credibility:** Enhances U.S. nuclear posture by adding defensive credibility to offensive capabilities.
4. **Strategic signaling:** Projects U.S. technological superiority, reassuring allies and deterring adversaries.
5. **MAD disruption:** Undermines Mutually Assured Destruction (MAD), which has been the foundation of nuclear stability since the Cold War.
6. **Arms race risks:** Could trigger adversaries to develop more MIRVs, hypersonics, and decoy technologies to overwhelm defences.
7. **Extended deterrence:** Allies (Japan, NATO) may seek integration, making it a tool for global U.S. security leadership.

ECONOMIC & INDUSTRIAL ASPECTS

1. **Massive investment:** Estimated cost of $175 billion+, one of the largest U.S. defence projects ever.
2. **Defence contractors:** Key players include SpaceX, Lockheed Martin, Raytheon (RTX), L3Harris, Palantir, and Anduril.
3. **Spin-off benefits:** Research may drive advances in space tech, AI, directed-energy, and satellite systems.
4. **Job creation:** Large-scale R&D and manufacturing are expected to create thousands of jobs across defence hubs.

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5. **Risk of overruns:** Past U.S. missile defence programs faced delays, cost escalation, and limited effectiveness.
6. **Opportunity cost:** High spending may divert resources from other defence or domestic needs.
7. **Private-sector role:** Heavy involvement of commercial space firms (like SpaceX) raises questions about ownership and military–industrial dependence.

POLITICAL & POLICY

1. **Trump's framing:** Presented as a patriotic promise to shield Americans from nuclear threats.
2. **Congressional debates:** Initial request of $25 billion tied to a larger $150 billion defence package.
3. **Partisan divides:** Republicans largely supportive; Democrats more sceptical on cost and feasibility.
4. **Election politics:** Trump used it as a campaign promise, linking it to his "America First" defence vision.
5. **Arms control issues:** Potentially violates ABM Treaty principles and could complicate New START extensions.
6. **International law:** Raises concerns about militarization of outer space, opposed by many global treaties.
7. **Future administrations:** Uncertain if successors would continue, scale down, or cancel the program, depending on priorities.

GLOBAL & DIPLOMATIC IMPLICATIONS

1. **Challenge to Nuclear Parity:** Russia and China see the Golden Dome as undermining strategic balance.
2. **Risk of New Arms Race:** Could accelerate development of MIRVs, hypersonics, and decoys by adversaries.
3. **NATO Dimension:** Allies may push for joint integration or extended U.S. coverage.
4. **Comparative Models:** Israel's Iron Dome seen as an inspiration, but with limited scope.
5. **Rival Systems:** Russia's S-500 and China's HQ-19 viewed as countermeasures.
6. **UN & Global Debates:** Space weaponization discussions likely to intensify.
7. **Arms Control Credibility:** May weaken U.S. position in global arms-control negotiations.

FEASIBILITY & CRITICISMS

1. **Unproven Technology:** Boost-phase interception still lacks practical success.
2. **Space Weaponization Hurdles:** Technical, legal, and financial barriers are immense.
3. **Testing Challenges:** Simulating real-world missile threats remains difficult.
4. **Financial Concerns:** Risk of massive expenditure reminiscent of Reagan's SDI.
5. **Symbolic vs. Practical:** Critics argue it's more about politics than operational defense.
6. **Adversary Escalation:** May provoke Russia/China to expand missile stockpiles.
7. **Operational Realism:** Many experts doubt its battlefield viability.

WAY FORWARD

1. **Incremental Evolution:** Likely to progress as upgrades, not as a complete shield.
2. **Integration with Existing Systems:** GMD, THAAD, and Aegis to be strengthened with space sensors.
3. **Timeline of Development:** Full realisation could take 10–20 years.
4. **Hypersonic Focus:** Priority likely on countering hypersonic glide vehicles first.
5. **Revival of Strategic Vision:** Seen as a symbolic return to Reagan-era "Star Wars" ambitions.
6. **Tech Leadership Test:** Will test U.S. dominance in space-defence technologies.

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7. **Dependent on Political Will:** Success hinges on sustained funding, innovation, and bipartisan support

CONCLUSION

The Golden Dome represents the most ambitious U.S. missile defence initiative since the Cold War, blending space-based interception, advanced AI, and layered ground systems into a single national shield. While it symbolises America's pursuit of absolute homeland security, the project faces immense technological, financial, and strategic hurdles. Its success could reshape global security by undermining traditional nuclear deterrence, but failure could echo the fate of Reagan's SDI, leaving only political symbolism and wasted resources.

Prelims Questions

Q1. With reference to the Winter Fog Experiment (WiFEX), consider the following statements:

1. It is coordinated by the Indian Institute of Tropical Meteorology under the Ministry of Earth Sciences.
2. It primarily focuses on the dynamics and forecasting of summer dust storms over the Indo-Gangetic Plain.
3. WiFEX has developed a fog forecasting model with a spatial resolution of 3 km.
4. The findings from WiFEX are used only for aviation-related forecasts.

Which of the statements given above are correct?

A. 1 and 3 only B. 1, 2 and 4 only
C. 2 and 3 only D. 1, 3 and 4 only

Q2. Consider the following statements regarding IN-SPACe:

1. It is an autonomous nodal agency under the Department of Space.
2. It directly manufactures satellites and launch vehicles.
3. It authorizes and supervises private sector participation in space activities.

Which of the above statements are correct?

A. 1 and 2 only B. 1 and 3 only
C. 2 and 3 only D. 1, 2 and 3

Q3. Consider the following statements regarding lichens:

1. Lichens are formed by a symbiotic association between a fungus and a photobiont.
2. Lichens are used as indicators of air pollution.
3. Norstictic acid is a common metabolite found in all lichen species.
4. The photobiont partner in lichens is always a green alga.

Which of the above statements are correct?

A. 1 and 2 only B. 1, 2 and 4 only
C. 1, 2 and 3 only D. 1, 3 and 4 only

Q4. SEMICON India 2025 will feature international pavilions from which of the following countries?

1. Japan 2. Taiwan
3. South Korea 4. Malaysia
5. Singapore

Select the correct option:

A. 1, 2, 3 and 5 B. 1, 3, 4 and 5
C. 2, 3, 4 and 5 D. 1, 2, 4 and 5

Q5. With reference to the NASA–ISRO Synthetic Aperture Radar (NISAR) satellite, consider the following statements:

1. It is the first satellite to be jointly developed by ISRO and NASA.
2. It uses only optical sensors for high-resolution Earth imaging.

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3. It can penetrate clouds, smoke, and vegetation to capture surface features.

Which of the statements given above is/ are correct?

A. 1 only B. 1 and 3 only

C. 2 and 3 only D. 1, 2, and 3

Q6. With reference to the proposed Golden Dome missile defence shield, consider the following statements:

1. It is a U.S. project aimed at building a space- and ground-based layered missile defence system.
2. Israel's Iron Dome and India's S-400 form the technological basis of the Golden Dome.
3. One of its primary goals is to counter hypersonic glide vehicles and ICBMs.

Which of the statements given above is/ are correct?

A. 1 and 2 only B. 1 and 3 only

C. 2 and 3 only D. 1, 2 and 3

Answer Key

1. A	2. B	3.A
4. B	5. B	6.B

Mains Questions

Q1. What is the Winter Fog Experiment (WiFEX)? Examine its significance in improving weather forecasting, disaster preparedness, and public safety in India. Also, discuss the challenges it faces and suggest a way forward.

(250 words, 15 marks)

Q2. Critically examine the recent reforms and initiatives aimed at enhancing private sector participation in India's space sector. Discuss their impact on investment, innovation, and the broader space economy.

(250 words, 15 marks)

Q3. The discovery of Allographa effusosoredica from the Western Ghats reflects India's growing scientific contributions in biodiversity research. Examine the ecological, scientific, and conservation significance of this discovery, with reference to the role of lichens as environmental indicators.

(250 words, 15 marks)

Q4. India is shifting from dependence to dominance in the semiconductor industry. Discuss the role of the India Semiconductor Mission and initiatives like SEMICON India in driving this transformation.

(250 words, 15 marks)

Q5. NISAR is being described as a game-changer in Earth observation. Discuss its key technological features, applications, and significance for India and the world, along with the challenges in its utilisation

250 words, 15 marks)

Q6. The Golden Dome missile defence shield has been described as the most ambitious U.S. military project since Reagan's Strategic Defence Initiative (SDI). Critically analyse its objectives, technological challenges, strategic implications, and feasibility in the current era of hypersonic and space-based warfare.

(250 words, 15 marks)

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PM JUGA: A MISSION FOR TRIBAL RENAISSANCE AND INCLUSIVE RURAL DEVELOPMENT

WHY IN THE NEWS?

The Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PM JUGA), also known as Dharti Aaba Janjatiya Gram Utkarsh Abhiyan, is India's most extensive tribal development programme, launched on October 2, 2024, from Hazaribagh, Jharkhand, by Prime Minister Narendra Modi. It represents a historic push towards the inclusive development of Scheduled Tribes (STs) and aims to bridge the urban-rural and tribal-mainstream development divide.

BACKGROUND AND RATIONALE

1. **Historical Neglect:** Tribal regions have remained socio-economically backwards due to centuries of marginalisation, inadequate access to resources, and lack of focused policy implementation.
2. **Geographical Isolation:** Many tribal villages are located in remote and forested areas, limiting access to essential services such as healthcare, education, roads, and markets.
3. **Poor Infrastructure:** Basic infrastructure like housing, electricity, sanitation, and clean water remains underdeveloped in large parts of tribal India.
4. **High Multidimensional Poverty:** Tribal communities disproportionately suffer from poverty, malnutrition, low literacy, and poor health indicators, as confirmed by national surveys like NFHS and NITI Aayog's MPI.
5. **PM's 2021 Vision Statement:** In his Independence Day speech (2021), Prime Minister Narendra Modi highlighted that tribal and coastal regions will become new engines of national development.
6. **Need for Convergent Approach:** Fragmented schemes had limited impact; hence, a unified, mission-mode approach involving multiple ministries became essential for integrated tribal development.
7. **Building on PM JANMAN:** PM JUGA expands upon the PM Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) launched in 2023, which focused specifically on PVTGs, by widening the scope to all Scheduled Tribes.
8. **Alignment with SDGs and Viksit Bharat@2047:** The mission aligns with the UN SDGs and India's vision of inclusive growth, ensuring no tribal community is left behind in the journey toward a developed India.

KEY FEATURES OF PM JUGA

Particulars	Details
Launched	October 2, 2024 (Hazaribagh, Jharkhand)
Total Budget	₹79,156 crore • Centre: ₹56,333 crore • States: ₹22,823 crore

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Coverage	63,000 villages across 549 districts (~71% of India's land area)
Target Beneficiaries	5 crore tribal citizens in tribal-majority and Aspirational District villages
Eligibility Criteria	Villages with: • ≥500 residents and >50% ST population • Or, ≥50 ST residents in Aspirational Districts
Implementing Ministries	17 Union Ministries working in convergence
Official Alternate Name	Dharti Aaba Janjatiya Gram Utkarsh Abhiyan

ELIGIBILITY CRITERIA FOR VILLAGES

Category	Eligibility Condition
General Villages	Population >500 and >50% Scheduled Tribe (ST) residents
Aspirational Districts	Villages with at least 50 Scheduled Tribe (ST) residents

MAJOR COMPONENTS AND INTERVENTIONS

Component	Key Interventions
A. Housing & Infrastructure	- 20 lakh pucca houses under PM Awas Yojana (Gramin) - 25,000 km roads under PM Gram Sadak Yojana
B. Energy & Clean Cooking	- 2.35 lakh tribal households electrified - 25 lakh LPG connections under PM Ujjwala Yojana
C. Education	- Upgradation of Ashram schools and hostels - 1,000 new tribal hostels under Samagra Shiksha
D. Health & Nutrition	- 1,000 mobile medical units under Ayushman Bharat Health Infra Mission - 8,000 Anganwadis (2,000 new + 6,000 upgraded) - 700 Poshan Vatikas by Ministry of AYUSH
E. Water & Sanitation	- Tap water in all eligible villages via Jal Jeevan Mission - Special focus on 5,000 remote hamlets (<20 tribal households)
F. Connectivity & Digital Inclusion	- High-speed broadband to 5,000 villages via BharatNet and USOF - Aadhaar, DigiLocker, UPI integration under Digital India
G. Livelihood & Employment	- Fishery support to 10,000 groups & 1 lakh individuals under PM Matsya Sampada Yojana - Livestock support to 8,500 individuals/ groups under National Livestock Mission - 1,000 tribal homestays under Swadesh Darshan - Capacity building of 1,000 Van Dhan Vikas Kendras (VDVKs)
H. Market Linkages & Health	- Tribal marketing centres - Sickle cell treatment units - Incentives for high-performing tribal districts

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GOVERNANCE REFORMS AND EMPOWERMENT

Reform Area	Key Measures
Local Governance Strengthening	- Capacity-building for Gram Sabhas and local institutions by Ministry of Panchayati Raj
Legal Empowerment	- Faster processing of Forest Rights Act (FRA) claims
Democratic Empowerment	- Strengthening of decentralised tribal governance and community participation

SIGNIFICANCE OF PM JUGA

1. **Comprehensive Development Mission:** First-ever large-scale tribal development initiative addressing infrastructure, education, healthcare, livelihood, digital inclusion, and governance in an integrated manner.
2. **Fulfils National Vision:** Embodies the spirit of "Sabka Saath, Sabka Vikas, Sabka Vishwas", ensuring inclusive and equitable growth.
3. **Mainstreaming with Identity Preservation:** Aims to integrate tribal communities into national progress while preserving their distinct culture, traditions, and way of life.
4. **Model of Cooperative Federalism:** Demonstrates effective Centre-State collaboration, with financial and administrative responsibilities shared for greater impact.
5. **Data-Driven and Mission-Mode Implementation:** Uses real-time data and a convergent, multi-ministerial approach for efficient delivery and monitoring.
6. **Bridges the Rural-Tribal Divide:** Reduces regional disparities by targeting remote and neglected tribal areas with focused investments.
7. **Supports Viksit Bharat @2047 Goals:** Contributes to the long-term vision of a developed, inclusive, and empowered India by 2047.
8. **Sustainable and Rights-Based Development:** Anchored in principles of sustainability, community empowerment, and recognition of land and forest rights under the FRA.

GOVERNANCE REFORMS

1. **Capacity Building of Gram Sabhas:** The Ministry of Panchayati Raj is conducting targeted training and awareness programs to strengthen Gram Sabhas in tribal areas, promoting grassroots participation.
2. **FRA Claim Processing Accelerated:** Special focus on expediting the recognition and processing of Forest Rights Act (FRA) claims, ensuring legal entitlement over land and forest resources for tribal communities.
3. **Strengthening Local Governance:** Enhancing the role of Panchayati Raj Institutions (PRIs) and traditional tribal bodies in decision-making and development planning.
4. **Democratic Empowerment of Tribal Communities:** Promoting inclusive representation and leadership from tribal communities in village-level governance structures.
5. **Transparency and Accountability Mechanisms:** Integration of e-governance tools, grievance redressal systems, and digital tracking for transparent scheme implementation.
6. **Community-led Planning and Monitoring:** Encouraging people's participation in planning, budgeting, and monitoring, making governance more responsive and need-based.
7. **Recognition of Customary Institutions:** Supporting and formalising the role of tribal customary and traditional governance systems, aligning them with modern democratic structures for synergy.

CONCLUSION

The Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PM JUGA) marks a transformative shift in India's tribal development strategy — from fragmented welfare schemes to an integrated, mission-mode approach. By converging the efforts of 17 ministries and focusing on over 63,000 villages, the programme seeks not just to deliver basic services, but to empower tribal communities as equal stakeholders in India's growth story. It ensures infrastructure development, social justice, economic

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empowerment, and cultural preservation, all within a rights-based and participatory framework.

Prelims Questions

Q. With reference to the Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PM JUGA), consider the following statements:

1. It was launched in 2024 and covers only the Particularly Vulnerable Tribal Groups (PVTGs).
2. It aims to provide housing, electricity, education, and livelihood in tribal-majority villages.
3. It is implemented solely by the Ministry of Tribal Affairs.

Which of the statements given above is/are correct?

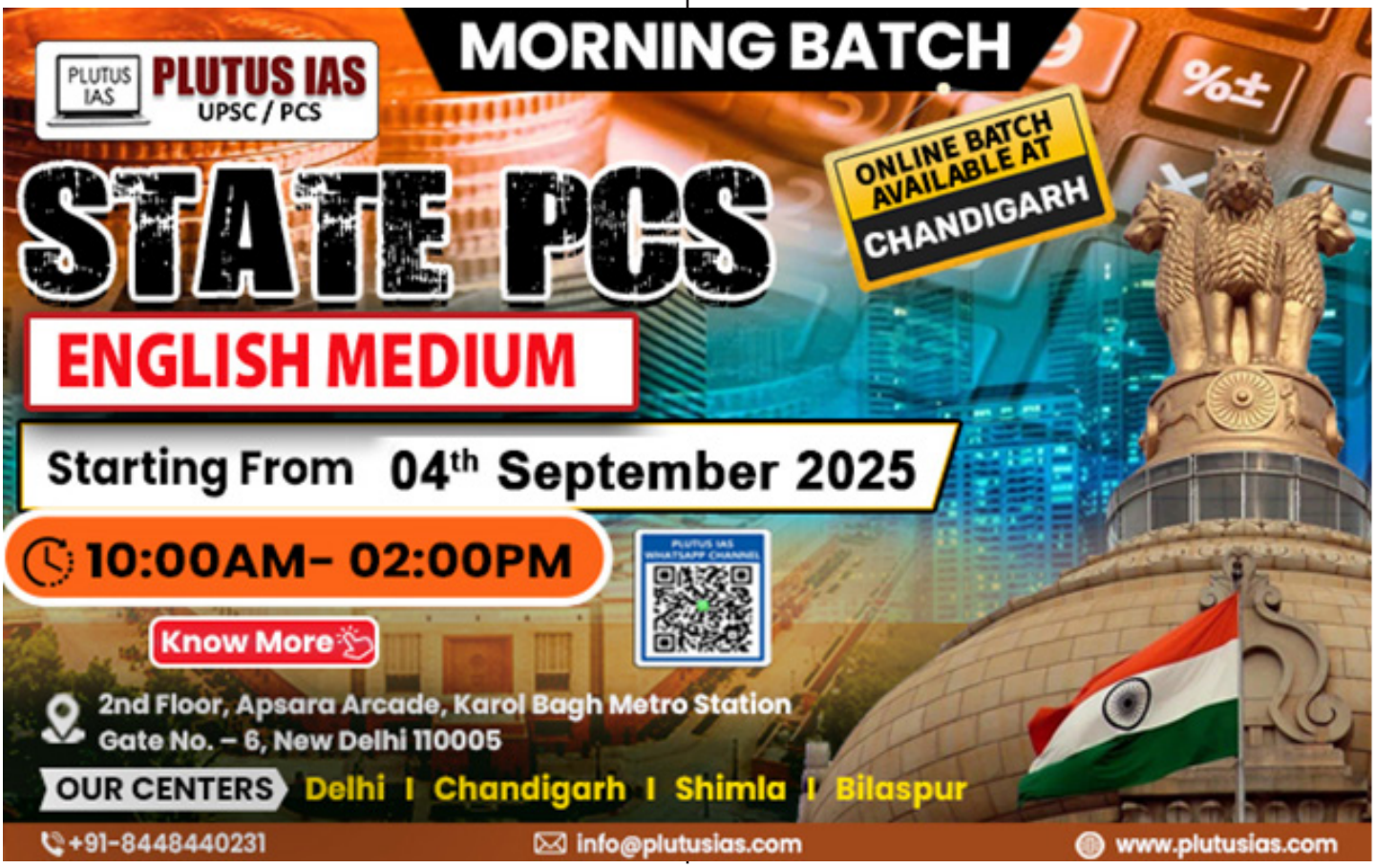
A. 1 and 2 only B. 2 only
C. 1 and 3 only D. 2 and 3 only

Answer: B

Mains Questions

Q. The Pradhan Mantri Janjatiya Unnat Gram Abhiyan (PM JUGA) represents a paradigm shift in India's tribal policy from welfare to empowerment. Critically analyse the key features, significance, and challenges of this mission in ensuring inclusive and sustainable tribal development.

(250 words, 15 marks)



"DRILLING INTO THE FUTURE: ANDAMAN BASIN AS INDIA'S ENERGY GAME-CHANGER"

WHY IN THE NEWS?

India's oil and gas exploration landscape is undergoing a transformative revival marked by policy liberalization, cutting-edge technological deployment, and a bold pivot towards underexplored offshore frontiers—particularly the Andaman-Nicobar Basin. This resurgence reflects the nation's strategic ambition to enhance energy self-sufficiency, reduce import dependency, and tap into the vast hydrocarbon potential beneath its Exclusive Economic Zone (EEZ).

BACKGROUND: INDIA'S ENERGY SECURITY CHALLENGE

1. **Rising Energy Demand:** India is the third-largest energy consumer globally, reflecting rapid economic growth and urbanization.
2. **High Import Dependency:** Over 85% of crude oil and about 50% of natural gas are imported, creating a major strategic and fiscal vulnerability.
3. **Foreign Exchange Burden:** This dependency puts pressure on India's current account and exposes it to global price volatility.
4. **Energy Security Risk:** Heavy reliance on imports makes India susceptible to geopolitical disruptions in oil-producing regions like West Asia.
5. **Policy Shift Post-2014:** Since 2014, the government has prioritised domestic exploration and production (E&P) to reduce this dependency.
6. **Strategic Reforms Initiated:** Key reforms have aimed at boosting investor confidence, enhancing ease of doing business, and exploring frontier basins like the Andaman-Nicobar offshore.

STRATEGIC-GEOGRAPHICAL CONTEXT

1. **Tectonic Junction Location:** The Andaman-Nicobar Basin lies at the tectonic intersection of the Indian and Burmese plates, making it geologically dynamic and resource-rich.
2. **Strategic Frontier:** It represents a high-potential frontier for offshore oil and gas exploration due to its unique geological setting.
3. **Proximity to Energy-Rich Zones:** The basin is located near Myanmar and Indonesia, both of which have established petroleum systems, indicating shared stratigraphic potential.
4. **Bay of Bengal Advantage:** Situated in the Bay of Bengal, it offers access to deepwater resources in an underexplored marine zone.
5. **Indo-Pacific Significance:** Its location strengthens India's presence in the Indo-Pacific region, contributing to strategic maritime interests.
6. **Energy Security Role:** Exploration in this basin can help reduce India's reliance on West Asian imports and diversify its energy sources.

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7. **Maritime Security Integration:** Energy activity in the region supports India's broader maritime strategy by enhancing surveillance and infrastructural presence.

ANDAMAN BASIN: INDIA'S NEW ENERGY FRONTIER

1. **Tectonic Confluence Zone:** The Andaman Basin is located at the junction of the Indian and Burmese plates, making it geologically active and favorable for hydrocarbon formation.
2. **Proximity to Proven Basins:** It shares structural and stratigraphic similarities with established hydrocarbon basins in Myanmar and North Sumatra, indicating strong exploration potential.
3. **Diverse Geological Settings:** The basin offers opportunities in carbonate plays and back-arc basin settings, both of which are globally known for oil and gas reservoirs.
4. **Recent Policy Breakthrough:** In 2022, nearly 1 million sq. km of previously restricted 'No-Go' offshore areas were opened for exploration.
5. **Frontier Status:** This move has positioned the Andaman Basin as India's most ambitious offshore exploration zone in recent decades.
6. **Strategic Importance:** Its development could significantly enhance India's energy security and establish a new offshore energy hub in the Bay of Bengal.

TECHNOLOGICAL LEAP IN ULTRA-DEEPWATER DRILLING

1. **Pioneering Depths:** ONGC and OIL have entered ultra-deepwater zones, drilling at unprecedented depths of up to 5000 metres.
2. **Key Drilling Project – ANDW-7:** The ANDW-7 wildcat well in the East Andaman Back Arc is a landmark initiative in India's offshore campaign.
3. **Light Crude Indications:** Cutting samples from the well revealed traces of light crude and condensates, confirming hydrocarbon generation.
4. **Neo-Pentane Detection:** Presence of C-5 hydrocarbons (neo-pentane) in trip gases suggests an active thermogenic system.
5. **Reservoir Rock Quality:** Core analysis revealed reservoir-quality facies, essential for commercial oil and gas recovery.
6. **Thermogenic System Confirmation:** Geological evidence validates a working petroleum system, similar to Southeast Asian basins.
7. **Global Exploration Parity:** These findings place India's Andaman offshore campaign on par with international deepwater efforts.

DATA-DRIVEN EXPLORATION THROUGH SEISMIC AND STRATIGRAPHIC SURVEYS

1. **Broad Seismic Mapping:** A massive 2D broadband seismic survey covering 80,000 LKM has been conducted across India's EEZ.
2. **High-Resolution Andaman Survey:** OIL completed 22,555 LKM of high-resolution seismic data in Deep Andaman (2021–22).
3. **Geological Structure Identification:** These surveys help locate faults, traps, and potential reservoirs within the offshore sedimentary basins.
4. **Stratigraphic Drilling in Progress:** Four stratigraphic wells, including one in the AN Basin, are currently being drilled to test subsurface data.
5. **Model Validation Objective:** Drilling aims to confirm geophysical models and validate hydrocarbon potential before commercial exploration.
6. **De-Risking Future Operations:** Stratigraphic drilling provides critical insights to minimize commercial exploration risks.
7. **Scientific Precision:** The integration of seismic data and test drilling marks a scientific, evidence-based approach to exploration.

POLICY REFORMS DRIVING OFFSHORE EXPLORATION MOMENTUM

1. **Revenue Sharing Contract Model (2015):** The shift from PSC to RSC gave operators greater operational freedom and simplified cost recovery.

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2. **HELP – A Unified Licensing Policy (2016):** The Hydrocarbon Exploration and Licensing Policy allows a single license for all hydrocarbon types.
3. **Open Acreage Licensing Programme (OALP):** OALP lets companies bid on blocks anytime, increasing flexibility and responsiveness in exploration.
4. **National Data Repository (NDR):** NDR provides open access to digitized geological and seismic data, empowering data-driven decisions.
5. **Crude Oil Marketing Deregulation (2022):** Deregulation allows producers to sell crude directly, enhancing competition and private investment.
6. **Investor-Friendly Environment:** Together, these reforms have made India's upstream sector transparent, liberalized, and competitive.
7. **Boost to Frontier Exploration:** The reformed framework has catalyzed exploration in high-risk, high-reward areas like the Andaman Basin.

INSTITUTIONAL BACKBONE: ROLE OF ONGC AND OIL

1. **ONGC – Energy Giant:** ONGC contributes around 71% of India's total crude and gas output, playing a dominant role in domestic production.
2. **Maharatna Leadership:** As a Maharatna PSU under the Ministry of Petroleum and Natural Gas, ONGC leads national energy strategies.
3. **Global and Domestic Reach:** ONGC is active in both Indian and international blocks, diversifying its energy portfolio.
4. **OIL – The Frontier Specialist:** Oil India Limited is India's second-largest upstream PSU, focusing increasingly on frontier basin exploration.
5. **Seismic and Stratigraphic Efforts:** OIL is spearheading seismic surveys and stratigraphic wells in the Deep Andaman region.
6. **Sustainable Operations:** Both PSUs emphasize environmentally sound, safe, and technologically advanced exploration practices.
7. **Driving Exploration Revival:** ONGC and OIL serve as the institutional engines behind India's offshore exploration revival.

STRATEGIC SIGNIFICANCE OF THE ANDAMAN BASIN

Dimension	Key Points
A. Energy Security	- Reduces dependence on Middle East oil imports - Enhances domestic availability of hydrocarbons - Diversifies India's energy basket - Supports Atmanirbhar Bharat in energy
B. Maritime Influence and Security	- Strengthens India's presence in Bay of Bengal and eastern Indian Ocean - Promotes Blue Economy through offshore resource development - Strategic location near Malacca Strait enhances maritime control - Complements India's Act East Policys
C. Regional Collaboration	- Geological affinity with Myanmar and Indonesia's proven basins - Enables regional cooperation in exploration and data sharing - Potential for joint ventures and technical exchange - Enhances regional energy diplomacy and connectivity

CHALLENGES AND ENVIRONMENTAL CONCERNS

Subheading	Challenge Description
High Operational Costs	Ultra-deepwater drilling (up to 5000m) requires advanced technology and high capital expenditure (CAPEX), increasing financial risks.
Subsurface Uncertainty	Limited geological data increases the risk of dry wells, making exploration economically uncertain in early phases.

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Infrastructure Gaps	Inadequate deepwater support infrastructure (e.g., rigs, subsea systems, logistics) hinders timely project execution.
Fragile Marine Ecosystems	The Andaman Sea hosts sensitive coral reefs, endangered marine species, and unique biodiversity, requiring careful handling.
Stringent Environmental Clearances	Regulatory delays in Environmental Impact Assessments (EIAs) and Coastal Regulation Zone (CRZ) approvals can stall operations.
Balancing Development and Conservation	Policymakers must ensure energy security goals align with commitments to ocean health and sustainable development.

WAY FORWARD: TOWARDS ENERGY SELF-RELIANCE

1. **Enhanced Geological Mapping:** Accelerate seismic coverage and geoscientific mapping in frontier basins to identify untapped hydrocarbon reserves and improve exploration success rates.
2. **Boost Private Sector Participation:** Facilitate greater private investment by simplifying regulatory processes, ensuring policy stability, and offering competitive fiscal terms.
3. **Infrastructure Modernization:** Strengthen offshore infrastructure, including the deployment of FPSOs (Floating Production Storage Offloading units), to efficiently exploit deepwater discoveries.
4. **Promote Gas-Based Transition:** Invest in clean energy synergies by using newly discovered natural gas reserves to support India's transition from coal to cleaner fuel alternatives.
5. **Balance Development with Conservation:** Ensure ecological sustainability by integrating green technologies, conducting thorough Environmental Impact Assessments (EIAs), and protecting marine biodiversity zones.

CONCLUSION

The emergence of the Andaman Basin as an exploration hotspot signals a new era in India's energy journey. Backed by strategic policy reforms, technological prowess, and institutional strength, India is poised to unlock the potential of its offshore wealth. If successful, this could mark a historic turning point towards energy security, regional leadership in offshore E&P, and a resilient blue economy, aligning with national goals under Atmanirbhar Bharat and the National Energy Policy.

RURAL INDIA ON THE RISE: GROWTH, CONFIDENCE, AND CONNECTIVITY

WHY IN THE NEWS?

In a clear sign of rural economic momentum, the July 2025 round of the Rural Economic Conditions and Sentiments Survey (RECSS), released by NABARD recently, reveals that 76.6% of rural households reported an increase in consumption, marking a sustained trajectory of consumption-led growth. The RECSS serves as a vital tool to evaluate the real-world impact of various government schemes and rural development programmes.

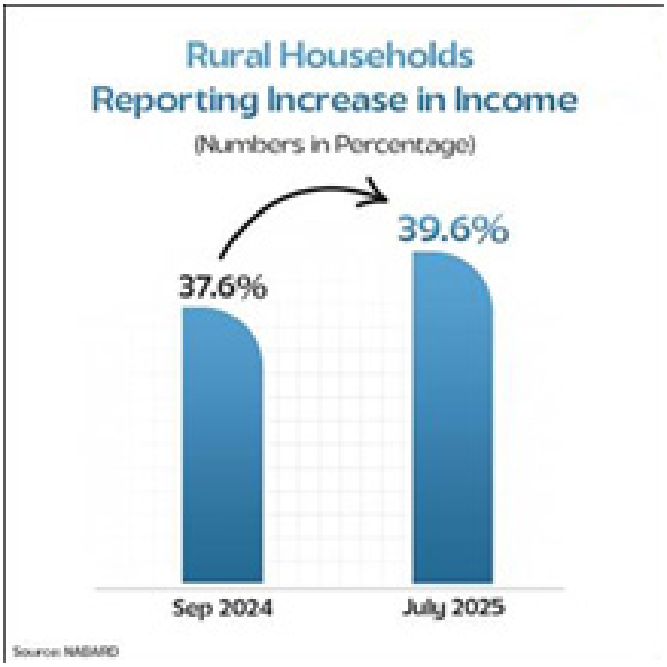
RISING INCOMES AND CONSUMPTION-LED GROWTH

Income Growth

39.6% of surveyed households reported an increase in income during the past year, the highest share across all six rounds of the survey so far.

Income Increase Bracket (%)	% of Households Reporting Increase
0–5%	24.7%
5–10%	42.5%
10–15%	14.9%

15–20%	8.9%
Above 20%	9.1%



CONSUMPTION EXPENDITURE

76.6% of households reported a rise in consumption over the past year. Just 3.2% of households reported a decline in consumption, which is the lowest since this survey started.

This growth is further reinforced by the highest recorded share of monthly income being spent on consumption at 65.57%, up from 60.87% in September 2024.

This reflects enhanced purchasing power and stronger financial confidence of rural households.

Government Support Remains Crucial

Income and spending levels continue to be strongly supported by several fiscal transfer schemes, in both kind and cash, both from the Centre and states. These include subsidies on food, electricity, cooking gas, fertilizers, and support for school needs, transport, meals, pensions, and interest subsidies. On average, these transfers made up about 10% of a household's monthly income. These interventions significantly enhance household resilience and reduce financial pressure, especially for vulnerable populations.

Strengthening Financial Health through Increased Savings

20.6% of households reported a rise in financial savings, showing a notable improvement in saving capacity alongside rising incomes.

The reported share of income allocated to savings stood at 13.18%, while loan repayments accounted for 11.85% of household spending.

Together, these numbers point toward a stronger culture of saving and debt management, alongside consumption growth.

STRONG SENTIMENTS ON INCOME AND EMPLOYMENT OUTLOOK

Short-Term Sentiments (Next One Quarter)

56.4% of rural households expect income levels to improve in the next quarter, the highest across all rounds of the survey so far.

56.2% of rural households anticipate better employment opportunities in the next quarter, reflecting growing optimism across income-generating avenues.

Long-Term Sentiments (Next One Year)

An all-time high 74.7% of rural households expect their income to increase over the next 12 months.

This reflects a strong sense of confidence and forward-looking positivity, bolstered in part by a favourable monsoon and improving infrastructure.

EXPANDING FINANCIAL INCLUSION AND FORMAL CREDIT USAGE

Shift to Formal Lending Channels

Driven by continued policy efforts to promote financial inclusion, rural households increasingly rely on formal institutional sources for credit. A record 52.6% of households reported sourcing loans exclusively from formal financial institutions—banks, cooperatives, NBFCs, MFIs, etc.

Another 26.9% borrowed from both formal and informal sources.

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This represents a strong shift away from unregulated lenders, ensuring better borrower protection and reduced cost of credit.

Decline in Informal Interest Burden

The mean interest rate on informal loans declined to 17.53%, a 30-basis-point drop from the previous round.

Despite being outside the formal system, 30% of rural households paid no interest on such loans—primarily due to borrowing from friends and relatives, indicating community-based financial support.

Rural Infrastructure Perceived to Be Improving

76.1% of households assessed that rural infrastructure improved over the past year.

This reflects consistent progress in areas such as roads, electricity supply, drinking water, health services, and educational institutions.

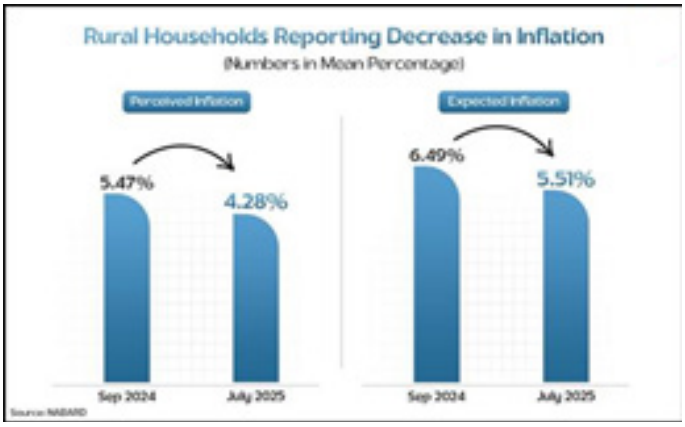
RURAL DEVELOPMENT PRIORITIES: ROADS, EDUCATION, WATER

Households were asked to rank areas where they noticed the most improvement in recent years. The top-ranked sectors were:

Rank	Area of Development	% of Households Ranking It 1st
1	Rural Roads	46.3%
2	Education Facilities	11.2%
3	Drinking Water Supply	10.0%
4	Electricity	8.6%
5	Health Infrastructure	7.5%

DECLINING INFLATION PERCEPTIONS AND EXPECTATIONS

The CPI-rural inflation fell from 3.25% in March to 2.92% in April and further to 2.59% in May. Food inflation also dropped to 1.36% in May. In the July survey, rural households reported a lower inflation perception, averaging (mean value)



STABLE FOOD EXPENDITURE PATTERNS

1. The share of food in total monthly consumption expenditure remained stable at a median value of 50%, even with softening rural food inflation.
2. This indicates that rising incomes are being used to diversify spending, without increasing pressure on food budgets.

COMPARISON OF KEY PARAMETERS WITH ROUND 1 (SEPTEMBER 2024)

Parameter	Sep 2024	Jul 2025	What This Means
Income Increased (% of Households)	37.6%	39.6%	More families are earning better incomes, and income growth is picking up.
Consumption Increased (% of Households)	80.1%	76.6%	Slight dip, but still high — spending remains strong, fueling rural demand.
Employment Outlook (Next Quarter)	52.6%	56.2%	Optimism rising — more households expect better job opportunities soon.
Income Outlook (Next 12 Months)	70.2%	74.7%	Marked rise in confidence — long-term income expectations are very positive.

CONCLUSION

The July 2025 RECSS survey highlights strong growth and optimism in rural India. Incomes and consumption are rising, savings have improved, and more households are accessing formal credit. Sentiments about future income and employment are at their highest levels yet. Government support remains steady, infrastructure is improving, and inflation perceptions are at a record low. Overall, the rural economy is on a confident and upward path.

FROM SWADESHI TO SELF-RELIANCE: A JOURNEY OF INDIAN HANDLOOMS

WHY IN THE NEWS?

The Indian handloom industry is one of the oldest and most vibrant cottage industries in the world. With a legacy dating back thousands of years, it reflects India's rich culture and skilled craftsmanship. Indian weavers have long been known for their expertise in hand-spinning, weaving and printing skills. They are located in small towns and villages across the country, where skills are passed down from one generation to the next.

FROM SWADESHI TO SELF-RELIANCE

The handloom sector played a vital role in India's freedom movement. The Swadeshi Movement, launched on 7th August 1905, championed indigenous industries, especially handlooms, as a form of economic resistance to colonial rule.

In honour of this legacy, the Government of India declared 7th August as National Handloom Day in 2015. The first celebration was inaugurated by Prime Minister Shri Narendra Modi in Chennai. Since then, this day is observed every year to honour the weaving community, recognise their contribution to the nation's socio-economic development, and renew our collective resolve to preserve and promote India's handloom heritage.

11TH NATIONAL HANDLOOM DAY: CELEBRATING CRAFTSMANSHIP AND EXCELLENCE

The 11th National Handloom Day will be celebrated on 7th August 2025 at Bharat Mandapam, New Delhi. The event will be graced by the Hon'ble President of India, who will confer the prestigious Sant Kabir Handloom Awards and National Handloom Awards for 2024 to a total of 24 awardees, including 5 Sant Kabir Awardees and 19 National Awardees.

These awards are part of the Handloom Marketing Assistance (HMA) component under the National Handloom Development Programme (NHDP). They recognise the work of weavers, designers, marketers, start-ups and producer companies who have made a difference in the field.

Each Sant Kabir Award carries a cash prize of ₹3.5 lakh, a gold coin (mounted), a Tamrapatra, a shawl, and a certificate. Each National Handloom Award includes a cash prize of ₹2 lakh, a Tamrapatra, a shawl, and a certificate.

THE HANDLOOM HACKATHON – A FRESH APPROACH TO OLD CHALLENGES

To support the handloom sector in adapting to modern challenges, the Ministry of Textiles launched Handloom Hackathon 2025, held on 4th August 2025 at the Research and Innovation Park, IIT Delhi. Organised by the Development Commissioner (Handlooms) in collaboration with the National Design Centre and FITT, IIT Delhi, the initiative marked a significant step towards innovation-led growth in the sector.

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HANDLOOMS: A LIFELINE OF RURAL INDIA AND KEEPER OF HERITAGE

The handloom sector is a big part of life in rural India. For many families, it is not just a tradition but also their main source of income. Weaving is often done at home with the usage of simple looms. It doesn't need a lot of money to start, which makes it perfect for small villages and towns.

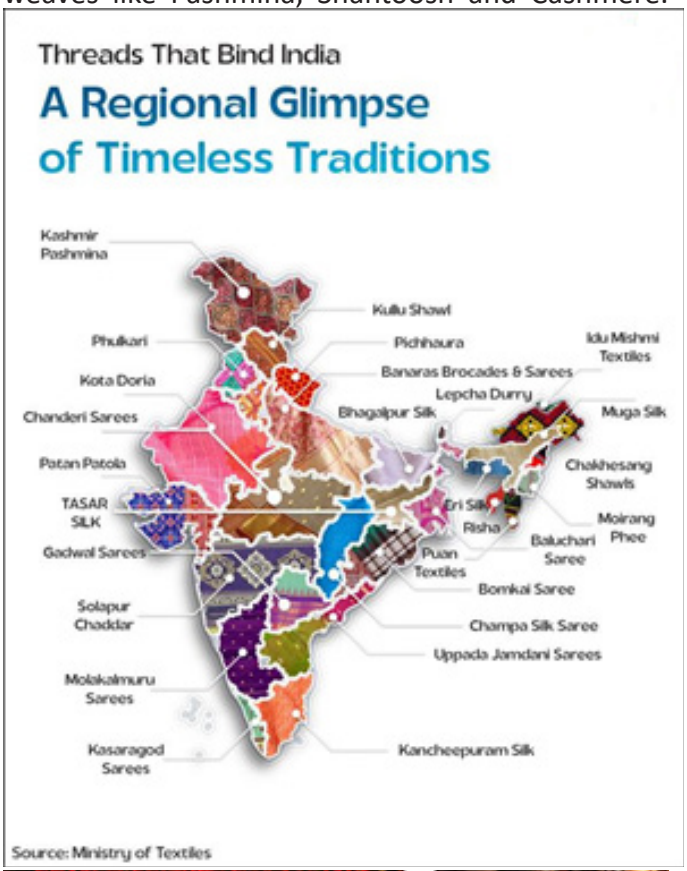
Today, handloom weaving is India's largest cottage industry. According to the 4th All India Handloom Census (2019–20), about 35.22 lakh households are involved in this work. Together, they include over 35 lakh weavers and allied workers.

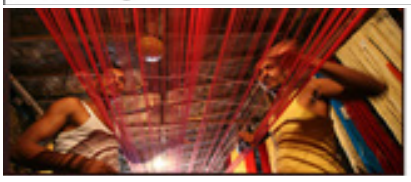
One of the most important parts of this sector is the role of women. Around 72% of economic handloom weavers are women. For many of them, weaving offers both income and economic independence. This is why many government schemes focus on helping women weavers and giving them more support.

Handlooms are more than just fabric. They carry the stories of our people, places and traditions. From Banarasi to Kanjeevaram, every weave reflects India's rich heritage. Made through eco-friendly methods, handlooms support rural families, empower women and promote sustainable living. They truly reflect who we are.

RICH VARIETY OF INDIAN HANDLOOMS

India's handloom sector is known for its wide range of fabrics, including cotton, khadi, jute, linen, and rare fibres like Himalayan nettle. It also produces distinctive silk varieties such as Tussar, Mashru, Mulberry, Eri, Muga and Ahimsa, along with woollen weaves like Pashmina, Shahtoosh and Cashmere.





Every region in India has developed its own unique handloom style. For example, Rajasthan is known for its tie and dye, Madhya Pradesh for Chanderi, and Uttar Pradesh for Jacquard patterns. These distinct traditions have made Indian handlooms popular both in India and around the world for their detailed designs and artistic value.

Other well-known styles include Bomkai from Odisha, Kunbi from Goa, Paithani from Maharashtra, Kotpad from Odisha, Balarampuram from Kerala, Jamdani and Baluchari from West Bengal. Each piece is handmade using traditional methods, making every product unique.

INDIAN HANDLOOMS IN GLOBAL MARKETS

Indian handlooms are celebrated across the globe for their rich textures, earthy colours and intricate

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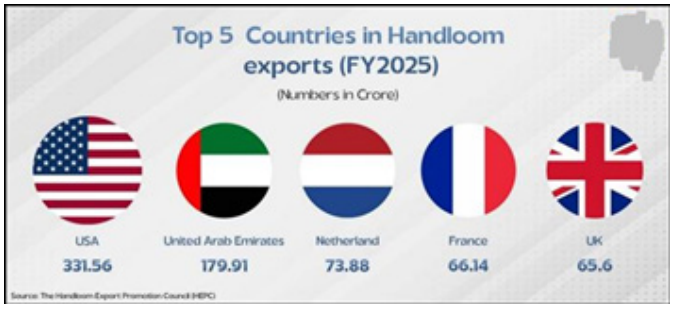
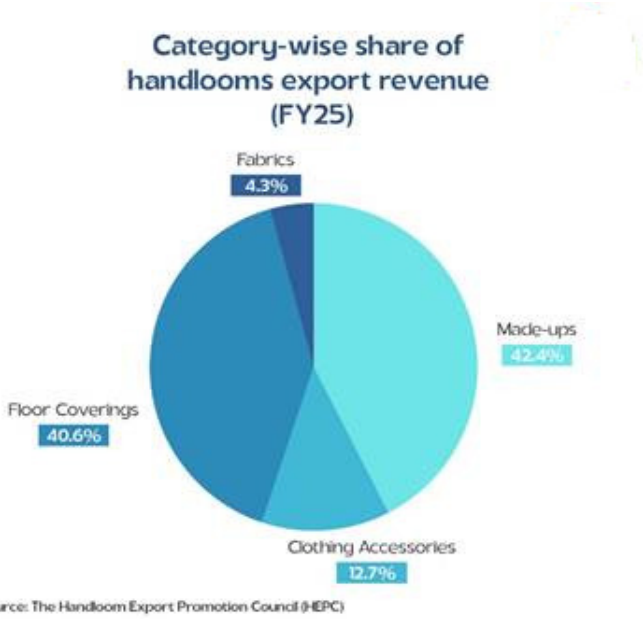
craftsmanship. Every weave tells a story, and it's this cultural depth and uniqueness that give Indian handloom products a special place in homes and hearts around the world.



Building on its rich heritage, India has emerged as the world's only major producer of handloom fabrics at a commercial scale. Remarkably, nearly 95 per cent of the world's handwoven fabric is made in India. While similar sectors in other countries have declined or disappeared, India's handloom tradition has continued to thrive, sustained by deep-rooted cultural values and the enduring skill of its weavers

India's handloom exports continue to find strong demand across global markets, reaching over 20 countries. In FY 2024-25, the United States remained the largest destination, accounting for ₹331.56 crore worth of exports. The United Arab Emirates followed with ₹179.91 crore, while the Netherlands imported goods worth ₹73.88 crore. France and the United Kingdom were close behind at ₹66.14 crore and ₹65.6 crore respectively. These figures reflect the continued global appreciation for the craftsmanship and cultural value of Indian handloom products.



GOVERNMENT SCHEMES FOR HANDLOOM DEVELOPMENT

1. National Handloom Development Programme (NHDP)

Component	2014–15 to 2023–24	2024–25
Small Cluster Development Programme		
No. of clusters sanctioned	715	79
Amount released (Rs. in crore)	533.17	85.99
No. of beneficiaries covered	2,16,579	12,221
Handloom Marketing Assistance		
No. of marketing events sanctioned	2,316	177
Amount released (Rs. in crore)	302.42	35.77
No. of beneficiaries covered	37,59,380	4,86,040
Products Registered under GI Act, 1999		
No. of products/items registered	73	31
Weavers MUDRA Loan		
No. of beneficiaries sanctioned loans	2,90,212	9,211
Handloom Weavers Welfare		
No. of weavers enrolled under PMJJBY/PMSBY	24,86,697	1,42,126

RAW MATERIAL SUPPLY SCHEME (RMSS)

The Yarn Supply Scheme (YSS), now partially modified and renamed as the Raw Material Supply Scheme (RMSS), has been approved for implementation for the period 2021–22 to 2025–26. The scheme aims to support handloom weavers by ensuring the availability of quality yarn at affordable prices through the following key objectives and components.

Objectives

Provide quality yarn and blends to eligible handloom weavers at subsidised rates.

Set benchmark prices and maintain consistent quality and supply.

Supply dyed yarn to address poor dyeing facilities and support product diversification.

Support handloom weavers in competing with the mill sector.

Subsidy

Under the scheme, freight charges are reimbursed for all types of yarns and a component of 15% of yarn subsidy is there for cotton hank yarn, domestic silk, wool and linen yarn and blended yarn of natural fibres with a quantity cap, so that handloom weavers may can compete with power-looms in pricing.

OTHER SIGNIFICANT INITIATIVES BY THE GOVERNMENT OF INDIA

Marketing Assistance

Expos and district-level events are organised regularly to provide a marketing platform to the handloom weavers. Weavers are also facilitated to participate in various crafts melas held across the country. As a new initiative, 23 e-commerce companies have been engaged to promote the e-marketing of handloom products.

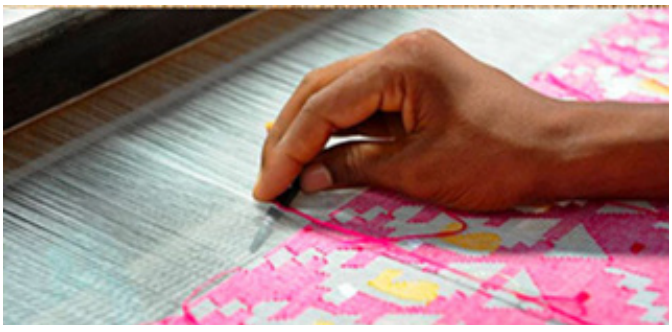
Certification of Handloom Products

The Handloom Mark was launched in 2006 to provide a distinct identity to handloom products. In 2015, the India Handloom Brand (IHB) was introduced for branding high-quality handloom products. It aims to create a direct link between the weaver and the consumer, offering the former better earnings and the latter an assurance of quality. Leading brands like BIBA, Peter England, and ONAYA have launched exclusive handloom collections with IHB.

Small Cluster Development Programme (SCDP)

The Small Cluster Development Programme focuses on developing weavers' groups as visible and self-sustainable entities. Need-based financial assistance of up to ₹2 crore per cluster is provided for interventions such as the purchase of looms and accessories, lighting units, workshed construction, solar lighting systems for common worksheds, engagement of textile designers, and product development activities.

Skill Up-gradation



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Weavers and allied workers receive training to learn new weaving techniques, adapt to modern technologies, and develop new designs and colours. Training also covers eco-friendly dyeing practices, exposure to basic accounting and management, and familiarisation with e-commerce platforms.

Hathkargha Samvardhan Sahayata (Looms and Accessories)

This scheme aims to improve fabric quality and productivity through the adoption of upgraded looms, jacquards, dobbies, etc. Under the scheme, 90% of the cost is borne by the Government of India, while implementation is carried out with full involvement of the respective State Governments.

Workshed Scheme

The scheme provides a dedicated workspace near the weaver's home for the entire family. Each unit costs ₹1.2 lakh. Marginalised households, including female, BPL, SC, ST, transgender, and differently-abled weavers, are eligible for 100% financial assistance, while other beneficiaries receive 75% assistance.

Engagement of Designers

Professional designers are engaged within clusters and beyond to develop innovative designs and products. The scheme covers their fees and offers additional financial outlay for remuneration to support design activities and establish marketing linkages.

Protecting Traditional Designs

The Ministry is actively working to safeguard India's unique handloom patterns by helping register them under the Geographical Indication (GI) Act, 1999. It also supports awareness through seminars and workshops. So far, a total no. of 104 handloom products, out of a total of 658 GI-tagged products, have been registered under the GI Act.

Empowering through Producer Companies

To improve productivity and earnings, more than 163 Producer Companies (PCs) have been set up across various states. These collectives help weavers manage their businesses better and access larger markets.

Going Digital with GeM & indiahandmade.com

Weavers are also being supported in selling their products online. Around 1.80 lakh weavers have been onboarded onto the Government e-Marketplace (GeM), allowing them to sell directly to government departments and institutions.2418 sellers onboarded on indiahandmade.com and 11410 products uploaded.

Welfare Measures for Handloom Weavers

The Ministry of Textiles continues to provide social security to handloom weavers across India. Social security is ensured through insurance schemes like the Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJY), Pradhan Mantri Suraksha Bima Yojana (PMSBY) and converged Mahatma Gandhi Bunkar Bima Yojana (MGBBY). These offer coverage against natural and accidental death, as well as disability.

Awardee weavers above 60 years of age, living in indigent conditions and earning below ₹1 lakh annually, are provided financial support of ₹8,000 per month. In addition, their children (up to two) are eligible for scholarships of up to ₹2 lakh per year for pursuing diploma, undergraduate, or postgraduate studies in government-recognised textile institutions.

CONCLUSION

National Handloom Day is a heartfelt celebration of India's weaving traditions and the people who keep them alive. The 11th edition is not only recognising their contributions through prestigious awards but also bringing fresh momentum with forward-looking initiatives such as the Handloom Hackathon 2025. Through new ideas, collaborations, and technology, the sector is taking firm steps toward

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resilience and renewal. As we mark this special day, we reaffirm our collective promise to empower our artisans, especially women; to protect India's rich weaving traditions and to ensure that the threads of heritage, sustainability, and self-reliance continue to weave a strong and vibrant future.

Prelims Questions

Q1. Consider the following statements regarding the Andaman-Nicobar Basin:

1. It lies at the tectonic junction of the Indian and Burmese plates.
2. It shares geological affinity with oil-producing basins in Myanmar and Indonesia.
3. Exploration in this basin can reduce India's reliance on Middle Eastern oil imports.

Which of the above statements are correct?

A. 1 and 2 only B. 1 and 3 only

C. 2 and 3 only D. 1, 2 and 3

Q2. Which of the following statements is/are correct with reference to recent rural economic trends in India?

1. The percentage of households reporting income increase rose between September 2024 and July 2025.
2. Rural consumption levels declined sharply in July 2025 compared to September 2024.
3. More than half of the rural households expect improved employment opportunities in the next quarter.

Select the correct answer using the code below:

A. 1 and 2 only B. 2 and 3 only

C. 1 and 3 only D. 1, 2, and 3

Q3. Consider the following statements regarding the Indian Handloom Sector:

1. The Handloom Hackathon 2025 was organised at IIT Kanpur.
2. The India Handloom Brand was launched in 2015 to promote quality handloom products.
3. The Small Cluster Development Programme provides assistance only to large handloom clusters.

Which of the statements given above is/are correct?

A. 1 and 2 only B. 2 only

C. 1 and 3 only D. 1, 2 and 3

Answer: B

1. D	2. C	3.B

Mains Questions

Q1. "India's offshore oil and gas exploration in the Andaman-Nicobar Basin is a bold step towards energy security, regional influence, and maritime resilience." Discuss the strategic, technological, environmental, and policy dimensions of this development. Also suggest the way forward.

(250 words, 15 marks)

Q2. Rural India has shown strong signs of economic optimism, driven by improvements in infrastructure, income growth, and financial inclusion. Examine the recent trends in rural consumption, income, and employment outlook, and discuss how government interventions have contributed to these outcomes.

(250 words, 15 marks)

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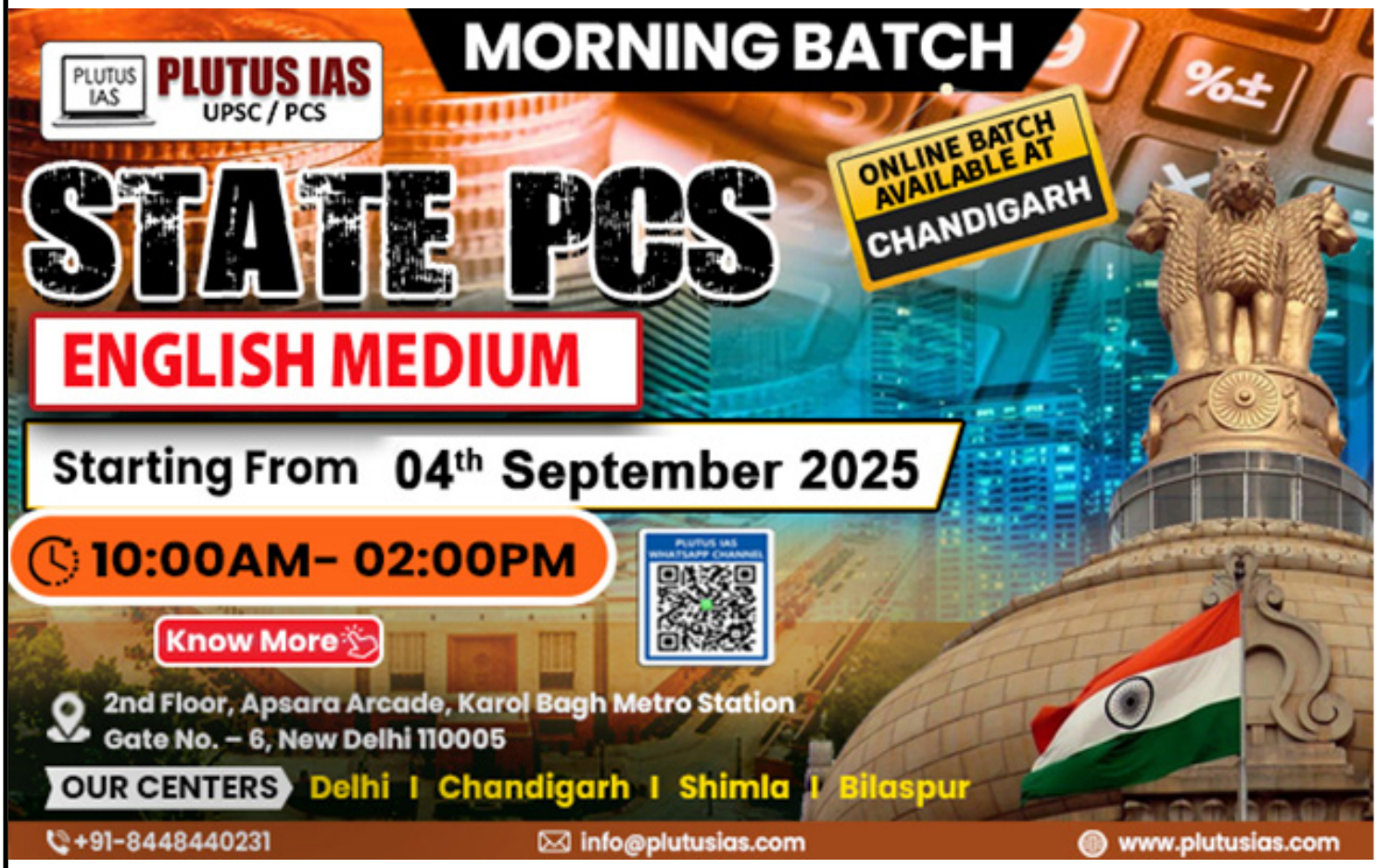
Q3. India's handloom sector is a symbol of cultural identity and a vital tool for rural economic empowerment. Discuss the initiatives taken by the government to strengthen this sector and the way forward.

(250 words, 15 marks)



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