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## CASTE CENSUS IN INDIA

**Why in News:** This article draws upon insights from an editorial published in The Hindu newspaper.

### Introduction

- For many decades, **Census data has been the backbone of public policy making in India.** It has provided essential information about areas like **health, education, employment, and housing.** However, a recent announcement by the **government to include caste enumeration in the upcoming national Census** has sparked widespread debate and attention.
- For several people, this decision represents a long-pending move toward collecting **reliable statistical data about the Other Backward Classes (OBCs).** But at the same time, there are concerns about whether this focus on caste data is genuinely for welfare or merely a political tool. Many worry that welfare policies for marginalized communities have been unnecessarily delayed under the excuse of waiting for better data.

### Why does the Caste Census Matter?

- Supporters of a **caste census** believe that it would give an **accurate, fact-based picture of the socio-economic condition of different caste groups in India.** This data could help design **better-targeted affirmative action policies and provide evidence to convince courts and policymakers** about the need for welfare programmes.
- Another important benefit would be that the data could show **inequalities within the OBC category itself.** This would help identify particularly deprived groups, like the **Extremely Backward Classes (EBCs),** and ensure that policies reach those most in need.
- While these arguments have merit, it is important to remember that **a caste census alone cannot solve deep-rooted social and economic inequalities.** Caste data should certainly be collected regularly in a diverse country like India. But to consider the Census as the most important tool for achieving social justice would be a **misunderstanding of its actual purpose.**
- The job of the **Registrar General of India (RGI)** is to gather **neutral, factual information** not to suggest or direct the government's welfare policies. Turning the Census into a tool for political reforms **puts an unfair burden on this institution and risks politicising its work.** In a politically polarised country, it is vital to maintain the **objectivity and credibility of Census operations.**

### Has Public Policy in India Always Waited for Data?

- Historically, **India's major social justice policies have never waited for perfect data.** Whether it was **reservations for Scheduled Castes (SCs) and Scheduled Tribes (STs), land reforms,** or the implementation of the **Mandal Commission's recommendations** — these actions were driven by **political movements, public pressure, and moral responsibility,** not by detailed statistical reports.
- Even recent policy decisions show this pattern. The **reservation for Economically Weaker Sections (EWS)** was introduced by the Modi government **without any detailed national-level data or commission report.** This demonstrates that when there is **political will,** the government can act, with or without comprehensive data.

### Existing Data on Caste-Based Inequality

- It's important to note that **plenty of data on caste-based inequalities already exists.** Since Independence, the **Census has been collecting data on SCs and STs.** Other national surveys like the **National Sample Survey (NSSO)** and **National Family Health Survey (NFHS)** have regularly shown that these communities continue to face **economic, educational, and social disadvantages.**
- The **National Crime Records Bureau (NCRB)** has consistently reported **high levels of crimes against SCs and STs,** ranging from **sexual violence to atrocities under the SC/ST (Prevention of Atrocities) Act.**
- Additionally, recent reports like the **Bihar Caste Survey** and the earlier **Socio-Economic and Caste Census (SECC)** have clearly shown the **economic vulnerability and diversity within the OBC category.** These surveys confirm that **a large portion of OBCs still work in informal, insecure, and low-income jobs, with little social security.**
- Despite this **wealth of existing data,** bold national-level policy reforms for OBCs have been missing. In sectors like the **private economy (corporates, IT, media), the representation of SCs, STs, and OBCs remains very limited.** Even in **state-run institutions like higher education, the judiciary, and the top bureaucracy,** these groups are poorly represented.

### The Risk of Politicising the Census

- One major risk in placing too much importance on a caste census is that it might **politicise an important statistical exercise.** The **Census is meant to be a neutral, fact-**



**finding operation** — not a political weapon. In today's polarised political climate, it is important to keep the **objectivity of Census data intact**.

- Moreover, **welfare policies for marginalized groups should not be delayed just because new data is awaited**. Governments must act based on the **available evidence, past reports, and public needs**.
- Social Justice Requires Political Will, Not Just Data
- A very important lesson from India's history is that **data alone does not drive public policy**. The real drivers are **political will, people's movements, and democratic pressure**. A caste census can certainly provide **better information**, but it cannot **automatically bring justice**.
- As the saying goes, **data is like a map — it shows the road, but it cannot walk the path for you**. If India wants to become a **fairer and more equal society**, the focus should be on the **intent and courage of its ruling class**. The real test for the current government is not in collecting caste data but in **taking bold, sincere policy actions** for the welfare of the most disadvantaged groups.

### Conclusion

- The announcement of a caste census has raised hopes, but also serious questions. It will be useful for policymaking — but only if it is **handled with care, objectivity, and sincerity**. Most importantly, **data should not become an excuse for inaction**. India already has **ample evidence of caste-based inequality**. What it urgently needs is **political courage and social commitment** to address these issues. The future of India's **social justice project depends not on spreadsheets and graphs but on the moral imagination of its leaders and the democratic will of its people**.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. In the context of India's welfare policymaking, critically examine the significance of a caste-based census. Do you agree that data alone cannot guarantee social justice without robust political will? Substantiate your answer with suitable examples. [250 words | 15 marks]

## PRESIDENT'S REFERENCE TO THE SUPREME COURT

**Why in News:** In a significant constitutional development, **President Droupadi Murmu** has recently made a reference to the **Supreme Court of India** under **Article 143** of the Constitution.

**Note:** This reference seeks the Court's opinion on certain important legal questions, especially regarding the powers of **Governors** and the **President** while dealing with **Bills passed by State Legislatures**.

### What is Article 143 of the Indian Constitution?

**Article 143** empowers the **President of India** to seek the opinion of the **Supreme Court** on important legal questions. This article is part of the Constitution's mechanism to clarify complicated matters of law and public importance through the wisdom of the apex court.

There are two types of references possible:

- **Article 143(1):** When a question of law or fact of **public importance** arises, the President can refer it to the Supreme Court.
- **Article 143(2):** When a question arises related to **pre-constitutional treaties, agreements, or arrangements**.

The **opinion given by the Supreme Court is not binding** on the President, but it carries **strong persuasive value** and is generally respected by both the **Executive** and the **Judiciary**.

### Historical Background

The concept of an advisory jurisdiction for the highest court originated from the **Government of India Act, 1935**. Under this Act, the **Governor-General** could refer legal matters to the **Federal Court**.

A similar provision exists in other countries:

- **Canada:** The **Supreme Court of Canada** offers advisory opinions to the government.
- **United States:** The **U.S. Supreme Court**, however, refuses to give advisory opinions, adhering strictly to the principle of **separation of powers**.

India retained this provision under **Article 143** to maintain a constitutional balance and address complex issues requiring judicial wisdom.

### Provisions Governing a Presidential Reference

- The **President can make a reference** based on the **advice of the Council of Ministers**.
- As per **Article 145**, the case is to be heard by a **Bench of at least five judges**.
- The **Supreme Court may decline to answer** if it finds the questions vague or inappropriate.
- The **Court's opinion is not legally binding** but carries substantial **moral and persuasive authority**.

### Notable Past References

Since **1950**, around **15 such references** have been made. Some important ones include:

- **Delhi Laws Act Case (1951):** Defined the scope of **delegated legislation** — how much law-making power can be delegated by Parliament to the executive.
- **Kerala Education Bill (1958):** Balanced **Fundamental Rights** with **Directive Principles of State Policy**, and

clarified the rights of **minority educational institutions** under **Article 30**.

- **Berubari Union Case (1960)**: Clarified that **cession of Indian territory** requires a **constitutional amendment** under **Article 368**.
- **Keshav Singh's Case (1965)**: Interpreted the **powers and privileges of legislatures**.
- **Presidential Poll Case (1974)**: Decided that **Presidential elections must proceed** even if there are **vacancies in State Legislative Assemblies**.
- **Special Courts Bill (1978)**: Important for laying down that:
  - The Supreme Court can **decline to answer a reference**.
  - Questions must be **specific and clear**.
  - The Court must not **interfere with parliamentary functions**.
- **Third Judges Case (1998)**: Gave guidelines for the **collegium system** for appointing judges to the **higher judiciary**.

Interestingly, the **Supreme Court has refused to give its opinion only once**, in 1993, on the **Ram Janmabhoomi-Babri Masjid** dispute.

### What is the Current Presidential Reference About?

- The latest reference has emerged following a **Supreme Court judgment** that set **timelines for Governors and the President** to act on **State Legislature Bills**. The Court also ruled that such decisions could be subject to **judicial review**.
- In response, the **Union Government** has raised **14 legal questions**, seeking the Court's opinion. The core issues include:
  - Whether **courts can prescribe timelines** for Governors and the President when no such time limit exists in the Constitution.
  - Whether decisions of **Governors and the President** on pending Bills can be subjected to **judicial review before the Bill becomes a law**.
  - The extent of powers the **Supreme Court can exercise under Article 142**, which allows the Court to do **complete justice** in any case.
- This reference reflects the growing **tensions between the Union Government and Opposition-ruled States** over the **Governor's role in legislative processes**.

### Why is this Important?

A clear and authoritative opinion from the Supreme Court can:

- Help resolve **constitutional ambiguities** around the role of **Governors and the President**.
- Clarify the limits of **judicial intervention** in legislative processes.
- Strengthen the principles of **democracy and federalism**.

- Settle political disputes that risk undermining the **smooth functioning of India's constitutional system**.

It may also echo the Court's past stand in the **Cauvery Water Disputes Tribunal reference (1992)**, where it noted that it cannot **sit in appeal over prior judgments** in its advisory capacity.

### Conclusion

- The **Presidential Reference under Article 143** is a vital constitutional tool that allows the highest court in India to guide the Executive on sensitive legal questions. Though **non-binding**, its persuasive authority plays a key role in resolving issues critical to the **governance of the country**. The current reference, involving the **powers of Governors and the President in State legislative processes**, is an opportunity for the Supreme Court to reaffirm constitutional values and clarify grey areas in the relationship between the **Centre and the States**. As India's democracy matures, mechanisms like these ensure that complex disputes are addressed within the **constitutional framework** — a sign of a healthy, functioning republic.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. "The advisory jurisdiction of the Supreme Court under Article 143 has played a crucial role in clarifying constitutional provisions and settling legal ambiguities in India's democratic framework." Discuss the historical evolution, key instances, and contemporary relevance of Presidential References to the Supreme Court. [250 words | 15 marks]

### SC AFFIRMS DIGITAL ACCESS AS FUNDAMENTAL RIGHT FOR PWDS

**Why in News:** In a significant step towards inclusivity, the **Supreme Court of India recently directed changes to the country's digital Know-Your-Customer (KYC) process**. The aim is to make it more accessible for **persons with disabilities (PwDs)**, especially **visually impaired individuals and acid attack survivors**.

This ruling is important because **access to digital services is now deeply tied to accessing financial, communication, and welfare services**. If these digital processes exclude people due to their disabilities, it becomes a violation of their constitutional rights.

#### What Laws Protect the Rights of Persons with Disabilities?

India has both **constitutional guarantees** and **dedicated disability laws** that safeguard the rights of PwDs.

- The **Preamble, Fundamental Rights, and Directive Principles** of the Constitution ensure equality, dignity, and non-discrimination.



- India is a signatory to the **United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)**, which calls for full inclusion of PwDs in society.
- Based on this, India passed the **Rights of Persons with Disabilities (RPwD) Act, 2016**, which adopts a ‘**social-barrier**’ approach. This means disability is not only about the impairment itself, but also about the **physical, social, and institutional barriers** that prevent full participation in society.
- **Section 42 of the RPwD Act** mandates that **all media and electronic services must be made accessible**. This includes screen-readers, sign-language, audio descriptions, and universal design in electronic devices.

### What is KYC and Why is it Mandatory?

**Know Your Customer (KYC)** is a process used by banks and financial institutions to verify the identity of their customers. It is mandatory under the **Prevention of Money Laundering Act, 2002**, to prevent fraud, money laundering, and financial crimes.

**KYC is essential for accessing:**

- Bank accounts
- SIM cards
- Insurance
- Pension schemes
- Demat or trading accounts
- Aadhaar-based government benefits like **Direct Benefit Transfers (DBTs) and scholarships**

To simplify KYC, the **Reserve Bank of India (RBI)** in 2016 introduced a **Video-based Customer Identification Process (V-CIP)**. This allows customers to verify their identity remotely by:

- Clicking a selfie
- Signing a form (digitally or on paper)
- Verifying an OTP in 30 seconds
- Reading a code flashed on the screen
- Uploading scanned ID documents

### Where Do the Problems Begin for PwDs?

Despite the push for digital convenience, **persons with disabilities—especially those with visual impairments or facial disfigurements—face serious challenges** under the current digital KYC rules.

- **Inaccessible Verification Methods:**
  - The system often requires users to **read flashing codes, write responses, or blink their eyes** to prove they are not bots.
  - Such methods automatically **exclude blind users or those with facial disfigurements** (e.g., acid attack survivors).

- **No Assistive Features:**
  - Many KYC platforms and apps do **not follow accessibility standards**.
  - There is **no screen-reader support, no voice assistance** to help align the camera, and **no audio cues** for lighting or focus.
  - This makes it nearly impossible for visually impaired users to complete the process independently.
- **Biometric Exclusion:**
  - **Thumb impressions**, which are widely used by visually impaired people, are **not accepted** in the current KYC system.
  - Aadhaar-based biometric verification also lacks features like **text-to-speech**, forcing users to seek help or be physically present—defeating the purpose of remote KYC.
- **No Human Support:**
  - The RBI’s rules **prohibit any form of assistance** during the KYC video call.
  - Without “prompting,” visually impaired users are **left without help** and often face rejections.

### How Did the Supreme Court Respond?

The **Supreme Court stepped in to protect the rights of persons with disabilities**. In a landmark ruling on **April 30, 2024**, the court stated that ‘**digital access**’ is **part of the fundamental right to life and liberty under Article 21** of the Constitution.

Here’s what the Court said and did:

- **Reaffirmed accessibility as a constitutional right:** The Court referred to earlier judgments, including the 2024 *Rajive Raturi v. Union of India* case, where it had ruled that **accessibility is essential to dignity and freedom of movement**.
- **Said digital exclusion equals rights violation:** It noted that **digital KYC barriers violate the UNCRPD and India’s RPwD Act**, which demand equal access.
- **Called for ‘substantive equality’:** The judgment emphasized that **equal treatment is not enough**—what’s needed is **reasonable accommodation** that enables true participation.
- **Directed inclusive KYC reforms:** The RBI and other regulatory bodies like SEBI and the Department of Telecommunications must **revise their KYC guidelines** with accessibility at the core.

### Who Else is Affected by Digital Inaccessibility?

While the court ruling focused on persons with disabilities, it also **highlighted how the digital divide hurts other vulnerable groups**, such as:

- **Rural populations**
- **Senior citizens**

- **People with low income**
- **Linguistic minorities**

They, too, face challenges in accessing digital platforms, and the Court reminded the government of its duty to **build digital infrastructure that is inclusive for all**.

### What Needs to Change?

To ensure no one is left behind, the following steps are necessary:

- **Implement ICT Accessibility Standards** in all digital financial apps and platforms.
- **Allow alternative verification methods** like voice-based identity, thumb impressions, and human assistance.
- **Design KYC apps with universal design**, ensuring compatibility with screen-readers and other assistive technologies.
- **Train bank staff and digital service providers** to understand and support the needs of PwDs.

### Conclusion

The Supreme Court's decision is a major victory for **digital rights and disability inclusion in India**. It sends a powerful message that **technology must empower—not exclude—people**. As India moves rapidly toward a digital economy, **ensuring accessibility is not just a legal requirement—it is a moral and constitutional obligation**.

Let us hope this judgment paves the way for a more inclusive digital future, where every citizen—regardless of ability—can fully participate and benefit.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

Q. With reference to the Rights of Persons with Disabilities (RPwD) Act, 2016, consider the following statements:

1. The Act adopts a purely medical model to define disability.
2. It mandates that electronic and print media be made accessible to persons with disabilities.
3. India enacted the RPwD Act to give effect to the UN Convention on the Rights of Persons with Disabilities (UNCRPD).

Which of the statements given above are correct?

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

Answer: (b)

### Descriptive Question

Q. Digital inclusion is not a privilege but a constitutional right." In light of the Supreme Court's recent judgment on making KYC processes accessible for persons with disabilities, discuss the significance of digital accessibility in promoting substantive equality in India. [250 words] [15 marks]

### ARE UNOPPOSED ELECTION VICTORIES UNCONSTITUTIONAL?

**Why in News:** The Supreme Court sought to know whether it can be laid down in the election law to mandate a certain percentage of votes even when there is only one candidate in the fray for declaring him/her elected.

#### Petition and Argument

- The court was hearing a **petition by legal research think tank Vidhi Centre for Legal Policy questioning the constitutionality of Section 53(2) of The Representation of the People Act, 1951**, as far as Lok Sabha and Assembly elections are concerned.
- **Violates NOTA:** The petition, filed in August 2024, argues that not holding the election in case of a single candidate **prevents voters from choosing the None of the Above (NOTA) option, which amounts to a violation of their fundamental right**.
- The petition cites the Supreme Court's 2013 judgment in *People's Union for Civil Liberties vs Union of India*, in which the court held that the right to cast a negative vote by choosing NOTA was protected in direct elections under Article 19(1)(a) of the Constitution.

#### Uncontested Elections

- Candidates were elected uncontested to the Lok Sabha **at 26 constituencies between 1951 and 2024**, the petition says, citing statistical reports of the Election Commission of India for these years.
- More than 82 lakh electors had been deprived of the chance to cast their vote in these elections.
- Of these 26 no-contests, seven took place during the Lok Sabha election of 1957, five each in the elections of 1951 and 1967, three in 1962, two in 1977, and one each in the elections of 1971, 1980, 1989, and 2024.
- Last year, the BJP candidate from Surat, Mukeshkumar Dalal, was declared elected unopposed after all other candidates either dropped out or had their nominations rejected.

#### Response of the Election Commission of India

- The Election Commission pointed out that **only nine of the 20 Lok Sabha elections held from 1951 to 2024 had seen uncontested elections of MPs**. And in the more than three decades since 1989, only one candidate had entered the Lok Sabha uncontested.



- The Commission argued that “NOTA” cannot be assumed to have automatically contested every election.
- It cited the court’s NOTA judgment that a button should be added to the electronic voting machine (EVM) to give an option to those who did not wish to vote for any of the candidates in the fray.
- According to ECI, the NOTA option can be exercised when the polling takes place where the voters come to the polling booths to cast their votes.
- Therefore, treating NOTA as a mandatorily contesting candidate in all direct uncontested elections does not find place in the statute, and the same would require legislative amendments in the provisions of the Representation of the People Act, 1951 and the Conduct of the Elections Rules, 1961.

### Supreme Court’s View and Suggestions

- The Supreme Court is examining the constitutionality of unopposed election victories, particularly in the context of Lok Sabha and Assembly elections.
- **Proposed Minimum Vote Share:** The Court suggested that even if there is only one candidate, they should be required to obtain a prescribed minimum vote share (e.g. 10%, 15%) to be declared elected, instead of winning automatically.
- **Upholding Democratic Principles:** Justice Surya Kant emphasised that since democracy is founded on the principle of majority, a minimum vote share would ensure that at least some voters who are liking you are represented, even in a default election.
- **Progressive Reform:** The Court views this as a very welcome and progressive step and a very good reform that would cause no inconvenience.
- **Call for Legislative Action:** The Supreme Court has asked the Union government to examine this question and consider enacting something to address this issue, stating that Parliament has the wisdom to decide on the appropriate weapon to ensure a candidate represents the will of the people. Justice Kant clarified that the Court is not considering striking down the existing law, but rather impressing upon the government to add a provision to it.
- **Promoting Multi-Party Culture:** The Court believes such a measure would ensure better representation for the constituency and promote a multi-party culture.

### Conclusion

- The Supreme Court has given the Union government four weeks to file its response and will hear the matter again in July 2025. The Court acknowledged that more deliberations would be necessary for such a reform.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. What legal and constitutional arguments underpin the challenge to uncontested elections? Discuss how the lack of electoral competition affects democratic principles and voter rights. [250 words] [15 marks]

## SUPREME COURT MAKES ITS JUDGES’ ASSETS PUBLIC

**Why in News:** The Supreme Court (SC) has now made it mandatory to publish the declaration of assets by judges on the Supreme Court website.

### Key details

- Following the **discovery of substantial sums of money at the home of a Delhi High Court judge**, which rekindled the debate on asset disclosure, the Supreme Court (SC) decided that all of its judges would publicly declare their assets to the CJI for publication on the court’s website.
- The Supreme Court’s Full Court decided on April 1, 2025, that **judges should declare their assets to the Chief Justice of India upon taking office and subsequently whenever they make a significant purchase.**
- Judicial officials are **not required by law to disclose their assets in public**, unlike elected officials and public servants.
- Nonetheless, the SC passed a **resolution in 1997** stating that the **judges “should declare all assets, including those of spouses and dependants, to the CJI.”**
- The **SC decided to voluntarily post judges’ assets on its website in 2009.**
- The **1997 Restatement of Values of Judicial Life**, which was adopted by the Supreme Court and **establishes certain judicial standards and principles that judges of the Supreme Court and High Courts must adhere to, is reiterated in the current decision.**

### SC on Judges’ Asset Disclosure

- **Legal Status:** Judges are not required by law to reveal their assets to the public.
- Judges must disclose their assets to the CJI, but not to the public, according to a **1997 SC resolution.**
- **2009 SC Decision:** Permitted optional, but not required, asset disclosure on the SC website.
- **2019 SC Ruling:** The Court ruled that information on judges’ assets falls under the purview of the Right to Information (RTI) Act, stating that such disclosures do not constitute personal information when related to public accountability.

### RESTATEMENT OF VALUES OF JUDICIAL LIFE (1997)

- Justice must not merely be done but it must also be seen to be done. Accordingly, any act of a **Judge of the Supreme Court or a High Court, whether in official or personal capacity, which erodes the credibility of this perception has to be avoided.**
- **Close association with individual members of the Bar**, particularly those who practice in the same court, shall be eschewed.
- A **Judge should not permit any member of his immediate family**, such as spouse, son, daughter, son-in-law or daughter-in-law or any other close relative, if a member of the Bar, to appear before him or even be associated in any manner with a cause to be dealt with by him.
- A Judge shall not hear and decide a matter in **which a member of his family, a close relation or a friend is concerned.**
- A Judge is expected to let his judgments speak for themselves. He shall **not give interviews to the media.**
- A Judge shall **not accept gifts or hospitality** except from his family, friends.
- A **Judge shall not hear and decide a matter in which a company in which he holds shares is concerned** unless he has disclosed his interest and no objection to his hearing and deciding the matter is raised.
- A **Judge should not seek any financial benefit in the form of a perquisite or privilege attached to his office** unless it is clearly available. Any doubt on this behalf must be got resolved and clarified through the Chief Justice.

### High Court Situation

- Just **97 out of 770 HC judges (13%) had disclosed their assets to the public as of March 2025.**
- A number of high courts (including those in Allahabad, Rajasthan, Bombay, Gujarat, Andhra Pradesh, and Uttarakhand) vehemently opposed public disclosure and turned down RTI requests regarding the assets of judges.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. In light of recent developments regarding the public disclosure of judges' assets, critically examine the balance between judicial accountability and judicial independence in India. How do measures like the 1997 Restatement of Values of Judicial Life and recent Supreme Court decisions impact this balance? [250 words | 15 marks]

## ARBITRATION IN INDIA

**Why in News:** A five-judge Constitution Bench of the Supreme Court, led by Chief Justice Sanjiv Khanna, ruled (4:1) that courts have limited powers to modify arbitral awards under the Arbitration and Conciliation Act, 1996. This decision clarifies the extent of judicial intervention permissible in arbitration proceedings.

### Key Details of the Judgment

- **Majority Opinion (4:1):** The court held that under Section 34 of the Arbitration and Conciliation Act, 1996, courts can modify arbitral awards on limited grounds, such as:
  - Correcting clerical or typographical errors.
  - Separating invalid portions of an award from valid ones.
  - Adjusting interest calculations post-award.
- **Article 142:** The Supreme Court can exercise its inherent powers under Article 142 of the Constitution to do complete justice in arbitration cases, but this should be done with caution and not undermine the objectives of the Arbitration Act.
- **Minority Opinion:** Justice K.V. Viswanathan dissented, stating that courts do not have the power to modify arbitral awards unless explicitly provided by the statute.

### Understanding Arbitration in India

#### Arbitration and Conciliation Act, 1996

- This Act governs arbitration proceedings in India, aiming to provide a **speedy and cost-effective dispute resolution** mechanism. It aligns with the United Nations Commission on International Trade Law (UNCITRAL) Model Law, **promoting uniformity in international arbitration practices.**

#### Key Features

- **Section 34:** Allows parties to apply for setting aside an arbitral award on specific grounds, such as incapacity of a party, invalid arbitration agreement, or arbitral award in conflict with public policy.
- **Section 37:** Provides for appeals against certain orders, including those refusing to refer parties to arbitration or setting aside or refusing to set aside an arbitral award.

#### Recent Amendments

- **2015 Amendment:** Introduced provisions to reduce delays and enhance the efficacy of arbitration proceedings.
- **2019 Amendment:** Established the Arbitration Council of India to promote institutional arbitration and set qualification norms for arbitrators.

#### Conclusion

- The Supreme Court's decision delineates the contours of judicial intervention in arbitral proceedings, aiming to uphold the sanctity of arbitration while ensuring justice. As India aspires to become a global arbitration hub, such judgments play a pivotal role in shaping a robust and reliable arbitration ecosystem.

EXPECTED QUESTION FOR UPSC CSE

Prelims MCQ

Q. With reference to the Supreme Court’s recent judgment on the modification of arbitral awards in India, consider the following statements:

1. The Supreme Court ruled that appellate courts have no general power to modify arbitral awards under the Arbitration and Conciliation Act, 1996.
2. The Arbitration and Conciliation Act, 1996 allows courts to correct clerical or typographical errors in arbitral awards.
3. The Supreme Court can invoke Article 142 of the Constitution to ensure complete justice in arbitration-related cases.

Which of the above statements are correct?

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

Answer: (d)

**CENTRE DEFENDS WAQF (AMENDMENT) ACT, 2025**

**Why in News:** In an important hearing before the **Supreme Court of India**, the **Central Government** strongly defended the **Waqf (Amendment) Act, 2025**, asserting that the new law is **secular in nature** and does not interfere with any **essential religious practices** of Islam.

**Note:** The hearing is part of a legal challenge against the recent amendments to the Waqf law, with the petitioners arguing that the law violates their **fundamental religious rights** under **Articles 25 and 26** of the Constitution.

**What is Waqf?**

A **waqf** is a **permanent dedication of property by a Muslim** for religious, charitable, or pious purposes. In India, waqf properties are managed by **Waqf Boards**, which are statutory bodies. Over the years, Waqf laws have been modified to ensure better governance, prevent misuse, and avoid encroachments on waqf land.

**Centre’s Key Argument**

- **Solicitor-General**, representing the Centre, argued that creating a **waqf** is a **form of charity**, which, although present in all religions, is **not an essential religious practice**. He told the **Bench headed by Chief Justice of India** that:
- “A Muslim who does not create a waqf would still be a Muslim. Charity is a noble act but not a religious compulsion.”

- By making this argument, the Centre sought to clarify that regulating the **secular and administrative aspects** of waqf does **not violate religious freedom**.

**Why Was the Law Amended?**

The **Waqf (Amendment) Act, 2025** brings in stricter norms for waqf property management, including:

- **Mandatory registration** of all waqf properties from **April 8, 2025 (the date the law came into force)**.
- **Ending the practice of ‘waqf by user’**, where land used for religious purposes over time could be claimed as waqf without formal documentation.
- Greater transparency and accountability in the functioning of waqf boards.

The government claims these measures are aimed at **stopping illegal encroachments**, some of which were being reported **even by members of the Muslim community themselves**.

**Addressing the Petitioners’ Concerns**

The petitioners opposing the law argued that:

- ‘**Waqf by user**’ is a **long-standing religious tradition** and must be protected.
- Allowing **government officers** to decide whether a waqf property is on government land is like letting a **judge decide his own case** — raising concerns about **bias**.
- The amendments undermine the **autonomy of waqf institutions** and amount to **state interference in religious affairs**.

**Centre’s Response to These Objections**

The **Solicitor-General** responded with the following points:

- The concept of ‘**waqf by user**’ was created by **previous legislation**, not by religion. What is made by law can also be changed by law, especially when societal conditions demand it.
- India has **similar laws for Hindu endowments**, where outdated practices like **hereditary priests (archakas)** have been legally removed. Thus, it is not discriminatory to update waqf laws as well.
- As for **government officials conducting inquiries**, the Centre said that unless there is **proof of personal bias**, it is unreasonable to assume that they would act unfairly. Moreover, there is a **clear system of appeals**:
  - First to the **Waqf Tribunal**,
  - Then to the **High Court**,
  - And finally, to the **Supreme Court**.

**Waqf and the Constitution**

The Centre’s broader legal stance rests on a clear **constitutional distinction**:

- **Articles 25 and 26** guarantee **freedom of religion**, including the **right to practice and manage religious affairs**.

- But these freedoms are **subject to public order, morality, and health**, and allow the state to regulate secular aspects of religious institutions, such as **property and financial management**.

### What Lies Ahead?

The legal debate over the **Waqf (Amendment) Act, 2025** is far from over. The arguments will **continue in the Supreme Court**, and the final judgment will have long-term implications on:

- The **legal status of waqf properties**,
- The **balance between religious rights and regulatory control**, and
- The **uniformity in the governance of religious endowments** across different communities.

### Conclusion

- The Waqf (Amendment) Act, 2025, according to the Centre, is a **reformative step** aimed at bringing **transparency, accountability, and lawful administration** of religious charitable properties. Whether the Supreme Court upholds this view or sides with the petitioners claiming a breach of religious rights will be a landmark moment in India's ongoing journey of balancing **faith and governance** under the Constitution.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. The regulation of religious endowments by the State must strike a balance between constitutional freedoms and administrative transparency. In the light of recent debates on the Waqf (Amendment) Act, 2025, critically examine the scope and limits of state intervention in religious affairs under Articles 25 and 26 of the Constitution. [250 words | 15 marks]

## EMBLEMS ACT, 1950

**Why in News:** In a recent judgment, the **Supreme Court of India** declined to entertain a petition that sought to **protect the name and legacy of V.D. Savarkar**, the prominent **Hindutva ideologue and freedom fighter**, under the **Emblems and Names (Prevention of Improper Use) Act, 1950**.

#### More insight into the matter

- The plea was filed by a 65-year-old petitioner who appeared in person before a **Bench**. He argued that there was a growing misunderstanding about **Veer Savarkar's contributions to India's freedom struggle**, and he sought legal means to **protect Savarkar's name from misuse or disrespect** (Under the **Emblems and Names (Prevention of Improper Use) Act, 1950**).

- The petitioner's plea came in the wake of controversial remarks made by **Rahul Gandhi** during his **Bharat Jodo Yatra** in 2024. Gandhi had reportedly stated that **Savarkar referred to himself as a "most obedient servant" of the British**, referring to letters Savarkar had written while imprisoned during colonial rule. **These remarks stirred a nationwide debate, particularly among political circles and historians.**

- In response, a criminal defamation complaint was filed against Mr. Gandhi. However, the **Supreme Court stayed the trial court's summons** in the defamation case but also **criticised Rahul Gandhi** for making what it described as **"irresponsible comments"** against national figures like Savarkar.

- Petitioner claimed that **protecting Savarkar's name was a part of his fundamental duty under Article 51A of the Indian Constitution**, which talks about **promoting national values, respecting the Constitution, and honouring the ideals of freedom fighters.**

- He requested the court to allow him to **establish historical facts** through a judicial platform so that **Savarkar's image is not tarnished** by political narratives or public misconceptions.

### The Court's Response

- The Supreme Court, however, questioned the basis of the writ petition. The Bench asked the petitioner whether any of his fundamental rights had been violated, which is a basic requirement for such petitions to be heard in the Supreme Court under Article 32 of the Constitution.
- Since the petitioner was not personally affected, and the case did not involve any violation of constitutional rights, the Court found no legal ground to intervene.

### The Emblems and Names (Prevention of Improper Use) Act, 1950 – A Brief Overview

- The **Emblems and Names (Prevention of Improper Use) Act, 1950** is a law that prohibits the **unauthorised use of certain names, emblems, and symbols** for professional or commercial purposes.
- It generally applies to **national figures, government emblems, and public institutions**. However, it does **not automatically extend to individual historical figures unless specifically notified by the government.**
- The petitioner in this case was asking the Court to interpret Savarkar's name as protected under this Act — but such a move would usually require a **notification by the Central Government**, not a judicial order.

#### Facts about Veer Savarkar

##### Birth and Early Life

- **Full Name:** Vinayak Damodar Savarkar
- **Born:** 28th May 1883, in **Bhagur**, near **Nashik**, Maharashtra

### Revolutionary Activities and Organizations

#### Abhinav Bharat Society

- Founded by **Vinayak Damodar Savarkar** and his brother **Ganesh Damodar Savarkar** in 1904.
- Originally started as **Mitra Mela** in Nashik.
- It was a **secret revolutionary society** with branches in India and London, aiming to overthrow British rule through armed revolution.

#### India House

- **Founded in 1905** in London by **Shyamji Krishna Verma**.
- Served as a **hub for Indian revolutionaries** and nationalist students abroad.
- Savarkar was actively involved in its activities and radicalized several Indian students.

#### Free India Society

- Founded by Savarkar in **London in 1906**, inspired by the ideas of Italian nationalist **Giuseppe Mazzini**, whose biography Savarkar had also written.
- Aimed at promoting the cause of complete independence for India through revolutionary means.

### Ideological Contributions

#### Writings

- **‘The History of the First War of Indian Independence’**: A pioneering work portraying the **1857 revolt** as a national uprising, with detailed discussion on **guerilla warfare tactics**.
- **‘Hindutva: Who is a Hindu?’**: Coined the term *Hindutva* to define a **cultural and political identity** of Hindus. The book laid the foundation for **Hindu nationalist ideology**.

#### Association with Hindu Mahasabha

- Served as the **President of the Akhil Bharat Hindu Mahasabha** from **1937 to 1943**.
- Advocated **Hindu political unity** and **militant nationalism**, positioning Hindu Mahasabha as an alternative to the Congress-led nationalist movement.

#### Arrest, Trial, and Imprisonment

- **1909**: Arrested for plotting armed revolt against **Morley-Minto Reforms** (Indian Councils Act 1909).
- **1910**: Arrested again for his association with the revolutionary **India House** group.
- **Charges**:
  - **Abetment in the murder** of Nashik Collector **Jackson**.
  - **Waging a conspiracy** against the British Crown under **IPC Section 121-A**.
- **Sentence**: Following two trials, sentenced to **50 years’ imprisonment** (commonly referred to as **Kala Pani**) and deported to **Cellular Jail in Andaman and Nicobar Islands in 1911**.

### A Larger Debate on Historical Narratives

- This case highlights a larger debate in India: How should the legacy of historical figures be preserved or interpreted in the present political context? While **freedom of speech** allows public figures to express their views, it also raises questions about **respecting national icons and freedom fighters**.
- The Supreme Court has consistently urged **responsibility in public discourse**, especially when it involves those who contributed to India’s independence.

### Conclusion

- The Supreme Court’s dismissal of this plea underlines the **importance of constitutional procedures** and the **limited scope of judicial intervention** in matters of historical interpretation. While the desire to **honour and protect freedom fighters like V.D. Savarkar** is understandable, the Court emphasised that such issues must be addressed through **appropriate legislative or public platforms**, not through writ petitions. This decision sends a clear message — that while **historical legacies matter, judicial remedies must follow constitutional principles**. Public debate, academic research, and responsible political discourse remain the **primary avenues for engaging with the legacy of India’s complex and diverse freedom struggle**.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q.** The right to freedom of speech and expression is fundamental, but it must be exercised responsibly, especially when it concerns national icons and historical figures. In light of the recent Supreme Court judgment dismissing a plea to protect V.D. Savarkar’s name under the Emblems and Names (Prevention of Improper Use) Act, 1950, critically examine the constitutional boundaries between individual rights, public discourse, and the protection of national legacy. [250 words | 15 marks]

### DEPUTY SPEAKER

**Why in News:** The position of Deputy Speaker of the Lok Sabha has remained vacant since June 2019, marking the longest such vacancy in the history of independent India.

**Note:** Article 93 mandates that the Lok Sabha elect both a Speaker and a Deputy Speaker “as soon as may be.” However, it does not specify a definitive timeline for these elections.

#### Historical Context and Evolution

- The roles of Speaker and Deputy Speaker trace back to the **Government of India Act of 1919, where they were initially termed President and Deputy President**. The Government of India Act of 1935 re-designated these positions to their current titles.

- Post-independence, the first Deputy Speaker of the Lok Sabha was **M. Ananthasayanam Ayyangar**. Over the years, the position has often been occupied by members of opposition parties as a convention, fostering a balance in parliamentary proceedings.

### Election and Tenure

- The Deputy Speaker is **elected by the Lok Sabha members from among themselves**. The election is typically **scheduled by the Speaker** and is expected to occur promptly after the Speaker's election. While the Constitution does not stipulate a specific timeframe, parliamentary convention has traditionally ensured the Deputy Speaker's election within a reasonable period.
- The **Deputy Speaker serves for the duration of the Lok Sabha's term**, unless they:
  - Resign
  - Cease to be a member of the House.
  - Are removed by a resolution passed by an effective majority

### Removal Process

- **Grounds for Removal**
  - The Constitution does not specify any particular grounds for the removal of the Deputy Speaker. Removal can be initiated based on loss of confidence, misconduct, partisanship, or any other reason as determined by the members of the Lok Sabha.
- **Notice of Resolution**
  - A motion to remove the Deputy Speaker must begin with a notice of intention to move a resolution. This notice must be in writing. **Must be signed by not less than 50 members of the Lok Sabha (as per Rules of Procedure and Conduct of Business in Lok Sabha, not explicitly stated in the Constitution)**. Must be submitted to the Secretary-General of the Lok Sabha.
- **Admissibility of the Motion**
  - The **Speaker of the Lok Sabha decides** whether the notice is admissible. However, since the motion concerns the removal of the Deputy Speaker, and if the Speaker is not available, the President may appoint a member of the House to preside, as per Article 95(1). Once admitted, a date is set for discussion of the resolution.
- **Inclusion in List of Business**
  - The resolution is listed in the business agenda of the House. **Typically, the resolution must be taken up within 14 days** of the notice being admitted.
- **Right to Participate but Not Preside**
  - As per Article 96(1) of the Constitution: "At any sitting of the House of the People while a resolution for the removal of the Deputy Speaker... is under consideration, the Deputy Speaker shall not preside, **but may be present and speak in the House and shall be entitled to vote on the resolution.**"

### Debate on the Resolution

- On the appointed day, the House debates the resolution. The Deputy Speaker, though barred from presiding, can participate in the debate and defend themselves. Any member may speak in favour or against the resolution.

### Voting on the Resolution

- After the debate, the resolution is put to vote. For removal to pass, it must be approved by an effective majority, which means: a majority of the total membership of the House (excluding vacancies), and not merely those present and voting.

### Result and Consequence

- If the resolution passes: The Deputy Speaker is formally removed from office. **The decision is final and binding.**

### Significance in Parliamentary Democracy

- **Ensures Continuity of Legislative Business:** In the absence of the Speaker, the Deputy Speaker presides over the sittings of the House under Article 95(1) of the Constitution. This ensures that the legislative functioning of the Lok Sabha is not stalled due to the Speaker's absence—maintaining uninterrupted democratic governance.
- **Supports the Speaker in Maintaining Order:** The Deputy Speaker assists the Speaker in upholding parliamentary discipline and decorum. This is especially important during long sessions or when the Speaker is engaged elsewhere (e.g., administrative duties or external delegations).
- **Presides Impartially Over Debates:** While the Speaker is generally expected to act impartially, the **Deputy Speaker is often chosen from the opposition party or non-ruling coalition**, ensuring a balance of power in presiding roles. This fosters non-partisan debate, reinforcing parliamentary fairness and trust.
- **Strengthens Democratic Conventions:** The post reinforces parliamentary conventions and democratic checks by showing that presiding roles are shared, not monopolized by the ruling party. **Examples include when Jawaharlal Nehru supported Sardar Hukam Singh, an opposition MP, as Deputy Speaker**—setting a precedent of bipartisan cooperation.
- **Administrative and Committee Role:** The Deputy Speaker automatically becomes the chairman of any Parliamentary Committee when appointed as a member of that committee. These are crucial for detailed legislative scrutiny, a backbone of Parliament's effectiveness.
- **Presides Over Joint Sessions:** In rare circumstances, such as when both the Speaker and Chairperson of Rajya Sabha are unavailable, the Deputy Speaker also presides over joint sittings of Parliament.



- **Has a Casting Vote When Presiding:** Like the Speaker, the Deputy Speaker—when presiding over the House—does not vote in the first instance but has a casting vote in case of a tie. This gives them the power to break deadlocks and affect legislative outcomes.
- **Reflects the Spirit of Federalism and Accommodation:** By allowing for representation from various regions or political parties, the Deputy Speaker’s post symbolizes India’s pluralistic democratic values. Their election from opposition benches reflects cooperative federalism and inclusive governance.

### Conclusion

- To ensure the effective functioning of the Deputy Speaker’s office, Parliament must mandate a fixed timeline—such as within 30 days of the first sitting—for the election, through constitutional amendment. If delayed, the President, on the Prime Minister’s advice, should be empowered to initiate the process. Regular delegation of presiding duties to the Deputy Speaker can affirm the office’s relevance and administrative utility.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. “The Deputy Speaker’s office is a constitutional necessity, not a political convenience.” In light of this statement, critically examine the significance and current status of the Deputy Speaker in the Lok Sabha. [250 words] [15 marks]

## RODRIK’S POLITICAL TRILEMMA

**Why in News:** This article has been developed based on the perspectives presented in an editorial in *The Hindu* newspaper.

### Introduction

- Today, democracies across the western world are facing a deep crisis. There is rising polarisation, growing mistrust in democratic institutions, and the alarming spread of populism. As a result, many countries are becoming more inward-looking and nationalistic.
- Over twenty years ago, economist **Dani Rodrik** had warned about a situation like this. He proposed a concept called the “**political trilemma of the world economy**”, which helps explain why democracies are struggling today.

#### What is Rodrik’s Political Trilemma?

In 2000, Dani Rodrik wrote a paper titled “How Far Will International Economic Integration Go?” where he proposed that countries **cannot simultaneously have all three** of the following:

- **Deep globalisation** (international economic integration)
- **Strong nation-state sovereignty** (national control over decisions)

- **Full popular democracy** (where people can freely influence policies)

At most, a country can **successfully have only two out of these three**. Trying to have all three, he warned, would create tensions and contradictions.

Simply put:

- If you want to be deeply integrated into the world economy *and* allow your people to fully control politics, you must **give up some national control**.
- If you want to protect your nation’s independence *and* participate in globalisation, you might have to **limit democracy**.
- If you want democracy *and* national sovereignty, you must **limit how much you open up to the global economy**.

At the time, this was mainly an academic theory. Today, it is unfolding in the real world — especially in Western democracies — leading to political crises, social unrest, and the weakening of democratic values.

### Understanding the Three Choices

Let’s look at the three difficult choices countries face, according to Rodrik:

#### Globalisation and Democracy — but at the Cost of Sovereignty

- Countries can enjoy the benefits of both globalisation and democracy, but only if they give up some national sovereignty. A great example is the **European Union (EU)**.
- In the EU, member countries agreed to give up control over many policies — **like trade, migration, and monetary matters** — to be part of a larger economic and political union.
- **The EU created a huge single market of 450 million people, with a GDP of \$18.5 trillion.**
- **It accounts for about 15% of global trade and has been an economic success in many ways.**
- However, not everyone has benefited equally. Some citizens feel that they have lost opportunities or that their national identities are threatened by free movement and foreign influences.
- This resentment has fueled nationalist movements like **Brexit** (the United Kingdom leaving the EU).
- Across Europe, **far-right parties** are gaining strength, pushing back against both globalisation and democracy in favor of a stricter, isolationist version of national sovereignty.

#### Globalisation and Sovereignty — but at the Cost of Democracy

- Countries can also choose to maintain national sovereignty and participate in globalisation, but they have to **limit the influence of popular democracy** over economic decisions.

- **In this model:**
  - **Independent institutions** like central banks and regulatory authorities make economic policies.
  - These bodies are shielded from popular political pressures.
- Rodrik noted that in many developing countries, **international financial institutions** like the **International Monetary Fund (IMF)** push governments to follow strict economic reforms that favor investors and creditors, often ignoring the will of the people.
- For example, in **Kenya**, IMF-backed policies demanding tight fiscal discipline led to widespread public anger. People felt that their welfare and needs were sacrificed to maintain foreign investors' confidence.
- Thus, in trying to balance globalisation and sovereignty, both **democracy and real sovereignty** suffer.

### Democracy and Sovereignty — but at the Cost of Globalisation

- The third path is what Rodrik called the “**Bretton Woods compromise**”. Here, countries maintain democracy and sovereignty but **limit globalisation**.
- **Examples include:**
  - **India:** Through protectionist policies, restrictions on foreign investments, and promotion of domestic industries, India has aimed to control how it engages with global markets.
  - **China and East Asian Tigers** (like South Korea, Taiwan): They allowed selective foreign investments and encouraged exports but kept tight political control and restricted foreign influence, especially over media and information.
- This model has worked well economically — these countries achieved rapid growth. But it often came at the cost of **curbing political freedoms and dissent**, raising questions about long-term sustainability.

### The Western Crisis: A Backlash Against Globalisation

For decades, western democracies tried to balance all three — **democracy, sovereignty, and globalisation** — believing that they could enjoy the benefits of all at once. But this balance has proved impossible.

**Globalisation**, while increasing wealth overall, also created **winners and losers**:

- **Manufacturing jobs disappeared in many parts of the U.S., U.K., and Europe as industries moved to countries with cheaper labor.**
- Economic insecurity grew among workers and small businesses who felt left behind.
- Populist leaders like **Donald Trump** (USA), **Geert Wilders** (Netherlands), and **Viktor Orbán** (Hungary) rose to power by tapping into these frustrations.

**Today, there is:**

- Growing mistrust of mainstream political parties and democratic institutions,
- A backlash against immigration, free trade, and international cooperation,
- Rising protectionism and nationalist rhetoric.

Countries are now retreating from global cooperation on issues like climate change and development aid, seeking to “protect their own” first.

**The challenge for western democracies today is to:**

- Spread the benefits of globalisation more fairly,
- Make democratic institutions more responsive to all citizens,
- And avoid the easy but dangerous answers offered by populism.

A careful, thoughtful path is needed — not reckless dismantling of systems but rebuilding them to be stronger and more inclusive.

### Conclusion

Rodrik’s political trilemma shows that **countries cannot have it all** — they must choose carefully which two elements they want to prioritize. If they fail to navigate the trade-offs wisely, the consequences could be severe: social unrest, weakened democracies, and a poorer future.

### SIMLA AGREEMENT, 1972

**Why in News:** Pakistan announced the suspension of the 1972 Simla Agreement and declared the closure of the Wagah border with India, halting all cross-border movement through the point.

#### About the Simla Agreement

- The agreement was signed by **Indian Prime Minister Indira Gandhi and Pakistani President Zulfikar Ali Bhutto after the 1971 war**, and was considered a significant breakthrough.

#### Background: The 1971 War

- The India-Pakistan War of 1971 **officially began on December 3**, when Pakistan ordered pre-emptive air strikes on eight Indian airfields.
- That evening, Prime Minister Indira Gandhi announced that the airstrikes were “a declaration of war against India”.
- On the ground, the Indian Army adopted a three-pronged assault, while simultaneously holding off Pakistani attacks in the West and making territorial gains of its own.
- On **December 16**, the Indian Army surrounded Dhaka. With zero hopes of a victory, the **Pakistan Army accepted the ultimatum to surrender**.
- The 1971 war led to the creation of the new nation of Bangladesh out of Pakistan.

#### Simla Agreement, 1972

- On July 2, 1972, Prime Minister Indira Gandhi and President Bhutto signed the Simla Agreement.
- **Purpose:** An official copy of the agreement published by the Ministry of External Affairs says it sought to reverse the consequences of the 1971 War.
- The agreement stated that both countries were committed to **ending hostilities and working towards a peaceful and cooperative relationship**.
- The goal was to redirect national resources from conflict toward improving the welfare of their people.
- **Key Provisions**
  - **Bilateral Dispute Resolution:** India and Pakistan agreed to settle all disputes, including Kashmir, through direct, bilateral negotiations. This clause became a central part of India’s argument against third-party intervention.

- **Establishment of the Line of Control (LoC):** The agreement converted the 1971 ceasefire line in Jammu and Kashmir into the Line of Control (LoC). Both sides pledged not to alter it unilaterally, solidifying the military status quo.
- **Return of captured territory:** India returned over 13,000 km<sup>2</sup> of land it had captured during the war, while retaining strategically important areas like Turtuk and Chalunka in Ladakh.
- **Recognition of Bangladesh:** While not explicitly part of the agreement, it laid the foundation for Pakistan’s eventual diplomatic recognition of Bangladesh.

#### Potential Outcomes of Suspension

- The Line of Control has been a hotspot for tensions, including ceasefire violations and infiltration attempts. If the principles of the Simla Agreement are no longer respected, it could escalate border hostilities and trigger wider military tensions.
- Pakistan’s suspension is largely symbolic, given that the agreement has lost much of its practical significance due to frequent breaches over the years.
- The suspension threatens regional stability, especially between nuclear-armed neighbors, and may intensify diplomatic and military tensions, further diminishing the chances of meaningful dialogue.
- Pakistan’s action could draw criticism for breaching international obligations, reinforcing India’s position that Pakistan is an unreliable partner.

#### Conclusion

- The Simla Agreement laid the foundation for a bilateral framework aimed at fostering peace and resolving disputes between India and Pakistan. While it helped avoid large-scale conflicts for decades, its repeated violations weakened its relevance. Pakistan’s recent suspension of the agreement not only undermines diplomatic mechanisms but also risks escalating tensions in an already volatile region, especially between two nuclear-armed states.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

- Q. What are the main provisions of the Simla Agreement, 1972? How has the Simla Agreement shaped India-Pakistan relations over time? [150 words] [10 marks]

## INDUS WATERS TREATY (IWT)

**Why in News:** India has said the Indus Waters Treaty (IWT) of 1960 with Pakistan will be held 'in abeyance' with immediate effect, post Pahalgam attack, until Islamabad credibly and irrevocably abjures its support for cross-border terrorism.

### About the Indus Waters Treaty

- **Indus Basin:** The Indus river basin has six rivers- **Indus, Jhelum, Chenab, Ravi, Beas and Sutlej**; originating from Tibet and flowing through the Himalayan ranges to enter Pakistan, ending in the south of Karachi.
- Initially, the **Inter-Dominion Accord of May 1948** was adopted, where India and Pakistan decided that India would supply water to Pakistan in exchange for an annual payment made by the latter. This agreement, however, soon disintegrated as both countries could not agree upon its common interpretations.
- In 1951, in the backdrop of the water-sharing dispute, **both countries applied to the World Bank for funding of their respective irrigation projects** on the Indus and its tributaries, which is when the World Bank offered to mediate the conflict.
- In 1960, after nearly a decade of fact-finding, negotiation, proposals by the World Bank and amendments to them, an agreement was reached between the two countries.
- The Indus Waters Treaty (IWT) was signed by former Prime Minister Jawaharlal Nehru and the then-President of Pakistan, Ayub Khan.
- The former Vice President of the World Bank, W.A.B. Iliff, also signed the treaty.

### Provisions of the Treaty

- The treaty prescribed how water from the six rivers would be shared between India and Pakistan.
- **River Allocation:** It allocated the three western rivers—**Indus, Chenab and Jhelum—to Pakistan for unrestricted use**, barring certain non-consumptive, agricultural and domestic uses by India and the three Eastern rivers—**Ravi, Beas and Sutlej**—were allocated to India for unrestricted usage.
- This meant that **80% of the share of water, or about 135 Million Acre Feet (MAF), went to Pakistan**, leaving the rest 33 MAF or 20% of water, for use by India.
- **Indus Commission:** It also required both countries to establish a Permanent Indus Commission, constituted by permanent commissioners on both sides.
  - The functions of the commission include serving as a forum for exchange of information on the rivers, for continued cooperation and as a first stop for resolution of conflicts.
- While Pakistan has rights over the waters of Jhelum, Chenab and Indus, Annexure C of the IWT allows India

certain agricultural uses, while Annexure D allows it to build 'run of the river' hydropower projects, meaning projects not requiring live storage of water.

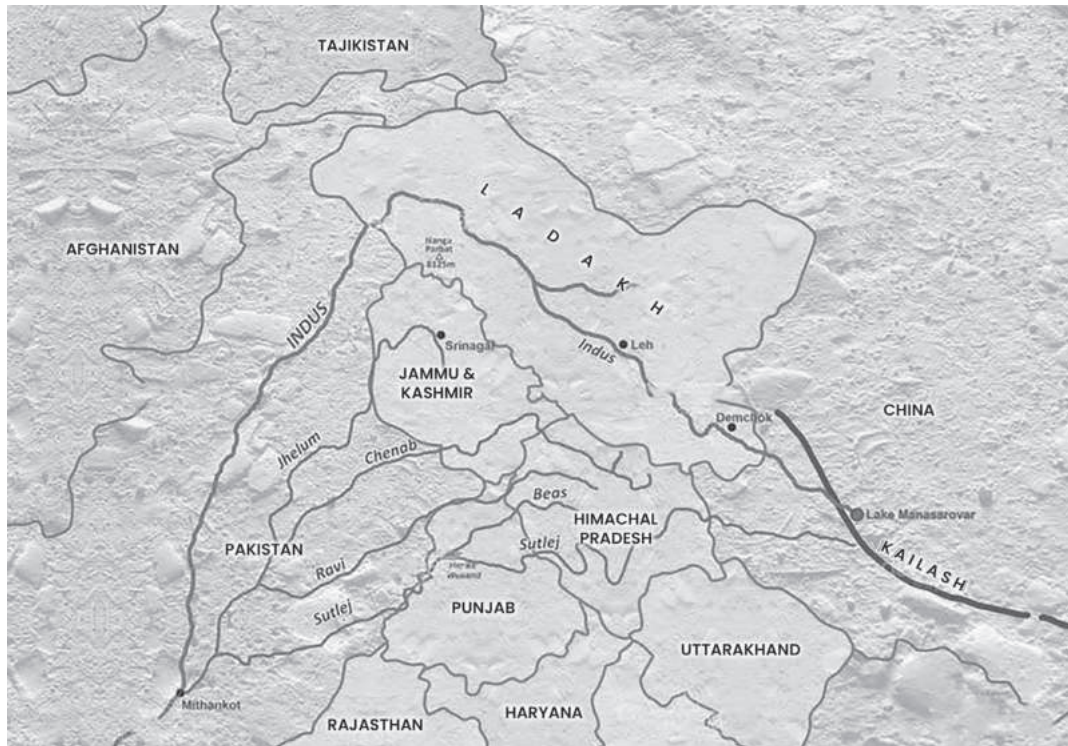
- The treaty also allows Pakistan to raise objections over such projects being built by India if it does not find them to be compliant with the specifications.
- **Information Sharing:** India has to share information on the project design or alterations made to it with Pakistan, which is required to respond with objections, if any, within three months of receipt.
- Besides, India is allowed to have a minimum storage level on the western rivers, meaning it can store up to **3.75 MAF of water for conservation and flood storage purposes**.

### Keeping the Treaty in Abeyance

- Contrary to accusations from some sections in Pakistan, keeping the treaty in abeyance does not mean blocking water flow to Pakistan.
- It means India will focus on and optimize the provisions of the treaty concerning the western rivers.
- India currently lacks the storage capacity to prevent water from flowing into Pakistan.
- India can, however, **perform sediment flushing operations from existing dams**.
- Keeping the treaty in abeyance also serves as a **strategic signal to Pakistan** that "business as usual" is no longer possible.
- India has historically acted as a responsible upper riparian state, with hydro-power projects following treaty processes, but it is now indicating that new terms are required for the treaty to continue.

### Indus River System

- The Indus River System is **among the largest and oldest river basins globally**. Originating from the Himalayas, it flows through India and Pakistan, supporting fertile lands and diverse ecosystems.
- The system includes six major rivers: the **Indus, Jhelum, Chenab, Ravi, Beas, and Sutlej**, and has played a crucial role in shaping South Asia's history and culture. Within India, it covers several states.
- In **Jammu and Kashmir**, the **Indus, Jhelum, Chenab, and Ravi** rivers flow through the region. Himachal Pradesh is traversed by the Beas, Sutlej, and Ravi rivers.
- Punjab hosts the **Sutlej, Beas, Ravi, Chenab, and Ghaggar rivers**. This complex river network is essential for agriculture, water supply, and maintaining ecological balance across the area.



### Issues with the Dispute Resolution Mechanism (Article IX)

- Article IX of the treaty outlines a **graded three-level mechanism** for resolving disputes.
- This mechanism involves initial discussions between the Indus Commissioners of India and Pakistan, followed by escalation to a World Bank-appointed Neutral Expert, and finally to the International Court of Arbitration (CoA) in The Hague.
- Pakistan has used this **mechanism to delay dams and hydro-electric projects** by India.
- **Examples:** Objections to the Salal Dam, taking Baglihar to a Neutral Expert, halting the Tulbul navigation project since 1987, and forcing the Kishanganga project to arbitration (where India eventually prevailed but faced restrictions).
- As India prefers bilateral resolution for issues with Pakistan, the Indus treaty should also have a bilateral dispute resolution mechanism.
- It is noted that during early treaty hearings, Pakistan's delegation included a large number of lawyers compared to engineers, suggesting an attempt to internationalize the issue and portray India as misusing its upper riparian position. The revised treaty should include provisions against this.

### Way Forward and Conclusion

- Sections in both India and Pakistan have claimed that the treaty is unfair to their country and too generous to the other.
- Some in India have called for the treaty to be scrapped entirely.

- When the treaty is renegotiated, two key areas are considered very important for India to address.
  - **Grievance Redressal Mechanism:** India should push for changes to the dispute resolution mechanism, ideally towards a bilateral process, to prevent delays and internationalization of issues.
  - **Treaty Prescriptiveness and Technology:** The current treaty is described as very prescriptive regarding dam building. Since dam-building technology has significantly advanced since 1960, India should renegotiate to incorporate these modern technological elements into the treaty terms.
- **China's Engagement:** To address water tensions with China, India needs to strengthen its capabilities on the Brahmaputra and forge strategic lower-riparian partnerships with countries like Bhutan, Nepal, and Bangladesh to present a unified front on transboundary water concerns, despite the challenging dynamics in the region.

### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

Q. Consider the following statements regarding Indus Water Treaty:

1. It was signed between India and Pakistan in 1960, after years of negotiations arranged by the UN.
2. It gives India unrestricted use of the three Eastern Rivers i.e. Chenab, Ravi and Sutlej.

3. Under the treaty, India is obliged to allow the flow of waters in the Western Rivers to Pakistan.

How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Answer: a (3 only)

### Descriptive Question

Q. Despite being hailed as a model of transboundary river water sharing, the Indus Waters Treaty has faced increasing strain in recent years. Examine the challenges associated with the treaty and evaluate India's concerns and demands for its revision in the current geopolitical context. [250 words] [15 marks]

## INDIA-AUSTRALIA RELATIONS: RESTRICTIONS ON STUDENT VISA NORMS

**Why in News:** In early 2025, Australia implemented significant changes to its student visa policies, directly impacting Indian applicants. These revisions include heightened scrutiny under the new Genuine Student (GS) requirement, increased visa fees, and temporary suspension of applications from certain Indian states.

### Key Policy Changes

- **Introduction of the Genuine Student (GS) Requirement:** Replacing the previous Genuine Temporary Entrant (GTE) criterion, the GS requirement mandates applicants to provide detailed explanations for their choice of course and institution, ensuring alignment with their academic and career goals.
- **Increase in Visa Application Fees:** Effective July 1, 2024, the student visa application fee was raised from AUD 710 to AUD 1,600, aiming to manage student volumes and ensure applicants are financially committed.
- **Mandatory Confirmation of Enrolment (CoE):** From January 2025, all student visa applicants must provide a valid CoE from a recognized institution, eliminating the previous allowance of applying with just a Letter of Offer.
- **Suspension of Applications from Specific Indian States:** Several Australian universities have temporarily halted applications from six Indian states, including Punjab, Haryana, Uttar Pradesh, Uttarakhand, Gujarat, and Jammu & Kashmir, citing concerns over visa integrity and compliance.

### Reasons Behind Australia's Policy Shift

- **Addressing Visa System Abuse:** The Australian government aims to curb misuse of the student visa system, ensuring that entrants are genuine students

rather than individuals seeking alternative migration pathways.

- **Managing Immigration Levels:** With rising concerns over housing shortages and infrastructure strain, Australia is implementing measures to control immigration levels, including capping international student numbers.
- **Enhancing Educational Standards:** By tightening visa requirements, Australia seeks to maintain the quality and reputation of its education system, ensuring that institutions attract and retain serious and committed students.

### India-Australia Relations

#### Economic and Trade Engagement

- The economic ties between India and Australia have strengthened considerably, marked by the **implementation of the Economic Cooperation and Trade Agreement (ECTA)** in December 2022. This agreement has led to a notable increase in bilateral trade, with Indian exports to Australia rising by 14% in FY 2023-24 compared to the previous year.
- Building on this momentum, both nations are negotiating a **Comprehensive Economic Cooperation Agreement (CECA)** to further liberalize trade in goods and services. Key focus areas include critical minerals, agriculture, and technology sectors.
- Australia's 2025 roadmap for economic engagement with India identifies nearly 50 targeted opportunities across sectors such as defence, sports, culture, space, and technology. This strategic plan aims to diversify trade relationships and enhance economic security for both countries.

#### Defence and Strategic Cooperation

- Defence collaboration forms a cornerstone of the India-Australia partnership. The **Mutual Logistics Support Agreement, signed in 2020**, facilitates reciprocal access to military bases, enhancing joint training and operations. Both countries participate in regular defence exercises, including the biennial Exercise Tarang Shakti, showcasing their commitment to regional security and interoperability.
- Furthermore, India and Australia are active members of the **Quadrilateral Security Dialogue (Quad)**, along with the United States and Japan. The Quad serves as a platform for strategic cooperation, focusing on ensuring a free, open, and inclusive Indo-Pacific region. Upcoming meetings aim to deepen collaboration in areas such as maritime security, counterterrorism, and cyber defence.

#### Emerging Areas of Collaboration

- Beyond traditional sectors, India and Australia are expanding their partnership into emerging domains. **Cooperation in critical minerals** is a key area, with India seeking access to Australia's rich resources essential for renewable energy technologies. Joint initiatives in



clean energy, including solar manufacturing and green hydrogen projects, are also underway.

- In the realm of **technology and cyber security**, both nations are exploring avenues for collaboration to address common challenges and leverage opportunities in the digital economy. Additionally, educational exchanges and people-to-people ties continue to strengthen, fostering mutual understanding and cultural appreciation.

### Conclusion

- Australia's revised student visa policies reflect its broader objectives of maintaining the integrity of its immigration system and ensuring the quality of its education sector. While these measures pose challenges for Indian students, the overarching India-Australia relationship remains robust, underpinned by strong economic and defence cooperation. Continued dialogue and collaboration are essential to address mutual concerns and strengthen this strategic partnership.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. Discuss the key dimensions of India-Australia relations, focusing on trade, defense, and emerging sectors. What challenges hinder the deepening of this strategic partnership? [150 Words] [10 Marks]

## INDIA-UK FREE TRADE AGREEMENT (FTA): A LANDMARK DEAL

**Why in News:** The India-UK Free Trade Agreement, which is in line with India's Viksit Bharat 2047 vision and the UK's growth trajectory, was recently **jointly announced by Prime Ministers Shri Narendra Modi of India and Sir Keir Starmer of the United Kingdom.**

### Key features of the India-UK FTA

- It is regarded as a benchmark agreement and one of the most ambitious FTAs India has signed, encouraging inclusive growth, robust supply chains, quality employment, and digital connectivity.
- **Tariff Reduction and Trade Growth**
  - **Abolition of tariffs on approximately 99% of the tariff lines**, encompassing almost 100% of the trade value—greatly aiding Indian exports.
- **Trade** is presently valued at USD 60 billion and is **expected to double by 2030.**
- **Significant prospects for the manufacturing sector:**
  - **Sectors that require a lot of labour:** textiles, seafood, leather goods, shoes, toys, precious stones & jewellery, and sporting equipment.

- **Sectors reliant on technology:** engineering products, automobile components, motors, organic compounds.
- The agreement **boosts India's competitiveness in the UK market** compared to other countries.
- **Growth in Employment within the Services Sector:**
  - One of the most bold pledges made by the UK in areas such as: IT/ITeS, Fiscal and Occupational Services, Commercial and Instructional Services
  - This will create new employment opportunities and **enhance the incorporation of Indian service providers into international value chains.**
- **Mobility for Proficient Labour Force:**
  - **Facilitates movement for:** Contractual Service Providers, Corporate Guests, Financiers, Intra-Company Transferees (ICTs), Self-Employed Professionals (e.g., yoga teachers, cooks, artists), Spouses and dependent children of ICTs, having the right to work.
  - The FTA opens vast opportunities for India's **talented youth in the advanced digital services sector of the UK.**
- **Dual Contribution Convention:**
  - **For a maximum of three years, Indian employees and their employers are exempt from paying UK social security taxes.**
  - By **making Indian professionals more cost-competitive**, this policy will support job growth and provide substantial financial benefits.
- **Regulatory and Structural Changes:**
  - Tackles non-tariff obstacles and unreasonable trade limitations on Indian exported goods.

**Note:** India-UK relations are explored in detail in the March 2025 issue of the magazine.

### PRELIMS SPECIAL

#### What is a Free Trade Agreement (FTA)?

- A Free Trade Agreement is a treaty among nations or regions aimed at lowering or removing trade obstacles (such as tariffs and quotas) to boost trade and investment exchanges.
- **Scope:** Encompasses not just goods and services but can also include investment, rights to intellectual property, public sector purchasing, Regulatory measures for competition.

### Conclusion

The India-UK FTA is a contemporary, bold, and all-encompassing pact that represents strategic economic diplomacy between two democratic nations. It strengthens trade integration, improves market access, fosters job creation, and reinforces the shared commitment to tackling global issues together.

## EXPECTED QUESTION FOR UPSC CSE

### Descriptive Question

Q. The recently concluded India–UK Free Trade Agreement (FTA) has been described as one of the most ambitious and comprehensive trade pacts signed by India. Critically examine the key features of the agreement and evaluate its potential to promote inclusive economic growth, employment generation, and India’s strategic trade objectives. [250 words] [15 marks]

## INDIA AND THE GULF COOPERATION COUNCIL

**Why in News:** India is actively pursuing trade agreements with the Gulf Cooperation Council (GCC) members to address its energy needs and trade deficit.

### India-GCC Relations

- India’s relationship with the Gulf Cooperation Council (GCC) is multifaceted, extending beyond historical ties to encompass strategic, economic, and socio-cultural dimensions.
- The GCC, comprising **Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE**, holds vital significance for India, constituting its extended neighbourhood.
- The Gulf Cooperation Council (GCC) is a regional political and economic organization founded in 1981. It was **created in response to rising regional tensions, notably the Iranian Revolution of 1979 and the Iran-Iraq War that lasted from 1980 to 1988.**



### Strategic Importance and Dialogue

- **Shared Security Concerns:** Both India and the GCC share a **desire for political stability and security in the Gulf region and South Asia.** This translates into joint efforts

for peace and stability, creating opportunities for future cooperation.

- The changing international order and geopolitical developments, such as the wars in Ukraine and Gaza, proxy-fighting between Iran and Israel, and tensions in other regions, further underscore the need for greater cooperation.
- **Evolution of Strategic Dialogue**
  - The first-ever India-GCC Political Dialogue took place on September 26, **2003**, on the sidelines of the United Nations General Assembly.
  - An MoU on the **Mechanisms of Consultations** was signed on September 10, **2022**, during External Affairs Minister Dr. S. Jaishankar’s visit to Riyadh.
  - The first India-GCC Senior Officials Meeting was held on March 20, **2023**, in Riyadh.
  - The first India-GCC Joint Ministerial Meeting for Strategic Dialogue was held on September 9, **2024**, in Riyadh, co-chaired by EAM Dr. S. Jaishankar and the Prime Minister and Foreign Minister of Qatar, as President of the GCC Ministerial Council. This meeting was attended by the foreign ministers of all GCC states and the GCC Secretary General.
- **Joint Action Plan:** During the ministerial meeting, a Joint Action Plan 2024-2028 was adopted, outlining various joint activities in diverse areas including health, trade, security, agriculture and food security, transportation, energy, and culture, with the option to add more areas.

### Economic and Commercial Ties

- **Trade Volume and Balance**
  - The GCC is one of the largest trading blocs for India’s foreign trade.
  - In FY **2023-24**, **bilateral trade between India and the GCC stood at \$161.59 billion.** This comprised 14.22% of India’s total foreign trade.
  - The trade balance is in the GCC’s favour due to large volumes of oil and gas imports by India. In FY 2023-24, India’s imports from GCC were \$105.49 billion (or \$105.3 billion), while exports were \$56.3 billion.
  - Specific trade figures for individual **GCC countries show Saudi Arabia and UAE** as major trading partners.
- **Energy Security**
  - The **GCC countries’ substantial oil and gas reserves** are of immense importance for India’s energy security.
  - Historically, nearly 50-60% of India’s hydrocarbon imports came from GCC states.
  - While India has diversified its energy basket and increased imports of Russian crude, the **GCC’s contribution to India’s oil and gas supplies remained significant at 28% in 2023-24.** Saudi Arabia, UAE, Qatar, and Kuwait remain among India’s top 10 suppliers of crude oil and gas.



- Potential tightening sanctions on Russian shipping reinforce the relevance of the Gulf in India's energy security.
- **Investment Opportunities**
  - GCC countries are one of India's most important sources of foreign direct investments (FDI).
  - Between **April 2000 and June 2024, India received a collective FDI of \$24.66 billion from GCC countries**, excluding significant portfolio investments.
  - Expanding trade also opens up investment opportunities in India for GCC, particularly in downstream energy projects. Some members, notably Saudi Arabia, have made investments in Indian petroleum refining capacity, though the potential remains largely untapped. Russia has been the biggest investor in India's downstream energy sector so far.
  - GCC also has considerable exposure to Indian equities, and tax treaties could influence future engagement.
- **India-GCC Free Trade Agreement (FTA)**
  - **Discussions** on an FTA have gained momentum, especially after the signing of the India-UAE Comprehensive Economic Partnership Agreement (CEPA).
  - An initial framework agreement for an FTA was signed in 2004, with two rounds of negotiations held in 2006 and 2008.
  - Discussions were interrupted by political challenges in the region (Arab Spring 2010-11), but the intention to revive the FTA was announced in November 2022, and talks continue.

### People-to-People Connections

- **Indian Diaspora:** The GCC countries are home to one of the largest expatriate Indian communities in the world, estimated at 8.5 million, representing the largest concentration of Indian citizens outside India.
- **Remittances:** The Indian diaspora in the GCC countries contributes the second-biggest chunk of remittances to India. They are the largest contributors to the nearly US\$120 billion in remittances received in India in 2023. While the share of remittances from GCC declined from over 50% in 2016-17 to about 30% in 2020-21, it still represents a major component of India's total inward remittances.
- **Welfare Concerns:** India has legitimate concerns over the welfare of expatriate Indian workers in Gulf countries. Negotiations over trade and investment treaties include this as a focus area from the Indian side, an issue GCC needs to tackle as its member economies diversify.

### Way Forward: Evolving Cooperation and Future Challenges

- **Diversification of GCC Economies:** The GCC countries are prioritising economic reforms in preparation for a post-oil economy, a process that has accelerated since the Arab Spring and COVID-19. This diversification offers new avenues for cooperation with India.
- **New Areas of Collaboration**
  - Healthcare
  - Infrastructure development
  - Food security
  - Digital economy
  - AI and machine learning
  - Space exploration
  - Fighting climate change and reducing carbon emissions
  - Developing clean and renewable energy sources
- **Security and Defence Ties:** India and GCC have enhanced defence and security cooperation, focusing on counterterrorism, maritime and coastal security, with joint exercises and training. India is also working with countries like the UAE and Saudi Arabia to enhance defence trade, including possible joint manufacturing.
- **Strategic Convergence:** The economic growth and potential of India make it a natural attraction for GCC countries as they look to develop partnerships with growing Asian economies amidst shifts in the international order. The shared challenges of economic prosperity, land and maritime security, territorial integrity, food, health, and climate security, cultural cooperation, and leveraging technological advancements are at the forefront of their growing strategic convergence.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

- Q. What are the key drivers of strategic convergence between India and the GCC? How has India and the GCC's relationship evolved beyond traditional energy and trade? [250 words] [15 marks]

### TOWARDS FAIRER & INCLUSIVE GLOBAL TRADE SYSTEM

**Why in News:** At the recent informal World Trade Organization (WTO) ministerial meeting in Paris, India's Commerce and Industry Minister, Piyush Goyal, emphasized the need to eliminate non-tariff barriers and address trade distortions caused by non-market economies.

#### Challenges in the Current Global Trade Landscape

- **Paralysis of the WTO Dispute Settlement Mechanism:** The WTO's Appellate Body, which serves as the final court for trade disputes, has been non-functional since December

2019 due to the United States blocking the appointment of new members. This dysfunctionality has undermined the WTO's credibility and its ability to enforce global trade rules, weakening the rule-based order.

- **Rise of Protectionist Measures:** The escalation of trade wars, notably between the US and China, has led to a surge in protectionist policies. Tariffs and non-tariff barriers have disrupted global supply chains, adversely affecting developing economies that rely heavily on exports.
- **Rise in Unilateral Green Barriers:** While combating climate change is critical, the introduction of environmental trade barriers—like the EU's Carbon Border Adjustment Mechanism (CBAM)—often ignores the developmental needs of poorer nations. These green measures risk becoming neo-protectionist tools that restrict market access for developing countries under the guise of sustainability.
- **Complex Regulatory Frameworks:** India has pointed out the challenges posed by intricate regulatory frameworks, especially in the European Union, which can hinder seamless trade and investment. Simplifying these regulations is crucial for fostering better economic cooperation.
- **Inequity in Digital Trade and E-Commerce Rules:** Emerging areas like data localization, cross-border digital flows, and taxation of digital giants remain governed by norms that favour tech-heavy developed nations. Developing economies argue for policy space to build their own digital capabilities before agreeing to binding global rules.
- **Lack of Representation and Voice:** Global trade negotiations often marginalize the Global South. Many least-developed and low-income countries lack the resources or negotiating power to influence decision-making, leading to trade outcomes that fail to account for their unique challenges and development priorities.
- **Disproportionate Influence of Developed Countries:** The existing trade order often benefits industrialized economies, enabling them to shape rules in their favour while sidelining the concerns of developing nations. For instance, developed countries maintain high subsidies for agriculture while urging developing nations to reduce support for their own farmers—creating an uneven playing field.

**Note:** The January 2025 issue of the magazine provides an in-depth coverage of the WTO.

### India's Initiatives Towards a Fairer Trade System

- **Advocacy for WTO Reforms:** India has been vocal about the need to reform the WTO to make it more inclusive and representative of developing countries' interests. Restoring the Appellate Body and ensuring transparency in dispute settlements are among its top priorities.

- **Strengthening South-South Cooperation:** India actively engages with other developing nations to promote mutual economic growth. Through initiatives like the Indian Technical and Economic Cooperation (ITEC) program, India provides training and capacity-building support to partner countries, fostering shared development.
- **Strategic Trade Agreements:** India is negotiating comprehensive free trade agreements with countries like Australia and the European Union, focusing on areas such as critical minerals, services, agriculture, and green energy. These agreements aim to deepen economic ties and ensure mutual benefits.
- **Emphasis on Inclusive Growth:** India's trade policies are increasingly focusing on inclusivity, ensuring that the benefits of trade reach all sections of society. By promoting sectors like agriculture and small-scale industries, India aims to make trade a tool for comprehensive development.

### Conclusion

- India is advocating for a fairer and more inclusive global trade system by pushing for WTO reforms, addressing trade distortions, and resisting green and digital protectionism. Through strategic trade partnerships, South-South cooperation, and a focus on inclusive growth, India seeks to ensure that global trade rules are equitable and responsive to the needs of developing nations.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. In the face of growing protectionism and systemic challenges in the World Trade Organization, India's push for a fair and inclusive global trade system is both timely and necessary. Critically examine India's approach to global trade reforms and evaluate its implications for developing countries. [250 words] [15 marks]

## BANDUNG CONFERENCE AND GLOBAL SOUTH

**Why in News:** 2025 marks the 70th anniversary of the first Asia-Africa summit, which took place in Bandung, Indonesia, from April 18 to 24, 1955.

### About Bandung Conference

- The Bandung Conference, also known as the **Asian-African Conference**, was a historic summit that took place in Bandung, Indonesia, from April 18 to 24, 1955.
- It was the first-ever summit-level **meeting of independence leaders from Asia and Africa**.
- Representatives from twenty-nine governments of Asian and African nations gathered for this meeting.



- The co-sponsors of the conference included Burma, India, Indonesia, Pakistan, and Sri Lanka, who brought together an additional twenty-four nations from Asia, Africa, and the Middle East.
- Notably, President Sukarno of Indonesia, Premier Chou En-Lai of China, Premier Jawaharlal Nehru of India, Premier U Nu of Burma, and President Gamal Abdel Nasser of Egypt were among the leaders present.

### Historical Context and Motivation

- The **conference occurred in the context of the wave of decolonisation that followed the Second World War**. Many of the participating nations had only recently gained independence from colonial rule.
- The conveners were driven by the common goals of charting a new course of **sovereign, independent, and collective action** to address the pressing challenges they faced as newly independent, developing nations.
- They were dissatisfied with being on the margins of the global stage.
- A key factor in bringing the leaders together was the reluctance and continued hegemonic actions by the former colonial overlords and other Western powers in their interactions with countries in **Africa, Asia, and Latin America**.
- **Bandung Spirit**: The gathering in Bandung was seen as a result of the sacrifices made by their forefathers and the people of the younger generations.

### Core Principles

- **Respect for fundamental human rights** and for the purposes and principles of the Charter of the United Nations.
- Respect for the **sovereignty and territorial integrity** of all nations.
- Recognition of the **equality of all races and of the equality of all nations**, large and small.
- Abstention from **intervention or interference in the internal affairs** of another country.
- **Respect for the right of each nation to defend itself singly or collectively**, in conformity with the Charter of the United Nations.
- Abstention from the use of **arrangements of collective defence** to serve the particular interests of any of the big powers. Abstention by any country from exerting pressure on other countries.
- Refraining from **acts or threats of aggression or the use of force** against the territorial integrity or political independence of any country.
- Settlement of all international disputes by peaceful means, such as negotiation, conciliation, arbitration or judicial settlement, as well as other peaceful means of the parties' own choice, in conformity with the Charter of the United Nations.

- Promotion of mutual interests and cooperation.
- Respect for justice and international obligation.

### Legacy of the Conference

- **Non-Aligned Movement**: The Bandung Conference and its final resolution laid the foundation for the Non-Aligned Movement (NAM) during the Cold War. The NAM was established in 1961.
- This was followed by the **establishment of the Group of 77 (G77) in 1964**.
- These two multilateral groupings provided platforms for developing countries to voice their political and economic perspectives in international arenas and promote unity.
- The conference set in motion a new wave of South-South cooperation and solidarity. The concept of the Third World or the South also arose from this meeting.
- The basic principles of Bandung – mutual interest, solidarity, and respect for national sovereignty – continue to guide relations among developing countries.
- Despite the initial momentum and subsequent formation of NAM and G77, the Global South continued to be on the margins of global geopolitics and geoeconomics for a period.
- The solidarity generated by the spirit of Bandung had weakened by the end of the 1960s, partly because most of the original leaders were no longer in power.

### Challenges

- The **economic independence and egalitarian development** path advocated by Bandung remain substantially unrealised.
- Seventy years after the conference, the **Global South is still described as waiting for independence**, with the North still perceived as calling the shots and the South paying the price for “borrowed dreams”.
- Many postcolonial nations, after a brief period embracing the Bandung ideals, **reportedly lost the will to resist imperialism** and pursue independent development strategies.
- Facing a development impasse by the 1970s, many turned to global finance and embraced neoliberalism instead of confronting foreign capital and building domestic capabilities.

### Relevance Today

- Seventy years later, the principles of the Bandung Conference are considered as relevant today as they were in 1965.
- The countries of the Global South must be at the forefront of shaping the evolving multipolar world to ensure it is focused on a fair, just, inclusive, and equitable global community.
- The principles provide guidance in addressing contemporary challenges such as international inequality, debt traps, climate crisis responsibility, and developed countries turning inward.



# ECONOMY & AGRICULTURE

## MANUFACTURING GROWTH

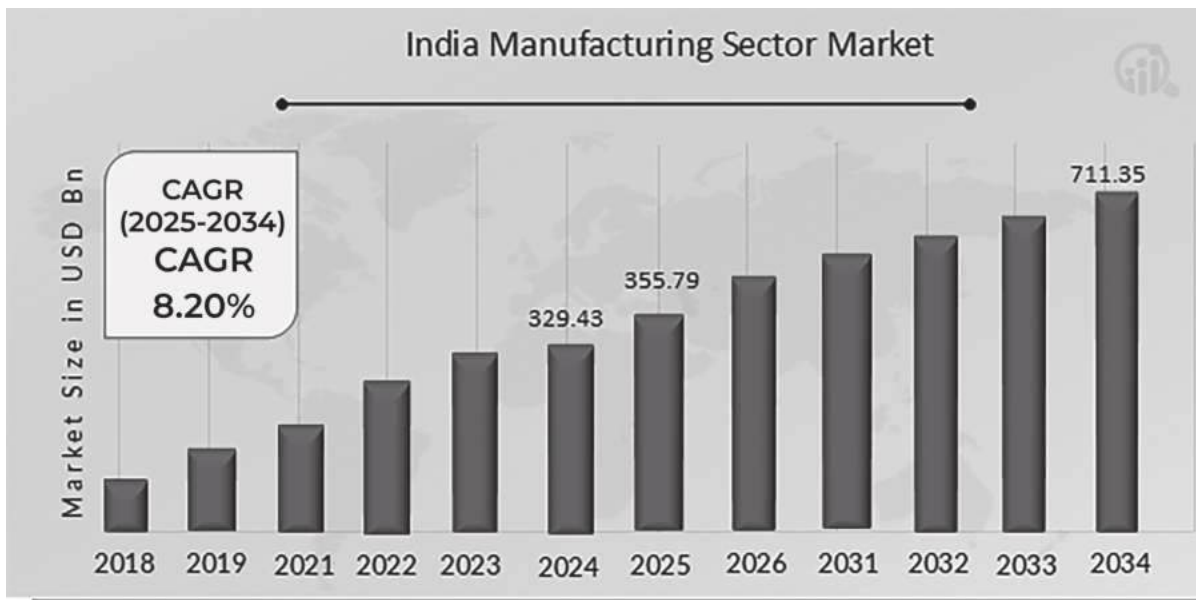
**Why in News:** Recent studies highlight the need for a fundamental reset in manufacturing growth in India through high-tech and innovation-driven industries.

### Current status of India's manufacturing growth:

- **GDP Contribution:** The manufacturing sector currently contributes **17% to India's GDP**.
- **Performance in the Financial Year 2024-25:** The

manufacturing sector achieved ₹14 lakh crore in production and ₹5.3 lakh crore in exports and has created over 11.5 lakh jobs.

- **Growth rate:** The manufacturing sector achieved the **average annual growth rate of 5.2 per cent in the last decade**. The sector had a gross value added of 14.3 per cent in FY23 and an output share of 35.2 percent during the same period.
- **Purchasing Managers' Index (PMI) for manufacturing:** It consistently remained well above the threshold value of 50 in all months of FY24.



### Challenges

- **Per capita value added in manufacturing:** For India, in 2023, the per capita value added has been \$0.32 K (K: 1000), and productivity stands at \$8.9 K, while the same figures are \$2 K and \$32 K, respectively, for the world average.
- **The total value added for India stands at \$461 billion**, while that for China is \$4,658 billion and the U.S. is \$2,497 billion.
- **Infrastructure:** Inadequate connectivity in both digital and physical infrastructure **increases the cost of manufacturing and operating expenses**.
- **Credit availability:** Financial institutions like banks provide loans to MSMEs at high interest rates, with strict collateral requirements making it difficult to access credit.
- **Global competition:** From established nations like China and Japan, as well as **emerging economies of Vietnam and Mexico**, due to their superior infrastructure and lower production costs.
- **Labour issues:** Despite having a sizeable labour force, the **scarce availability of skilled labour** affects the productivity of the manufacturing sector.
- **Regulatory cholesterol:** various laws and regulations (labour, environmental, etc.) delay manufacturing activities, thus discouraging investors.
- **R&D investments:** With a mere **0.65% of GDP** going towards R&D, it seriously hinders innovation-based manufacturing and is widespread adoption.

### National Manufacturing Mission

- It was **announced in the UNION BUDGET 2025-26**. The mission targets industries of all sizes—small, medium, and large—to advance the ‘Make in India’ vision.
- It focuses on **five key areas**: improving the ease and cost of doing business, preparing a future-ready workforce, strengthening the MSME sector, ensuring access to technology, and promoting high-quality manufacturing.
- The government will offer policy support, detailed implementation plans, and robust governance and monitoring mechanisms for both central ministries and state governments.
- The Mission seeks to **boost domestic value addition** and establish a strong manufacturing ecosystem for products such as **solar PV cells, EV batteries, motors and controllers, electrolyzers, wind turbines, high-voltage transmission gear, and grid-scale energy storage**. It will also promote clean technology manufacturing.

### Way Forward

- **Production Linked Incentives (PLI)**: the extension of PLI incentives to labour-incentive sectors will help to generate higher growth and employment.
- **Eliminating regulatory cholesterol**: structural reforms to create a single-window clearance system to comply with various labour and environmental regulations so as to improve ease of doing business.
- **Women in manufacturing**: According to the World Bank’s recent estimates, India’s manufacturing output could rise by 9% if more women join the workforce.
- **Infrastructure**: Investments in logistics and power generation can greatly enhance the efficiency and reduce the time and cost of moving goods.
- **Skilling of labourers**: to equip workers with necessary skills to meet the demands of modern manufacturing.
- **Leveraging Digital Technologies**: Integrating digital technologies into the manufacturing process can lead to improved efficiency and productivity.
- **Focusing on MSMEs**: MSMEs contribute around 45% of India’s manufacturing GDP and employ about 60 million people.

### Conclusion

Global manufacturing and trade are shifting rapidly toward **innovation-driven**, and high-tech products. Thus, it necessitates a sound policy system to design innovative policies in an evolving global environment.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. India’s manufacturing sector has achieved moderate growth in recent years, but still falls short in global competitiveness. Analyse the factors responsible for this underperformance and suggest a roadmap for inclusive and sustainable manufacturing growth. [250 words] [15 marks]

## ENHANCING MSMEs COMPETITIVENESS IN INDIA

**Why in News:** NITI Aayog has released a report titled “Enhancing MSME Competitiveness in India”, prepared in collaboration with the Institute for Competitiveness (IFC).

### Key Findings and Insights from the Report

- **Sectoral and Ownership Structure**
  - 74.3% of workers in proprietary and partnership MSMEs are in the non-agriculture sector.
  - 81% of MSMEs operate as proprietorships, with 80% classified as micro-enterprises.
- **Policy Gaps**
  - Despite numerous policies, their impact is limited by low awareness and insufficient stakeholder engagement.
  - Calls for more adaptive, data-driven, and regionally coordinated policy frameworks.

### Importance of MSMEs in India

- **Backbone of the Indian Economy:** MSMEs are described as the **backbone of India’s economy**, encompassing a wide range of enterprises from traditional artisans to advanced engineering firms.
- They play a **dual role**:
  - Preserving cultural heritage.
  - Driving future economic growth and innovation.
- **GDP:** In the fiscal year 2021-22, MSME Gross Value Added (GVA) accounted for 29.2% of India’s Gross Domestic Product (GDP).
- **Manufacturing:** The share of MSME manufacturing output in India’s total manufacturing output was 36.2% in the same period.
- **Exports:** MSME-specified products represented 45% of India’s total exports.
- **Job Creation:** MSMEs have created approximately 120 million jobs across various industries in India.
- **Role in Sectoral Supply Chains:** They serve as an important link in the supply chain across sectors like food processing, agriculture, chemicals, electronics, and textiles.

### Challenges Faced by MSMEs

- **Financial Constraints**
  - High-risk perception and costs limit access to formal lending.
  - Inadequate finance restricts investment in R&D and technological upgrades.
- **Technological Gaps**
  - Limited access to global technology.
  - High costs and resource constraints hinder domestic innovation.



- **Skill and Capacity Deficits**
  - Widespread financial illiteracy and skill gaps.
  - Lack of awareness about government initiatives and capacity-building opportunities.
- **Regulatory and Market Barriers**
  - Predominance of informal operations restricts access to finance and global markets.
  - Weak branding and limited product variety make MSMEs vulnerable to market fluctuations.

### Recommendations for Enhancing the Competitiveness of MSMEs

- **Access to Finance**
  - Strengthen regulatory oversight of the **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)**.
  - Promote women's entrepreneurship through 100% guaranteed coverage for women-led businesses and lower premium rates.
  - Support NBFCs with better on-lending structures and lower-rate wholesale funding.
  - Reinstate Priority Sector Lending norms to incentivise bank lending to NBFCs for MSME financing.
- **Addressing Skilling Challenges**
  - Forge partnerships between government, academia, and industry to develop dynamic, relevant training programs.
  - Implement cost-sharing or grant-based models to subsidise training and technology adoption.
  - Establish boards to update occupational standards and align training with industry needs periodically.
- **Technological Development and Supply Chain Integration**
  - **Improve supply chain integration to enable MSMEs' participation** in global value chains (GVCs).
  - Invest in logistics, digital linkages, and trade infrastructure.
  - Support sector-specific initiatives like electronic linkage platforms and trade fairs to spur innovation and market access.
- **Leveraging Artificial Intelligence (AI)**
  - Launch government-led awareness campaigns on data protection and AI adoption.
  - Create collaborative platforms connecting MSMEs with AI experts and institutions.
  - Provide financial support (grants, subsidies, tax incentives) and promote affordable, cloud-based AI solutions.
- **Enhancing Risk Management**
  - Promote affordable digital risk management and insurance solutions, especially for MSMEs with long supply chains.

- Encourage adoption of real-time monitoring tools (e.g., sensor-based tracking) to reduce operational risks.

### Conclusion

- MSME competitiveness in India hinges on **coordinated efforts to address financial, technological, skill, and policy challenges**. A cluster-based, data-driven approach, combined with targeted policy interventions and capacity building, is essential for unlocking the growth potential of MSMEs and ensuring their sustained contribution to India's economic development.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. Discuss the significance of MSMEs to India's economy and development. What are the significant obstacles hindering the growth and competitiveness of Indian MSMEs? [250 words] [15 marks]

## GROWTH IN INDIA'S EXPORTS

**Why in News:** India's exports reached an all-time high of \$824.9 billion in the financial year 2024-25 (FY25). This marks a significant growth of 6.01% compared to the previous year's export figure of \$778.1 billion in FY24.

### Key Drivers of Export Growth

- The robust growth in India's total exports was primarily driven by a **surge in services exports**, complemented by an increase in non-petroleum merchandise exports.
- **Services Exports**
  - Services exports continued their strong growth momentum, reaching a historic high of \$387.5 billion in FY25.
  - This represents a **13.6% increase from \$341.1 billion in the previous year (FY24)**.
  - This surge reflects sustained global demand for India's IT, business, financial, and travel-related services.
- **Merchandise Exports**
  - The cumulative value of merchandise exports during FY25 was \$437.42 billion, showing a positive growth of 0.08% compared to \$437.07 billion in FY24.
  - Merchandise exports, excluding petroleum products, reached a record \$374.1 billion in FY25.
  - This segment registered a 6% increase from \$352.9 billion in FY24, marking the highest-ever annual non-petroleum merchandise exports.
  - Major contributors to merchandise export growth in FY25 included:
    - ◆ **Agricultural and processed foods:** rice, coffee, meat, tea, jute, fruits & vegetables

- ◆ **Industrial goods:** electronics, engineering, plastics, RMG textiles, pharmaceuticals, minerals



### Important Factors Driving Higher Export Growth

- **Market Diversification:** Increased demand from Southeast Asia, Africa, and Latin America helped counter global economic slowdowns.
- **Trade Pacts:** Agreements like the India-UAE CEPA expanded market access and reduced trade barriers, especially for electronics and services.
- **Policy Support:** The government advanced exports through the new Foreign Trade Policy, targeted sectoral schemes, trade facilitation, Districts as Export Hubs, and MSME assistance.
- **Supply Chain Shift:** India emerged as a key player in China-plus-one strategies, drawing interest from global firms.

### Trade Deficit and Important Trends

- Despite the strong export performance, India's overall goods trade deficit in FY25 rose to \$282.82 billion, compared to \$241.14 billion in FY24.
- In March 2025, India's trade deficit widened sharply to \$21.54 billion, rising from a three-year low of \$14.05 billion in February.
- Merchandise imports for FY25 stood at \$720.24 billion, up from \$678.21 billion in FY24.
- Regarding **trade with the US**, India's trade surplus with the US jumped 16.6% in FY25, ballooning to \$41.18 billion from \$35.32 billion a year ago. This occurred even as US President Donald Trump prepared to hike US tariffs.
- Indian goods exports to the US rose by 11.6%, from \$77.52 billion in FY24 to \$86.51 billion in FY25, while imports from the US rose by 7.42%, from \$42.20 billion to \$45.33 billion.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

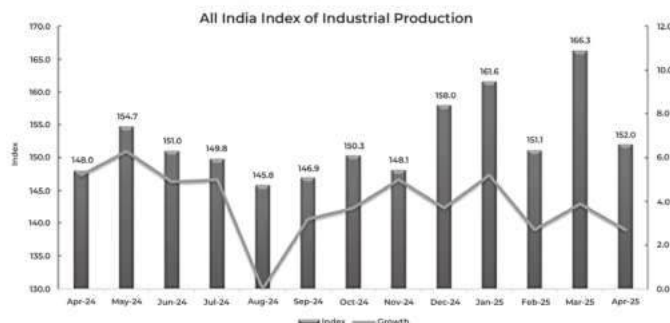
Q. What are the key drivers behind India's recent export growth, and how significant are services exports compared to merchandise exports in India's total trade? [150 words] [10 marks]

## INDEX OF INDUSTRIAL PRODUCTION

**Why in News:** Recently, as per **Index of Industrial Production** released by, **National Statistical Office (NSO)**, the industrial output grew by only 2.9% in February 2025, marking the slowest growth in six months, well below the market expectation of 4%.

### Key Details

- The Index of Industrial Production (IIP) is a key statistical tool used to **measure the short-term changes in the volume of production in Indian industries.**
- It is a vital indicator of economic performance since it **sheds light on the expansion or contraction of industrial activity over a specific time frame.**
- The National Statistical Organisation (NSO), a division of the **Ministry of Statistics and Programme Implementation (MoSPI)**, is responsible for publishing the IIP.
- The index's current **base year is 2011-12**. This base year was chosen to represent contemporary production patterns and industrial structure after it was periodically revised from previous base years.
- **Weightage-wise Sectoral Composition of IIP:**
  - **Manufacturing:** 77.63% of the total weight - 809 items
  - **Mining:** 14.37% of the total weight - 29 items
  - **Electricity:** 7.99% - 1 item
  - **February Sectoral Growth (Year-over-Year):**
    - ◆ Mining: From 8.1% in February 2024, it fell abruptly to 1.6%.
    - ◆ Production: grew 2.9%, less than the 4.9% growth of the previous year.
    - ◆ Output growth for electricity fell from 7.6% in February 2024 to 3.6%.
- Government organisations like the Reserve Bank of India and the Ministry of Finance use it to **formulate policies.**
- The quarterly and advance GDP (Gross Domestic Product) estimates are still **heavily reliant on IIP.**





**EXPECTED QUESTION FOR UPSC CSE**

**Prelims MCQ**

Q. In the Index of Eight Core Industries, which one of the following is given the lowest weightage?

(a) Coal production                      (b) Steel production

(c) Fertilizer production                (d) None of the above

Answer: (c)

**DIGITAL EXCLUSION AND THE VULNERABILITY OF INDIA'S ILLITERATE POOR**

**Why in News:** A recent column and case study that appeared in Frontline magazine highlighted concerns about how the Digital India initiative should not deny the unlettered population access to their own money.

**Context:** As India rapidly moves towards a digitised economy, millions of citizens, especially those who are unlettered or have low digital literacy, face significant challenges in accessing and managing their financial resources. While digital banking and government schemes are intended to increase financial inclusion, the reality for many is a complex and often exclusionary system.

**Digital Divide in Financial Access**

- **Superficial Inclusion**
  - **Account Ownership vs. Usability:** Many people now have bank accounts and smartphones, but lack the skills to use them effectively.
  - **Barriers to Access:** Reading OTPs, navigating

banking apps, and understanding digital processes pose significant hurdles for individuals with limited literacy.

- **Increased Vulnerability**
  - **Exposure to Scams:** Unlettered individuals are frequent targets of financial scams and phishing attempts, often unable to distinguish legitimate communication from fraud.
  - **Security Risks:** Reliance on passwords or PINs, which may be shared with others for help, increases the risk of unauthorised access and theft.

**Digital Divide:** The gap between people who have access to modern information and communications technology and those who don't. This can lead to economic, educational, and social inequalities.

**Digital exclusion:** It refers to the situation where individuals or groups are unable to access or utilize digital technologies, leading to their marginalization in economic, social, and political life. This can be due to factors like lack of access to technology, inadequate skills, or lack of motivation to use digital tools.

**Systemic and Institutional Challenges**

- **Rigid Banking Procedures**
  - **KYC Compliance:** Strict Know Your Customer (KYC) norms require accurate documentation, which is often lacking or inconsistent for the rural and unlettered population.
  - **Account Freezes:** Even minor discrepancies in documents can lead to account suspension, necessitating complex and lengthy resolution processes.
- **Dependency and Exploitation**
  - **Reliance on Intermediaries:** Many depend on literate family members or acquaintances to access their accounts, making them vulnerable to misuse and exploitation.
  - **Limited Grievance Redressal:** Navigating the complaint and resolution system is difficult for those unfamiliar with formal procedures or lacking confidence in institutions.

**Broader Societal Implications**

- **Exclusion from Welfare Schemes**
  - **Access to Benefits:** Digital requirements for government schemes can exclude those unable to meet technical or documentation standards, denying them entitled benefits.
  - **Rural-Urban Gaps:** Urban populations adapt more easily to digital systems, while rural and tribal communities lag behind, deepening existing inequalities.
- **Social and Economic Risks**
  - **Health and Safety:** Limited access to healthcare and social protection compounds financial vulnerability.

- **Migration and Labour Exploitation:** Migrant workers and domestic help often face wage theft and poor working conditions, with little recourse due to a lack of awareness or support.

### Key Insights

- **Digital Literacy is Essential:** True financial inclusion requires not just access to technology, but the ability to use it safely and effectively.
- **Systemic Reform is Needed:** Current banking and digital systems are not designed for the realities of the unlettered or underserved populations.

### Way Forward: Recommendations

- **Simplified KYC and Banking Processes:** Develop alternative verification and account management procedures for those with limited literacy.
- **Financial and Digital Literacy Initiatives:** Implement widespread education campaigns in local languages, using audio-visual materials.
- **Community Support Systems:** Establish trusted intermediaries or community banking agents to assist with transactions, with proper oversight to prevent abuse.
- **Policy Adjustments:** Advocate for differentiated regulatory frameworks and protections for vulnerable groups.
- **Improved Grievance Mechanisms:** Make complaint processes more accessible and responsive for those with limited education or digital skills.

### Conclusion

- The digitisation of financial services in India holds great promise, but also **significant risks for the illiterate and digitally excluded**. Without targeted reforms and inclusive policies, millions will continue to face barriers to accessing their own money and government benefits, increasing their vulnerability and perpetuating cycles of poverty and exclusion. A **truly inclusive Digital India must address these gaps to ensure that economic rights are protected for all citizens**.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

Q. What are the economic implications of digital exclusion for vulnerable populations? How does illiteracy exacerbate the challenges of navigating digital systems? [250 words] [15 marks]

## BANK IN DOMAIN

**Why in News:** To combat the increasing number of digital payment frauds, the Reserve Bank of India (RBI) has decided to operationalise the **.bank.in** domain for banks.

### Key Details

- The '.in' is India's **Country Code Top Level domain (ccTLD)**.
- This exclusive internet domain for domestic banks will **minimise cybersecurity threats** and will help in strengthening trust in the country's digital banking and payment services.
- The RBI has asked banks to migrate to **.bank.in** domain by October 31, 2025.

### Migration to .bank.in Domain

- RBI announced the introduction of the 'bank.in', an exclusive internet domain for Indian banks, in February 2025.
- A domain name is used to find websites. It is a **unique and easy-to-remember address to access websites on the internet**.
- The operationalisation of the new internet domain name is **through the Institute for Development and Research in Banking Technology (IDRBT), which has been authorised by the National Internet Exchange of India (NIXI)**, under the aegis of the Ministry of Electronics and Information Technology (MeitY), to serve as the exclusive registrar for this domain.
- The '.IN' domain is India's own ccTLD, which is a two-letter string (eg, <https://www.india.gov.in>) added at the end of a domain name.
- A **ccTLD functions as more than just a string in a web address**. It is considered a symbol of national identity on the global internet.
- With the migration to the new domain, all banks in the country will have 'bank.in' as the domain name. **Currently, banks are either using '.com' or '.co.in' as their domain name, which is more generic**.
- Once the migration is done, **customers should ensure that if they are visiting a bank website, the domain should be '.bank.in'**. And, in case they receive an email from their bank with a domain ending in 'bank.in', it can be considered genuine.

### Rationale Behind the Domain Change

- With the operationalisation of the '.bank.in' domain name, it would be difficult for any entity, except RBI-regulated banks, to register with 'bank.in'. This will **help in reducing the number of digital frauds using a bank's website**.
- The new internet domain will reduce cybersecurity threats and malicious activities like phishing and streamline secure financial services, thereby enhancing trust in digital banking and payment services.

### About National Internet Exchange of India (NIXI)

- NIXI is a **not-for-profit organisation set up for peering of Internet Service Providers (ISPs)** among themselves to route the domestic traffic within the country, instead of taking it to the US/abroad, thereby resulting in better quality of service and reduced bandwidth charges for ISPs by saving on international bandwidth.



### Banking Scams

- Banking scams or frauds **involve criminals using deceptive tactics to steal money or sensitive information from victims.** Fraudsters employ various methods, such as emails, text messages, phone calls, and fake websites, to trick individuals into divulging their financial details.
- **Some common Banking Frauds**
  - **Phishing and spear-phishing:** Scammers send fake emails or messages to trick victims into revealing sensitive information such as account details, credit card information, and PINs.
  - **Synthetic identity fraud:** Fraudsters combine real and fake information to create identities for securing loans or opening accounts, leveraging data breaches and AI to evade detection.
  - **Mobile banking frauds:** Cybercriminals hijack phone numbers to bypass two-factor authentication (2FA) and steal funds by exploiting carrier vulnerabilities.
  - **Jumped deposits:** Fraudsters make small deposits to gain victims' trust before initiating fake refund requests that trick them into revealing their UPI PINs.
  - **ATM skimming and card cloning:** IoT devices are used to steal card data from ATMs or payment terminals, enabling fraudulent transactions or card duplication.
  - **Government masquerader scams:** Impostors pose as government officials to trick victims into sharing personal data or making fraudulent payments.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

- Q. Which of the following is a key function of the National Internet Exchange of India (NIXI)?
- To act as the primary regulator for all digital banking transactions in India.
  - To facilitate the peering of Internet Service Providers (ISPs) to route domestic internet traffic within the country.
  - To directly combat digital payment frauds by blacklisting fraudulent websites.
  - To register all .in domain names for websites in India.

(b) : Answer

#### Descriptive Question

- Q. How does the introduction of the new .bank.in domain enhance trust and security in India's digital banking ecosystem? Which governmental and institutional bodies are involved in implementing this initiative? [150 words] [10 marks]

## ORANGE ECONOMY

**Why in News:** While addressing the WAVES 2025 summit, Prime Minister Narendra Modi hailed the rise of India's Orange Economy.

### About Orange Economy

- The orange economy refers to **economic activities encompassing the creative sectors of music, film, food, gaming, and animation.**
- It refers to industries that **rely on individual creativity, skill, and talent.** These include sectors such as music, film, design, fashion, publishing, the arts, advertising, and software development.
- As defined by the United Nations Economic Network, the orange economy blends cultural, economic, and social elements.
- It also **connects with other sectors** like technology, tourism, and intellectual property. The Orange Economy is largely based on ideas and knowledge.
- **Significance:** It has the potential to fuel growth, generate jobs, and promote innovation, especially in developing countries, while preserving cultural heritage and identity.
- The term orange economy was first coined by **former Colombian President Iván Duque Márquez and former culture minister Felipe Buitrago.**
  - Orange was chosen as the colour resonates across cultures in creative, religious, and cultural spheres.

### India's Strategic Focus and Investment in the Orange Economy

- India is strategically **formalising its creator economy**, recognising its potential as a structured industry. This formalisation marks a strategic shift from viewing the creator economy as merely informal or side-hustle driven.
- The government envisions creators as key drivers of economic growth and global influence. The government is making significant investments in this sector.
- **A \$1 billion fund has been announced to boost India's expanding creator economy**, offering creators access to capital, skill development opportunities, improved production capabilities, and global market linkages.
- Additionally, **₹391 crore has been sanctioned for the establishment of the Indian Institute of Creative Technology (IICT)**, an institution focused on building expertise in digital and creative technologies.
- These initiatives aim to boost creator skills, improve content quality, and facilitate global market access.

### Economic Impact and Potential of the Orange Economy

- **Huge Economic Impact:** The creator economy is poised to play a pivotal role in shaping consumer behaviour in India. According to a **report by the Boston Consulting Group (BCG), creators already influence over \$350 billion in annual spending in India.** This figure is estimated to potentially cross \$1 trillion by 2030.
- **Rapid Growth in Direct Revenues:** Direct revenues from the ecosystem are projected to **grow from \$20–25 billion today to \$100–125 billion by the end of the decade.**
- **Significant Share in Consumer Expenditure:** Creator-driven spending could make up 25–30% of total consumer expenditure in the country by 2030.

- **Expanding Beyond Metros and Gen Z:** What was once a metro and Gen Z-centric phenomenon has **now spread across age groups and geographies, including smaller cities.**
- **Leading Sectors:** Categories like fashion, beauty, and entertainment are currently leading the charge.
- **New Monetisation Models:** Emerging monetisation models such as live commerce and virtual gifting are redefining value creation for creators and brands.
- **Projection for Media & Entertainment Industry:** Reliance Industries Mukesh Ambani projected that **India's media and entertainment industries could grow more than threefold to over \$100 billion** within the next decade.

### Current State and Creator Landscape in India

- India is estimated to be **home to 2 to 2.5 million active digital creators** with over 1,000 followers. However, only 8–10% of these creators can monetise their content effectively, indicating large unrealised potential.
- **Short-form video remains the most dominant format**, with platforms like YouTube Shorts, Instagram Reels, and Moj being prominent.
- Popular content genres include comedy, films, daily soaps, and fashion.
- The number of influencers in India **grew significantly from 962,000 in 2020 to 4.06 million in 2024, a 322% increase.**
- Brands are shifting their marketing strategies; influencers have moved beyond product endorsements to becoming strategic partners. Brands now seek creators who can produce authentic, context-driven content.
- Categories like **Gaming, Travel, and Lifestyle** are **experiencing exceptional growth**, offering brands opportunities to align with creators who understand these audiences.

### Soft Power and Global Reach of the Orange Economy

- Prime Minister Narendra Modi highlighted that creators across various locations and domains (musicians, podcasters, game designers, filmmakers) are fuelling India's growing creative sector.
- He compared their **potential impact on global soft power** to the legacy of actor Raj Kapoor and Hindi cinema.
- PM also stated that the creator economy is bringing "new energy" to India's ambition of becoming a \$5 trillion economy.
- To facilitate global reach, the government launched **WAVES Bazaar**, a global e-marketplace aimed at connecting Indian content creators with international buyers and collaborators.
  - This platform allows creators to showcase work, pitch projects, find commercial opportunities abroad, and ultimately aims to make India a net exporter of content.

### WAVES Summit

- The World Audio Visual Entertainment Summit (WAVES) 2025 was **held in Mumbai.**
- It was India's first WAVES Summit.
- **Aim:** The summit aimed to establish India as a global hub for media, entertainment, and digital innovation.
- The **theme** was "Connecting Creators, Connecting Countries"
- Outcomes and Impact
  - The WAVES Bazaar resulted in business deals worth over one thousand three hundred crore rupees with creators and filmmakers.
  - The WAVES declaration was adopted by representatives of 77 countries at the Global Media Dialogue.
  - Cultural programmes highlighted India's vast artistic diversity through traditional folk **dances**, martial arts displays, and drumming performances.
  - The summit successfully positioned India as a global media and entertainment hub and was seen as a significant step towards amplifying India's creative prowess on the world stage.

### Conclusion

- India's Orange Economy stands at the confluence of creativity, technology, and commerce, offering immense potential for economic growth, cultural preservation, and global influence. With strategic investments, institutional support, and rising digital participation, India is poised to become a global leader in creative industries. The sector **not only empowers individuals but also strengthens India's soft power**, making it a key pillar in the journey toward a \$5 trillion economy.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

- Q. The term "Orange Economy" refers to economic activities primarily based on which of the following?
- (a) Agricultural production and export of citrus fruits.
  - (b) The extraction and processing of natural minerals.
  - (c) Creativity, intellectual property, and cultural goods/services.
  - (d) Renewable energy and environmental sustainability.

Answer: (c)

#### Descriptive Question

- Q. Define the orange economy and its strategic significance in India. What is the economic impact and potential of India's orange economy globally? [250 words] [15 marks]

## ECOLOGY IS THE PERMANENT ECONOMY

**Why in News:** A Recent opinion piece in The Hindu, acknowledging that the principle of Ecology is the world's permanent economy, will lead to a focus on ecological health as the basis for human survival, economic stability and climate resilience.

### Interdependence of Ecology and Economy

- **Data**
  - Biodiversity loss and climate change cost the world ~\$300 billion annually.
  - Over 60% of India's GDP is directly or indirectly dependent on nature.
  - 57% of rural communities rely on forests for their livelihoods.
- **Consequences of Ecological Degradation:** Increased droughts, desertification, food and water insecurity, mass displacement, and reduced crop yields.
- **Real-world Example:** COVID-19 lockdowns disrupted agricultural cycles and were followed by unprecedented floods, illustrating the vulnerability of livelihoods to ecological instability.

### Rethinking Livelihoods: Beyond Job Creation

- **Natural Capital as a Service Provider:** Nature offers essential services (e.g. oxygen, water regulation, pollination) beyond raw materials.
- **Integrated Resource Management:** Advocates for regenerative agriculture, renewable energy, and circular economies (reuse/recycle) to balance economic and ecological needs.

### Economic Opportunities in Ecological Transition

- **Global Job Creation Potential**
  - Sustainable management of land and water could create up to 395 million jobs by 2030.
  - Regenerative farming, fishing, and forestry could generate \$3.6 trillion in business opportunities.
- **India's Economic Upside:** Meeting climate targets could multiply India's net income by 25 times via reduced disaster costs and increased resilience in nature-dependent sectors.
- **Agroforestry Benefits:** Well-designed agroforestry can boost yields by up to 64% and improve biodiversity and soil health.

### Survival and Resilience

- **Survival Imperative:** Integrated ecology-economy strategies are essential for resilience against extreme weather, pandemics, and resource insecurity.
- **Biodiversity as Insurance:** Preserving indigenous pollinators and crop varieties increases agricultural resilience to climate change.

### Strategies and Actions for Integrating Ecology and Economy

- **Role of Businesses**
  - **Invest in Nature-Based Solutions:** Support agroforestry, organic farming, and sustainable practices for long-term gains and premium pricing.
  - **Corporate Accounting Reform:** Incorporate environmental and social impacts into profit/loss statements to reflect true costs and benefits.
  - **Restoration and Rewilding:** Businesses should lead in restoring forests and ecosystems, benefiting both communities and their own supply chains.
- **Government Actions**
  - **Green Recovery Plan:** Invest in rural communities, forest restoration, renewable energy, and green infrastructure.
  - **Community Benefit from Afforestation:** Ensure transparent, accountable profit-sharing and capacity building for local communities.
  - **Standardised Agroforestry Policies:** Implement and decentralise agroforestry policies to support biodiversity-friendly agriculture.
  - **Integrated, Nature-Centred Policies:** Shift from isolated climate policies to holistic approaches that recognise nature as the foundation of development.

### Conclusion

- Ecology is not separate from the economy; **it is its foundation.** A sustainable future requires balancing economic development with environmental stewardship. Human disconnection from nature must be addressed through emotional and cultural reconnection. The **climate crisis is as much a moral and existential challenge as it is a scientific one.** Individual responsibility and lifestyle changes are crucial for global sustainability.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. What is the fundamental connection between ecological health and human economic well-being and survival? How can the economy transition from exploitation to ecological stewardship for long-term prosperity? [250 words] [15 marks]

## PREDATORY PRICING

**Why in News:** Recently, the **Competition Commission of India (CCI)** came up with new definitions for various costs to curb predatory pricing.

### Key features of the 2025 CCI notification

- **Average variable cost**
  - The “average variable cost” of a product or service is calculated by dividing the total variable cost by the total output over a given time period, and it represents the variable cost per unit of output.
  - Here, “total variable cost” means “total cost” (including all costs associated with producing that good or service) minus “fixed cost” and “fixed overheads” related to the product.
  - CCI will be able to assess whether a company’s price for a good or service is predatory or not with its assistance.
- **Flexible framework**
  - The framework permits case-by-case evaluation instead of sector-specific metrics, allowing the Commission to take into account the distinctive characteristics and changing dynamics of digital markets when assessing claims of predatory behaviour.

- Rejects stakeholders suggestions on market value
  - As it may be impacted by subsidies, brand value, or consumer perceptions.

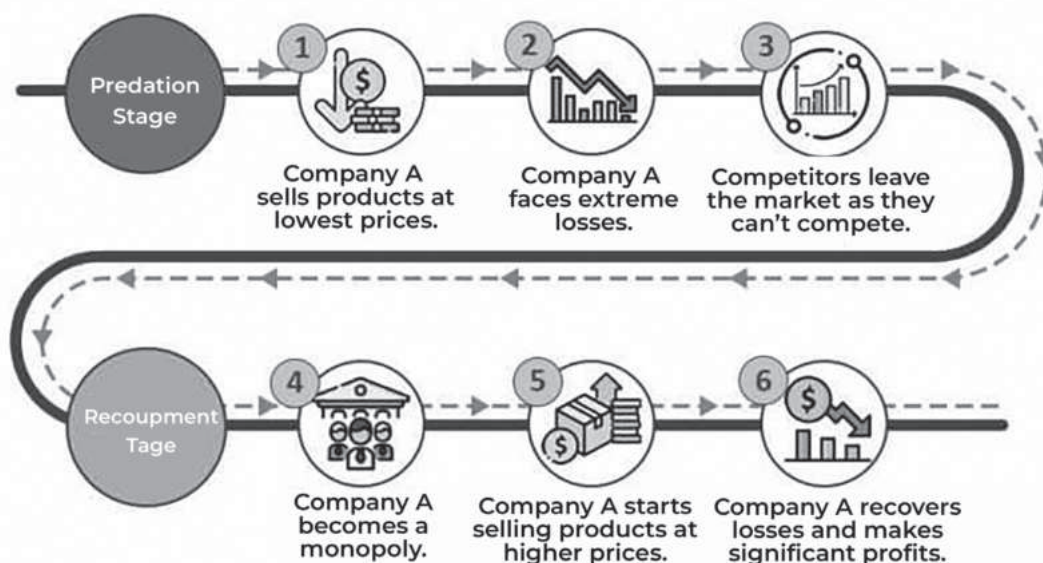
### Significance

- **Protection of small companies:** It prevents powerful companies from eliminating smaller competitors through price wars.
- **Regulation Simplicity:** Improves CCI’s capacity to consistently examine, measure, and decide anti-competitive pricing.
- **Legal Clarity:** Offers a clear framework for cost benchmarking that is based on sound economic principles.

### What is Predatory Pricing?

- Predatory pricing, as defined by the Competition Act of 2002, is when a good or service is offered below its cost by a company, with the intention of stifling competition and driving out rivals.

## How Predatory Pricing Works?



### Competition Commission of India (CCI)

- The Competition Commission of India (CCI), a **statutory and quasi-judicial body under the Ministry of Corporate Affairs**, under the Competition Act, 2002.
- Its primary objectives include **curbing anti-competitive practices, fostering healthy market competition, safeguarding consumer interests**, and ensuring trade freedom within Indian markets.
- The CCI is empowered to **investigate unfair practices such as cartels, price-fixing, and abuse of dominant market positions**. It can also impose penalties and issue orders to halt such activities, thereby promoting fair and transparent market conduct.

### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

- Q. Which institution / government body monitors and regulates ‘Predatory pricing’ in India?
- (a) Reserve Bank of India
  - (b) Securities and Exchange Board of India
  - (c) Competition Commission of India
  - (d) None of the above

Answer: (c)

## VIZHINJAM PORT

**Why in News:** India's maritime infrastructure has advanced significantly with the recent opening of the **Vizhinjam International Seaport** and a **dedicated deepwater transshipment in Kerala** by Prime Minister Narendra Modi.

### Significance of Vizhinjam International Seaport

- **Strategic Position:** Vizhinjam Port is located just 10 nautical miles from the busy international shipping route that connects East Asia, North America, and Europe. Because of its ideal location, the port can serve as a natural entry point for international maritime trade.
- **Increased Trade Competitiveness:** Export-import operations would be streamlined with the establishment of a direct transshipping hub in India, resulting in **quicker turnaround times and increased logistics efficiency**. By drawing in new shipping lanes and making Indian exports marginally more competitive internationally, this will greatly increase the nation's competitiveness in the global trade arena.
- **Technology integration:** Its advanced infrastructure ensures **safe and effective operations with semi-automation and an AI-driven vessel traffic management system** developed in partnership with IIT Madras.
- **Geographical edge:** The port can accommodate the **biggest container ships in the world, including next-generation ships with capacities exceeding 24,000 TEUs**, thanks to its **natural depth of nearly 20 meters**.
- **Minimal Littoral Drift:** Because of Vizhinjam's coastal terrain, there is less littoral drift, which **reduces the need for frequent dredging and maintenance costs**. This intrinsic advantage ensures long-term operational efficiency and environmental sustainability.

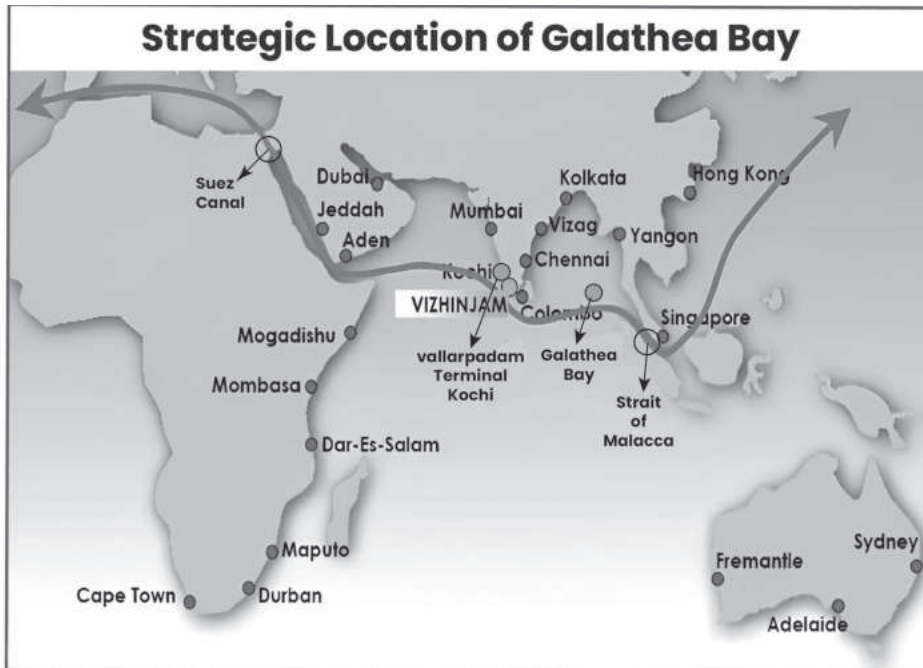
- **Regional Growth:** The port is anticipated to initiate waves of economic activity in southern Kerala through **employment opportunities and industrial development** in areas like logistics, transportation, warehousing, and related sectors.
- **Enhanced Connectivity:** The port's **excellent rail and national highway connections** guarantee easy cargo transportation to and from the inland regions. Inland transport is still cost-effective and efficient because **National Highway 47 is only 2 km away and there are rail connections within 12 km**.

### About Vizhinjam Port

- Located in Vizhinjam, a coastal town in Kerala's Thiruvananthapuram district, this is **India's first dedicated transshipment port and the country's first semi-automated port**.
- Developed through a **public-private partnership** at an estimated cost of ₹8,900 crore, the port is operated by the Adani Group, while the Kerala government retains majority ownership.
- The Vizhinjam port has **India's deepest breakwater**, extending close to three kilometres, and boasts a natural draft of about 20 metres.
- It is also equipped with the **country's first indigenously developed AI-powered Vessel Traffic Management System**, created in partnership with IIT Madras.

### Conclusion

Vizhinjam boasts state-of-the-art facilities such as modern container terminals, warehouses, and logistics parks and thus it is set to become a key player in regional trade, potentially serving as a gateway for commerce between Southeast Asia, the Middle East, and Africa.



### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

- Q. Recently, the Vizhinjam port was seen in the news, it is located in?
- Kerala
  - Tamil Nadu
  - Andhra Pradesh
  - None of the above

Answer: (a)

## ELEPHANT CENSUS IN SOUTH KARNATAKA

**Why in News:** A three-day elephant census, conducted as part of a synchronised interstate effort, concluded recently, with results expected to reveal crucial population trends of elephants in South Karnataka. The census was carried out under the Interstate Coordination Committee (ICC) mandate, focusing on better understanding elephant numbers and movement patterns across southern India.

### Why Does the Elephant Census Matters?

- Elephants are not just majestic animals but also a **keystone species**, playing an essential role in maintaining the ecological balance of forest ecosystems.
- However, in recent years, **human-elephant conflicts** have been rising, particularly in the border areas of Karnataka, Kerala, and Tamil Nadu.
- Knowing where elephants are and how they live helps in planning better **conservation strategies** and reducing **man-animal conflict**.

### The Three-Day Census Exercise

The census was held over **three days** and included three key methods of data collection:

- **Day 1 – Block Sampling / Direct Count Method:** Forest staff and trained volunteers directly observed elephants in predefined forest blocks. This method helps estimate elephant **density and distribution**.
- **Day 2 – Line Transect Method:** Observers walked along fixed paths (transects) through the forest to count elephants. This method provides data about **elephant presence in less accessible regions**.
- **Day 3 – Waterhole Count Method:** The final day was devoted to monitoring **waterholes**, expecting elephants to visit them. This helps assess the **age and sex composition** of elephant herds.

However, **heavy rainfall** across the region made this difficult, as **natural water availability** meant elephants did not need to gather at specific water sources.

### Key Locations Covered in Karnataka

The census was conducted in several important forest and wildlife areas of Karnataka, including:

- Bandipur Tiger Reserve
- Nagarahole Tiger Reserve
- Biligiri Ranganatha (BRT) Tiger Reserve
- Bhadra Tiger Reserve
- Cauvery Wildlife Sanctuary
- Male Mahadeshwara (M.M.) Hills
- Madikeri (Territorial and Wildlife Divisions)
- Virajpet Division
- Bannerghatta National Park
- Kolar Division
- Chikkamagaluru and Shivamogga Wildlife Divisions

### Key Highlights on Elephants in India

#### About Elephants

- **Natural Heritage Animal of India:** The elephant holds a special status as a symbol of India's natural heritage.
- **Keystone Species:** Elephants play a vital role in maintaining forest ecosystems. Without them, the ecosystem balance would collapse.
- **Highly Intelligent:** They possess the **largest brain of any land animal**, showcasing advanced memory, emotional intelligence, and social behavior.

#### Ecological Significance

- **Seed Dispersers:** Elephants consume and disperse a large quantity of seeds, helping regenerate forests.
- **Forest Engineers:** By breaking trees, creating clearings, and opening up the canopy, they allow sunlight to reach the forest floor — supporting plant diversity.
- **Water Access:** In dry conditions, elephants dig for underground water, benefiting themselves and other wildlife.

#### Elephants in India

- **India hosts ~60% of the world's wild Asian elephant population.**
- As per the **2017 Project Elephant Census**, there are **29,964 wild elephants** in India.
- **Top States by Population:**
  - Karnataka – Highest
  - Followed by Assam and Kerala

## Conservation Status

Category	Elephant Type	Status
IUCN Red List	African Forest Elephant	Critically Endangered
	African Savanna Elephant	Endangered
	Asia Elephant ( <i>Elephas maximus</i> )	Endangered
Wildlife Protection Act, 1972	Asian Elephant	Schedule I (Highest Protection)
CITES	Asian Elephant	Appendix I (No International trade allowed)
	African Savanna Elephant	Appendix II
Convention on Migratory Species	Asian Elephant	Appendix I
	African Forest Elephant	Appendix II

### India's Elephant Conservation Initiatives

#### Project Elephant (1992)

- Launched to protect elephants, their habitats, and corridors.
- Implemented in 23 states.
- Helped increase population from ~25,000 in 1992 to ~30,000 by 2021.

#### Elephant Reserves

- 33 Elephant Reserves established.
- Total area: approx. 80,777 sq. km.
- These reserves provide safe habitats and ensure migration corridors.

#### Managing Human-Elephant Conflicts

- 40+ Elephant Corridors and 88 Wildlife Crossings developed to reduce animal-human conflicts.
- Buffer Zones around protected areas span 17,000+ sq. km.
- Rapid Response Teams deployed in conflict-prone states.
- 110 Railway Stretches identified for eco-friendly measures like:
  - Underpasses for elephants
  - Vegetation clearance for better visibility
  - Ramps and warning systems to prevent train collisions

#### Community Involvement

- **Gaj Yatra:** Nationwide campaign to raise awareness on elephant conservation.
- **Gaj Shilpi:** Local artists and communities engaged to spread the message.

- **Gaj Gaurav Awards:** Recognize individuals and organizations excelling in elephant conservation.

### Global Collaboration

#### Monitoring Illegal Killing of Elephants (MIKE Programme)

- Initiated by CITES in 1997, operational in India since 2003.
- Aims to:
  - Track elephant mortality and poaching.
  - Support better management and enforcement.
- Helps build capacity for long-term elephant conservation.

#### MIKE Sites in India:

- Chirang-Ripu (Assam)
- Deomali (Arunachal Pradesh)
- Dihing Patkai (Assam)
- Garo Hills (Meghalaya)
- Eastern Dooars (West Bengal)
- Mayurbhanj (Odisha)
- Shivalik (Uttarakhand)
- Mysore (Karnataka)
- Nilgiri (Tamil Nadu)
- Wayanad (Kerala)

### Conclusion

Elephants are not only India's Natural Heritage Animal but also vital for ecological balance. Through sustained efforts like **Project Elephant, creation of reserves and corridors, community participation, and international cooperation**, India is taking significant steps to ensure the survival and well-being of its elephant population.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. With reference to Indian elephants, consider the following statements:

1. The leader of an elephant group is a female.
2. The maximum gestation period can be 22 months.
3. An elephant can normally go on calving till the age of 40 years only.
4. Among the States in India, the highest elephant population is in Kerala.

Which of the statements given above is/are correct?

- (a) 1 and 2 only                      (b) 2 and 4 only  
(c) 3 only                              (d) 1, 3 and 4 only

Answer: (a)

## BALANCING CONSERVATION LAWS AND INDIGENOUS RIGHTS

**Why in News:** Recently, an article appeared in The Hindu discussing how conservation laws and policies are becoming more exclusionary in many parts of the world.

### Historical Context of Exclusionary Conservation: Fortress Conservation Model

- **Colonial Roots:** Conservation science and legal frameworks are rooted in colonial ideologies that idealised pristine nature devoid of human influence.
- **Protected Areas:** This model creates exclusionary zones (e.g. national parks, tiger reserves) managed by centralised state control, criminalising Indigenous Peoples and Local Communities (IPLCs) as encroachers.
- **Global Displacement:** Researchers estimate 10–20 million people displaced globally, including 6 lakh in India due to Project Tiger and the Wildlife Protection Act, 1972.
- **Examples: Indigenous Peoples and Local Communities (IPLCs)**
  - Kenya's Maasai and Ogiek communities
  - Uganda's Batwa
  - Peru's Ashaninka
  - India's Adivasis

- **Biodiversity Paradox:** Most biodiverse regions overlap with IPLC territories, yet their stewardship is often disregarded.

### International Legal Frameworks and IPLC Rights

- **Convention on Biological Diversity (CBD)**
  - **Objectives:** Conservation, sustainable use, and equitable benefit-sharing (Article 8(j)).
  - Urges respect for traditional knowledge but lacks enforcement.
  - COP-16 (2024) established a permanent subsidiary body for IPLCs, signalling incremental progress.
- **Kunming-Montreal Global Biodiversity Framework (KMGBF)**
  - **30 by 30 Target:** Protect 30% of land and marine areas by 2030.
  - **Risks:** Expansion of protected areas could further displace IPLCs.
  - Other Effective Area-Based Conservation Measures (OECMs) aim to include community-managed lands but risk exploitation without safeguards.
- **UN Declaration on Indigenous Rights (2007)**
  - **India's Stance:** India voted in favour but avoids the term indigenous, citing constitutional recognition of Scheduled Tribes (8.6% of the population).

### India's Legal Framework and Conservation Policies

- **Biological Diversity Act (BDA), 2002**
  - **Three-tier system:** National Biodiversity Authority, State Boards, and Biodiversity Management Committees (BMCs).
  - Focus on documenting traditional knowledge, but criticised for monetising biodiversity.
- **Forest Rights Act (FRA), 2006:** It is a landmark law recognising Adivasi and forest-dweller rights.
  - **Key Provisions**
    - ◆ Community Forest Resource (CFR) rights
    - ◆ Rights to protect biodiversity and intellectual property.
  - **Challenges:** Poor implementation, only 3% of CFR claims recognised as of 2023.
- **Constitutional Safeguards**
  - **Articles 244 & 244A:** Special provisions for Scheduled and Tribal Areas.
  - **PESA Act, 1996:** Extends self-governance to tribal areas.



## CHALLENGES AND CONTRADICTIONS

### National Biodiversity Strategy and Action Plan (NBSAPs)

- ▶ **2025 Update:** Claims a bottom-up approach but prioritises state-led conservation (e.g. forest departments) over FRA-led gram sabhas.
- ▶ **Biodiversity Management Committees (BMCs) Limitations:** Poor functionality and lack of synergy with FRA institutions.

### Exploitation Risks

- ▶ **OECM Pitfalls:** Without FRA compliance, OECMs could enable corporate exploitation.
- ▶ **CBD & BDA:** Frameworks risk commodifying traditional knowledge without ensuring IPLC benefits.

### Policy Disconnects

- ▶ **Wildlife Protection vs. FRA:** Protected areas often override community rights.
- ▶ **Tribal Affairs Ministry's Warnings (2024):** Draft Biodiversity Rules must align with the FRA and secure the gram sabha consent.

## WAY FORWARD: INTEGRATING RIGHTS AND CONSERVATION

### Strengthening the FRA Framework

- ▶ **Prioritise CFR Recognition:** Accelerate the settlement of forest rights, especially in protected areas.
- ▶ **Legal Synergy:** Ensure BDA, OECMs, and NBSAPs align with FRA's decentralised governance.

### Community-Led Conservation

- ▶ **Traditional Knowledge Integration:** Formalise IPLC roles in national/international frameworks.
- ▶ **Beyond Protected Areas:** Expand OECMs with FRA compliance and community consent.

### Global Advocacy

- ▶ **CBD Implementation:** Leverage the new IPLC subsidiary body to push for binding rights recognition.
- ▶ **30 by 30 Reforms:** Advocate for inclusive targets that prioritise community stewardship over displacement.

## Conclusion

- While international frameworks like the **Convention on Biological Diversity (CBD)** and **Kunming-Montreal Global Biodiversity Framework (KMGBF)** acknowledge IPLC roles, their implementation remains state-centric and exclusionary. India's FRA offers a revolutionary model but requires urgent operationalisation. The path to equitable conservation lies in legally empowering IPLCs, harmonising laws, and redefining "protection" beyond colonial paradigms.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. Evaluate the effectiveness of legislation such as India's Forest Rights Act (2006) and international agreements like the Kunming-Montreal Global Biodiversity Framework (KMGBF) in reconciling conservation goals with Indigenous rights. [250 words] [15 marks]

## BASEL, ROTTERDAM AND STOCKHOLM CONVENTIONS

**Why in News:** The seventeenth meeting of the Conference of the Parties to the Basel Convention (BC COP-17), the twelfth meeting of the Conference of the Parties to the Rotterdam Convention (RC COP-12) and the twelfth meeting of the Conference of the Parties to the Stockholm Convention (SC COP-12) were held back-to-back in Geneva from 28 April to 9 May 2025.

### Conference of Parties

- The Conference of the Parties (COPs) refers to **formal meetings of the countries that have signed and are members of a specific international treaty.**
- Scope of the COP is to review the "implementation of the Convention and any other legal instruments that the COP adopts and take decisions necessary to promote the effective implementation of the Convention."
- In COPs, **Parties meet annually or at regular intervals** to review progress on the agendas of the conventions and to negotiate new commitments.
- They are the supreme decision-making bodies of the respective conventions.

### Focus on the Stockholm Convention: Persistent Organic Pollutants (POPs)

- **New POPs Listed for Elimination**
  - ▶ Two of the three proposed POPs, **Chlorpyrifos** (an insecticide) and **long-chain perfluorocarboxylic acids (LC-PFCAs)** (a subgroup of PFAS or "forever chemicals"), were successfully listed under Annex A of the Stockholm Convention. This signifies a global ban on their production and use, albeit with specific exemptions.
    - ◆ Chlorpyrifos is known to harm the developing brains of children.
    - ◆ LC-PFCAs possess water, oil, dirt, and grease repellent properties and are found in various products, including personal care, cleaning products, textiles, and packaging.

- **Ongoing Negotiations for Medium-Chain Chlorinated Paraffins (MCCPs)**
  - Negotiations were still ongoing for medium-chain chlorinated paraffins (MCCPs), **a group of substances mainly used as plastic additives.**
  - Discussions included exemptions and technical aspects like chemical identity, traceability, and transparency to track products containing these chemicals once banned.
- **Concerns Regarding Exemptions and Undermining Scientific Recommendations**
  - A significant concern raised is the **addition of more exemptions during the Conference of the Parties' (COP) negotiations, especially for Chlorpyrifos,** which were not initially discussed or recommended by the POP Review Committee (POPRC), a scientific subsidiary body.
  - This **practice indicates that the political choices of the Parties** are undermining scientific recommendations, potentially harming human health, the environment, and human rights, and questioning the integrity of the Stockholm Convention's process.
- **Unprecedented Proposal for UV-328 Exemptions**
  - A major point of contention and a reason for delays in negotiations was a **proposal to add a new exemption for UV-328, a UV absorber used in plastics,** which was already listed for elimination with specific exemptions in 2023.
  - This proposal is considered unprecedented by non-governmental organisations (NGOs) and is strongly opposed because it could set a bad precedent by allowing the reopening of past decisions on banned POPs, thus questioning the credibility of the Convention.
  - It is suggested that larger economic interests, specifically from airlines, appear to have influenced this proposal, rather than it being solely driven by the proposing country, i.e. Ethiopia.
- **Current Implementation Challenges and Discussions**
  - Parties are now assessing the implementation of these amendments, as reports of illegal exports and dumping of plastic waste persist.
  - Discussions are ongoing to strengthen controls under the PIC procedure, particularly for certain polymers like fluorinated polymers, which, despite being dangerous, are not covered if sent for recycling under specific conditions.
  - The aim is ideally for all plastic waste to be subjected to PIC for strengthened controls.
- **Technical Guidelines on Environmentally Sound Management**
  - Discussions continued on technical guidelines for the environmentally sound management of different waste types.
  - At the 2023 COP, the controversial technology of "chemical recycling" of plastics was not considered environmentally sound. Efforts to reintroduce it are being monitored.

### India's Role and Advocacy at the BRS COPs 2025

- **Emphasis on Means of Implementation:** The effective execution of the BRS Conventions relies heavily on **access to finance, technology transfer, capacity-building, technical assistance,** and strengthened international cooperation.
- **Domestic Regulatory Framework:** India's integrated approach to implementing the conventions involves national legislation such as the **Environment (Protection) Act, the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, and the E-Waste Management Rules, 2016,** supported by investments in infrastructure.
- **Leadership on Plastic Pollution**
  - India showcased its domestic initiatives, including a ban on identified single-use plastic items and the implementation of **Extended Producer Responsibility (EPR) for plastic packaging.**
  - India has demonstrated a pioneering role in international environmental governance by introducing a resolution on single-use plastics at UNEA-4, bringing the issue to global attention.
- **Support for Global Instruments:** During bilateral meetings, India expressed support for the development of a legally binding international instrument on plastic pollution and the establishment of a Science-Policy Panel on Chemicals and Waste.
- **Commitment to Multilateral Cooperation:** India remains committed to multilateral environmental cooperation, advocating for the interests of developing countries while pursuing equitable, science-based, and sustainable solutions.

### Basel Convention and Plastic Waste Management

- **2019 Amendments and Prior Informed Consent (PIC)**
  - Amendments adopted in 2019 extended the Prior Informed Consent (PIC) procedure to most types of plastic waste.
  - PIC involves notifying authorities of import and transit states with detailed information on intended waste movements.
  - This development was partly a response to China's policy of no longer importing all plastic waste.



### Basel, Rotterdam and Stockholm Conventions (BRS)

The Basel, Rotterdam and Stockholm conventions are multilateral environmental agreements, which share the common objective of protecting human health and the environment from hazardous chemicals and wastes.

#### • Basel Convention

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was created to protect people and the environment from the negative effects of the inappropriate management of hazardous wastes worldwide.
- The agreement was adopted in 1989 and entered into force in 1992.
- It is the most comprehensive global treaty dealing with hazardous waste materials throughout their life cycles, from production and transport to final use and disposal.

#### • Rotterdam Convention

- The Rotterdam Convention on the Prior Informed Consent Procedure for certain hazardous Chemicals and Pesticides in international trade provides Parties with a first line of defence against hazardous chemicals.
- The agreement was adopted in 1998 and entered into force in 2004.
- It promotes international efforts to protect human health and the environment, as well as enabling countries to decide if they want to import hazardous chemicals and pesticides listed in the Convention.

#### • Stockholm Convention

- The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from highly dangerous, long-lasting chemicals by restricting and ultimately eliminating their production, use, trade, release and storage.
- The agreement was adopted in 2001 and entered into force in 2004.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

Q. Consider the following conventions:

	Convention	Related to
1.	Basel Convention	Control of Transboundary Movements of Hazardous Wastes
2.	Rotterdam Convention	Prior Informed Consent Procedure for Hazardous Chemicals
3.	Stockholm Convention	Persistent Organic Pollutants

How many of the above pairs are correctly matched?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

(c) Answer

## TSARAP CHU CONSERVATION RESERVE

**Why in News:** Himachal Pradesh's Tsarap Chu Conservation Reserve has been notified as India's Largest Protected Area.

### Key Details: About Tsarap Chu Conservation Reserve

- **Location:** Tsarap Chu Conservation Reserve is located in the Lahaul-Spiti region, specifically in the **Spiti Valley of Himachal Pradesh**.
- It serves as a **critical wildlife corridor**, linking the Kibber and Chandra Taal wildlife sanctuaries.
- It has been notified as **India's largest conservation reserve by the Himachal Pradesh government** under Section 36A(1) of the **Wildlife (Protection) Act, 1972**.
- Tsarap Chu is the fifth conservation reserve in Himachal Pradesh, **joining Darlaghat, Naina Devi, Potter Hill, and Shilli**.
- **Area:** 1585 km<sup>2</sup>
- **Purpose:** To protect high-altitude wildlife.
- Tsarap Chu is considered a **prime snow leopard habitat**, supporting one of the highest densities of snow leopards in Himachal Pradesh.
- **Fauna:** Snow Leopard, Tibetan wolves, Ibex, Kiangs (wild ass), Bharals (blue sheep), Tibetan argali

### Conservation Reserves

- Conservation reserves and community reserves in India are terms **denoting protected areas of India which typically act as buffer zones or connectors** and migration corridors between established national parks, wildlife sanctuaries and reserved and protected forests of India.
- Such areas are **designated as conservation areas if they are uninhabited and completely owned by the Government of India**, but used for subsistence by communities, and **community areas if part of the land is privately owned**.
- These protected area categories were first **introduced in the Wildlife (Protection) Amendment Act of 2002**, an amendment to the Wildlife Protection Act of 1972.
- These categories were added because of reduced protection in and around existing or proposed protected areas due to private ownership of land and land use.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. Tsarap Chu, India's largest Conservation Reserve, is located in which of the following state?

- (a) Sikkim (b) Manipur  
(c) Himachal Pradesh (d) Ladakh

Answer: (c)

## CLIMATE FINANCE TAXONOMY

**Why in News:** The Union Ministry of Finance's Department of Economic Affairs released the draft Framework for India's Climate Finance Taxonomy.

### What is a Climate Finance Taxonomy?

- A climate finance taxonomy is a system that **classifies which parts of the economy may be marketed as sustainable investments.**
- It helps guide investors and banks in directing trillions toward impactful investments to tackle climate change.
- **Taxonomies are frequently used to set standards** for classifying climate-related financial instruments (e.g. green bonds), but increasingly, they serve other use cases where the benchmarking feature is viewed as beneficial, including in the areas of climate risk management, net-zero transition planning, and climate disclosure.
- Many countries have either started to work on their taxonomy or have finalised one. **South Africa, Colombia, South Korea, Thailand, Singapore, Canada, and Mexico** are some of the countries which have developed taxonomies.

### Significance of Taxonomy

- **Need of Transitioning to a Net-Zero Economy:** With global temperatures soaring and the adverse effects of climate change exacerbating, countries need to transition to a net-zero economy.
- **Role of Taxonomies in Guiding Sustainable Economic Activities:** Taxonomies can play a pivotal role in doing this as they can help ascertain if economic activities are aligned with credible, science-based transition pathways.
- **Boosting Climate Capital and Preventing Greenwashing:** They can also give impetus to the deployment of climate capital and reduce the risks of greenwashing.
- **Taxonomy's Importance for India's Climate Finance:** For India, a taxonomy could bring in more climate funds from international sources. Green finance flows in India are falling far short of the country's current needs due to a lack of clarity in what constitutes sustainable activity. A taxonomy would change that.

## Potential for Green Investments in India

- India has a **climate-smart investment potential of \$ 3.1 trillion from 2018 to 2030**, according to a report by the International Finance Corporation (IFC).
- The largest space for investment is in the electric-vehicle segment, at \$ 667 billion, as India aims to electrify all of its new vehicles by 2030.
- India's renewable energy sector also continues to be a good investment avenue at \$ 403.7 billion.
- **India's Climate Commitments**
  - India aims to achieve a net-zero economy by 2070.
  - India has also pledged to **reduce the emissions intensity of its GDP by 45% by 2030**, from the 2005 level.
  - India has **committed to achieving about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.**

### What's in the Framework?

#### Key Climate Action Pillars

- **Mitigation:** Reducing emissions (e.g. renewable energy).
- **Adaptation:** Enhancing resilience (e.g. agriculture, water security).
- **Transition:** Supporting hard-to-abate sectors (e.g. cement, iron, steel).

- **Sectors Covered:** Power, mobility, buildings, agriculture, food/water security, and hard-to-abate industries (initial focus on cement and steel).

### Approach

- **Qualitative:** Sets objectives/principles to determine if an activity is climate-relevant.
- **Quantitative:** Translates the qualitative principles into measurable performance thresholds (e.g., GHG reduction targets)

### Activity Classification

#### Climate Supportive

- **Tier 1:** Absolute emission avoidance or major intensity cuts, Climate adaptation & resilience
- **Tier 2:** Comprises measures that lower emission intensity with defined pathways for further improvement, Energy efficiency

#### Transition Supportive:

- Efficiency or intensity improvements in sectors where zero-emission is not yet feasible.

## Conclusion

- India's Climate Finance Taxonomy is an important move to direct investments into truly sustainable projects. It



will help attract green funds, prevent fake claims, and support India's goal of reaching net-zero emissions by 2070. By clearly defining climate-friendly activities, the framework will boost investment in clean energy and other key sectors, making India's climate goals more achievable and transparent.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

Q. How does India's climate finance taxonomy aim to structure and categorise green investments? [150 words] [10 marks]

### EUROPEAN RED ADMIRAL BUTTERFLY (VANESSA ATALANTA)

**Why in News:** European Red Admiral butterfly sighted for the first time in Himachal's Dhauladhar mountain range.

#### Key Details

- The European Red Admiral (*Vanessa atalanta*), a widely distributed migratory butterfly species, has been sighted and documented in Himachal Pradesh.
- The species was observed near Dharamshala in the Dhauladhar mountain range, marking its maiden appearance in the country.
- A single specimen was recorded at **Thatharna Hill, near Dharamshala**, at an elevation of 2,500 metres.

#### Significance of the Sighting

- **Biodiversity Impact**
  - Increases the total butterfly species documented in Himachal Pradesh to 440.
  - Highlights the region's ecological richness and importance for migratory species.
- **Regional Rarity:** No prior confirmed sightings in China, Mongolia, or Afghanistan.
- **Uncertainty:** Unclear if the sighting reflects a one-time migration or the start of a breeding population.
- **Conservation:** Strengthens the need to protect Himalayan habitats critical for migratory species.
- **Research Directions**
  - Monitor potential breeding behaviour.
  - Study the impacts of climate change and ecological shifts on species distribution.
- **Global Context:** Adds to understanding of migratory butterfly dynamics in Asia.

#### Ecological Factors Driving the Sighting

- **Host Plant Availability:** Butterfly larvae feed on stinging nettle (*Urtica dioica*), which is abundant in the Western Himalayas.
- **Climate Influence:** Conducive climatic conditions may have facilitated migration into India.

#### About European Red Admiral (*Vanessa atalanta*)



- The Red Admiral butterfly (*Vanessa atalanta*) is a common species found in North America and across the world.
- **Features and Morphology**
  - Adult Red Admiral butterflies have an open wingspan that ranges in size from 1.75 - 3 inches.
  - Their background colour is black.
  - A striking visual feature is the **orange to red colored stripes that form marginal bands on their fore and hind wings.**
  - Eggs are green to cream in colour and are covered in small hair-like structures, which help with camouflaging on nettle leaves.
  - Larvae feed off the leaves of their host plant and grow to a length of about 1.25 inches
- **Range and Habitat**
  - The Red Admiral butterfly (*Vanessa atalanta*) has a **wide distribution that covers North and South America, Europe, and Asia.**
  - In the wild, *V. atalanta* are commonly found in moist areas near forests.
- **IUCN Status:** Least Concern

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

Q. Which of the following plant families do Red Admiral butterflies primarily use as host plants for their larvae?

- |                  |                    |
|------------------|--------------------|
| (a) Daisy family | (b) Mustard family |
| (c) Rose family  | (d) Nettle family  |

Answer: (d)

## DECLINING SNOW IN THE HINDU KUSH HIMALAYA (HKH)

**Why in News:** A recent report by the International Centre for Integrated Mountain Development (ICIMOD) noted a sharp decline in snow levels across the Hindu Kush Himalaya (HKH), raising serious concerns about water and climate security for over two billion people in the region.

### Key Findings of the Snow Update Report 2025

- Since 2020, four winters have witnessed below-normal snow persistence levels in the Hindu Kush Himalaya (HKH) region.
- The snow level in the HKH plummeted to a record 23.6% low in the winter of 2024-2025. This has been the lowest recorded in the past 23 years.
- The snow persistence has been **negative for all twelve major river basins**.
- The report reveals the most **alarming declines in snow persistence** in the Mekong (-51.9%) and Salween (-48.3%) basins, followed by the Tibetan Plateau (-29.1%), the Brahmaputra (-27.9%), Yangtze (-26.3%), and the Ganges (-24.1%) basins.

Snow persistence refers to the proportion of time that snow remains on the ground. As this snow melts, it supplies water to both people and ecosystems.

### About Hindu Kush Himalaya (HKH)

- HKH is termed as the world's **Third Pole** due to its vast ice reserves. The region has the largest deposit of snow and ice beyond the two Polar Regions.
- The HKH region **extends 3,500 km over all or part of eight countries from Afghanistan in the west to Myanmar in the east**.

- It is the **source of ten large Asian river systems** – the Amu Darya, Indus, Ganges, Brahmaputra (Yarlungtsanpo), Irrawaddy, Salween (Nu), Mekong (Lancang), Yangtze (Jinsha), Yellow River (Huanghe), and Tarim (Dayan) – and provides water, ecosystem services, and the basis for livelihoods to a population of around 240 million people in the region.
- The basins of these rivers provide water to 1.9 billion people, a fourth of the world's population.

### PRELIMS SPECIAL

#### International Centre for Integrated Mountain Development (ICIMOD)

- The International Centre for Integrated Mountain Development (ICIMOD) is an intergovernmental knowledge and learning centre working on behalf of the people of the Hindu Kush Himalaya (HKH).
- **Headquarters:** Kathmandu
- **Eight regional member countries** – Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.
- It works to improve the lives and livelihoods of men, women, and children of the HKH and protect mountain environments and cultures.
- **Mission:** To build and share knowledge that drives regional policy and action and attracts investment that enables the diverse countries and communities of the HKH to transition to greener, more inclusive, and climate-resilient development.
- **Core Pillars**
  - Enhance livelihoods
  - Sustain resources
  - Value culture

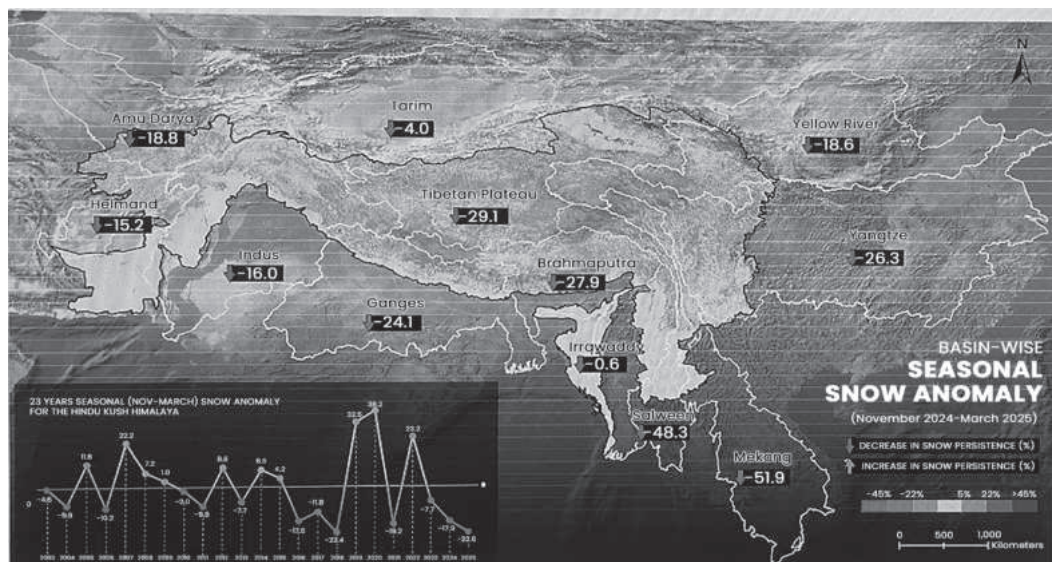


Fig: Snow cover persistence anomaly during November 2024–March 2025 (Compared to historic observations during the reference period 2003–2024)



- A decrease in plankton growth is **expected to alter the ecosystem, ultimately diminishing fish stocks** and endangering food security for coastal communities.

### Mechanisms of Impact from Extreme Monsoons

- **Intense Monsoons**
  - The large volume of freshwater discharge from rivers creates a freshwater layer on the ocean surface.
  - This **layer acts as a cap, blocking essential nutrients from deeper layers** from reaching the sunlit upper waters where plankton thrive.
  - Without these nutrients, plankton growth drops, impacting the entire food chain, including fish.
- **Weak Monsoons**
  - Result in **reduced ocean circulation and wind-driven mixing**.
  - This also blocks the supply of nutrients to plankton, similarly leading to a collapse in productivity.
- Both **extremely weak and strong monsoon periods inhibit the mixing between the deep and surface zones of the ocean**, preventing nutrients from reaching the upper region where marine life thrives.

#### Future Projections: Climate Change Concerns

- Climate change is expected to intensify and increase the variability of the monsoon.
- Future projections suggest that conditions, such as warmer surface waters and increased freshwater runoff, may mirror past intervals when marine productivity declined sharply.
- Experts warn that future winds may not be strong enough to allow mixing of different layers of water for nutrient supply, compounding the risk.

### Way Forward

- To address this threat, it is crucial to refine future climate projections and inform sustainable management of fisheries and coastal resources.
- Extending research to the Arabian Sea will reveal broader synchronous impacts across the northern Indian Ocean.
- Proactively addressing climate change is essential, as it is expected to make monsoons more intense and variable, compounding these risks.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

- Q. How do changing monsoon patterns in the Bay of Bengal impact marine ecosystems and food security? [150 words] [10 marks]

## MUSA INDANDAMANENSIS

**Why in News:** An infructescence of about 4.2 metres has been recorded in a species of wild banana from the Andaman and Nicobar islands, making it the longest infructescence recorded in bananas across the world.

### Key Details: About the Discovery

- The infructescence was recorded in an endemic species of wild banana, the **Musa indandamanensis**.
  - An infructescence is the **branched or unbranched axis upon which fruits are arranged**.
- **Specimen Location:** Campbell Bay in the Nicobar group of islands
- **Significance:** It represents a critical genetic resource for banana cultivation and highlights biodiversity in the Andaman and Nicobar Islands (ANI).

### About Musa indandamanensis

- **Status:** Musa indandamanensis is a critically endangered wild banana species endemic to the remote tropical forests of the Andaman and Nicobar Islands (ANI).
- **Discovery:** Discovered in 2012 near the **Krishna Nala reserve forest in Little Andaman by Dr. Lal Ji Singh**, a scientist at the Botanical Survey of India (BSI). The species was formally described in 2014.
- **Physical Characteristics**
  - The plant stands approximately 11 meters tall.
  - While earlier specimens from Little Andaman had stem girths under 100 cm, the newly discovered Nicobar specimens exhibit a thicker girth of 110 cm, indicating potential intra-species variation.
- **Habitat:** Musa indandamanensis thrives near waterfalls or streams, suggesting a reliance on moist, shaded environments.
- **Fruit Bunch:** Its fruit bunch axis (lux) measures around 1 meter, three times longer than typical species. Initially recorded at 3 meters in 2012, the 4.2-meter specimen highlights the species' exceptional growth potential.
- **Flowers:** Unlike the conical flowers of most bananas, it has cylindrical, green blooms.
- **Fruit:** Edible, sweet, and nutritionally rich, its pulp is strikingly orange, contrasting with the white or yellow of regular bananas.
- **Seeds:** Unlike cultivated varieties, its seeds are viable for germination, offering potential for propagation.
- **Agricultural Potential:** The large fruit lux and robust genetic traits of M. indandamanensis could aid in enhancing banana yields and disease resistance through hybridisation, potentially benefiting India's agricultural sector.



**EXPECTED QUESTION FOR UPSC CSE**

**Prelims MCQ**

Q. Musa Indandamanensis, recently seen in the news, is a species of which of the following?

- (a) Wild berry
- (b) Banana
- (c) Cabbage
- (d) Orange

Answer: (b)

**MAPPING THE GENOME OF SAOLA**

**Why in News:** An international team of scientists has mapped the genome of the saola (*Pseudoryx nghetinhensis*), the rarest large land mammal in the world.

**Key Details: About the Study**

- **Genome Sequencing:** Researchers analysed remains from 26 saolas collected from hunters' households to generate complete genomes.
- **Population Split**
  - Genetic data revealed the saola split into two distinct populations 5,000–20,000 years ago, likely due to habitat fragmentation during the Last Glacial Maximum.
  - Human activities (e.g. hunting, rice farming, deforestation) around 4,000 years ago further isolated the populations.
- **Loss of Genetic Diversity**
  - Both populations experienced declines in genetic diversity, but the lost diversity in one group complemented the other.
  - Mixing the two populations could restore genetic health by compensating for lost variants.

- **Significance:** The study provides a roadmap for conservation strategies, emphasising the need to integrate genetic data with urgent on-ground actions.

**PRELIMS SPECIAL**

**About Saola**



- Known as **Asian unicorn**.
- Saola are recognised by two parallel horns with sharp ends, which can reach 20 inches in length and are found on both males and females.
- Saola have **striking white markings on the face and large glands on the muzzle**, which may be used to mark their territory or attract mates.
- **Location:** They are found only in the **Annamite Mountains of Laos and Vietnam**.
- **Habitat:** Evergreen forests with little or no dry season
- **IUCN Status:** Critically Endangered
- **CITES:** Appendix I

**EXPECTED QUESTION FOR UPSC CSE**

**Prelims MCQ**

Q. Which of the following mountains is the natural home of Saolas?

- (a) Altai Mountains
- (b) Annamite Mountains
- (c) Caucasus Mountains
- (d) Ural Mountains

Answer: (b)

**URBAN SPIDER**

**Why in News:** A groundbreaking study by researchers at the University of Nebraska–Lincoln has revealed a fascinating urban adaptation in funnel-weaving spiders (*Agelenopsis pennsylvanica*). These spiders are modifying their webs to reduce noise interference caused by urban environments. This is one of the first known cases where an animal alters its sensory reception structures, not just behaviour, to cope with noise pollution.

### Key Findings

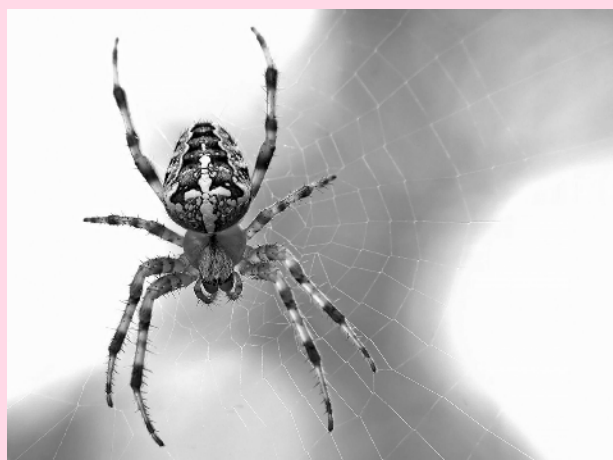
- Urban vs. Rural Spiders: Spiders from noisy urban areas built webs that dampened a wide range of vibrations, likely to filter out irrelevant noise and focus on real threats or food.
- In contrast, rural spiders (when exposed to urban noise in the lab) built webs that amplified vibrations, probably to improve perception in an unfamiliar, noisy environment.
- This suggests spiders possess an adaptive flexibility in web-making based on past exposure to environmental noise.

### How It Works

Spiders detect prey by sensing vibrations on their webs. The study showed that spiders can:

- Change the silk tension and thread layout.
- Alter the size and density of web strands.
- Modulate web architecture to either absorb or transmit sound vibrations better.

#### About Spiders



- Spiders belong to the arachnid group, not the insect class. Unlike insects, which have six legs and two eyes, spiders have eight legs and typically six or eight eyes.
- While most spiders are meat-eaters that hunt and consume insects, there is a species in Central America that primarily feeds on plants.
- They are well-known for spinning silk webs to trap insects, using silk produced from a liquid secreted by specialized glands. Spiders are found across the globe, except in Antarctica.
- Spiders digest food externally. Once they catch their prey, they release digestive fluids over it. These juices dissolve the prey's body into a liquid, which the spider then consumes.

### Implications

- **For Urban Wildlife**
  - Demonstrates how even invertebrates can adapt to anthropogenic (human-made) stressors.

- Offers insight into the resilience of small species in urban ecosystems.
- Indicates that behavioural plasticity may help sustain biodiversity in cities.
- **For Humans**
  - Highlights the hidden impacts of urban noise pollution—not just on people but also on wildlife.
  - Urges better urban planning and noise control, especially in green spaces and wildlife corridors.
  - Opens up the possibility of bio-inspired technologies, such as vibration filters or soundproof materials based on spider web mechanics.

### Significance

- This research sheds light on the broader impact of human-induced noise pollution on wildlife. While much attention has been given to how animals alter their vocalizations in noisy environments, this study is among the first to demonstrate an adaptation in the reception of sensory information.
- It underscores the importance of considering both the production and reception of signals in ecological studies of communication.

### Conclusion

- The discovery of spiders modifying their webs to counteract urban noise pollution highlights the intricate ways in which wildlife adapts to human-altered environments. As cities continue to expand and noise levels rise, understanding these natural adaptations becomes crucial in developing strategies to mitigate the impact of urbanization on biodiversity.

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

Q. Which of the following statements best explains the recent findings about funnel-weaving spiders (*Agelenopsis pennsylvanica*) in urban environments?

1. Urban spiders spin webs that dampen a wide range of vibrations to cope with noise pollution.
2. Rural spiders spin webs that amplify vibrations, especially in unfamiliar noisy environments.
3. The study shows that web construction is purely genetic and not influenced by experience.
4. This adaptation is linked to sensory filtering rather than vocal communication.

Select the correct answer using the code given below:

- (a) 1, 2, and 4 only                      (b) 1 and 3 only  
(c) 2 and 4 only                          (d) All of the above

Answer: (a)



## HUMAN ANTIBIOTIC USE POLLUTING RIVERS, FUELLING DRUG RESISTANCE

**Why in News:** The recent study in PNAS Nexus revealed that rising human antibiotic consumption is leading to large-scale contamination of rivers.

### Key details

- Antibiotic pollution is present in millions of kilometres of rivers worldwide at concentrations high enough to damage aquatic life and encourage drug resistance.
- About 8,500 tonnes of antibiotics, or almost one-third of what people consume each year, are estimated by researchers to wind up in river systems worldwide each year, despite frequently having passed through wastewater systems.
- Chronic and cumulative environmental exposure to antibiotics can still be hazardous to aquatic ecosystems and human health, even though the amounts of residues from individual antibiotics translate into very small concentrations in most rivers, making them extremely difficult to detect.
- Just 43% of the load of antibiotics from domestic sources is processed by wastewater systems.
- Six million kilometres, or 25% of rivers, are above the high-risk level for antibiotic contamination.
  - More than 80% of the rivers in India are categorised as being at high or extremely high risk.
- Amoxicillin, the world's most-used antibiotic, is the most likely to be present at risky levels, especially in Southeast Asia, where rising use and limited wastewater treatment amplify the problem.

### Causes

- **Incomplete Metabolism in Humans:** A significant portion of consumed antibiotics is not fully metabolized by the human body and is excreted, eventually reaching water systems.
- **Inefficient Wastewater Treatment:** Existing wastewater treatment plants are often unable to completely remove antibiotic residues, allowing them to enter rivers and lakes.
- **Extensive Use in Livestock and Aquaculture:** Antibiotics are routinely used in animal husbandry and fish farming to prevent disease and promote growth, leading to direct discharge of residues into the environment.

- **Industrial Discharges from Pharmaceutical Manufacturing:** Improper handling and leakage during the production of antibiotics contribute to environmental contamination, particularly near manufacturing hubs.
- **Climate Change Effects:** Rising temperatures enhance bacterial growth rates and increase horizontal gene transfer, thereby accelerating the development and spread of antimicrobial resistance.

### What is Antimicrobial Resistance?

- **Antimicrobial Resistance (AMR)** occurs when bacteria, viruses, fungi and parasites no longer respond to antimicrobial medicines.
- As a result of drug resistance, antibiotics and other antimicrobial medicines become ineffective, and infections become difficult or impossible to treat, increasing the risk of disease spread, severe illness, disability and death.
- AMR is the **third leading cause of mortality in the world**
- Globally, **over 1 million deaths are directly linked to bacterial AMR** and 5 million deaths indirectly

### Way forward

- **WASH initiatives:** To stop the spread of AMR, hospitals' management and individuals should be provided with basic access to personal hygiene.
- **Chennai Declaration:** To stop the sale of antibiotics over-the-counter, the new H1 rule that forbade the use of only second- and third-line antibiotics must be put into effect as soon as possible.
- **One Health Approach:** The "One Health Approach", a comprehensive strategy that connects human health to our shared environment, must serve as the foundation for all AMR initiatives.
- **Investment in Public Health Infrastructure:** Increased government budgeting and private investments can help to create a network of hospitals and laboratories.
- **Strong investment in new antibiotic R&D:** Key stakeholders need to provide funding for the creation of potent and novel antibiotics.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. Unchecked antibiotic pollution in the environment is a silent contributor to the global antimicrobial resistance crisis. Examine the causes and suggest policy-level interventions to address this challenge. [250 words | 15 marks]

### ISRO'S SEMICRYOGENIC ENGINE TEST: BOOSTING INDIA'S FUTURE LAUNCH CAPABILITIES

**Why in News:** Recently, the Indian Space Research Organisation (ISRO) successfully conducted a short-duration hot test of its semicryogenic engine at the ISRO Propulsion Complex (IPRC) in Mahendragiri, Tamil Nadu.

#### Key Details

- **Test Configuration:** The test involved the **Engine Power Head Test Article (PHTA)**, which includes all engine systems except the thrust chamber.
- **Duration and Performance:** The engine was ignited and operated for 3.5 seconds, reaching up to 60% of its rated power level, demonstrating stable and controlled performance.
- **Objective:** The test aimed to validate the engine's start-up sequence and assess the performance of critical subsystems, including low-pressure and high-pressure turbo pumps, pre-burner, and associated control systems.
- **Future Plans:** Further qualification tests are scheduled to comprehensively validate the engine system, paving the way for its integration into ISRO's launch vehicles.

#### Significance

- **Enhanced Launch Capabilities:** The semicryogenic engine, utilizing a **Liquid Oxygen (LOX) and Kerosene propellant combination**, is designed to replace the current L110 core liquid stage of the LVM3 rocket. This upgrade is expected to increase the payload capacity from 4 tonnes to 5 tonnes in geostationary transfer orbit (GTO).
- **Environmental and Operational Advantages:** The use of **non-toxic and non-hazardous propellants** offers better performance and environmental benefits compared to existing propulsion systems.
- **Strategic Importance:** Developing indigenous semi cryogenic propulsion technology positions India among a select group of nations with advanced rocket engine capabilities, enhancing its competitiveness in the global space market.

#### What is a Semicryogenic Engine?

A **semicryogenic engine** is a type of rocket propulsion system that uses a combination of a cryogenic oxidizer and a non-cryogenic fuel. Specifically, it typically uses **liquid oxygen (LOX)** as the oxidizer—which is stored at cryogenic temperatures (around  $-183^{\circ}\text{C}$ )—and **kerosene (RP-1)** as the fuel, which can be stored at ambient temperature. This **makes it distinct from fully cryogenic engines** that use both cryogenic fuel and oxidizer, such as liquid hydrogen and liquid oxygen. Many global launch systems, including Russia's RD-180 and SpaceX's Merlin engines, use semicryogenic technology.

- **How it works:** LOX is cooled to cryogenic temperatures and mixed with kerosene, which burns at high efficiency in the combustion chamber.
- **Advantages:**
  - Simpler and more robust than full cryogenic systems
  - Non-toxic and relatively safer fuels
  - Higher thrust and cost-effective
  - Easier to store and handle than liquid hydrogen
- **Limitations:**
  - Slightly lower efficiency than full cryogenic engines
  - Still involves handling cryogenic oxidizers

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

- Q. Which of the following propellant combinations is used in ISRO's semicryogenic engine?
- Liquid Hydrogen and Liquid Oxygen
  - Liquid Oxygen and Kerosene
  - Solid Propellant and Liquid Oxygen
  - Hydrazine and Nitrogen Tetroxide

Answer: (b)

### SUN'S SUBSURFACE WEATHER

**Why in News:** An international team of solar physicists have traced giant tides of plasma beneath the Sun's surface at a region called the near-surface shear layer (NSSL).



## Key Details

- The plasma currents shift with the Sun's magnetic heartbeat and could have a far-reaching influence on space weather and Earth.
- The **Near-Surface Shear Layer (NSSL)**, extending to about 35,000 km in depth, is a critical region beneath the Sun's surface.
  - It is marked by distinct rotational behaviours that vary with depth and by changes, over space and time, that relate to active region magnetic fields and the solar cycle.

## About the Study

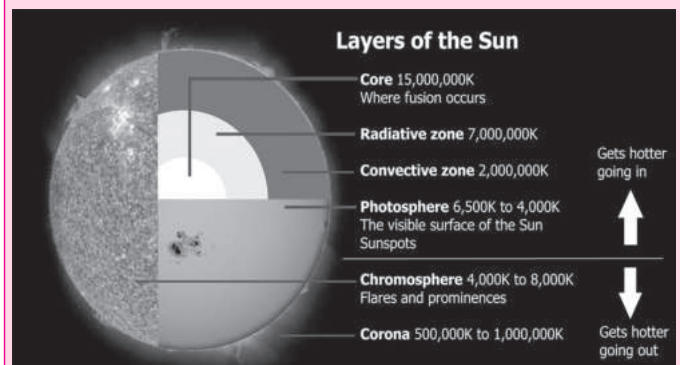
- **Discovery of Plasma Currents**
  - The study reveals that plasma currents in the NSSL shift in sync with the Sun's 11-year sunspot cycle.
  - These currents are dynamic and pulse in step with the solar cycle, indicating a strong connection between the Sun's internal flows and its magnetic heartbeat.
- **Methodology**
  - Researchers employed helioseismology, a technique that tracks sound waves travelling through the Sun, to observe changes in solar material movement.
  - The analysis utilised over a decade of data from NASA's Solar Dynamics Observatory/Helioseismic and Magnetic Imager (SDO/HMI) and the ground-based Global Oscillations Network Group (GONG) of the National Solar Observatory (NSO), USA.
- **Flow Patterns and Circulation Cells**
  - Surface plasma flows were observed to converge toward active sunspot latitudes.
  - Midway through the NSSL, these flows reverse direction and move outward, forming circulation cells.
  - The Coriolis force, which also influences weather patterns on Earth, plays a significant role in shaping these flows, causing swirling motions and modifying the Sun's rotational shear
- **Implications for Solar Dynamics**
  - The local plasma currents within the NSSL do not drive the Sun's larger-scale zonal flows (torsional oscillations), suggesting that deeper, yet unidentified processes power these global flows.
  - The findings provide new insights into how the Sun's interior connects to its outer magnetic behaviour and may help improve models for predicting solar activity and space weather

## Impact and Way Forward

- **Space Weather and Earth**
  - Understanding these hidden plasma patterns is crucial, as solar activity can disrupt satellites, power grids, and communications on Earth.
  - Improved knowledge of the Sun's internal dynamics could lead to more accurate predictions of solar behaviour and its impact on space weather.
- The study hints that there may be **deeper layers within the Sun that drive its global dynamics**, pointing to the need for further investigation.

### Sun

- The Sun is **approximately 4.6 billion years old** and has a diameter of about 1.39 million kilometers. Its surface temperature is around 6000 °C, while the temperature at its core reaches an astonishing 16 million °C.
- The **Sun's average density is 1.41 times that of water**, which has a density of 999.97 kg/m<sup>3</sup>. In comparison, Earth's overall density is about 5.5 times that of water.
- The surface gravity of the Sun is extremely strong at 274 m/s<sup>2</sup>, which is about 28 times greater than the gravity on Earth (9.8 m/s<sup>2</sup>) and significantly more than that on the Moon (1.62 m/s<sup>2</sup>).



### Solar Cycle

- The sun is a **huge ball of electrically charged hot gas**. This charged gas moves, generating a powerful magnetic field. The Sun's magnetic field goes through a cycle, called the solar cycle.
- **Every 11 years or so, the Sun's magnetic field completely flips**. This means that the Sun's north and south poles switch places. Then it takes about another 11 years for the Sun's north and south poles to flip back again.
- The solar cycle **affects activity on the surface of the Sun**, such as sunspots, which are caused by the Sun's magnetic fields. As the magnetic fields change, so does the amount of activity on the Sun's surface.
- One way to track the solar cycle is by counting the number of sunspots. The beginning of a solar cycle is a solar minimum, or when the Sun has the fewest sunspots. Over time, solar activity—and the number of sunspots—increases.
- The **middle of the solar cycle is the solar maximum, or when the Sun has the most sunspots**. As the cycle ends, it fades back to the solar minimum and then a new cycle begins.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. Consider the following statements regarding the Solar Cycle:

1. The solar cycle is an approximately 11-year period marked by fluctuations in the number of sunspots and solar activity on the Sun's surface.
2. During each solar cycle, the Sun's magnetic field and polarity remain unchanged.

Which of the statements above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Answer: (a)

## S8 TENSION

**Why in News:** New estimates of S8 tension based on data collected by the Subaru telescope's Hyper-Suprime Cam indicate the tension has to do with dark matter and dark energy.

### About S8 Tension

- S8 (Sigma Eight) is a **key parameter in cosmology that quantifies the "clumpiness" or clustering of matter** (including both visible and dark matter) in the universe, specifically on scales of about 8 megaparsecs (roughly 26 million light-years).
- It is derived from the root mean square of matter density fluctuations when the matter distribution is smoothed on this scale.
- A **higher S8 value means more matter is clumped together**, while a lower value indicates a more uniform distribution.
- S8 tension refers to a **persistent and statistically significant discrepancy between the values of S8 obtained from two different types** of astronomical observations, i.e.
  - **Cosmic Microwave Background (CMB) measurements:** These probe the early universe and typically yield a higher S8 value (around 0.83).
  - **Large-scale structure and gravitational lensing surveys:** These examine the current universe and consistently find a lower S8 value (around 0.76–0.78).
- **Measuring S8**
  - **From the CMB:** It is a sea of photons, the particles of light, present throughout the universe. They are left over from the Big Bang, its afterglow. Cosmologists analyse temperature fluctuations in the CMB, the

afterglow of the Big Bang, to predict how matter should have clumped over cosmic history according to the standard  $\Lambda$ CDM (Lambda Cold Dark Matter model).

- **From Gravitational Lensing and Galaxy Surveys:** Observations of how light from distant galaxies is distorted by intervening matter (cosmic shear) provide a direct, present-day measurement of matter clumping.
- **Significance in Cosmology**
  - **Test of the Standard Model:** S8 is crucial for testing the  $\Lambda$ CDM model, which is the prevailing theory describing the universe's composition and evolution. The S8 tension suggests that either our measurements or our understanding of cosmic structure formation may be incomplete.
  - **Implications for Dark Matter and Dark Energy:** The tension could indicate that dark matter or dark energy behaves differently than currently assumed, or that new physics, such as interactions between dark matter and dark energy, modified gravity, or time-varying constants, may be needed to explain the observations.
  - **Comparison to Hubble Tension:** Like the better-known Hubble tension (which involves discrepancies in the universe's expansion rate), the S8 tension is a major challenge for cosmology, potentially pointing to gaps in our understanding of the universe's fundamental workings.

### PRELIMS SPECIAL

#### Subaru Telescope

- The observatory of the Subaru Telescope was officially established in April 1997, following the completion of its **base facility building in Hilo, Hawaii**.
- Subaru Telescope can refer to the telescope itself or the entire observatory organisation.
- Subaru Telescope is located on the summit region of Maunakea, a dormant volcano on the Big Island of Hawaii.
- The summit of Maunakea is an isolated peak that protrudes above most of the Earth's weather systems.

## EXPECTED QUESTION ON UPSC CSE

### Prelims MCQ

Q. The S8 Tension is related to which of the following areas?

- (a) Macroeconomics              (b) Agriculture Genetics  
(c) Cosmology                      (d) Medical Biotechnology

Answer: (c)

## BULLSEYE GALAXY

**Why in News:** A team of international researchers recently discovered a galaxy with nine rings. They called it a serendipitous discovery because previous ringed galaxies have only displayed two or three rings at best.

### Discovery and Characteristics of the Bullseye Galaxy

- The presence of eight rings was confirmed **using the Hubble Space Telescope**.
- Data from the **W.M. Keck Observatory in Hawaii confirmed the existence of the ninth ring**.
- The galaxy is officially named **LEDA 1313424** but is commonly known as the Bullseye Galaxy.
- The Bullseye Galaxy is **nearly 2.5 times larger than the Milky Way**, with a diameter of 250,000 light-years.
- **Formation of Rings:** About 50 million years ago, a blue dwarf galaxy passed directly through the center of a larger galaxy, sending ripple-like waves of gas that triggered star formation in ring patterns. The dwarf galaxy remains nearby, about 130,000 light-years away, still linked by a thin trail of gas.

### Potential Evolution to a Giant Low Surface Brightness (GLSB) Galaxy

- The Bullseye Galaxy also shows signs that it **could one day evolve into a giant low surface brightness (GLSB) galaxy**.
- GLSB galaxies are considered important in the study of dark matter.
- **Low surface-brightness galaxies (LSBs) are characterised by:**
  - A shortage of elements heavier than hydrogen and helium.
  - Very little star formation despite possessing large disks filled with hydrogen. This is described as a paradox that scientists cannot explain.
  - They are believed to be filled with dark matter, making them excellent study targets for this mysterious matter.
  - A more uniform distribution of mass near their centres, which contradicts the standard model of cosmology that predicts denser centres. This discrepancy is a challenge for scientists
- **GLSB galaxies are the largest type of LSBs.**
- **Example:** Malin 1, about 6.5 times wider than the Milky Way and one of the largest spiral galaxies known.

### Scientific Implications of the Bullseye Galaxy

- **Opportunities for Research**
  - Potential to observe direct evidence of a collisional ring galaxy evolving into a GLSB galaxy.

- Insights into dark matter distribution through GLSB galaxy studies.

### Unresolved Questions

- Transition from ringed galaxy to GLSB galaxy remains theoretical.
- Need for cosmological simulations to validate theories (e.g. rapid dark matter halo spin).



### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

- Q. What is the primary proposed mechanism for the formation of the Bullseye Galaxy's unusual multi-ring structure?
- Gradual accretion of gas and dust from intergalactic space causing star formation in waves.
  - A close gravitational encounter with a massive galaxy causing tidal forces to shape the disk.
  - A direct, head-on passage of a blue dwarf galaxy through its centre around 50 million years ago.
  - Regular cyclical processes within the galaxy's core cause stars to form in expanding rings over millions of years.

Answer: (c)

## ASTEROID 2024 YR4

**Why in News:** When asteroid 2024 YR4 was first detected, astronomers feared it might collide with Earth. However, after detailed tracking and analysis, scientists have now ruled out any threat to Earth.

### Asteroid 2024 YR4

- Asteroid 2024 YR4 is a **near-Earth asteroid**. When asteroid 2024 YR4 was discovered, it was estimated to have a very small chance of impacting Earth on Dec. 22, 2032.

- After more observations, NASA concluded it poses no significant impact risk to Earth in 2032 and beyond.
- **Discovery:** 2024 YR4 was first reported to the Minor Planet Centre (the international clearing house for small body positional measurements) by the **NASA-funded Asteroid Terrestrial-impact Last Alert System (ATLAS)** in Chile on Dec. 27, 2024. ATLAS comprises several telescopes around the world and is managed by the University of Hawaii’s Institute for Astronomy.
- **Size:** Based on infrared observations from NASA’s James Webb Space Telescope made in March 2025, asteroid 2024 YR4 is now estimated to be 174-220 feet (53-67 meters).
- **Determining the Impact Probability of Asteroids**
  - NASA’s Near-Earth Object Observations program funds observatories to search for undiscovered asteroids and track existing potentially hazardous asteroids.
  - Using the observation data, NASA teams calculate and refine near-Earth object orbits using computer models.
  - Once the orbit of an asteroid is computed, these same computer models at NASA’s Centre for Near-Earth Object Studies can project how close the asteroid might approach Earth over the coming years and decades.
- **Frequent Changes in the Impact Probability**
  - Determining the impact probability is the scientific process.
  - As NASA and others involved in the International Asteroid Warning Network gather more observations of asteroid 2024 YR4, the asteroid’s future trajectory can be better understood.
- **Possibility of Deflecting the Asteroid 2024 YR4**
  - A kinetic impactor spacecraft like NASA’s Double Asteroid Redirection Test (DART) mission is one asteroid deflection technique that could be used to address a potentially hazardous asteroid in the future.
  - Each asteroid is unique, and deflection would depend on the asteroid’s size, physical properties, orbit, and discovery warning time.
  - 2024 YR4 poses no significant impact risk to the planet, and thus it is premature to speculate on potential deflection techniques for this asteroid.
- **Impact on the Moon:** Asteroid 2024 YR4 has a very small chance of impacting the Moon on Dec. 22, 2032. If the asteroid were to impact the Moon, it would not alter its orbit.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. “2024 YR4”, recently seen in the news, is a:

- (a) AI Microchip Processor
- (b) Communication Satellite
- (c) Near-Earth Asteroid
- (d) Earth-Sized Planet

Answer: (c)

## RNA-BASED ANTIVIRAL DEVELOPMENT

**Why in News:** Researchers from Martin Luther University Halle-Wittenberg (MLU), Germany, have developed a novel RNA-based antiviral agent that provides robust protection against the Cucumber Mosaic Virus (CMV), a significant plant pathogen affecting over 1,200 plant species globally.

### Key Details

- **Cucumber Mosaic Virus (CMV):** CMV is **transmitted by approximately 90 species of aphids and infects a wide range of plants**, including cucumbers, squash, cereals, and medicinal plants. Infected plants exhibit mosaic patterns on leaves, stunted growth, and yield unmarketable fruits.
- **RNA-Based Antiviral Development:** The MLU research team **engineered efficient double-stranded RNA molecules (edsRNAs)** enriched with potent small interfering RNAs (siRNAs). These edsRNAs, upon entering plant cells, are processed into siRNAs that specifically target and degrade viral RNA, thereby enhancing the plant’s immune response.
- **Laboratory Findings:** In controlled experiments using the model plant *Nicotiana benthamiana*, the RNA-based treatment demonstrated remarkable efficacy. While all untreated plants succumbed to high viral loads, **80–100% of the treated plants survived**, indicating the potential of this approach in managing CMV infections.
- **Application Methods:** Currently, the antiviral agents are applied manually in laboratory settings. However, efforts are underway to develop more practical application methods, such as foliar sprays, to facilitate large-scale agricultural use.
- **Three Key Advantages:**
  - **High Precision:** The plant’s immune system is directed toward the virus’s most vulnerable genetic regions, improving infection resistance.



- **Stronger Defense:** The dsRNA targets multiple genome regions at once, reducing the chance for the virus to mutate and escape immune detection.
- **Rapid Adaptability:** The dsRNA sequence can be redesigned within a month to counter new viral strains, enabling quick response to emerging threats.

#### What is an RNA-Based Antiviral?

- An RNA-based antiviral is a **treatment strategy that utilizes double-stranded RNA (dsRNA) molecules to trigger the plant's innate immune response** against viral pathogens.
- When introduced into the plant, these dsRNAs are processed into small interfering RNAs (siRNAs) that guide the degradation of complementary viral RNA sequences, effectively silencing the virus and preventing its replication.
- This method harnesses the **natural RNA interference (RNAi) pathway** in plants, offering a targeted and environmentally friendly approach to disease management.

#### Significance

- **Agricultural Impact:** CMV poses a substantial threat to global agriculture, with India **experiencing 25–30% yield losses in banana plantations** due to the virus. The development of an effective antiviral agent could significantly mitigate these losses and enhance food security.
- **Non-GMO Approach:** The RNA-based antiviral strategy **offers a non-genetically modified (non-GMO) solution, aligning with regulatory standards** and public acceptance. This approach leverages the plant's natural defense mechanisms without altering its genetic makeup.
- **Adaptability:** Given the high mutation rate of RNA viruses like CMV, the ability to quickly design and deploy new dsRNAs targeting different viral genome regions provides a **flexible and responsive tool** for managing emerging viral strains.

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

- Q. Which of the following best describes the function of small interfering RNAs (siRNAs) in plant defence mechanisms?
- They encode proteins that directly attack pathogens.
  - They guide the degradation of specific viral RNA sequences.
  - They serve as templates for viral replication.
  - They inhibit the synthesis of plant structural proteins.

Answer: (b)

## GENOME-EDITED RICE VARIETIES

**Why in News:** In May 2025, India released the world's first genome-edited rice varieties—DRR Dhan 100 (Kamala) and Pusa DST Rice 1.

#### Key Details

- **Development and Technology:** The genome-edited rice varieties were **developed using CRISPR-Cas12 technology**, allowing precise editing of the plant's own genes without introducing foreign DNA. This method differentiates genome editing from traditional genetic modification.
  - Developed by ICAR, these high-yielding, water-efficient, and climate-resilient varieties mark a major step toward sustainable agriculture and food security.
- **Regulatory Framework:** India has exempted certain genome-edited crops (specifically SDN1 and SDN2 categories) from stringent biosafety regulations, facilitating faster development and deployment.

#### New Varieties

##### DRR Dhan 100 (Kamala)

- **Parentage:** Derived from the popular Samba Mahsuri (BPT5204) variety.
- **Features:**
  - **Shorter Maturation:** Matures in 125–130 days, approximately 20 days earlier than its parent variety.
  - **Higher Yield:** Produces more grains per panicle, leading to increased overall yield.
  - **Resource Efficiency:** Requires less water and fertilizers, contributing to reduced greenhouse gas emissions.

##### Pusa DST Rice 1

- **Parentage:** Developed from MTU1010, a widely cultivated variety.
- **Features:**
  - **Stress Tolerance:** Exhibits enhanced tolerance to drought and salinity.
  - **Yield Improvement:** Demonstrates a 9.66% to 30.4% increase in yield, especially in saline and alkaline soils.

#### What is Gene editing technology?

It refers to a suite of techniques that enable scientists to modify an organism's DNA by adding, deleting, or altering specific genetic material. These modifications can range from changes in individual cells to alterations in entire organisms.

How Gene Editing Works?

Gene editing operates through two primary delivery methods:

- **Ex Vivo Editing:** In this approach, cells are extracted from the patient, genetically modified in a laboratory setting, and then reintroduced into the patient's body.

- **In Vivo Editing:** Here, the gene-editing tools are delivered directly into the patient's body to target and modify specific cells.

The editing process utilizes engineered nucleases—molecular “scissors”—such as **CRISPR-Cas9**, **TALENs**, or **zinc finger nucleases**. These nucleases create precise cuts at targeted DNA sequences. The cell's natural repair mechanisms then mend these cuts, allowing for the insertion, deletion, or correction of genetic material.

#### Applications in Medicine

Gene editing holds transformative potential across various medical domains:

- **Genetic Disorders:** Conditions like sickle cell anaemia and cystic fibrosis can be addressed by correcting the underlying genetic mutations.
- **Cancer Therapy:** By modifying immune cells to better recognize and attack cancer cells, gene editing enhances the efficacy of immunotherapies.
- **Infectious Diseases:** Gene editing can potentially render cells resistant to infections, offering new avenues for treatment.
- **Personalized Medicine:** Tailoring treatments based on an individual's genetic makeup ensures higher efficacy and reduced side effects.

#### Understanding the Difference Between Genome Editing and Genetic Modification

- Genome editing and genetic modification are both techniques used to alter the genetic makeup of organisms, but they differ significantly in approach, technology, and regulatory treatment. **Genome editing is a highly precise method** that involves making targeted changes to an organism's own DNA without introducing foreign genes. Technologies like CRISPR-Cas9 are used to edit or deactivate specific genes, allowing scientists to enhance desirable traits such as drought resistance or early maturation.
- In India, genome-edited crops that do not involve foreign DNA are not categorized as Genetically Modified Organisms (GMOs), which allows for a more favourable and less restrictive regulatory framework.
- In contrast, **genetic modification** (or GM technology) typically involves **inserting genes from other species** into the target organism to introduce new traits—such as pest resistance or herbicide tolerance. While GMOs have contributed to agricultural productivity in some contexts, they have also faced significant **public resistance** due to concerns over food safety, environmental consequences, and ethical implications of mixing genetic material across species.

#### Significance

- **Agricultural Impact**
  - **Enhanced Productivity:** The new rice varieties promise significant yield improvements, crucial for meeting the food demands of a growing population.

- **Climate Resilience:** Traits like drought and salinity tolerance make these varieties suitable for cultivation in challenging environmental conditions.
- **Resource Efficiency:** Reduced water usage and lower greenhouse gas emissions contribute to sustainable farming practices.
- **Economic and Social Implications**
  - **Farmer Benefits:** Higher yields and resilience can lead to increased incomes and reduced risk for farmers.
  - **Food Security:** Improved rice production supports national food security goals.
  - **Global Leadership:** India's advancement in genome editing positions it as a pioneer in sustainable agriculture.

#### Challenges and Concerns

- **Regulatory and Ethical Issues**
  - **Public Awareness:** Educating stakeholders about the safety and benefits of genome-edited crops is essential to gain public trust.
  - **Intellectual Property:** The use of patented technologies like CRISPR-Cas9 may raise concerns about accessibility and affordability for farmers.
- **Environmental Considerations**
  - **Biodiversity:** Continuous monitoring is necessary to assess the long-term impact of genome-edited crops on biodiversity.

#### Conclusion

- India's development of genome-edited rice varieties marks a transformative step toward sustainable agriculture. By leveraging cutting-edge technology, the country aims to enhance food security, support farmer livelihoods, and address environmental challenges. However, careful consideration of regulatory frameworks, public perception, and ethical implications will be vital to ensure the responsible adoption of these innovations.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

- Q. “Genome editing in agriculture offers a transformative approach to sustainable food security, but it raises regulatory, ethical, and socio-economic challenges.” Critically examine this statement in the context of India's recent development and approval of genome-edited rice varieties. [250 words] [15 marks]

#### YAK GENOMIC SCIENCE

**Why in News:** Specialists from four institutions of the Indian Council of Agricultural Research (ICAR) have assembled the first-ever chromosome-level genome of the Indian yak.



## About the Research

- The primary achievement is the successful assembly of the first-ever chromosome-level genome of the Indian yak.
- **Methodology:** The research team employed **cutting-edge long-read sequencing technology and bioinformatics tools** to generate the chromosome-level assembly.
- **Collaborating Institutions**
  - ICAR-National Research Centre on Yak in Arunachal Pradesh
  - ICAR-Indian Institute of Agricultural Biotechnology, Ranchi
  - ICAR-Central Institute for Research on Cattle, Meerut
  - ICAR-Central Institute for Cotton Research, Nagpur
- **Public Availability**
  - The assembled genome is now publicly available to the wider scientific community.
  - This availability is intended to encourage collaboration and accelerate further research into this unique animal.

## Significance and Potential Impact

- This genomic achievement has the potential to **transform yak breeding programmes and conservation strategies**.
- It will enhance the scientific understanding of the yak's genetic intricacies and its ecological role in the Himalayan region.
- **Anticipated Outcomes**
  - Identifying and preserving genetically diverse yak populations.
  - Enhancing desirable traits such as milk yield and disease resistance.
  - Elucidating the genetic mechanisms behind the yak's unique adaptation to harsh environments.
  - Providing insights into the evolution and adaptation of other bovine species.
- The genome resource is considered valuable for **developing targeted breeding programmes** and identifying genetic markers for cold tolerance, disease resistance, and increased milk production with much greater precision.
- This research is expected to support the **long-term sustainability of yak populations** and contribute positively to the livelihoods of yak herders.
- **Allele Mining:** Comparative genomics using this data and that of other bovine species is anticipated to open opportunities for allele mining for useful genes contributing to biotic and abiotic stresses and quality traits.

# INDIAN YAK (BOS GRUNNIENS)



**Distribution:** Indian yaks inhabit high-altitude regions of **Ladakh, Sikkim, Arunachal Pradesh, and Himachal Pradesh**.

These animals are often referred to as the **ship of the Himalayas** due to their crucial role in high-altitude economies.

They inhabit regions above 7,000 feet where few other livestock species can survive.

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>◆ <b>Threats to Yak Populations</b></li> <li>◆ Shrinking grazing areas</li> <li>◆ Climatic shifts</li> <li>◆ Diseases</li> <li>◆ Genetic erosion</li> </ul> | <ul style="list-style-type: none"> <li>◆ <b>Conservation Status and Protection</b></li> <li>◆ <b>IUCN Red List:</b> Vulnerable</li> <li>◆ <b>CITES:</b> Appendix I</li> <li>◆ <b>Indian Wildlife (Protection) Act, 1972:</b> Schedule I</li> </ul> |
|--|--|

## Scientific Research Applications

- **Genetic diversity preservation:** Enhanced ability to identify and preserve genetically diverse yak populations.
- **Adaptation mechanisms:** Deeper understanding of genetic mechanisms behind yak adaptation to harsh environments.
- **Comparative genomics:** Insights into evolution and adaptation patterns in other bovine species.
- **Disease resistance:** Identification of genetic factors contributing to disease resistance in extreme conditions.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. Consider the following:

- |                            |                    |
|----------------------------|--------------------|
| 1. Shrinking grazing areas | 2. Climatic shifts |
| 3. Diseases                | 4. Genetic erosion |

How many of the above are threats to Yak populations?

- |                |              |
|----------------|--------------|
| (a) Only one   | (b) Only two |
| (c) Only three | (d) All four |

Answer: (d)

## SEMAGLUTIDE: A BREAKTHROUGH THERAPY FOR MANAGING DIABETES AND OBESITY IN INDIA

**Why in News:** Semaglutide, marketed under brand names such as Ozempic, Wegovy, and Rybelsus, has garnered significant attention in India for its dual efficacy in managing type 2 diabetes and promoting weight loss.

### Key Details about Semaglutide

- Semaglutide is a **glucagon-like peptide-1 (GLP-1) receptor agonist**.
- It mimics the action of the natural hormone GLP-1, **enhancing insulin secretion, suppressing glucagon release, slowing gastric emptying**, and reducing appetite.
- These combined effects contribute to improved blood sugar control and weight reduction.
- **Clinical Efficacy:** Clinical trials have demonstrated that semaglutide significantly lowers HbA1c levels and facilitates substantial weight loss. In some studies, patients experienced up to a 15% reduction in body weight, marking a notable advancement in obesity treatment.

### Administration

- **Ozempic:** Administered via subcutaneous injection, primarily for type 2 diabetes management.
- **Wegovy:** A higher-dose injectable formulation approved for chronic weight management.
- **Rybelsus:** An oral tablet form, offering an alternative to injections for diabetes treatment.

### Relevance

- **Rising Prevalence of Diabetes and Obesity:** India faces a growing burden of type 2 diabetes and obesity, often referred to as “diabesity.” The dual action of semaglutide addresses both conditions simultaneously, offering a comprehensive therapeutic approach.
- **Cardiovascular Benefits:** Beyond glycemic control and weight loss, semaglutide has been associated with a reduction in major adverse cardiovascular events, including heart attacks and strokes, which are prevalent complications among Indian diabetic patients.
- **Patient Compliance:** The availability of both injectable and oral formulations enhances patient adherence to treatment regimens, catering to individual preferences and improving overall outcomes.

### Potential Side Effects and Considerations

- **Gastrointestinal Issues:** Common side effects include nausea, vomiting, diarrhea, abdominal pain, and constipation. These symptoms are typically transient and may subside with continued use.
- **Rare but Serious Risks:**
  - **Pancreatitis:** Cases of inflammation of the pancreas have been reported, necessitating prompt medical attention if symptoms arise.

- **Thyroid Tumors:** Animal studies have indicated a potential risk of thyroid C-cell tumors, though human data is inconclusive.
- **Vision Changes:** Instances of diabetic retinopathy complications have been observed, warranting regular eye examinations.
- **Other Considerations:** Patients may experience injection site reactions, hypoglycemia (especially when combined with other antidiabetic agents), and potential kidney function alterations. Regular monitoring and consultation with healthcare providers are essential.

### Conclusion

- Semaglutide represents a significant advancement in the management of type 2 diabetes and obesity, particularly relevant to India’s healthcare landscape. Its multifaceted benefits, including glycemic control, weight reduction, and cardiovascular risk mitigation, position it as a valuable tool in chronic disease management. However, awareness of potential side effects and individualized patient assessment remain crucial to optimizing therapeutic outcomes.

### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

Q. With reference to Semaglutide, recently seen in the news, consider the following statements:

1. Semaglutide is a GLP-1 receptor agonist used in the treatment of both type 2 diabetes and obesity.
2. It works by suppressing insulin secretion and accelerating gastric emptying.
3. In India, Semaglutide is available only in injectable form.
4. Clinical trials have shown that it can reduce cardiovascular risks in diabetic patients.

Which of the statements given above are correct?

- (a) 1 and 2 only                      (b) 1 and 4 only  
(c) 2 and 3 only                      (d) 1, 3 and 4 only

Answer: (b)

## THALASSAEMIA

**Why in News:** World Thalassaemia Day was observed on 8 May with the theme, "Together for Thalassaemia: Uniting Communities, Prioritising Patients".



## About Thalassaemia

- Thalassaemia is a blood disorder passed down through families (inherited) in which the body makes an abnormal form or inadequate amount of haemoglobin.
- Haemoglobin is the protein in red blood cells that carries oxygen. The disorder results in large numbers of red blood cells being destroyed, which leads to anaemia.

## Cause of Thalassaemia

- Haemoglobin is made of two proteins:
  - Alpha globin
  - Beta globin
- Thalassaemia occurs when there is a variant in a gene that helps control the production of one of these proteins.

## Types of Thalassaemia

- Alpha thalassaemia occurs when a gene or genes related to the alpha globin protein are missing or there is a variant.
  - Alpha thalassemys occur most often in people from Southeast Asia, the Middle East, China, and in those of African descent.
- Beta thalassaemia occurs when similar gene defects affect the production of the beta globin protein.
  - Beta thalassemys occur most often in people of Mediterranean origin. To a lesser extent, Chinese, other Asians, and African Americans can be affected.
- There are many forms of thalassaemia. Each type has many different subtypes. Both alpha and beta thalassaemia include the following two forms:
  - Thalassaemia major
  - Thalassaemia minor
- One must inherit the variant gene from both parents to develop thalassaemia major.
- Thalassaemia minor occurs if you receive the variant gene from only one parent. People with this form of the disorder are carriers of the disease. Most of the time, they do not have symptoms.

## Symptoms

- The most severe form of alpha thalassaemia major causes **stillbirth** (death of the unborn baby during birth or the late stages of pregnancy).
- Children born with beta thalassaemia major are normal at birth, but develop severe anemia during the first year of life.
- Other symptoms
  - Bone deformities in the face
  - Fatigue
  - Growth failure
  - Shortness of breath
  - Yellow skin (jaundice)

## Treatment

- There is no definitive cure for thalassaemia, treatment options involve managing the symptoms.
- Treatment for thalassaemia major often involves regular blood transfusions and folate supplements.
- People who receive a lot of blood transfusions need a treatment called chelation therapy. This is done to remove excess iron from the body.
- A bone marrow transplant may help treat the disease in some people, especially children.

### History of World Thalassaemia Day

- World Thalassaemia Day was established by the Thalassaemia International Federation (TIF) in 1994, in memory of George Englezos, the son of TIF founder Panos Englezos.
- George died due to thalassaemia, and the day was globally observed to remember such individuals who are affected and ensure their safety. Since then, the day has been marked every year with campaigns, blood donation drives, and policy talks across different countries.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

- Q. Thalassaemia is a genetic disorder related to which of the following?
- (a) Bones and Cartilages    (b) Insufficient lung capacity  
(c) Blood    (d) Muscle weakness

Answer: (c)

## NIPAH VIRUS

**Why in News:** A 42-year-old woman in Kerala's Malappuram district tested positive for the Nipah, a zoonotic virus with a high mortality rate.

### Key Details

- Kerala has had five Nipah outbreaks since 2018.
- Only six people who tested positive have survived — one in Kozhikode in 2018, another in Kochi in 2019, and four cases in Kozhikode in 2023.

### About Nipah Virus

- Nipah virus (NiV) is a zoonotic virus, meaning that it can spread between animals and people.
- **Origin:** Nipah virus (NiV) was first discovered in 1999 following an outbreak of disease in pigs and people in Malaysia and Singapore.
- In India, during 2001 and 2007, two outbreaks in

humans were reported from West Bengal, neighbouring Bangladesh.

- **Reservoir:** Large fruit bats of the Pteropus genus are the natural reservoir of NiV.
- Nipah virus is also known to cause illness in pigs and people.
- Infection with NiV is associated with encephalitis (swelling of the brain) and can cause mild to severe illness and even death.

### Transmission of Nipah Virus

- Direct contact with infected animals, **such as bats or pigs**, or their body fluids (such as blood, urine or saliva).
- Consuming food products that have been contaminated by the body fluids of infected animals (such as palm sap or fruit contaminated by an infected bat).
- Close contact with a person infected with NiV or their body fluids (including nasal or respiratory droplets, urine, or blood).

### Signs and Symptoms

- **Infection with Nipah virus (NiV) can cause mild to severe disease**, including swelling of the brain (encephalitis) and potentially death.
- Symptoms typically appear in 4-14 days following exposure to the virus.
- The illness initially presents as 3-14 days of fever and headache, and often includes signs of respiratory illness, such as cough, sore throat, and difficulty breathing.
- Death may occur in 40-75% of cases. Long-term side effects in survivors of Nipah virus infection have been noted, including persistent convulsions and personality changes.

### Diagnosis

- Nipah virus (NiV) infection can be diagnosed during illness or after recovery. Different tests are available to diagnose NiV infection.
- During the early stages of the illness, laboratory testing can be conducted using **real-time polymerase chain reaction (RT-PCR)** from throat and nasal swabs, cerebrospinal fluid, urine, and blood.
- Later in the course of illness and after recovery, testing for antibodies is conducted using an **enzyme-linked immunosorbent assay (ELISA)**.

### Treatment

- There are currently **no drugs or vaccines** specific for Nipah virus infection, although the WHO has identified Nipah as a priority disease for the WHO Research and Development Blueprint.
- Intensive supportive care is recommended to treat severe respiratory and neurologic complications.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. Consider the following statements regarding Nipah Virus:

1. Nipah Virus is a zoonotic virus transmitted primarily from bats to humans.
2. There are currently no drugs or vaccines specific for Nipah virus infection.

Which of the statements above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

(c) :Answer

## TUBERCULOSIS (TB) -FREE INDIA BY 2025

**Why in News:** On World Tuberculosis Day 2025, Prime Minister Narendra Modi called for intensified, targeted action to achieve a TB-free India by 2025, five years ahead of the global Sustainable Development Goal (SDG) target of 2030.

### Key Details

- **Emphasis on Targeted Interventions:** The Prime Minister underscored the importance of analyzing TB trends by geography (urban vs. rural) and occupation, particularly among workers in high-risk sectors such as construction, mining, and textiles. This approach aims to identify and prioritize vulnerable groups for early testing and treatment.
- **Advancements in Diagnostics and Treatment:** The meeting reviewed significant infrastructure developments, including the expansion of the TB diagnostic network to 8,540 NAAT labs and 87 culture and drug susceptibility labs. Over 26,700 X-ray units, including 500 AI-enabled handheld devices, are now operational, with an additional 1,000 in the pipeline.
- **Community Engagement and Support:** The Prime Minister encouraged leveraging technology to enhance engagement between Ni-kshay Mitras and TB patients through interactive tools to boost awareness and treatment adherence.
- **Growing Concerns over Antimicrobial Resistance (AMR):** This renewed focus comes amid growing concerns over antimicrobial resistance (AMR), which threatens to undermine decades of progress in TB control.

**What is Tuberculosis (TB)?**

- Tuberculosis (TB) is an infectious disease caused by the bacterium *Mycobacterium tuberculosis*. It primarily affects the lungs but can also impact other organs. TB spreads through the air when individuals with active pulmonary TB cough, sneeze, or speak, releasing microscopic droplets containing the bacteria.

**What is Antimicrobial Resistance (AMR)?**

- Antimicrobial resistance occurs when microorganisms (bacteria, viruses, fungi, and parasites) evolve to resist the effects of medications, rendering standard treatments ineffective. In the context of TB, AMR leads to drug-resistant strains, making the disease more difficult and costly to treat.

**Treatment**

- In India, tuberculosis (TB) is treated using a standard six-month regimen of four first-line drugs: isoniazid, rifampicin, pyrazinamide, and ethambutol (HRZE), provided free under the National TB Elimination Programme (NTEP).
- **For drug-resistant TB (MDR/XDR), second-line medications such as levofloxacin, bedaquiline, delamanid, linezolid, and clofazimine** are used in longer, more complex regimens lasting up to 24 months. Newer, shorter MDR-TB regimens (9–11 months) combining oral drugs like bedaquiline and levofloxacin are now preferred.
- Preventive treatment with isoniazid or rifapentine is also given to close contacts of TB patients.

**Causes of Antimicrobial Resistance**

- **Overuse and Misuse of Antibiotics:** Inappropriate prescribing and use of antibiotics in humans and animals.
- **Poor Infection Control:** Inadequate hygiene and sanitation in healthcare settings.
- **Lack of Rapid Diagnostics:** Delays in identifying resistant infections lead to inappropriate treatment.
- **Incomplete Treatment Courses:** Patients not completing prescribed antibiotic regimens.
- **Agricultural Practices:** Use of antibiotics in livestock for growth promotion and disease prevention.

**TB in India: Data and Statistics**

According to the WHO Global Tuberculosis Report 2024, India has made significant progress in TB control:

- **Incidence Rate:** Reduced by 17.7%, from 237 cases per 100,000 population in 2015 to 195 in 2023.
- **Mortality Rate:** Decreased from 28 to 22 deaths per 100,000 population during the same period.

**National TB Elimination Programme (NTEP)**

Formerly known as the Revised National Tuberculosis Control Programme (RNTCP), the NTEP aims to eliminate TB in India by 2025. Key strategies include:

- **Prevent:** Vaccination and public awareness campaigns.
- **Detect:** Enhanced screening and diagnostic services.
- **Treat:** Providing free, quality-assured anti-TB drugs and patient support.

- **Build:** Strengthening health systems and infrastructure.
- **Nikshay Poshan Yojana:** Provides a nutritional support incentive of ₹1000 per month to TB patients during treatment, benefiting over 1.28 crore patients since 2018. Additionally, 29.4 lakh food baskets have been distributed by 2.55 lakh Ni-kshay Mitras.

**EXPECTED QUESTION IN UPSC CSE**

**Prelims Question**

- Q. Which of the following statements about Tuberculosis (TB) is correct?
- (a) TB is caused by a virus.
  - (b) TB primarily affects the liver.
  - (c) TB spreads through contaminated water.
  - (d) TB is an airborne bacterial infection.

Answer: (d)

**RABIES**

**Why in News:** The number of rabies deaths has been increasing in Kerala, reportedly at an alarming rate over the past four to five years.

**About Rabies**

- Rabies is a viral zoonotic disease that causes progressive and fatal inflammation of the brain and spinal cord.
- Rabies is a viral disease transmitted from mammals to humans that causes acute encephalitis.
- **Clinical forms of rabies**
  - Furious rabies – characterised by hyperactivity and hallucinations. Furious rabies is the most common form of human rabies.
  - Paralytic rabies – characterised by paralysis and coma.
- Rabies is transmitted through mucosal exposure to infected animals, **such as rabid dogs, bats and sometimes other species.**
- **Transmission of Rabies:** The rabies virus is mainly transmitted from the saliva of a rabid animal when it bites or scratches a person. Licks to wounds, grazes, broken skin, or to the lining of the mouth and nose, can also transmit the virus.
  - However, the rabies virus has also been found and could possibly be transmitted through other bodily fluids such as tears and nervous tissue. Rabies virus is not found in blood or faeces.
  - Human-to-human transmission of rabies is extremely rare.
  - There are no evidence-based reports of human rabies arising from the consumption of milk, including breastmilk, or cooked meat.



## NATURAL HYDROGEN

**Why in News:** Recently, an article appeared in The Hindu titled 'Is Natural Hydrogen the Fuel of the Future?'

### Key Details - About Hydrogen as a Fuel

- Hydrogen is a clean fuel that produces only water when consumed in a fuel cell.
- Hydrogen can be produced from a variety of domestic resources, such as **natural gas, nuclear power, biomass, and renewable power like solar and wind.**
- These qualities make it an attractive fuel option for transportation and electricity generation applications.
- It can be used in cars, in houses, for portable power, and in many more applications.
- Hydrogen is an energy carrier that can be used to store, move, and deliver energy produced from other sources.
- Today, **hydrogen fuel can be produced through several methods.**
  - The most common methods today are natural gas reforming (a thermal process), and electrolysis.
  - Other methods include solar-driven and biological processes.

#### About Natural Hydrogen

- Natural hydrogen, also known as geologic or white hydrogen, is hydrogen gas (H<sub>2</sub>) that forms and accumulates naturally within the Earth's crust.
- Unlike hydrogen produced artificially from fossil fuels or renewable sources, natural hydrogen is generated through geological processes, offering potential for a sustainable energy breakthrough.

#### Extraction of Natural Hydrogen

- Natural hydrogen occurs as a free gas in geology, produced by processes such as **serpentinisation** (the interaction of water and iron-containing rocks), radiolysis of water by radioactive rocks, and from organic matter at depth.

### Production of Hydrogen Fuel

- **Thermal Processes**
  - Thermal processes for hydrogen production **typically involve steam reforming**, a high-temperature process in which steam reacts with a hydrocarbon fuel to produce hydrogen.
  - Many hydrocarbon fuels can be reformed to produce hydrogen, including natural gas, diesel, renewable liquid fuels, gasified coal, or gasified biomass.
- **Electrolytic Processes**
  - Water can be separated into oxygen and hydrogen through a process called electrolysis.
  - Electrolytic processes take place in an electrolyser, which functions much like a fuel cell in reverse—instead of using the energy of a hydrogen molecule,

like a fuel cell does, an electrolyser creates hydrogen from water molecules.

- **Solar-Driven Processes**
  - Solar-driven processes use light as the agent for hydrogen production. There are a few solar-driven processes, including **photobiological, photoelectrochemical, and solar thermochemical.**
  - Photobiological processes use the natural photosynthetic activity of bacteria and green algae to produce hydrogen.
  - Photoelectrochemical processes use specialised semiconductors to separate water into hydrogen and oxygen.
  - Solar thermochemical hydrogen production uses concentrated solar power to drive water splitting reactions, often along with other species such as metal oxides.
- **Biological Processes**
  - Biological processes use microbes such as bacteria and microalgae and can produce hydrogen through biological reactions.
  - In microbial biomass conversion, the microbes break down organic matter like biomass or wastewater to produce hydrogen, while in photobiological processes, the microbes use sunlight as the energy source.

### Challenges Faced by Clean, Widespread Use of Hydrogen in Global Energy Transitions

- **High Cost:** Producing hydrogen from low-carbon energy is costly at the moment.
- **Infrastructure Limitations:** The development of hydrogen infrastructure is slow and is holding back widespread adoption.
- **CO<sub>2</sub> Emissions:** Hydrogen is almost entirely supplied from natural gas and coal today.
- **Hydrogen Storage Challenges:** Storing hydrogen safely, efficiently, and cost-effectively, particularly in vehicles, continues to be a major challenge and focus of ongoing research.
- **Regulatory Barriers:** Regulations currently limit the development of a clean hydrogen industry.

### Recommendations to Scale up Hydrogen

- **Establish a role for hydrogen in long-term energy strategies.** National, regional and city governments can guide future expectations. Companies should also have clear long-term goals.
- **Stimulate commercial demand for clean hydrogen.** Clean hydrogen technologies are available, but costs

remain challenging. Policies that create sustainable markets for clean hydrogen, especially to reduce emissions from fossil fuel-based hydrogen, are needed to underpin investments by suppliers, distributors and users.

- **Support R&D to bring down costs.** Alongside cost reductions from economies of scale, R&D is crucial to lower costs and improve performance, including for fuel cells, hydrogen-based fuels and electrolyzers.
- **Address investment risks of first-movers.** New applications for hydrogen, as well as clean hydrogen supply and infrastructure projects, stand at the riskiest point of the deployment curve. Targeted and time-limited loans, guarantees and other tools can help the private sector to invest, learn and share risks and rewards.

### Conclusion

- Natural hydrogen offers a clean and promising energy alternative, but its widespread use faces challenges like high costs, storage issues, and limited infrastructure. With targeted investments, supportive policies, and R&D, it can play a vital role in the global shift to sustainable energy.

#### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. What are the primary production methods associated with hydrogen energy? Discuss the key challenges associated with integrating hydrogen into the global energy transition. [250 words] [15 marks]

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### PAHALGAM TERROR ATTACK

**Why in News:** On April 22, terror struck Pahalgam (Baisaran Valley). Pakistan-backed attackers stormed a village, asked people their religion, and killed them, resulting in 26 deaths.

#### Key Details

- **Attack on civilians:** This is the first major civilian-targeted terror incident in Kashmir since the abrogation of Article 370 in 2019.
- **Responsible actors:** The Resistance Front (TRF), an affiliate of Lashkar-e-Taiba, claimed responsibility for the attack.

#### Impact of Pahalgam attack

- **Security challenges:** The attacks affect the people's perspective regarding security infrastructure in Kashmir Valley.
- **Tourism:** The recent terror attacks negatively affect tourism prospects of the region along with negatively affecting local businesses reliant on tourism.
- **Communalization risk:** The act of asking religion before killing victims attempts to inflate communal tensions affecting social infrastructure.

#### Baisaran Valley

- Situated around 5 km from Pahalgam, Baisaran stands out as a favored destination for both tourists and trekkers.
- With no motorable access, it can only be reached on foot or by pony, which posed significant challenges during rescue efforts in the recent terror incident.
- Often dubbed 'Mini Switzerland', Baisaran captivates visitors with its lush green meadows, dense pine woods, and breathtaking views of snow-covered mountains, closely mirroring the charm of European landscapes.
- The Pahalgam Development Authority praises its natural beauty and serene surroundings as one of the key attractions of the region.
- The meadow acts as an important base camp for trekkers en route to Tulian Lake, known for its stunning panoramas of Pahalgam and the Lidder Valley.
- Baisaran's scenic charm, featuring sweeping views of the Lidder River, draws tourists throughout the year, whether in the warmth of summer or the snow-clad winter months.

#### India's response

- **Suspension of Indus Water Treaty:** India made a clear statement by suspending the treaty: "Water and blood cannot flow together."
- **The Attari-Wagah border was closed by India.** With immediate effect, the Integrated Check Post Attari was shut down.
- **Trade relations: All bilateral trade between India and Pakistan was also halted.** It prohibited the import of textiles and cement and stopped exporting essential items like onions. Economic relations between the two countries were severely disrupted by this action, which cut off the main land-based trade route.
- **Visa revocation:** India swiftly deported all Pakistanis living in the nation and revoked their visas, demonstrating its strong anti-terrorism stance. Under the SAARC Visa Exemption Scheme (SVES), Pakistani nationals will not be able to enter India.
- **Cultural relations: All performances, screenings, music releases, and cultural exchanges were suspended,** and Pakistani artists were completely prohibited.
- **High commission relations: The defence/military, naval and air advisors in the Pakistani High Commission in New Delhi are declared Persona Non Grata.** The overall strength of the High Commissions will be brought down to 30 from the present 55 through further reductions.

#### Way Forward

- **AI driven threat detection: Using cutting-edge surveillance technologies,** such as AI-driven threat detection, to improve security infrastructure especially in dangerous and high risk regions.
- **International Cooperation: Fortifying counterterrorism alliances with the United States, Saudi Arabia, and European countries** to monitor international terrorist networks and highlighting Pakistani terror infrastructure.
- **Restoring Normalcy: Immediate actions should concentrate on addressing public concerns, promoting tourism, and strengthening security.**
- **De-Radicalization & Community Engagement: Putting in place rehabilitation initiatives for people who have been radicalised. Promoting interfaith discussions** in order to refute extremist propaganda.
- **Economic: To strengthen peace through prosperity, introduce a tourism recovery package** and provide incentives for local business owners.

## Conclusion

India's response to the Pahalgam attack **stood firmly on legal and moral grounds**. History will remember it as a principled and calibrated retaliation, shaped by leadership, ethics, and strategic precision.

## OPERATION SINDOOR

**Why in News:** Operation SINDOOR was designed as a **targeted military operation to eliminate the infrastructure supporting cross-border terrorism** and punish those responsible for the devastating terrorist attack in Pahalgam on April 22, 2025.

### Key Details

- **Nine major terror camps**, including those in Bahawalpur and Muridke, **were located and destroyed** through coordinated air and ground operations after thorough multi-agency intelligence.

### Purpose

- Operation Sindoor was created with the **intention of punishing terrorists and their planners**.
- **Intended to demolish cross-border terror infrastructure**.

### Intelligence and Target Selection

- The team conducted a microscopic examination of the terror landscape.
- Identified a large number of training grounds and terror camps.

### Restraint and Operational Ethics

- **Exercised self-imposed restraint in order to prevent collateral harm**.
- To protect civilians, **only terrorist targets were destroyed**.

### Outcomes of the Attacks

- In the action, **more than 100 terrorists were killed**.
- **In Pakistan, eleven air bases are destroyed**.
- **When Pakistan invaded, the Indian army responded by causing significant damage to the Pakistani intrusion**.

#### High-value targets eliminated include

- Abdul Malik and Yusuf Azhar Ahmad Rauf Mudassir.
- These people **were connected to the Pulwama explosion and the IC-814 hijack**.

### Pakistan's response

- On the evenings of May 7, 8, and 9, **Pakistan used drones and missile attacks against Indian civilian areas and religious infrastructure in a desperate and sinister response**.
- But before they could cause significant damage, India's security forces were alert and ready to intercept and

eliminate a wave of unmanned aerial vehicles and missile threats.

### India's Retaliatory Action

- India destroyed radar facilities close to **Gurjanwala** and carried out retaliatory strikes on radar installations in Lahore.
- On **nine terrorist bases**—four in Pakistan (including Bahawalpur and Muridke) and five in Pakistan-occupied Kashmir (including Muzaffarabad and Kotli)—the Indian Armed Forces carried out precise and well-coordinated missile strikes. **These sites served as important command centres for Lashkar-e-Taiba (LeT) and Jaish-e-Mohammed (JeM)**, which were in charge of significant attacks like Mumbai (2008) and Pulwama (2019).
- **Eleven military installations**, including Noor Khan, Rafiqui, Murid, Sukkur, Sialkot, Pasrur, Chunian, Sargodha, Skardu, Bholari, and Jacobabad, **were targeted by India** in a span of three hours.
- **Major ammunition depots and air bases**, including Sargodha and Bholari, where F-16 and JF-17 fighter jets were based, were the targets of the attack. This led to the **destruction of almost 20% of Pakistan's air force infrastructure**.

### Strategic Significance

- **A New Strategic Red Line:** Operation SINDOOR drew a new red line- **if terror is state policy, it will be met with a visible and forceful response**. This marked a shift from deterrence to direct action.
- **Equal Punishment for Terrorists and Their Sponsors:** India rejected the artificial separation between terrorists and their backers, striking both simultaneously.
- **Exposure of Pakistan's Air Defense Weaknesses:** Indian Air Force bypassed and jammed Pakistan's Chinese-supplied air defense systems, completing the mission in just 23 minutes using Rafale jets, SCALP missiles, and HAMMER bombs, demonstrating India's technological edge.

### Conclusion

Operation SINDOOR marked a decisive shift in India's counter-terrorism strategy—from passive deterrence to active retaliation. By targeting both terrorists and their state sponsors, India reinforced its resolve to safeguard national security and unity. The operation not only delivered a strong military response but also reshaped the strategic narrative on how India confronts cross-border terrorism.

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

Q. Recently, Indian armed forces carried out 'Operation Sindoor' in response to?

- (a) Political instability in India



- (b) Pahalgam terrorist attack
- (c) Israel-Gaza conflict
- (d) None of the above

Answer: (b)

## AIR DEFENCE SYSTEMS

**Why in News:** During Operation Sindoor in May 2025, India's indigenous air defence control system Akashteer played a pivotal role by coordinating a successful interception of a large-scale aerial assault by Pakistan, showcasing the operational strength of homegrown technology.

### Key Details

- The S-400 Triumf system also proved its operational effectiveness by intercepting and destroying incoming missiles and Asisguard Songar drones launched by Pakistan, delivering a rapid and forceful defensive response.

### India's Air Defence Systems

- An Air Defence System refers to an **integrated network of weapons, sensors, command infrastructure, and personnel** designed to detect, track, intercept, and destroy aerial threats such as enemy aircraft, drones, cruise missiles, and ballistic missiles before they can inflict damage.

### Working Mechanism of Air Defence Systems

- Air defence systems operate through a combination of detection, tracking, interception, and neutralization:
  - **Detection:** Utilizing radars and sensors to identify incoming threats.
  - **Tracking:** Monitoring the trajectory and speed of the threat.
  - **Interception:** Deploying missiles or other countermeasures to neutralize the threat before it reaches its target.
  - **Integration:** Systems like Akashteer ensure seamless coordination between various components for efficient threat management.

### Types of Air Defence Systems:

- **Short-Range:** For point defense (e.g., Iron Dome, Akash).
- **Medium-Range:** For area defense (e.g., Barak-8, HQ-16).
- **Long-Range:** For strategic defense (e.g., S-400, THAAD, Project Kusha in development).

### Imported Systems

- **S-400 Triumf (Russia)**
  - The S-400 Triumf is **one of the world's most advanced** long-range surface-to-air missile systems, acquired by India under a \$5.4 billion deal signed with Russia in 2018.

- **Range & Capabilities:** Capable of engaging aerial threats — including aircraft, drones, cruise missiles, and ballistic missiles — at distances up to 400 km and altitudes of 30 km.
- **Radar System:** Equipped with the 91N6E Big Bird acquisition radar and 92N6E Grave Stone engagement radar, which can track up to 100 targets simultaneously.
- **Missile Types:** Uses a mix of four types of missiles (40N6, 48N6, 9M96E2, and 9M96E) to create a layered defence envelope.
- **Role in Operation Sindoor:** Successfully intercepted Songar drones and missile threats from Pakistan, demonstrating strategic value in active combat.
- **SPYDER (Israel)**
  - The SPYDER (Surface-to-air Python and Derby) is a **quick-reaction mobile air defence system** developed by Israel's Rafael Advanced Defense Systems.
  - **Range:** SPYDER-SR has a range of about 15 km, while SPYDER-MR extends up to 35–50 km.
  - **Missile System:** Uses Python-5 (infrared homing) and Derby (active radar homing) missiles.
  - **Deployment:** Widely used by the Indian Air Force to protect high-value assets and fill short-range interception gaps.
  - **Flexibility:** Can engage aircraft, helicopters, UAVs, and precision-guided munitions under all weather conditions.

### Indigenous Systems

- **Akash**
  - The Akash missile system, **developed by DRDO and produced by BEL and BDL**, is India's first indigenously built medium-range surface-to-air missile.
  - **Range & Speed:** Capable of intercepting aerial targets up to 25–30 km at Mach 2.5 speed.
  - **Radar Integration:** Paired with the Rajendra 3D passive electronically scanned array radar for tracking and fire control.
  - **Variants:** Includes Akash Mk-1, Akash-1S with seeker guidance, and Akash-NG with a range up to 70 km and improved maneuverability.
  - **Target Spectrum:** Effective against fighter aircraft, helicopters, drones, cruise missiles, and air-to-surface missiles.
- **Barak-8 (India-Israel Joint Development)**
  - Developed by **DRDO and Israel Aerospace Industries (IAI)**, Barak-8 is a long-range surface-to-air missile (LR-SAM) for both naval and land-based use.
  - **Range:** Varies between 70 to 100 km depending on the variant (Barak-8ER for extended range).

- **Seeker:** Equipped with active radar homing and two-way data link, ensuring high kill probability even against maneuvering targets.
- **Deployment:** Used by Indian Navy (on destroyers and frigates) and Indian Air Force for strategic base protection.
- **Capabilities:** Can intercept stealth aircraft, UAVs, sea-skimming missiles, and other high-speed threats.
- **Akashteer**
  - Akashteer is an **automated command and control system developed by DRDO for the Indian Army's air defence artillery units.**
  - **Functionality:** Integrates sensors (radar), weapon systems (missiles, guns), and communication networks to provide real-time aerial threat detection, tracking, and response.
  - **Operation Mode:** Operates in network-centric warfare environments, managing multiple fire units simultaneously.
  - **Role in Combat:** Played a crucial role in Operation Sindoor by coordinating missile launches that neutralized enemy UAVs and rockets.
  - **Significance:** Enhances reaction speed, threat prioritization, and interoperability among various air defence elements.
- **China**
  - **HQ-9:** Long-range SAM system often compared to the S-300 and Patriot systems. Used for anti-aircraft and anti-cruise missile roles.
  - **HQ-16 & HQ-22:** Medium-range systems designed to intercept aircraft and UAVs with upgraded electronics and radar coverage.
  - **FD-2000:** Export variant of HQ-9; offered as a cost-effective alternative to Western systems. Deployed by countries like Pakistan and Turkmenistan.
  - **HQ-19 & HQ-26 (in development):** Intended for ballistic missile defence, rivaling U.S. THAAD in future performance.
- **Russia**
  - **S-400 Triumf:** One of the most advanced long-range air defence systems globally, capable of engaging targets up to 400 km.
  - **S-300:** Still in use; forms the backbone of many Russian-aligned states' air defence.
  - **S-500 Prometey (under induction):** Designed to neutralize stealth aircraft, hypersonic missiles, and satellites in low Earth orbit; represents the next generation of strategic air defence.

### Future Developments: Project Kusha

Project Kusha is DRDO's ambitious initiative to develop an indigenous long-range surface-to-air missile system with capabilities comparable to the S-400:

- **Multi-Tiered Interceptors:** The system will feature three types of interceptor missiles with ranges of 150 km (M1), 250 km (M2), and 350 km (M3).
- **Advanced Radars:** Equipped with long-range surveillance and fire control radars capable of detecting multiple targets simultaneously.
- **Integration:** Designed to work in conjunction with existing systems like Akash and the S-400, providing a comprehensive air defence shield.

### Global Air Defence Powers: A Comparative Overview

- **United States**
  - **Patriot Missile System (PAC-3):** A long-range surface-to-air missile (SAM) system designed to counter tactical ballistic missiles, cruise missiles, and aircraft. Widely exported and battle-tested.
  - **THAAD (Terminal High Altitude Area Defense):** Designed to intercept ballistic missiles during their terminal phase using hit-to-kill technology.
  - **Aegis Combat System:** A naval-based missile defence system with SM-3 and SM-6 missiles, providing long-range and sea-based ballistic missile interception.

### Conclusion

- India's focus on developing indigenous air defence systems like Akashteer and Project Kusha signifies a strategic shift towards self-reliance in defence technology. These advancements not only enhance national security but also position India as a significant player in global defence capabilities.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

"India's air defence strategy is evolving from dependence on foreign platforms to indigenous, integrated and multi-layered systems." Discuss the current status of India's air defence capabilities, highlighting key indigenous developments, imported systems, and future strategic initiatives like Project Kusha. [250 words | 15 marks]

## DRONE WARFARE

**Why in News:** In May 2025, India and Pakistan engaged in their first large-scale drone warfare during border skirmishes, marking a significant shift in South Asian military dynamics. This event underscored the growing importance of Unmanned Aerial Vehicles (UAVs) in modern combat and highlighted the need for robust counter-drone technologies.

### Types of Drones in Modern Warfare

- **Surveillance and Reconnaissance Drones:** Used for real-time intelligence gathering, border monitoring, and battlefield assessment. Examples include India's Heron

and Rustom-II drones. Equipped with HD cameras, infrared sensors, and night vision to aid 24x7 monitoring.

- **Combat Drones / UCAVs (Unmanned Combat Aerial Vehicles):** Capable of carrying and deploying missiles or bombs without an onboard pilot. India is acquiring MQ-9B SeaGuardian/Reaper drones from the U.S. for long-range strike capability.
- **Swarm Drones:** Multiple autonomous drones coordinated to saturate enemy defences or confuse radar systems. Used in offensive assaults, electronic jamming, or decoy missions. Often AI-powered, mimicking biological swarm behaviour.

- **FPV (First Person View) Drones:** Operated using real-time video feed, giving operators a cockpit-like view. Employed in close-quarter attacks, especially effective in urban or trench warfare. India's Defence Research Wing recently inducted indigenous FPV drones for infantry use.
- **AI-Enabled Drones:** Capable of autonomous decision-making, target identification, and precision attacks without direct human control. Ukraine has pioneered AI-drones for autonomous missions against tanks and bunkers.

## Advantages of Drone-Based Warfare

- 1** **Cost-Effective Operations:** Drones are cheaper to manufacture and deploy than fighter jets or helicopters. They minimize logistical costs and allow wider surveillance coverage.
- 2** **Minimized Human Risk:** As they are unmanned, drones eliminate the danger to pilots in hostile environments. Particularly useful in disputed areas or contested zones like LoC and LAC.
- 3** **Enhanced Tactical Precision:** Drones can loiter over targets, offering more time to confirm enemy positions before striking. Useful in targeted assassinations, surgical strikes, and infrastructure sabotage.
- 4** **Real-Time Data and Decision Support:** Live data from surveillance drones aids faster, more informed decisions by command centers. Increases operational responsiveness and coordination.
- 5** **Adaptability in Varied Terrain:** Drones can operate in mountains, deserts, oceans, and urban zones, making them ideal for India's varied geographies.

## Challenges and Threats from Drones

- 1** **Electronic Warfare Vulnerabilities:** Drones can be jammed, spoofed, or even hijacked via cyber warfare tools. Enemies can exploit unsecured communication channels or GPS links.
- 2** **Low Radar Visibility:** Small commercial drones are hard to detect on conventional military radars. Their low flight altitude helps them evade most surface-to-air missile systems.
- 3** **Weaponization by Non-State Actors:** Cheap drones can be armed with explosives by terrorists or insurgent groups. Used in cross-border smuggling, reconnaissance, or coordinated attacks (as seen on Indian borders).
- 4** **Legal and Ethical Dilemmas:** AI-enabled drones raise questions about autonomous lethal decisions. Challenges in accountability, international law compliance, and potential for civilian casualties.
- 5** **Drone Dependency Risks:** Over Reliance on UAVs might undermine traditional intelligence methods and create strategic blind spots in jamming-heavy warfare.

## India's Innovations and Capabilities in Drone Technology

- **Indrajaal System:** Developed by Grene Robotics in Hyderabad, the Indrajaal System is an AI-powered drone defense grid capable of protecting up to 4,000 sq. km. It combines optical, RF, and radar sensors with jammers and spoofers to detect, disrupt, and mislead hostile drones. Designed for critical infrastructure and military installations, it provides wide-area, autonomous airspace security.
- **Bhargavastra Micro-Missile System:** Bhargavastra is India's first indigenous micro-missile counter-drone system. It can neutralize small UAVs up to 5 km high using mobile launchers, proximity warheads, and precision infrared and radar guidance. It offers a compact and effective solution against low-flying drone threats.
- **Indigenous FPV Drones:** Developed by the Indian Army, these First-Person View drones are used in close-combat and urban warfare scenarios. They enhance surveillance and situational awareness in forward areas, particularly in counter-insurgency operations.
- **Rustom-II / TAPAS:** Rustom-II (TAPAS) is a Medium-Altitude Long-Endurance UAV under development for surveillance and limited strike roles. Once operational, it will serve as India's key indigenous ISR platform, reducing dependence on imports.
- **MQ-9B Predator Acquisition:** India is acquiring 31 MQ-9B drones from the U.S. for tri-service use. With 36-hour endurance, satellite control, and precision strike capability, these armed drones will enhance India's long-range surveillance and combat capabilities, especially over maritime and border regions.

### Global Landscape: Where Does India Stand?

- **USA:** The United States leads in Unmanned Combat Aerial Vehicles (UCAVs) and long-range ISR (Intelligence, Surveillance, Reconnaissance) platforms with advanced systems like the **MQ-9 Reaper** and **Global Hawk**, known for their global strike and surveillance capabilities.
- **China:** China is a major manufacturer and exporter of drones, offering cost-competitive systems like the **Wing Loong II** and **CH-5**, which are widely adopted in Asia, Africa, and the Middle East. These platforms are noted for their range, payload capacity, and affordability.
- **Turkey:** Turkey has rapidly emerged as a drone power through its **Bayraktar TB2**, which has seen successful combat use in Libya, Syria, Nagorno-Karabakh, and Ukraine. Its drones are cost-effective, easy to operate, and have become a preferred choice for several countries with limited defence budgets.
- **Russia:** Russia, while traditionally strong in conventional warfare, has been playing catch-up in autonomous drone technologies. However, it has fielded several platforms during the Ukraine war, including the **Orion UAV**, capable of ISR and light attack roles, and **Lancet loitering munitions**, which are used for precision kamikaze-style strikes. Despite limited autonomy and export appeal compared to U.S. or Turkish systems, Russia's **emphasis on tactical drones and loitering**

**munitions** has grown significantly, especially in contested airspace scenarios.

- **Iran:** Iran has gained notoriety for developing low-cost, long-range drones like the **Shahed-136** and **Mohajer-6**, used extensively in asymmetric and proxy warfare. These drones are typically loitering munitions (also known as "kamikaze drones") and have been exported to state and non-state actors, including use in the Ukraine conflict.

## Conclusion

- Drone warfare has **transformed the dynamics of 21st-century conflicts**. India's engagement in Operation Sindoor, the deployment of indigenous FPV drones, and the development of integrated defense systems like Indrajaal and Bhargavastra indicate a strategic shift in India's military doctrine. While global players continue to push the limits with AI and swarming drones, India is bridging the gap through innovation, collaborations, and focused policy initiatives.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. The rise of unmanned aerial vehicles (UAVs) and drone warfare is redefining the nature of modern conflict. Discuss the strategic, operational, and ethical implications of drone technology in warfare, with special reference to India's preparedness and recent innovations. [250 words | 15 marks]

## BRAHMOS MISSILE

**Why in News:** The BrahMos missile was reportedly used in **Operation Sindoor**, targeting Pakistani air bases.

### About BrahMos Missile

- The BrahMos is a **medium-range ramjet supersonic cruise missile** that can be launched from submarines, ships, aircraft, or land. It is the fastest cruise missile in the world
- BRAHMOS is a **two-stage missile** with a solid propellant booster engine as its first stage, which brings it to supersonic speed and then gets separated.
  - The liquid ramjet or the second stage then takes the missile closer to 3 Mach speed in the cruise phase.
- **Stealth technology and guidance system** with advanced embedded software provides the missile with special features.
- **Range:** The missile has a flight range of up to **290 km with supersonic speed** all through the flight, leading to shorter flight time, consequently ensuring lower dispersion of targets, quicker engagement time and non-interception by any known weapon system in the world.



- It operates on the '**Fire and Forget Principle**', adopting a variety of flights on its way to the target.
- Its destructive power is enhanced due to the **large kinetic energy on impact**. Its cruising altitude could be up to 15 km, and terminal altitude is as low as 10 meters.
- It carries a **conventional warhead weighing 200 to 300 kg**.
- **Compared to existing state-of-the-art subsonic cruise missiles, BRAHMOS has:**
  - 3 times more velocity
  - 2.5 to 3 times more flight range
  - 3 to 4 times more seeker range
  - 9 times more kinetic energy
- The missile has an identical configuration for land, sea and sub-sea platforms and uses a Transport Launch Canister (TLC) for transportation, storage and launch.
- **Status**
  - BRAHMOS is the **first supersonic cruise missile known to be in service**. Induction of the first version of the BRAHMOS Weapon Complex in the Indian Navy commenced in 2005.
  - The Indian Army has also inducted many BRAHMOS regiments since 2007.
  - The IAF has successfully inducted the BRAHMOS Air Launched Cruise Missile system armed with Sukhoi-30MKI frontline fighter aircraft.
- **In Service**
  - Ship-based Weapon Complex (Inclined & Vertical Configuration)
  - Land-based Weapon Complex (Vertical Launch Configuration from Mobile Autonomous Launcher)
  - Air Launched Version (Integrated on Su-30MKI fighter aircraft)
- **Joint Venture**
  - BrahMos Aerospace was formed as a **joint venture** between the Defence Research and Development Organisation (DRDO) of India and the Joint Stock Company "Military Industrial Consortium" "NPO Mashinostroyeniya" (earlier known as Federal State Unitary Enterprise NPOM of Russia).
  - The company was established in India through an intergovernmental agreement signed on February 12, 1998, between the Republic of India and the Russian Federation.
  - BrahMos - the name represents the fury of the **Brahmaputra** and the grace of the **Moskva** rivers.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. Consider the following statements regarding the BrahMos missile:

1. It is a supersonic medium-range ballistic missile with a flight range up to 290 km.
2. It can be launched from land, sea and air.

Which of the statements above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

(b) Answer

## CYBER WARFARE

**Why in News:** In the wake of Operation Sindoor, launched in May 2025 as a response to the Pahalgam terror attack, India faced a significant surge in cyber threats.

### Understanding Cyber Warfare

- Cyber warfare involves the **use of digital attacks by one nation to disrupt the vital computer systems of another**, aiming to create damage, death, or destruction.
- Unlike traditional warfare, cyber warfare is characterized by its **stealth, anonymity, and the difficulty of attribution**.
- It encompasses activities such as **hacking, spreading malware, and launching denial-of-service attacks** to compromise critical infrastructure, steal sensitive data, or sow misinformation.

### Key Characteristics of Cyber Warfare

- **Asymmetric Tool:** Allows smaller states or non-state actors to challenge stronger nations without traditional military force.
- **Low Attribution:** Cyberattacks are difficult to trace, making accountability and retaliation complex.
- **Non-Kinetic & Stealthy:** Operates without physical destruction; attacks are silent, fast, and often undetected until damage is done.
- **Wide Target Spectrum:** Affects not just military systems but also civilian sectors like health, power, banking, and media.
- **Global & Remote:** Attacks can originate from anywhere, transcending geographical borders and reaching global targets.
- **Information Disruption:** Includes misinformation, propaganda, and psychological operations aimed at destabilizing societies.

## India's Position and Preparations

India has been increasingly focusing on strengthening its cyber capabilities to counter emerging threats:

- **Cyber Commandos Training:** The government has initiated a program to train 5,000 cyber commandos over the next five years. These specialists will be embedded across agencies like the CBI, NIA, and state police forces, enhancing capabilities in digital forensics, cyber fraud detection, and network monitoring.
- **Educational Collaborations:** Institutions like the Officers Training Academy (OTA) in Chennai have partnered with SRM Institute of Science and Technology to offer diploma programs in Information Technology and Cyber Security, aiming to equip military personnel with advanced cyber skills.
- **Infrastructure Development:** The establishment of research and development centers, such as the one in Patna in collaboration with CDAC, focuses on advancing cyber security and forensics, providing a platform for innovation and professional training.
- **Policy and Governance:** The Indian government has been proactive in formulating policies to enhance cyber security, including the development of centralized frameworks for real-time threat intelligence sharing and standardized protocols for critical infrastructure protection.

### Major Cyber attacks in India – A Snapshot

- **AIIMS Delhi Ransomware Attack (2022):** Paralyzed patient services and data access for over two weeks; attackers demanded a major crypto ransom, exposing healthcare cyber vulnerabilities.
- **Mumbai Power Grid Outage (2020):** Massive blackout suspected to be a cyberattack by Chinese groups amid border tensions; highlighted vulnerabilities in critical energy infrastructure.
- **Kudankulam Nuclear Plant Malware (2019):** Malware linked to North Korea's Lazarus Group found in a non-critical system; raised concerns over cybersecurity in nuclear facilities.

## Conclusion

- The increasing prevalence of cyber warfare necessitates a comprehensive and proactive approach to national security. India's initiatives in training specialized personnel, enhancing infrastructure, and fostering international collaborations signify a commitment to bolstering its cyber defence capabilities. However, continuous investment, policy development, and global cooperation remain essential to effectively counter the evolving cyber threats in the modern digital landscape.

## EXPECTED QUESTION FOR UPSC CSE

### Prelims MCQ

Q. With reference to cyber warfare, consider the following statements:

1. Cyber warfare is always initiated by state actors and involves physical infrastructure damage.
2. Attribution of cyberattacks to a specific source is often difficult.
3. Cyber warfare targets only military installations and classified defense systems.
4. Disinformation campaigns and psychological operations are also considered tools of cyber warfare.

Which of the statements given above are correct?

- (a) 2 and 4 only                      (b) 1 and 3 only  
(c) 2, 3 and 4 only                (d) 1, 2 and 4 only

Answer: (a)

## TERRITORIAL ARMY

**Why in News:** The defence ministry has empowered the Army chief to activate 14 of the 32 infantry battalions of the Territorial Army (TA) for deployment across the country till February 2028.

### About Territorial Army (TA)

- The Territorial Army (TA) is a **part of the Regular Army in India, designed to relieve the Regular Army from static duties and assist civil administration** during natural calamities, maintenance of essential services, or when the country's security is threatened. It is often **referred to as a Citizen's Army**.

### Role and Objectives

- **Relieving the Regular Army:** To free up Regular Army personnel from static duties.
- **Assisting Civil Administration:** This includes responding to:
  - Natural calamities (e.g. earthquakes, cyclones).
  - Situations affecting the maintenance of essential services.
  - Situations where the security of the Country is threatened.
- Providing units for the Regular Army as and when required.
- **Environmental Protection:** The Ecological units actively work on the development, preservation, maintenance of ecological balance, and afforestation in difficult areas.





## WHO ADOPTS HISTORIC GLOBAL PANDEMIC AGREEMENT

**Why in News:** In a landmark move aimed at building a **stronger, safer, and fairer world** in the face of future health crises, the **World Health Organization (WHO)** member states have **unanimously adopted the world's first-ever Pandemic Agreement**.

### Key Details

- This historic decision was made during the **78th World Health Assembly**, WHO's highest decision-making body, **held in Geneva**.
- This global pact marks the **culmination of over three years of intense negotiations**, initiated after the devastating impact of the **COVID-19 pandemic**.
- It represents a unified effort by countries to avoid repeating past mistakes and to strengthen the world's ability to respond quickly, fairly, and effectively to future pandemics.
- The final agreement was officially adopted in a **plenary session** of the World Health Assembly, after it was first **approved by Committee on Monday** with overwhelming support — **124 countries voted in favour, none opposed, and 11 abstained**.
- Describing the agreement as a major achievement, **WHO Director-General Dr. Tedros Adhanom Ghebreyesus** said:

**"The world is safer today thanks to the leadership, collaboration, and commitment of our Member States to adopt the historic WHO Pandemic Agreement. It is a victory for public health, science, and multilateral action."**

### Why This Agreement Matters

The adoption of the **WHO Pandemic Agreement** is a direct response to the global suffering and inequalities exposed during the COVID-19 crisis. Its primary goal is to ensure that the **world is better prepared and more united** in the face of future pandemic threats.

### Key objectives of the agreement include

- **Strengthening international cooperation and coordination** during health emergencies
- **Ensuring fair and timely access to vaccines, medicines, and diagnostics**, especially for low- and middle-income countries

- **Enhancing preparedness and prevention efforts** at global, national, and local levels
- Promoting **data sharing, surveillance**, and early warning systems
- Improving **health system resilience and workforce training**

This agreement reinforces the idea that **no country can face a pandemic alone, and that a collective global response** is essential to prevent widespread suffering, economic losses, and health system collapse.

### Focus on Equity and Justice

- One of the most important aspects of the agreement is its **strong focus on equity**.
- During the COVID-19 pandemic, many countries — especially in the Global South — faced severe delays and shortages in accessing life-saving vaccines and medicines.
- The new Pandemic Agreement seeks to change that by establishing mechanisms to ensure that **all countries, regardless of income level, have equal access to essential health tools**.
- This reflects a growing consensus that **health security must be a shared responsibility, and that equity is central to global preparedness**.

### Way Forward

While the adoption of the Pandemic Agreement is a major step forward, its real impact will depend on **how well countries implement its provisions**. **Moving forward, governments will need to:**

- **Integrate the agreement's principles into national health policies**
- **Invest in health infrastructure and workforce**
- **Support international collaboration** through funding, technical assistance, and political will

The WHO will continue to play a central role in **coordinating global efforts, monitoring progress, and supporting countries** in building stronger health systems.

### Conclusion

The **WHO Pandemic Agreement** is a historic commitment by the global community to learn from past experiences and prepare more wisely for the future. It shows that the world can come together in the spirit of **multilateralism, solidarity, and shared responsibility**.

### In the words of Dr. Tedros:

“Our societies, economies, and lives must never again be so vulnerable. This agreement is a vital step toward a future where pandemics are better managed and human suffering is reduced.”

With this global pact in place, the world takes a **critical step toward a future that is safer, more equitable, and more resilient** in the face of health emergencies.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

Q. The adoption of the WHO Pandemic Agreement marks a watershed moment in global health governance. Critically examine the objectives and key features of this agreement. What challenges may arise in its implementation, and how can India align its health diplomacy to leverage this global initiative? [250 words | 15 marks]

## PRECONCEPTION HEALTH

**Why in News:** This article is based on insights presented in an editorial featured in *The Hindu* newspaper.

### Introduction

- In nearly **four decades of medical practice**, one thing has remained painfully clear — **too many women in India begin their pregnancy journey already suffering from undiagnosed anaemia**. We often talk about **maternal health** only during **pregnancy and childbirth**, but the real foundation for a healthy pregnancy is laid **much earlier — before conception**.
- Today, over **57% of Indian women in their reproductive years (15–49 years)** suffer from **anaemia**, yet most of them don't even know it. They live with **tiredness, dizziness, and weakness**, but these signs are **ignored as normal**. When they become pregnant, their **low haemoglobin levels** increase the risk of serious complications like:
  - **Preterm birth**
  - **Low birth weight**
  - **Preeclampsia**
  - **Post-partum hemorrhage (severe bleeding after delivery)**

All these conditions can lead to **maternal and infant deaths**, or long-term health issues for both mother and child.

#### Current Status

India has made progress. The **Maternal Mortality Ratio (MMR)** has reduced to **93 per 1,00,000 live births**. But to go further and meet the **Sustainable Development Goals (SDGs)**, we must **change how we think**. We can't wait until pregnancy to act — we need to focus on **preconception health**.

Instead of only asking, “**Are you ready to be a mother?**”, we should also ask, “**Is your body ready for pregnancy?**”

### Limitations of Current Anaemia Treatment

- For many years, the main strategy to tackle anaemia has been **oral Iron-Folic Acid (IFA) tablets**. These tablets do help, but they also come with **side effects** like:
  - **Nausea**
  - **Constipation**
  - **Diarrhoea**
  - **Poor absorption of iron**
- Because of these side effects, many women **stop taking the tablets**, or they don't take them regularly. For women who have had anaemia for a long time, **pregnancy alone is too short a window** to correct the deficiency with just oral tablets.
- As a result, not only does the **mother remain weak**, but the **baby also does not get enough iron**, which affects **brain development and growth**.

### A Better Option (IV Iron Treatment)

To address **moderate to severe anaemia**, a better and faster solution is available: **Intravenous Ferric Carboxymaltose (IV FCM)**. This treatment:

- **Delivers iron directly into the bloodstream**
- **Restores haemoglobin levels quickly**
- **Bypasses digestion**, so it works even when absorption is a problem
- **Is not affected by hepcidin**, a hormone that blocks oral iron absorption

**Note:** IV FCM can be a **life-changing intervention**, especially for women with long-standing or severe anaemia.

#### Other Hidden Deficiencies

Many people think anaemia is only due to low iron, but there are **other important deficiencies** too:

- **Vitamin B12 Deficiency:**
  - Found in nearly **49% of reproductive-age women** in India
  - Affects **red blood cell production and brain function**
  - Can lead to **birth defects** if untreated
- **Thyroid Disorders:**
  - Conditions like **hypothyroidism** or **hyperthyroidism** can **worsen anaemia**
  - Also harm **foetal brain development**
- **Gestational Diabetes:**
  - Often goes **undiagnosed until late in pregnancy**
  - Can cause **complications** for both mother and baby

To truly prevent complications, doctors should **screen women for these issues even before they conceive**. A **combination of injectable Vitamin B12, folate, and IV iron** is ideal for tackling **refractory anaemia** (anaemia that doesn't respond to basic treatment).



## Role of Community and Families

Changing our approach from just treating anaemia during pregnancy to **preventing it before pregnancy** requires **community support**.

- Families must encourage **young women to get preconception check-ups**
- **ASHA workers and Anganwadi staff** should include **pre-pregnancy health education** in their routine work
- Community health programmes should treat **preconception care as essential**, just like antenatal care

## A Collective Responsibility

Improving **maternal health** is not only the doctor's job — it is a **shared responsibility** of:

- **Families**
- **Healthcare providers**
- **Policymakers**
- **Local communities**

By failing to detect and treat anaemia **before pregnancy**, we not only risk the **lives of mothers** but also **limit the future potential of their children**.

## The Way Forward

- Make **preconception health check-ups** as normal as pregnancy tests
- Encourage **use of IV FCM** where needed for faster recovery from anaemia
- Add **Vitamin B12, folate, thyroid, and sugar tests** to pre-pregnancy screening
- Improve **adherence to oral IFA** by changing dosing patterns (e.g., **alternate days** or **twice a week** to reduce side effects)
- Empower **ASHA and Anganwadi workers** with tools and training to spread awareness

## Conclusion

- No woman should begin pregnancy while anaemic. No woman should go through pregnancy without proper care for **iron, Vitamin B12, thyroid, or sugar levels**. And no woman should come out of childbirth **weaker than when she entered it**. Ensuring good **preconception health is not optional** — it is **essential, urgent, and transformative**. If we want our future children to be **smarter and healthier**, we must begin by making sure their **mothers are healthy even before they conceive**.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

Q. Anaemia among women of reproductive age in India is not just a health issue, but a societal failure that begins long before pregnancy. Critically examine the statement in the context of India's maternal health policies. Suggest a roadmap for integrating preconception care into existing maternal and child health programmes. [250 words | 15 marks]

## TACKLING ADOLESCENT OBESITY IN INDIA

**Why in News:** This article is based on the **perspectives presented** in an article published in **The Hindu** newspaper.

### Introduction

- India is witnessing a growing concern around adolescent obesity. The issue has entered public and policy discussions with more urgency in recent months. The seventh edition of **Poshan Pakhwada**, held last month, placed a special focus on childhood and adolescent obesity, along with the first 1,000 days of life.
- Simultaneously, the **'Let's Fix Our Food'** initiative, led by the **Indian Council of Medical Research (ICMR), Public Health Foundation of India, UNICEF India, and others**, released policy briefs urging the creation of healthier food environments for adolescents.
- In a significant step, the Supreme Court recently gave the Central government a **strict three-month deadline** to finalise clear and transparent food labelling rules. These developments reflect the nation's growing awareness about the nutrition crisis among its youth.

### A Troubling Nutrition Paradox

- Adolescence is a period of rapid physical and mental growth, laying the foundation for future health and productivity. **However, Indian adolescents today face a unique paradox: they suffer both from undernutrition and rising obesity**. Malnutrition remains a major issue in many regions, yet obesity and related lifestyle diseases are also on the rise.
- According to the **World Obesity Atlas 2024**, India is experiencing one of the steepest annual increases in childhood obesity globally. **The Comprehensive National Nutrition Survey has revealed that over 5% of Indian adolescents are either overweight or obese, with some states reporting even higher figures (10-15%)**. Considering that adolescents make up about 20% of India's population, this is a serious public health concern.

### What Is Driving the Obesity Epidemic?

- One of the key reasons for this surge in obesity is the **easy access to unhealthy, ultra-processed foods**. These foods, often high in **fat, sugar, and salt**, are aggressively marketed to young people through television, social media, and even within schools. **These products are often more convenient and widely available than healthy alternatives**.
- Adolescents, being at a vulnerable and impressionable age, are heavily influenced by peer pressure, advertisements, and social trends. **While it may seem like they have many food choices, truly healthy options are often limited, unaffordable, or unattractive in comparison**. This unhealthy shift in dietary patterns is leading to long-term consequences like obesity, diabetes, and heart disease.

## The Impact Beyond Health

- Poor nutrition doesn't just affect physical health; it also influences mental well-being, academic performance, and future productivity. Adolescents with poor diets often face difficulties in concentrating, learning, and attending school regularly. Nutrition, therefore, is not just a health issue but an educational and economic one as well.

## What Needs to Be Done? A Two-Pronged Approach

To effectively address this crisis, India must adopt a two-pronged approach:

- **Stronger Regulations**
  - Enforce clear front-of-pack nutrition labels to help consumers make informed choices.
  - **Impose a health tax on high fat, sugar, and salt (HFSS) foods, especially sugary beverages.**
  - Regulate and restrict advertisements that target children, especially on digital platforms and in schools.
- **Empowering Adolescents**
  - **Strengthen nutrition education in schools to help children make informed food choices.**
  - Introduce food literacy as a life skill to teach adolescents how to identify, prepare, and choose nutritious foods.
  - Encourage physical activity through improved access to playgrounds and sports infrastructure.

## The Role of Schools and Communities

- Schools are central to shaping the eating habits of young people. **They should ensure that only nutritious food is available on campus, include regular nutrition and health education in the curriculum, and promote physical activity.** Community awareness programmes can further spread the message and encourage families to adopt healthy practices at home.

## Need for Unified Action

- Currently, several ministries such as Health, Women and Child Development, Education, Consumer Affairs, and Agriculture are working on different aspects of nutrition. But without proper coordination, their efforts remain fragmented. **Programmes like Poshan Abhiyaan provide a framework for joint action, but more convergence and collaboration are needed for real impact.**

## Conclusion

Adolescent obesity is not just a medical issue; it is a social, economic, and developmental challenge. To build a healthier India, we must transform our food environments through better policies, education, and collective responsibility. Healthy food must be made accessible, affordable, and aspirational. Only then can we ensure that the young generation grows up strong, healthy, and ready to lead the nation towards a brighter future.

## EXPECTED QUESTION FOR UPSC CSE

### Descriptive Question

- Q. Adolescent obesity is emerging as a serious public health concern in India. Discuss the causes and consequences of this trend. Suggest a comprehensive strategy to address this challenge, especially in the context of food environments and youth empowerment. [250 words | 15 marks]

## REPORT CARD 19: CHILD WELLBEING IN AN UNPREDICTABLE WORLD

**Why in News:** Children in many of the world's wealthiest and developed countries saw a marked decline in their academic performance, mental wellbeing, and physical health in the period since the start of the COVID-19 pandemic, according to a **new report by UNICEF.**

### Key Areas of Decline

- **Academic Performance and Skills**
  - **Learning Losses:** Many countries experienced sharp declines in children's academic skills, especially in foundational abilities like reading and mathematics, due to school shutdowns lasting between three and 12 months, which forced remote learning.
  - **Magnitude of Setbacks:** Children are estimated to be between seven months and one year behind academically on average.
  - **Disadvantaged Families:** These setbacks were most severe for children from disadvantaged families.
  - **Functional Literacy and Numeracy:** An estimated 8 million 15-year-olds across the 43 countries (around half of the age group) were assessed as not functionally literate and numerate, meaning they could not understand a basic text. This represents a 4% increase since 2018.
- **Mental Wellbeing**
  - **Life Satisfaction Decline:** Children's life satisfaction suffered, declining substantially in 14 of 32 countries with available data.
  - **Japan's Improvement:** Japan was the only country to see a marked improvement in this area.
  - **Youth Perspectives:** Young people reported feeling "mentally overwhelmed" and "not satisfied," often due to setting high goals.
- **Physical Health**
  - **Rising Overweight Levels:** Levels of overweight increased substantially in 14 out of 43 countries with available data, continuing a long-term trend.
  - Unhealthy Food Environment



**Top Performing Countries:** The Netherlands and Denmark retained their rankings as the top two places to be a child, based on measures of mental wellbeing, physical health, and skills, followed by France.

**United Nations International Children’s Emergency Fund (UNICEF)**

- The United Nations International Children’s Emergency Fund (UNICEF) was **founded in 1946, shortly after World War II**, with the aim of supporting children and youth whose lives and futures were endangered, regardless of their country’s involvement in the war.
- Today, UNICEF **operates in over 190 countries and territories**, working to safeguard and promote the rights of every child.
- Its operations are entirely **funded through voluntary contributions from individuals**, governments, civil society organizations, and private sector partners.
- UNICEF has been recognized globally for its work, receiving prestigious honors such as the **Nobel Peace Prize (1965), the Indira Gandhi Prize (1989), and the Princess of Asturias Award (2006)**.

**Way Forward: Recommendations in the Report**

- **Skills Development:** Support the development of essential skills, including numeracy, literacy, and digital skills, as well as social and emotional competencies, particularly for children who fell behind during the pandemic and those from disadvantaged backgrounds.
- **Mental Health Improvement:** Enhance mental health through promotion and prevention initiatives, providing specialist services, and tackling violence and bullying, both online and offline.
- **Physical Health Improvement:** Improve children’s physical health by ensuring access to nutritious food and limiting the marketing and promotion of unhealthy food.
- **Child Engagement:** Engage children to better understand their experiences and views, and work collaboratively with them to find solutions that promote their well-being.

**Conclusion**

- There is a need for a “coherent, holistic, whole-of-childhood approach” to address children’s needs at every stage of their lives, especially given the challenges faced by children from disadvantaged backgrounds.

**EXPECTED QUESTION FOR UPSC CSE**

**Prelims MCQ**

Q. The report ‘Report Card 19: Child Wellbeing in an Unpredictable World’ is released by which of the following?

- (a) UNESCO
- (b) UNICEF
- (c) WHO
- (d) Save the Children

Answer: (b)

**ADOLESCENT HEALTH AND WELLBEING**

**Why in News:** A recent report from **The Second Lancet Commission on Adolescent Health and Wellbeing** has raised a powerful alarm about the future of the world’s adolescents.

**Key Observations**

While some progress has been made in the past few years, the Commission warns that **without urgent and increased investment, by the year 2030, at least half of the world’s adolescents — around 1 billion young people — will be living in “multi-burden countries”**. These are countries facing **multiple and overlapping health challenges**, including malnutrition, non-communicable diseases, mental health issues, and a lack of access to proper healthcare and education.

**Startling Projections for 2030**

The Commission estimates that **by 2030**

- **464 million adolescents will be overweight**, reflecting growing concerns over poor diets and lack of physical activity.
- **42 million years of healthy life will be lost globally due to mental health disorders and suicide**- a powerful reminder of how mental health issues are silently affecting millions of young people.
- These projections highlight how serious the situation could become unless **governments and international organisations step up their efforts** to improve adolescent health.

**A Disproportionate Share of Health Funding**

- One of the key messages from the Commission is that **current funding for adolescent health is far too low**, considering the size of the adolescent population and the scale of their health needs.
- Between **2016 and 2021, only 2.4% of all global development assistance for health** was specifically allocated to adolescents, even though they make up **over 25% of the world’s population**.
- This mismatch between need and funding could have serious long-term consequences for **global development, equity, and peace**.

**A Global Voice for Adolescents**

The Lancet Commission was launched in **2021** and included:

- **44 commissioners** from various fields,
- **10 youth commissioners** to represent adolescent perspectives,
- and **122 adolescents** from around the world who participated in **Youth Solution Labs** to offer grassroots solutions.

This inclusive approach reflects a growing recognition that **young people must be involved in shaping the policies that affect their futures.**

### Some Gains, but Challenges Remain

Dr. Tedros Adhanom Ghebreyesus, Director-General of the **World Health Organization (WHO)**, contributed an article to *The Lancet* highlighting some important progress over the past 20 years:

- **Adolescent mortality has dropped by 27%**, thanks to improvements in nutrition, a reduction in infectious diseases, and **better access to education — particularly for girls.**
- These gains are essential steps toward **gender equality** and **better life outcomes** for young people.
- However, the report stresses that these gains will be **insufficient unless backed by targeted and long-term investments** in adolescent health and wellbeing.

#### The Largest Generation in History

Today, there are about **2 billion adolescents globally**, making up around **24% of the world's total population.** According to projections:

- **By 2100, 46% of all adolescents will live in Africa, and**
- **85% will live in either Africa or Asia.**

This demographic shift makes it essential for **governments in these regions to develop robust health, education, and social policies** to support their rapidly growing youth populations.

#### Growing Up in Conflict Zones

Another worrying trend is the rise in the number of young people living in **conflict-affected areas.** Since the 1990s, this number has more than **doubled**, and today, **around 340 million adolescents live in conflict zones**, where access to healthcare, education, and protection is often limited or non-existent.

### Digital Natives Facing New Challenges

This generation of adolescents is also the **first truly digital generation.** The report calls them the **“first global generation of digital natives”.**

- Globally, **79% of people aged 15–24 use the Internet.**
- In high-income and upper-middle-income countries, more than **95% of adolescents are online.**

While digital connectivity opens up opportunities for learning and global communication, it also brings risks like **cyberbullying, misinformation, harmful online content, and mental health issues** linked to excessive or unhealthy social media use.

### What Needs to Be Done?

The report calls for the creation of **supportive laws and**

**policies** that protect and promote adolescent health and wellbeing. These should aim to:

- **Protect sexual and reproductive health and rights,**
- **Regulate commercial factors that harm health,** such as unhealthy food marketing and addictive technologies,
- **Promote safe and healthy use of social media and online spaces.**

Such frameworks can create an environment where adolescents can thrive — physically, mentally, and socially.

### Conclusion

The message from the **Second Lancet Commission** is loud and clear: **The world cannot afford to neglect its adolescents.** Investing in their health, education, safety, and digital wellbeing is not just a moral responsibility — it is a strategic priority for the future of humanity.

If we act now, we can ensure that this **largest generation of adolescents in human history** grows into healthy, empowered adults who can shape a brighter, more equitable world for all.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

- Q. Despite constituting a quarter of the global population, adolescents receive a disproportionately low share of global health investments. In light of the findings of the Second Lancet Commission on Adolescent Health and Wellbeing, discuss the challenges faced by adolescents globally and suggest measures to ensure their holistic development. [250 words | 15 marks]

## WOMEN IN COOPERATIVES

**Why in News:** A recent article in The Indian Express highlighted the urgent need to place women at the forefront of India's growing cooperative movement, especially in light of the upcoming International Year of Cooperatives in 2025.

### What are co-operative societies?

- A cooperative society, as opposed to profit-driven businesses, is a **voluntary, member-owned organisation created to address shared economic, social, and cultural needs through self-help, mutual aid, and community welfare.**
- The earliest types of chit funds, **kuries and bhisnis**, which had their origins in Kolhapur, Maharashtra, and the Malabar region of Kerala, relied heavily on women.
- Since the **Cooperative Credit Societies Act** was passed in pre-independence India in **1904**, cooperatives have had a formal history that spans more than a century.



### Key Initiatives

- The United Nations has declared **2025 the International Year of Cooperatives**: Theme – “Cooperatives Build a Better World”.
- The creation of the **Ministry of Cooperation** was in 2021.
- **Swayam Shakti Shahakar Yojna**: Working capital loans for cooperatives upto 3 years are provided to women Self Help Groups (SHGs) for facilitating adequate bank credit to women SHGs to undertake common/collective socio-economic activities.
- **Examples**: **Lijjat Papad**: Women producing consumption goods from home, **Amul**: Covers millions of women dairy farmers, **SEWA**: Promotes self-employment among women.

### Significance of Cooperatives for Women

- **Economic**: Rural women have benefitted from cooperatives by **increasing their household incomes and savings**, as well as their **financial literacy and entrepreneurship abilities**.
- **Social capital**: Through networks of **reciprocity, trust, and group effort**, cooperatives give women access to social capital, which in turn fosters resilience.
- **Agriculture**: It helps women to purchase agricultural inputs and equipment through a **risk- and benefit-sharing basis as well as enhanced agricultural investments**.
- **Gender equality**: By providing a **platform for women to take on leadership roles and participate in decision-making**, women’s cooperatives challenge traditional gender roles and promote gender equality.

### Challenges Faced by Women’s Cooperatives

- **Current status**: Ministry of Cooperation data from 2023 showed that out of 24,264 women’s cooperatives, **only 10,806 were functional**, while the rest were dormant or under liquidation due to inadequate institutional support, poor finances and lack of training.
- **Cultural norms**: Especially in rural areas, women are constrained by cultural norms such as the **weight of unpaid labour and restricted mobility**.

- **Inadequate skills**: **Low literacy, little education, and a lack of business, technological, and marketing skills** present significant obstacles for women in rural cooperatives. This hinders their involvement, leadership, and output.
- **Operational challenges**: weak and irregular audits due to poor coordination among women members

### Way Forward

- **Institutional and Financial Support**: Through expert advice, skill development, and market connections, revive dormant cooperatives. Ensure equipment access, low-interest credit, and dedicated funding.
- **Building Capacity and Training**: To increase women’s involvement, regularly offer training in marketing, finance, digital literacy, and governance along with mentorship and leadership quotas.
- **Digital Push for Inclusion and Efficiency**: Encourage the use of digital platforms for financial inclusion, marketing, and training while computerising PACS and ARDBs to improve efficiency and transparency.
- **Merger of weak cooperatives**: It will help to create one strong women’s cooperative in the local regions, improving maximum utilization of resources.

### Conclusion

Cooperatives can transform the socio-economic landscape for women in India and with the **right tools, leadership, and training, women-only cooperatives can propel social and economic change**. 2025’s International Year of Cooperatives presents a pertinent chance to change laws and strengthen the position of women leading this movement.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. Though Women have historically contributed to cooperative practices in India, their leadership and participation in modern cooperatives remain limited. Examine the role of women’s cooperatives in fostering socio-economic empowerment and discuss the challenges they face. Also suggest measures to strengthen women’s participation and leadership in cooperatives. [250 words] [15 marks]

## NALANDA UNIVERSITY SET FOR GLOBAL REVIVAL

**Why in News:** In a significant step toward reviving India's ancient legacy of higher education, **eminent economist Professor Sachin Chaturvedi** has taken charge as the **new Vice-Chancellor of Nalanda University, Bihar.**

### A Renaissance in Modern Times

- Nalanda University, re-established near the ruins of the ancient Nalanda Mahavihara — one of the world's oldest centers of learning — is envisioned as a **global academic hub.**
- It operates under the **Ministry of External Affairs**, symbolizing India's effort to blend its ancient knowledge systems with modern international engagement.
- The university is preparing for the **enrolment of about 900 students** in the upcoming academic session.
- Currently, admissions have already reached **540 students** across various streams, marking a significant increase and reflecting growing interest in the institution.
- The new Vice-Chancellor underlined the university's mission to **foster peace**, encourage **rigorous interdisciplinary research**, and **connect Indian philosophy with contemporary global challenges.**
- The idea is to **create a platform** where **researchers, diplomats, and policy-makers** can interact, collaborate, and contribute to a more just and knowledge-driven global order.
- The **Bihar government has allocated nearly 500 acres of land** for the university's campus. Of this, **100 acres have been reserved for water bodies**, enhancing ecological sustainability, while **300 acres have been preserved as forest land**, aligning with the vision of a **green and environmentally sensitive campus.**

### The History of Ancient Nalanda

- Once hailed as the greatest center of learning in the ancient world, **Nalanda University** is not just a historical site — it is a symbol of **India's intellectual and spiritual legacy.** After centuries of silence, this ancient university is now being revived as a modern institution that blends **heritage with innovation**, and **wisdom with sustainability.**
- **Nalanda University was founded in 427 CE** during the reign of **Gupta Emperor Kumaragupta I (Shakraditya)** in

what is now **modern-day Bihar.** For nearly **600 years**, it remained a vibrant center of higher education, attracting students and scholars from all over Asia.

- During the reign of **Emperor Harshavardhana (606–647 CE)** and later the **Pala dynasty**, Nalanda rose to its **peak of fame and influence.**
- The **renowned Chinese monk and scholar Xuanzang (Hiuen Tsang)** studied at Nalanda for **five years.** He also carried back numerous **Buddhist scriptures** which he later **translated into Chinese**, spreading Indian philosophy across East Asia.
- Another Chinese pilgrim, **I-Tsing**, visited Nalanda in **670 CE** and noted that the university hosted **about 2,000 students** and was **supported by donations from around 200 villages.**
- Nalanda attracted scholars and students from **China, Korea, Tibet, Mongolia, Indonesia, and other parts of Asia**, making it an early example of **international academic exchange.**
- Great thinkers and scientists like **Nagarjuna, Aryabhata, Dharmakirti**, and others were associated with this prestigious institution.
- The **Indonesian Shailendra dynasty** also supported Nalanda by constructing a **monastery within the university**, reflecting its international reach.
- The region also holds **spiritual significance**, as **Lord Buddha** and **Lord Mahavira** are believed to have meditated in its vicinity.

### Periods of Destruction and Decline

While Nalanda thrived for centuries, it also faced **multiple attacks** and periods of destruction.

- **First Attack (455–470 CE):**
  - Conducted by the **Hunas**, a Central Asian tribal group.
  - Their goal was primarily **looting** the wealth of the university.
  - **Emperor Skanda Gupta** later restored the university and established its **renowned library.**
- **Second Attack (7th Century):**
  - Carried out by the **Goudas rulers of Bengal**, due to **political rivalry** with Emperor Harshavardhana.
  - Once again, **Harshavardhana** restored Nalanda and supported its mission.



- **Final Destruction (1193 CE):**
  - Nalanda was finally **burnt and destroyed** by **Bakhtiyar Khilji**, a general of the **Turkish ruler Qutbuddin Aibak**.
  - Thousands of priceless **manuscripts, books, and scrolls** were destroyed, and the university was **abandoned**.

### Rediscovery of the Ruins

- In **1812**, the ruins of Nalanda were rediscovered by **Scottish surveyor Francis Buchanan-Hamilton**.
- Later in **1861**, **Sir Alexander Cunningham**, the founder of the **Archaeological Survey of India**, confirmed the site as the location of the ancient university.
- Over the years, archaeological excavations have revealed **temples, monasteries, libraries, lecture halls, and dormitories**, confirming the university's **rich architectural and intellectual legacy**.

### The Revival of Nalanda University

- After lying in ruins for centuries, the idea of **reviving Nalanda University** was proposed in the **early 2000s**. This initiative was supported by:
  - **Former President Dr. A.P.J. Abdul Kalam**
  - **The Government of Singapore**
  - **The East Asia Summit (EAS) countries**
- Together, they envisioned a modern institution that would **reclaim Nalanda's global status** as a hub for knowledge and culture.

### The Nalanda University Act, 2010

- In **2010**, the **Indian Parliament** passed the **Nalanda University Act**, giving legal status to the new university.
- The revived Nalanda University is a **joint international effort**, with India working in collaboration with **East Asian and ASEAN nations**.

### The New Campus

- The **Bihar Government** allocated **455 acres** of land near the ancient ruins.
- **Famous architect B.V. Doshi** designed an **eco-friendly, green campus** that reflects the **spiritual and intellectual atmosphere of the past**, while integrating modern technology.
- The campus includes:
  - **A 100-acre water body**
  - **A solar power plant**
  - **Water treatment and recycling systems**
  - **Net-zero carbon emissions** — making it a **'Net Zero' Green Campus**

### Courses and Global Engagement

The new Nalanda University offers **postgraduate programs** in areas such as:

- **Buddhist Studies, Philosophy and Comparative Religions**
- **Historical Studies**
- **Ecology and Environmental Studies**
- **International Relations and Peace Studies**

Students and faculty come from across India and **over 20 countries**, making Nalanda a **truly global university once again**.

### Recognition by UNESCO

- In **2016**, the **ruins of ancient Nalanda University** were declared a **UNESCO World Heritage Site**, acknowledging its **immense historical and cultural value**.

### Conclusion

- The revival of Nalanda University is not just a reconstruction of a campus — it is the **reawakening of a civilisational legacy**. It stands as a proud symbol of India's ancient commitment to **education, peace, and global dialogue**. Today, Nalanda University is once again poised to become a **beacon of learning**, promoting **regional cooperation, inter-cultural understanding, and sustainable development** rooted in the **wisdom of the past and aspirations for the future**.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. The revival of Nalanda University is not just an educational initiative but a civilizational statement. Discuss in light of the historical significance of ancient Nalanda and the modern efforts to restore its legacy. [150 words | 10 marks]

## A RARE HISTORICAL RECORD OF A NATURAL CALAMITY

**Why in News:** In a remarkable discovery that adds a new dimension to India's historical and epigraphic heritage, a **stone inscription** has been found near the **Chandrashekhara Temple** at **Guttala village** in **Haveri district, Karnataka**, documenting a **major humanitarian disaster** from over **480 years ago**.

### Archaeological Survey of India (ASI)

The **Archaeological Survey of India (ASI)** is the premier organization under the **Ministry of Culture**, responsible for **archaeological research** and the **protection of India's cultural heritage**.

- **ASI administers over 3,650 ancient monuments, archaeological sites, and remains** of national importance across the country.
- Its core functions include:
  - **Surveying antiquarian remains**
  - **Exploration and excavation** of archaeological sites

- **Conservation, preservation, and maintenance** of protected monuments

The ASI was established in 1861 by Alexander Cunningham, who became its first Director-General. He is widely regarded as the “Father of Indian Archaeology.”

### First Epigraphic Record of a Natural Calamity in India

- According to the Archaeological Survey of India (ASI), this is the **first known historical record** in the form of an inscription that **explicitly documents the large-scale human toll of a natural disaster** — a drought — in Indian history.
- The inscription dates back to **Saka year 1461, Vikari, Bhadrapada Shukla Panchami**, which corresponds to **August 18, 1539 CE**.

### Details of the Inscription

- The inscription is carved in the **Kannada language and script** and is found on a **stone slab**. It reveals that **6,307 people** died due to a severe **drought** (locally called *bara*), which caused a catastrophic humanitarian crisis in the area.
- The record goes further to describe how the **bodies of the deceased were buried by a man named Marulaih Odeya**, son of Nanideva Odeya of **Guttavalala**. In a display of community service and religious devotion, Marulaih carried the bodies in **baskets on his head** and buried them in honour of **Timmarasa Svami**, the ruler of the local *seeme* (a territorial division), and after paying respects to **Basaveshwara**, a revered figure in the region.
- The inscription is accompanied by a **sculpture** depicting a man — presumably Marulaih Odeya — carrying a **basket containing two or three bodies** on his head, bringing the tragic events to life in vivid visual form.

### Significance of the Discovery

According to **K. Munirathnam Reddy**, Director of Epigraphy at the ASI, this inscription is a **landmark discovery** for multiple reasons:

- It is **rare and explicit** in recording the **human cost of a natural disaster**.
- It gives us a **glimpse into the socio-economic realities** of the time, especially how communities coped with large-scale crises.
- Such records are **usually absent in literary sources**, making this find extremely valuable for historians and researchers.

### Implications for Research and Climate Studies

This discovery not only enriches our understanding of **historical disasters**, but also opens up avenues for:

- **Comparative studies** with other inscriptions across time and regions.

- Understanding **community resilience** and coping mechanisms during natural calamities.
- Tracing **historical climatic patterns**, potentially helping researchers study **long-term climate changes** and their societal impacts.
- Gaining insights into **administrative responses** and **demographic changes** triggered by such disasters.

### Epigraphy as a Window into India’s Past

- The **epigraphy branch of the ASI** has been instrumental in preserving India’s rich inscriptional heritage. In the financial year **2024–25 alone**, it has discovered and copied over **1,000 inscriptions** from across the country — including remote and forested areas. Already, over **100 inscriptions** have been found this year, further enhancing our understanding of India’s cultural, political, and environmental past.

### Conclusion

The discovery of the 1539 **Guttala drought inscription** stands as a **solemn reminder** of the human tragedies brought by natural calamities — even centuries ago. At the same time, it reflects the **community spirit, religious devotion, and resilience** of people in times of great hardship. As researchers continue to explore India’s vast epigraphic record, such findings will undoubtedly contribute to a more nuanced and holistic understanding of our history.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. The discovery of the 1539 CE drought inscription at Guttala in Karnataka offers valuable insights into the socio-economic impact of natural disasters in pre-modern India. Discuss the historical significance of such epigraphic records in reconstructing India’s environmental, social, and administrative past. [250 words | 15 marks]

## INTERNATIONAL VESAK DAY

**Why in News:** Recently, the **United Nations observed International Vesak Day** on May 12, bringing together **individuals from diverse backgrounds to honour the teachings of the Buddha**.

### Key Details

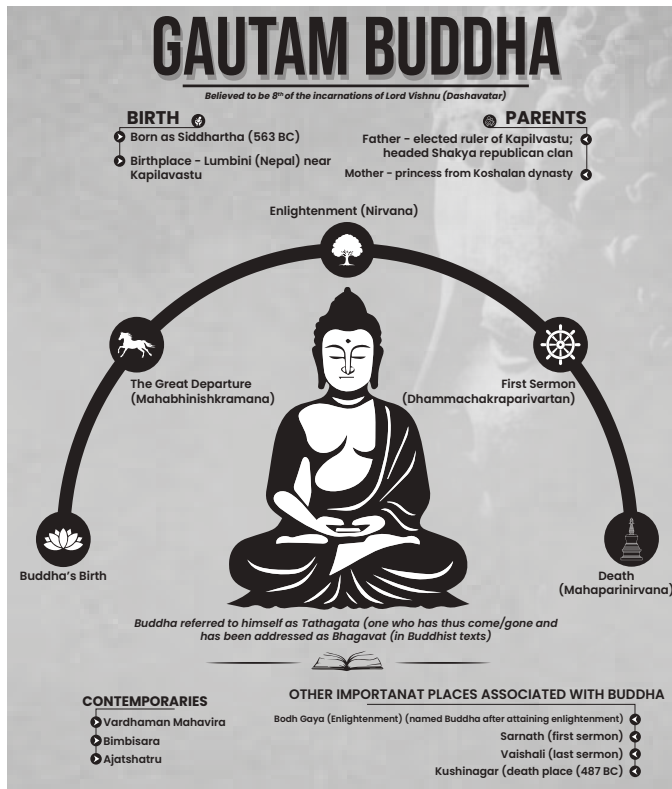
- **Theme of International Vesak Day, 2025:** “Harmony and Inclusiveness for Human Worth: Buddhist Perspectives for Global Peace and Sustainable Advancement”
- **Place:** **Ho Chi Minh City** in Vietnam.
- The **holy relics** were exhibited at **Hanh Tâm Monastery** in Ho Chi Minh City.
- The different events highlighted various facets of Buddhist traditions, such as:
  - Digital Presentation of Jataka Stories



- **Sculptures Representing Different Representations of the Buddha**
- **Comparative Analysis of Buddhist Artefacts from India and Vietnam.**
- For the first time, the Government of India's Ministry of Culture, together with the International Buddhist Confederation (IBC), presented the **sacred Buddha relic from Sarnath in Vietnam.**

### Vesak

- It has its origins in the **ancient lunar month of Vesākha**, occurring on the full moon day in May.
- The Buddha was **born on Vesak Day in 623 B.C.**, more than two and a half thousand years ago.
- Buddha achieved **enlightenment** on the Day of Vesak, and he also **died** on this holy day.
- The **Mahavamsa chronicle** suggests that Vesak originated in Sri Lanka, where the festival was established approximately 2,100 years ago during King Dutthagamani's rule.



### The UN Day of Vesak

- On **December 15, 1999**, the **United Nations General Assembly adopted Resolution 54/115**, recognising the Day of Vesak as an international observance worldwide.
- The day is observed each year at the UN Headquarters and additional UN offices, in coordination with the appropriate UN entities.

### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

Q. Recently, the term 'Vesak' was in the news. It is related to which of the following religions?

- (a) Jainism (b) Buddhism  
(c) Vaishnavism (d) None

Answer: (b)

### KANCHI KAMAKOTI PEETAM

**Why in News:** Sri Satya Chandrasekharendra Saraswathi was anointed the 71st pontiff of the Kanchi Kamakoti Peetam.

#### Key Details

- Sri Vijayendra Saraswathi Shankaracharya, the 70th pontiff, inducted his successor, born as **Duddu Satya Venkata Surya Subrahmanya Ganesha Sharma Dravid** as the **71st pontiff (acharya)** by performing the **Sanyasa Deeksha Samaroh and handing over the 'tandam' (staff).**
- The **70th pontiff, Sri Vijayendra Saraswathi**, was made acharya of the Peetam at 15 by his predecessor, Sri Jayendra Saraswathi, in 1983.
- The **69th pontiff, Jayendra Saraswathi**, was made acharya by Sri Chandrasekharendra Saraswathi in 1954.
- The **71st pontiff is an accomplished scholar in the Rig Veda.** He has completed studies in the Yajurveda, Samaveda, Shadangas, and Dashopanishads.

#### About Kanchi Kamakoti Peetam

- Sri Kanchi Kamakoti Peetam is a **significant monastic institution in Kancheepuram, Tamil Nadu**, rooted in the ancient Veda-Dharma tradition.
- It boasts of having an **unbroken line of 71 Acharyas.**
- The establishment of the Kanchi Kamakoti Peetam is **attributed to Sri Adi Sankara (also known as Sankara Bhagavatpada or Shankaracharya).**
- It was established more than 2500 years ago, during a period when heretic and non-Vedic sects were perceived as threatening the ancient Veda-Dharma.
- **Sri Sankara Bhagavatpada** is said to have settled down at Kancheepuram and spent the evening years of his life in Math there.

### EXPECTED QUESTION ON UPSC CSE

#### Prelims MCQ

Q. Sri Kanchi Kamakoti Peetam was established by which of the following?

- (a) Adi Shankaracharya (b) Sri Vidyanarya  
(c) Ramanujacharya (d) Madhvacharya

Answer: (a)

## SARASWATI PUSHKARALU

**Why in News:** The 12-day Saraswati Pushkaralu, a Kumbh Mela-like ritual for the Saraswati river, kick-started at the temple town Kaleshwaram, the abode of Sri Kaleshwara Mukteswara Swamy temple in Telangana's Jayashankar Bhupalpally district.

### About Saraswati Pushkaralu

- The once-in-12-years mega religious feast is dedicated to worshipping the subterranean Saraswati River, which converges with the Godavari and the Pranahita at the confluence point called Triveni Sangamam in Kaleshwaram.
- The 12-day event will witness 'Nadi Harathi' by pandits of the famous Kashi Vishwanath temple in Varanasi of Uttar Pradesh and a host of devotional programmes.
- **Historical significance:** The sanctum sanctorum of the ancient temple in Kaleshwaram houses two Shiva lingas known as Lord Kaleshwara (Yama) and Lord Mukteswara (Shiva) on a single pedestal bearing profound religious significance.
  - The holy temple complex houses other temples dedicated to **Goddesses Saraswati Devi and Shubhananda Devi**, among other deities.
- It is a river festival similar to the Kumbh Mela, observed when **Jupiter (Guru) enters the zodiac sign Gemini (Mithuna Rasi)**.

### Spiritual Benefits of Pushkara Bath

- It is believed that the **sins** committed by humans since birth, whether knowingly or unknowingly, are **washed away by taking a Pushkara bath**.
- In Indian Sanatan traditions, Pushkara bath is a great devotional act, and devotees believe that after taking a **Pushkara bath at the Triveni Sangam in Kaleshwaram**, visiting Goddess Sri Maha Saraswati brings great merit.
- The most common spiritual benefits of taking a holy dip in the Pushkara bath include **increased mental clarity, spiritual enlightenment, and the removal of negative energies or karma**. The ritual is believed to purify the mind, body, and soul, allowing devotees to experience a sense of divine connection and peace.

### Kaleshwara Mukteswara Swamy Temple

- Kaleshwaram is the site of the famous **Shiva temple called Kaleswara Mukteswara Swamy, which is on the border of Telangana and Maharashtra**.
- Kaleswaram is located exactly at the **merging point of the River Pranahita (tributary of Godavari) and the Godavari River**.
- The temple is uniquely significant because of the two Shiva Lingas that are found on a single pedestal.
  - They are named **Lord Shiva and Lord Yama, collectively known as Kaleswara Mukteswara Swamy**.

- Kaleswaram is one of the locations of the three Shiva temples mentioned in Trilinga Desham (Land of Three Lingams) and is another name for the Telugu-speaking region of Andhra Pradesh. (The other two locations mentioned are Draksharamam and Srishailam.)

### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

Q. The Saraswati Pushkaralu tradition is celebrated in the state of:

- (a) Odisha (b) Telangana  
(c) Karnataka (d) Tamil Nadu

(b) Answer

## SAMYUKTA MAHARASHTRA MOVEMENT

**Why in News:** 65<sup>th</sup> Maharashtra Day observed on 1st May, highlighting the role of the Samyukta Maharashtra Movement.

### About the Samyukta Maharashtra movement

- The Samyukta Maharashtra movement represents one of the most significant linguistic and cultural movements in post-independence India, culminating in the formation of Maharashtra state on May 1, 1960.

### Historical Context and Political Foundation

- **Pre-Independence Antecedents**
  - As early as 1940, the **Mahavidarbha Samiti under M.S. Aney** suggested a Marathi-speaking state consisting of eight districts from the Vidarbha and Nagpur divisions.
  - The formal resolution for **Samyukta Maharashtra was passed at a literary meet in Belgaum on May 12, 1946, presided over by Gajanan Tryambak Madkholkar**, leading to the formation of an implementation committee.
  - **Akola Pact (1947):** The Akola Pact of 1947 established an early framework for **cooperation between Congress leaders from Western Maharashtra and Central Provinces and Berar**, envisaging two sub-provinces of Mahavidarbha and Western Maharashtra under a single government. This agreement, signed by **Barrister Ramrao Deshmukh and others on August 8, 1947**, demonstrated the early recognition of the need for administrative unity among Marathi-speaking regions.
- **Post-Independence Political Challenges**
  - Despite Congress's pre-independence pledge to introduce linguistic states, **Jawaharlal Nehru and Sardar Vallabhbhai Patel** became adamantly



opposed to such reorganisation, perceiving linguistic states as potentially divisive.

- The **Dhar Commission's report** in December 1948 opposed the formation of states on linguistic lines, declaring such moves against national interest.
- The formation of Andhra State in October 1953 demonstrated the practical feasibility of linguistic reorganisation and provided a precedent for the Maharashtra movement.

### Organisational Structure and Leadership

#### • The Samyukta Maharashtra Samiti

- The formal establishment of the Samyukta Maharashtra Samiti on February 6, 1956, at **Tilak Smarak Mandir in Pune** marked the crystallisation of the movement's organisational structure.
- The leadership composition reflected the movement's broad-based character, with **Shripad Amrit Dange** as President, **T.R. Naravane** as Vice President, and **S.M. Joshi** as General Secretary.
- The inclusion of prominent leftist activists such as Narayan Ganesh Gore, Nana Patil, and Uddhavrao Patil alongside other leaders like Annabhau Sathe, Pralhad Keshav Atre, and Keshav Sitaram Thackeray demonstrated the movement's ideological diversity.

#### • Strategic Agreements and Negotiations

- **Nagpur Pact (1953)**: The Nagpur Pact of September 28, 1953, represented a crucial compromise that addressed regional concerns within the proposed Maharashtra state.
- This agreement ensured the equitable development of all regions and established Nagpur as a second capital, with provisions for annual legislative sessions and a High Court bench.

### Legacy and Contemporary Significance

#### • Federal Democracy and Linguistic Rights

- The successful formation of Maharashtra on May 1, 1960, with Mumbai as its capital, established important precedents for linguistic reorganisation and federal democracy in India.

- The movement's achievement demonstrated that cultural and linguistic identity could serve as legitimate bases for political organisation while maintaining national unity and democratic governance.

#### • Lessons for Contemporary Politics

- The movement's ability to transcend traditional social boundaries while maintaining cultural authenticity offers models for inclusive political organising that respects diversity while pursuing common objectives.
- The movement's sophisticated understanding of federalism, demonstrated in agreements like the Nagpur Pact, provides examples of how regional autonomy can be balanced with unity in democratic federal systems. These innovations in federal design remain relevant for contemporary discussions about governance and regional development.

### Conclusion

The Samyukta Maharashtra movement represents a **remarkable achievement in democratic mobilisation, cultural expression, and federal design**. Through the convergence of folk culture, intellectual analysis, and strategic political action, the movement successfully created a unified Marathi-speaking state while establishing important precedents for linguistic rights and federal democracy. The contributions of figures like Annabhau Sathe and Dr. Ambedkar demonstrated how cultural workers and intellectual leaders could collaborate to achieve transformative political change.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

- Q. How did diverse cultural and intellectual forces converge to shape Maharashtra's formation? What strategic political challenges and agreements defined the Samyukta Maharashtra movement's success? [250 words] [15 marks]

## GOVERNMENT SCHEMES

## MGNREGS 2024–25

**Why in News:** A recent review of the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for the financial year 2024–25 has revealed a worrying trend — while the number of households registered under the scheme has increased, the actual work provided has decreased.

**Note:** This was highlighted in a new report released by LibTech India, a collective of academics and social activists who closely monitor the implementation of rural welfare schemes.

## What the Report Reveals

The MGNREG Act guarantees 100 days of wage employment per year to every rural household whose adult members volunteer to do unskilled manual work. However, the reality on the ground seems far from this promise.

- Registered households have increased by 8.6%, rising from 13.80 crore in 2023–24 to 14.98 crore in 2024–25.
- But the actual employment provided has dropped — person days (the total number of workdays generated) fell by 7.1%.
- The average number of workdays per household also declined, from 52.42 days to 50.18 days, a fall of 4.3%.
- Most concerning, only 7% of households managed to receive the full 100 days of work as legally promised.

This clearly shows a mismatch between growing demand and shrinking supply — more people want work, but fewer are actually getting it.

## What are Person Days?

In MGNREGS, person days refer to the total number of workdays generated for individuals during the year. For example, if 1 person works for 10 days, that counts as 10 person days.

## State-Level Trends

There are sharp regional differences in the delivery of work:

States where person days decreased the most:

- Odisha: -34.8%
- Tamil Nadu: -25.1%
- Rajasthan: -15.9%

States where person days increased:

- Maharashtra: +39.7%

- Himachal Pradesh: +14.8%
- Bihar: +13.3%

This shows that the effectiveness of the scheme varies greatly across states, depending on local governance and implementation.

## Why Is This Happening?

The report and experts point to two major reasons behind this declining performance:

## Inadequate Budget Allocation

- The Union Government allocated only ₹86,000 crore for MGNREGS in 2024–25.
- This is far below the ₹2.64 lakh crore recommended by experts like the People's Action for Employment Guarantee (PAEG).
- Despite rising demand, no budget revision was made, leaving the programme underfunded.

## Delays in Wage Payments

- Across many states, workers have faced extraordinary delays in receiving wages, which discourages participation.
- Late payments violate the very spirit of the scheme, which is meant to provide timely income support to rural families.

## Worker Deletions and Additions

- From 2022 to 2024, a shocking 7.8 crore workers were removed (deleted) from the MGNREGS rolls, while only 1.92 crore were added. This raised serious concerns about inclusion errors and lack of transparency.
- However, in a positive development for 2024–25:
  - Only 99 lakh workers were deleted, while
  - 2.22 crore new workers were added.
- This is the first time in two years that additions outnumbered deletions, indicating a partial correction of past exclusions.

## The Bigger Question: Is the Right to Work Being Honoured?

- The findings raise critical concerns about the implementation and integrity of MGNREGS — a lifeline for millions of rural poor in India.
- Despite being a legal right, access to 100 days of work remains elusive for the majority. And with budget cuts, technical hurdles, and payment delays, the confidence of rural communities in the scheme may be eroding.



- The LibTech report rightly points out that **systemic and implementation-level challenges** continue to constrain MGNREGS, limiting its role as a social security net during rural distress.

### Way Forward: What Needs to Be Done?

To strengthen MGNREGS and ensure that it lives up to its constitutional promise, the following steps are essential:

- **Increase the annual budget allocation** in line with rising demand.
- **Ensure timely wage payments** through strict monitoring and penalties for delays.
- **Simplify registration and job demand processes**, especially in backward and tribal regions.
- **Prevent arbitrary deletions** of workers and use technology responsibly to ensure inclusivity.
- **Improve accountability** through social audits, grievance redressal systems, and local participation.

### Conclusion

As India battles rural distress, inflation, and unemployment, schemes like MGNREGS become *more important than ever*. The recent report is a *wake-up call* for policymakers to *revamp implementation*, ensure *adequate funding*, and most importantly, restore *faith in the rural employment safety net*.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

Q. With reference to the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), consider the following statements:

1. The scheme legally guarantees 100 days of unskilled manual work per year to rural households.
2. MGNREGS is demand-driven and provides employment only if the worker is below the poverty line.
3. Delayed wage payments under the scheme attract compensation as per the Act.
4. The scheme is implemented jointly by the Centre and the State Governments.

Which of the statements given above are correct?

- (a) 1, 2 and 3                      (b) 1, 3 and 4  
(c) 1 and 4 only                      (d) 2, 3 and 4

(b) Answer

#### Mains Question

Q. The Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) remains a crucial safety net for rural livelihoods, but recent trends indicate a growing mismatch between coverage and actual employment. Critically examine this statement in the light of recent developments. [250 words] [15 marks]

## RoDTEP SCHEME

**Why in News:** In a significant move that is expected to **boost India's export competitiveness**, the **Government of India** has announced the **restoration of the RoDTEP scheme benefits** for key segments of the export industry.

**Note:** Soon, exporters operating under **Advance Authorisation (AA)**, **Export-Oriented Units (EOUs)**, and **Special Economic Zones (SEZs)** will once again be able to claim benefits under the **Remission of Duties and Taxes on Exported Products (RoDTEP)** scheme.

### What is RoDTEP?

- Launched in **2021**, the **RoDTEP scheme** is a key policy initiative aimed at **reimbursing exporters** for **hidden or embedded taxes and duties** that are **not refunded** through any other scheme.
- These include taxes on fuel used in transportation, electricity duties, mandi tax, and other state or central levies that are part of the supply chain but not directly visible.
- By neutralizing these costs, RoDTEP helps **make Indian exports more price-competitive** in the global market, ensuring a level playing field for domestic manufacturers and traders.

### Why Was Restoration Needed?

- The **RoDTEP benefits** for AA holders, EOUs, and SEZ units were **suspended in February 2025**. This raised concern among exporters, as these entities form the **backbone of India's export economy**, contributing significantly to **foreign exchange earnings** and **employment generation**.
- Leading export associations, including the **Federation of Indian Export Organisations (FIEO)**, actively **lobbied the government** for reinstatement of these benefits.
- According to the **FIEO President**, the government's decision to restore these benefits "**recognises the critical role** that these units play in India's export ecosystem."

### Who Will Benefit?

The restored benefits will cover:

- **Advance Authorisation (AA) holders:** Exporters who import raw materials without paying duties, provided they export the finished product.
- **Export-Oriented Units (EOUs):** Units set up with the objective of exporting their entire production.
- **Special Economic Zones (SEZs):** Designated zones that enjoy tax and infrastructure incentives to promote exports.

Together, these entities represent a **large and vibrant segment of India's export structure**.

### When Will the Benefits Resume?

The **official date of restoration** is **June 1, 2025**. However, FIEO has requested the government to **backdate the benefits to February 7, 2025**, to ensure a **seamless transition** and avoid any disruptions in export planning and operations.

### Why It Matters?

- **Enhancing Global Competitiveness:** By reducing embedded costs, Indian products become more competitive in international markets.
- **Boosting Export Growth:** The move is aligned with India's goal of achieving a **\$1 trillion export target** in the coming years.
- **Supporting Export-Oriented Infrastructure:** SEZs and EOUs rely heavily on consistent policy support; restoring RoDTEP assures policy continuity.
- **Encouraging Value Addition:** By covering inputs and hidden taxes, the scheme encourages domestic value addition and manufacturing.

### Conclusion

The restoration of *RoDTEP benefits* to *AA holders, EOUs, and SEZ units* sends a *positive signal* to exporters and investors. It shows that the government is committed to supporting India's export sector by ensuring *policy stability, cost competitiveness, and global market access*. As global trade faces new challenges, such supportive steps are crucial for India to *expand its share in world exports* and create more jobs through trade.

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

Q. With reference to the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme, consider the following statements:

1. RoDTEP aims to reimburse exporters for all duties and taxes already refunded under existing schemes like GST and customs duty exemption.
2. The scheme is applicable to exporters under Advance Authorisation (AA), Export-Oriented Units (EOUs), and Special Economic Zones (SEZs).
3. The RoDTEP scheme was introduced to replace the Merchandise Exports from India Scheme (MEIS).

Which of the statements given above is/are correct?

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

Answer: (b)

## PM MITRA

**Why in News:** Madhya Pradesh has secured approval for the ₹2,100 crore PM MITRA Park, a project poised to revolutionise the state's textile industry. This integrated park, spanning 2,100 acres, will feature advanced facilities and residential complexes, attracting significant investment and creating numerous jobs.

## PM Mega Integrated Textile Region and Apparel (PM MITRA)

- The PM MITRA (Mega Integrated Textile Region and Apparel) scheme was launched by the **Ministry of Textiles**.
- The Government of India approved **7 PM Mega Integrated Textile Regions and Apparel (PM MITRA) Parks for the Textile industry**.
- Inspired by the **5F vision of the Prime Minister** (i.e. Farm to Fibre to Factory to Fashion to Foreign), the PM MITRA Parks are a major step forward in realising the Government's vision of making India a global hub for textile manufacturing and exports.
- MITRA parks will **enable the textile industry of India to achieve higher size and scale**, along with the creation of a modern & integrated textile value chain at one location.

### Benefits of MITRA Parks

- **Global Competitiveness and Investment Attraction:** It will make the Indian textile industry globally competitive, attract large investments and boost employment generation. It is also estimated that each PM MITRA park will attract an investment of Rs 10,000 Cr.
- **Employment Generation and Comprehensive Ecosystem Partnership:** Apart from accommodating the complete value chain of the T&A industry, MITRA parks will develop and enhance the ecosystem required to support the industry. Once completed, each park is expected to lead to the creation of 1,00,000 jobs directly and 2,00,000 jobs indirectly.
- **Modern Infrastructure and Global Standards:** These parks will create world-class infrastructure with plug-and-play facilities and help create global champions in the textiles sector.
- **Support Across the Value Chain:** Benefits for every segment of the textile industry through modernization, scalability, and a skilled workforce.

### Features

- MITRA Parks will be **set up at key locations, as ready to move, ready to start** (through plug and play facilities), with common industrial infrastructure and facilities, allowing integration of supply and value chains in a contiguous area.
- To enable scale, the **minimum** estimated area per MITRA Park is 1,000 acres.
- Man-made Fibre (MMF) and Technical Textiles are also expected to be a significant component of the new investment.
- MITRA parks can be either Greenfield or Brownfield.
  - **Greenfield Sites:** New independent sites will be developed under this category.
  - **Brownfield Sites:** Sites with partly developed industrial trunk infrastructure and other intended



facilities will be taken up for completing the development.

### EXPECTED QUESTION FOR UPSC CSE

#### Prelims MCQ

Q. Consider the following statements regarding the PM-MITRA scheme:

1. PM-MITRA aims to develop integrated textile value chain parks with world-class infrastructure.
2. The scheme is being implemented by the Ministry of Micro, Small and Medium Enterprises (MSME).

Which of the above statements is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Answer: (a)

## SVAMITVA SCHEME

**Why in News:** The Survey of Villages Abadi and Mapping with Improved Technology in Village Areas (SVAMITVA) Scheme has completed 5 years of implementation.

### About the Scheme

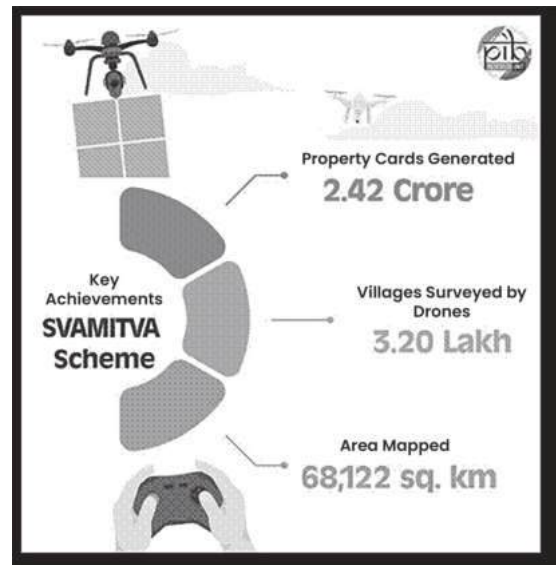
- **Launched in April 2020**, SVAMITVA provides legal ownership of rural residential land using drone-based surveys.
- SVAMITVA is implemented by the **Ministry of Panchayati Raj** with support from the Survey of India and National Informatics Centre Services Inc. (NICSI).
- It aims to **empower rural citizens with property cards, enabling access to credit, dispute resolution, and better planning.**

### Objectives

- **Creation of accurate land records** for rural planning and reduce property related disputes.
- To bring **financial stability to the citizens in rural India** by enabling them to use their property as a financial asset for taking loans and other financial benefits.
- **Determination of property tax**, which would accrue to the Gram Panchayats directly in States where it is devolved or else, add to the State exchequer.
- Creation of **survey infrastructure and GIS maps** that can be leveraged by any department for their use.
- To support the preparation of a **better-quality Gram Panchayat Development Plan (GPDP)** by making use of GIS maps.

### Components of the SVAMITVA Scheme

- **Establishment of Continuously Operating Reference Stations (CORS) network:** The CORS network support in establishing Ground Control Points, which is an important activity for **accurate Geo-referencing, ground truthing and demarcation of Lands.**
- **Large Scale Mapping using Drones:** Rural inhabited (abadi) area is being mapped by Survey of India using drone Survey. It generates high resolution and accurate maps to confer ownership property rights. Based on these maps or data, property cards are issued to the rural household owners.
- **Information, Education, and Communication (IEC) Initiatives:** Awareness program to sensitise the local population about the scheme methodology and its benefits.
- **Enhancement of Spatial Planning Application “Gram Manchitra”:** Leveraging digital spatial data/ maps created under drone survey for creation of spatial analytical tools to support preparation of Gram Panchayat Development Plan (GPDP).
- **Online Monitoring System:** Online Monitoring and reporting dashboard is monitored to track the progress of activities.
- **Project Management:** Programme Management Units at the National and State levels for supporting Ministry & State respectively with scheme implementation.



### Broad Areas of Impact

- **Inclusive Society:** Throughout history, scholars and development specialists have linked ‘Access to Property Rights’ with ‘Improvement in socio-economic standards of vulnerable populations in villages’. The SVAMITVA Scheme aims to enable the same.
- **Land Governance:** Land is an essential resource for any economic activity aimed at creation of material wealth in the world. Lack of clearly demarcated Abadi area has led

to a **high number of land-conflict cases**. As per reports, millions of people suffer the impact of land conflicts across India and the World. The SVAMITVA Scheme aims to **address the root cause for disputes at local level**.

- **Sustainable Habitats:** High-resolution digital maps for better Gram Panchayat Development Plans (GPDP) leading to **improvement across infrastructure like schools, community health centres, rivers, street lights, roads** etc. through efficient allocation of funds and increased accessibility.
- **Economic Growth:** The key outcome is to help people monetise their property as collateral. Furthermore, a boost to India's economic growth through streamlining of Property tax, in States where it is levied, leading to an increase in investments and ease of doing business.

### Conclusion

The SVAMITVA Scheme is changing land ownership in rural India. It turns old challenges into new opportunities for growth and empowerment. The **scheme uses technology to solve disputes and break barriers**. It helps people use their land for economic progress. With **drones and digital property cards**, it's about creating new possibilities. SVAMITVA is more than a government program, it's a step toward self-reliance, better planning and a stronger rural India.

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

- Q. The SVAMITVA scheme aims to:
- Provide financial assistance to farmers for agricultural activities.
  - Establish clear ownership rights of property in rural areas.
  - Promote digital literacy among rural youth.
  - Improve healthcare facilities in rural India.

(b) : Answer

#### Descriptive Question

- Q. The SVAMITVA Scheme seeks to transform rural India by formalising property ownership. Critically evaluate the challenges and limitations in its implementation, and suggest measures to ensure its effectiveness in empowering rural communities. [150 words] [10 marks]

## UDAN SCHEME

**Why in News:** Since its inception, more than one crore 49 lakh passengers have benefitted from the affordable regional air travel scheme UDAN.

#### Key Details

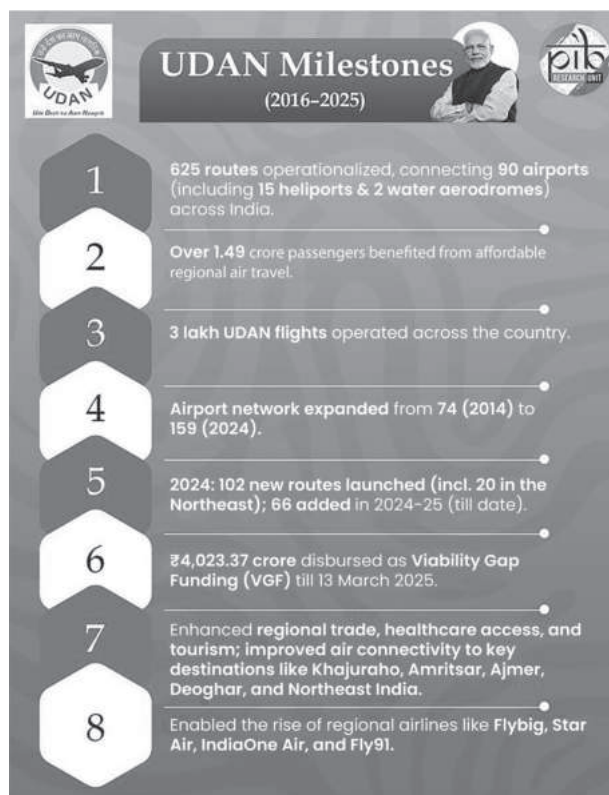
- In order to **connect Tier-2 and Tier-3 cities** using a model

that is **both financially supported and driven by the market**, the UDAN scheme was conceived under the National Civil Aviation Policy (NCAP) 2016 with a 10-year vision.

- **Date of launch: On October 21, 2016**, Prime Minister Shri Narendra Modi officially unveiled the Regional Connectivity Scheme (RCS), also known as UDAN ("Ude Desh ka Aam Nagrik").
- The goal of UDAN is to **democratise aviation by lowering the cost and increasing accessibility to flying for everyone**.
- **Parent ministry: Ministry of Civil Aviation**

### Significance of the UDAN Scheme

- **Enhancing Regional Connectivity:** By **operationalizing underserved and unserved airports throughout India**, UDAN aims to improve regional air connectivity.
- **Making Air Travel Affordable:** Uses operating cost reductions and **Viability Gap Funding (VGF)** to make air travel more affordable.
- **Stimulating Local Economies:** Encourages travel and **strengthens local economies**, resulting in balanced regional growth.
- **Employment Generation:** Creates employment in the aviation industry and associated sectors.
- **Bridging Rural-Urban Divide:** **Close the gap in connectivity** between rural and urban areas to improve socioeconomic integration.
- **Promoting Private Sector Participation:** Promotes private aviation participation using a market-driven strategy.





## INDIA'S BIRTH RATE DECLINE

**Why in News:** The **Sample Registration System (SRS) Statistical Report 2021**, released by the Registrar General of India, has revealed **significant changes in birth rates** across different Indian states. The report shows that while the **national crude birth rate** is falling steadily, **southern States** like **Tamil Nadu, Kerala, and Delhi** are witnessing a **much faster decline**.

### Basic Concepts

#### 1. Crude Birth Rate (CBR)

- **Definition:** Number of live births in a year per 1,000 people in the population.
- **Formula:**

$$\text{CBR} = \frac{\text{Number of live births in a year}}{\text{Mid-year total population}} \times 1000$$

**Example:** If a state has a CBR of 19.3, it means that 19.3 babies were born every year for every 1,000 people.

#### 2. Total Fertility Rate (TFR)

- **Definition:** The average number of children a woman would have in her lifetime if current birth rates continue.
- **Key Point:** If TFR is around 2.1, it is called replacement level fertility. At this level, the population size stabilizes over time.

#### 3. Gross Reproduction Rate (GRR)

- **Definition:** The average number of daughters born to a woman during her reproductive years who survive to childbearing age and go on to have children themselves.
- **GRR < 1** means the population is likely to shrink over time.

### National vs State Trends: A Widening Gap

- In 2021, the **all-India crude birth rate** stood at **19.3 births per 1,000 people**.
- Between **2016 and 2021**, this rate **declined at an average of 1.12% per year**.
- But in contrast, some States saw **much steeper declines**:
- **Fastest Decline in Birth Rates:**
  - **Tamil Nadu:** Declining at 2.35% per year
  - **Delhi:** Declining at 2.23% per year
  - **Kerala:** Declining at 2.05% per year
- These rates are **almost twice the national average**, indicating **rapid demographic shifts** in these regions.

#### States with Slowest Decline in Birth Rates:

- On the other hand, several States are experiencing a **much slower drop** in birth rates:
  - **Rajasthan:** 0.48%
  - **Bihar:** 0.86%

- **Chhattisgarh and Jharkhand:** 0.98%
- **Assam and Madhya Pradesh:** 1.05%
- **West Bengal:** 1.08%
- **Uttar Pradesh:** 1.09%
- **Note:** Interestingly, **Uttarakhand** is the **only State** where the **birth rate actually increased** during this period.

#### What is the SRS?

The **Sample Registration System (SRS)** is **India's largest demographic survey**, conducted annually. It provides **estimates of vital statistics** such as:

- Birth Rate
- Death Rate
- Infant Mortality Rate
- Total Fertility Rate (TFR)
- Gross Reproduction Rate (GRR)

These figures help policymakers and planners to understand the population trends and make informed decisions.

### Southern States Leading the Decline

- The SRS report highlights that the **rate of birth rate decline** was **faster than the national average** in **13 major States and Union Territories**, especially in the **southern region**:
  - **Andhra Pradesh:** 1.26%
  - **Telangana:** 1.67%
  - **Karnataka:** 1.68%
  - **Kerala and Tamil Nadu:** Already among the fastest decliners
- This shows a clear **demographic transition** in the southern States, where **education, healthcare, women's empowerment, and family planning** initiatives have significantly impacted fertility patterns.

### Other States Seeing Faster Declines

- Apart from the southern States, some other States also saw a **faster-than-average** decline in birth rates:
  - **Maharashtra:** 1.57%
  - **Gujarat:** 1.24%
  - **Odisha:** 1.34%
  - **Himachal Pradesh:** 1.29%
  - **Haryana:** 1.21%
  - **Jammu and Kashmir:** 1.47%



- Meanwhile, Punjab's birth rate declined at a pace almost equal to the national average.

### What About Registered Births?

- The Civil Registration System (CRS) 2021 adds another layer to this picture. It showed that some of the States with slower declines in birth rates are actually reporting more registered births.
- States and Union Territories with rising birth registrations include:
  - Bihar
  - Rajasthan
  - Uttar Pradesh
  - Uttarakhand
  - West Bengal
  - Arunachal Pradesh
  - Mizoram
  - Nagaland
  - Jammu & Kashmir
  - Ladakh
  - Lakshadweep
- This may indicate that in some states, better birth registration systems and population growth are happening simultaneously.

### Fertility Indicators Match the Birth Rate Trends

- The SRS 2021 also published data on:
  - **Total Fertility Rate (TFR):** The average number of children a woman is expected to have during her reproductive years.
  - **Gross Reproduction Rate (GRR):** The average number of daughters a woman is likely to have who survive to reproductive age.
- The data shows that States like Bihar, Uttar Pradesh, Rajasthan, and Madhya Pradesh continue to have TFR and GRR higher than the national average — meaning families are still larger in these States, which is consistent with their higher birth rates.

### Why Are Some States Seeing Faster Declines?

- Several factors contribute to a faster decline in birth rates, especially in southern and western India:
  - Higher female literacy
  - Better access to family planning
  - Improved healthcare
  - Urbanisation and economic growth
  - Rising age of marriage
  - Greater participation of women in the workforce
- These trends reflect a maturing demographic profile, where population growth slows down as people choose smaller families.

### Conclusion

- The SRS 2021 data paints a divided demographic picture of India:
  - On one side, southern and some western States are moving towards population stabilisation, with birth rates dropping faster than ever.
  - On the other side, northern and eastern States continue to have high birth rates and fertility levels, which may pose challenges in terms of population pressure and resource distribution.
- Understanding these patterns is essential for balanced development, targeted welfare schemes, and managing the future workforce of the country.

### EXPECTED QUESTION FOR UPSC CSE

#### Descriptive Question

- Q. Examine the regional variations in birth rates and fertility patterns in India. What socio-economic factors contribute to these trends, and how can they impact future policy planning? [250 words] [15 marks]

### WESP 2025: MID-YEAR UPDATE

**Why in News:** Recently, the United Nations Department of Economic and Social Affairs (UN DESA) published the mid-year update of 'World Economic Situation and Prospects 2025'.

#### Key Details

- **Global economic growth**
  - Supply chains will likely be strained, production costs will increase, and companies will likely postpone or reduce investments across a wide range of industries as a result of higher tariffs and trade policy uncertainty.
  - Global growth is expected to slow from 2.9% in 2024 to 2.4% in 2025, which is a 0.4 percentage point drop from the January estimate.
- **International Trade**
  - With trade growth predicted to drop precipitously from 3.3% in 2024 to 1.6% in 2025, global commerce is changing.
  - The demand for transportation, tourism, and other services may be slowed by a weaker merchandise trade and slower global growth.
- **International Investment and Finance**
  - Long-term economic growth and productivity are at risk due to the weak investment outlook brought on by high interest rates and budgetary restraints.
  - Vulnerable developing nations face serious difficulties as a result of the possibility of tighter financial

conditions and a **decline in official development assistance**.

- **Labour Markets**

- In the majority of developed and many developing economies, labour markets have remained robust.
- However, **slower investment and poorer growth prospects** are anticipated to have an impact on wage and employment growth, and the **quick uptake of generative AI could cause more upheavals**.

- **Inflation**

- Compared to the January forecast, global headline inflation is **expected to decrease by 0.2 percentage points**, from 4.0% in 2024 to 3.6% in 2025.
- Even though declining trends in the price of oil and some other commodities may have a moderating effect, tariff barriers, possible supply chain disruptions, and the **effects of climate change are driving up consumer prices**.

- **Monetary and Fiscal Policy**

- As **trade disputes and financial market volatility worsen**, central banks face more difficulties.
- In order to address slowing growth and growing inflation risks, policymakers will need to balance the timing and scope of future adjustments.
- While increased uncertainty continues to limit investment, **declining export revenues, declining foreign exchange earnings, and waning domestic demand are further taxing debt management**.

- **India's Prospects**

- With **growth predicted at 6.3% in 2025**—a 0.3 percentage point drop from the January estimate—**India will continue to rank among the largest economies with the fastest rates of growth**.

#### United Nations Department of Economic and Social Affairs (UN DESA)

- The United Nations Department of Economic and Social Affairs (UN DESA) upholds the **development pillar of the UN Secretariat**, headed by the UN Secretary General.
- Based at the United Nations headquarters in New York, UN DESA **supports deliberations in the UN General Assembly and UN Economic and Social Council (ECOSOC)**, and the implementation of the decisions of these bodies, including on water and sanitation related issues.
- UN DESA is a **pioneer of sustainable development and the home of the Sustainable Development Goals (SDGs)**, where each goal finds its space and where all stakeholders can do their part to leave no one behind.
- UN DESA helps countries **make informed decisions by providing a wealth of information** through our publications and databases and through our support for international deliberations at the United Nations General Assembly, Economic and Social Council (ECOSOC), Commissions, Forums and other bodies.

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

- Q. Recently the report 'World Economic Situation and Prospects' was in the news, it was published by?
- United Nations Department of Economic and Social Affairs
  - World Bank
  - World Economic Forum
  - None of the above

Answer: (a)

#### HUMAN DEVELOPMENT REPORT, 2025: UNDP

**Why in News:** Recently, the United Nations Development Programme (UNDP) released the **Human Development Report (HDR) for 2025**.

##### Key Details

- It is titled '**A Matter of Choice: People and Possibilities in the Age of AI**' and takes a look at AI's effect on future development.
- **Iceland (HDI value: (0.972) stands at the top of the Index**, followed closely by Norway and Switzerland.
- **South Sudan came in last position, 193**, with a score of 0.388.
- The report highlights India's progress in **life expectancy, years of schooling and expected years of schooling, and income levels**.

##### India's HDI ranking

- India remained in the **medium human development bracket** after improving its HDI value from 0.676 in 2022 (ranked 133rd) to **0.685 in 2023 (ranked 130th)**.
- **India's HDI value has risen by more than 53% since 1990**, surpassing both South Asia and the global average.
- Of all the countries adjoining India, **China (75th), Sri Lanka (78th), and Bhutan (127th) have higher positions than India**, while Bangladesh (130th) ranks equally.
- **Nepal (145th), Myanmar (149th), and Pakistan (168th) have positions lower than that of India**.
- **Increased Life Expectancy:** India's life expectancy became the highest since the index's inception, rising from 58.6 years in 1990 to **72 years in 2023**. This development was aided by national initiatives like **Poshan Abhiyaan, Janani Suraksha Yojana, and Ayushman Bharat**.
- **Education Improvement:** From 8.2 years in 1990 to **13 years in 2023**, the average number of years spent in school increased. Laws like the **Right to Education Act**,



Samagra Shiksha Abhiyan, and the National Education Policy 2020 have been crucial.

- **Economic Development and Poverty Alleviation:** India's per capita **Gross National Income (GNI)** increased from \$2,167 in 1990 to **\$9,046 in 2023**, a fourfold increase. Between 2015–16 and 2019–21, **135 million Indians were lifted out of multidimensional poverty.**

### Challenges in Spite of Achievements

- **National Income:** India's GNI per capita ranking is seven ranks below its HDI ranking.
- **Gender Inequality:** According to the Gender Inequality Index (GII), India is ranked 102nd, indicating **challenges in areas like political representation, reproductive health, and workforce participation.**
- India still remains in the medium human development class (HDI value 0.685).

### Recommendations Presented in Report

- **AI and Human Development:** HDR 2025 argues that **AI should complement human capabilities rather than replace them.**
- It calls for bold policy decisions to ensure that **AI-driven growth benefits all people.**
- The report urges the implementation of **inclusive AI policies to bridge the gap between developed and developing nations.**
  - Developing a complementary economy where humans and AI work in unison.
  - Building innovation for unlocking human capability.
  - Investing in inclusive education, health, and social safety systems.

### Conclusion

India has made notable progress in human development, but challenges like gender inequality and income disparity persist. The report stresses inclusive, human-centric AI policies to ensure technology supports equitable and sustainable growth.

#### EXPECTED QUESTION FOR UPSC CSE

##### Descriptive Question

Q. In the context of the Human Development Report 2025, critically examine India's progress in human development indicators. How can inclusive and human-centric AI policies bridge existing development gaps? [250 words] [15 marks]

## INDIA JUSTICE REPORT 2025

**Why in News:** Not a single State or Union Territory has met their own reserved quotas for women in the police, according to IJR 2025 — the country's only ranking of States on the delivery of justice.

### About the India Justice Report 2025

- The India Justice Report (IJR) 2025 remains the only **comprehensive quantitative index using the government's statistics to rank the capacity of the formal justice system** operating in various states.
- This IJR is a collaborative effort **undertaken in partnership with DAKSH, Commonwealth Human Rights Initiative, Common Cause, Centre for Social Justice, Vidhi Centre for Legal Policy and TISS-Prayas.**
- **First published in 2019, the fourth edition of the IJR continues** to track improvements and persisting deficits in each state's structural and financial capacity to deliver justice based on quantitative measurements of budgets, human resources, infrastructure, workload, and diversity across police, judiciary, prisons, legal aid and Human Rights Commissions for all 36 states and UTs.

### Highlights from the Report

- **Judiciary**
  - **Persisting vacancies, low case clearance rates and mounting arrears** continue to dog the formal court system.
  - By 2024, case accumulation had crossed the five crore mark—**an increase of over 30 percent across all court levels:** an increase that reflects the ongoing challenges with judicial vacancies, procedural inefficiencies, and the influx of new cases each year.
- **Police**
  - Nationally, the **police-population ratio remained stagnant at 155 police personnel per 100,000 population,** significantly below the sanctioned strength of 197.5
  - This shortfall varies considerably across states—**at just 81 police per lakh, Bihar exemplifies the situation.**
  - **Consequences of Shortfall:** Investigations take longer, crime prevention efforts falter, and public safety is compromised.
- **Forensics**
  - Across India, **the administrative control and capacity of forensic laboratories vary significantly,** raising concerns about their efficiency and impartiality.
  - In several states, including **Gujarat, Maharashtra, Rajasthan, Himachal Pradesh, and Karnataka,** state forensic science laboratories operate under the **direct control of the police.** This arrangement risks compromising the independence of forensic analysis.
  - Elsewhere, forensic services work under the Home Department, ensuring some degree of institutional separation in forensic investigations.
  - **Capacity Constraints:** Many forensic labs suffer from chronic underfunding, outdated infrastructure, and an acute shortage of skilled personnel.

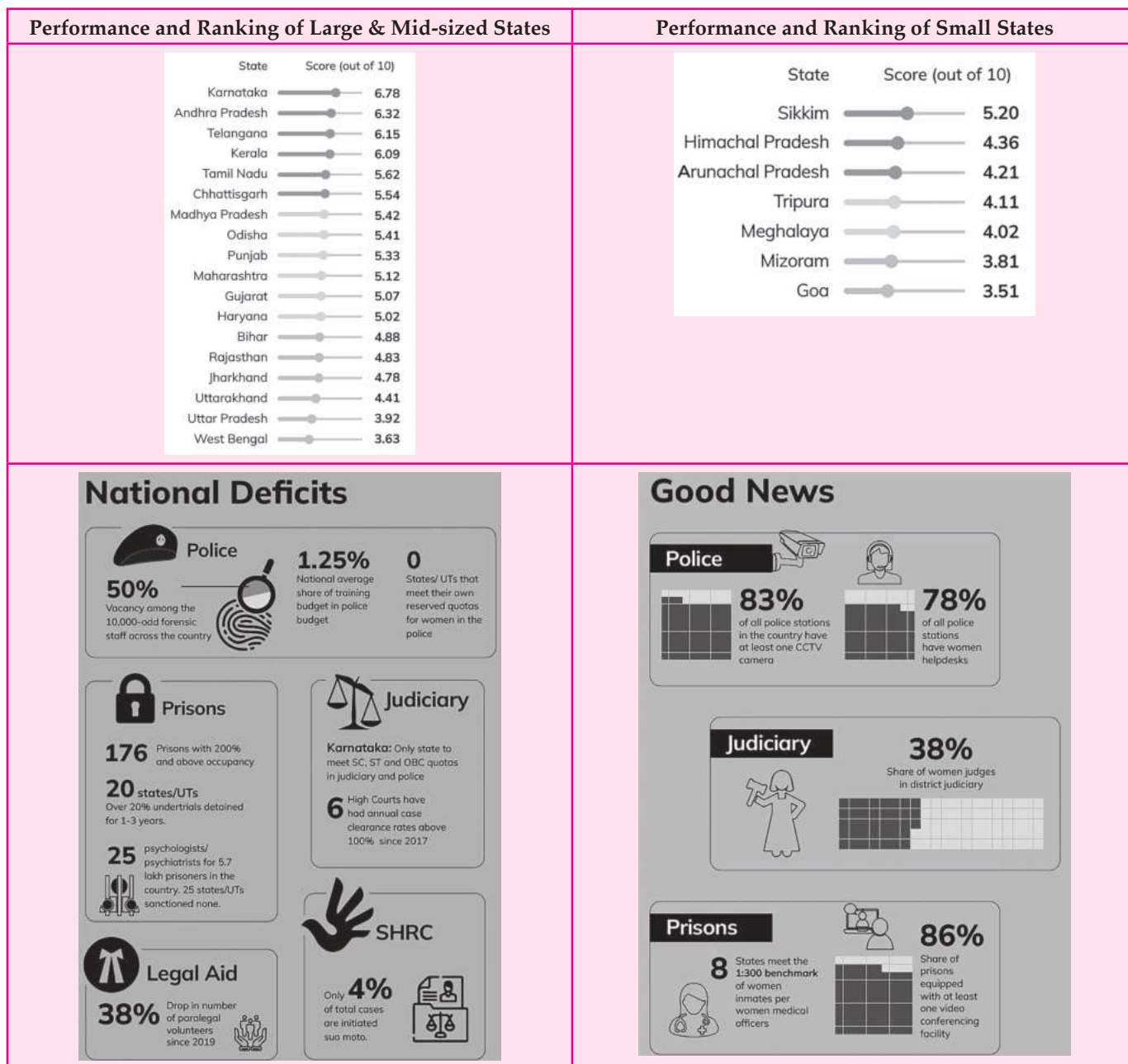
- **Prisons**
  - Despite amended legislation, numerous judicial directions, targeted interventions to reduce populations, and the **adoption of the Model Prison Manual 2016 by many states**, prison conditions remain lamentable.
  - Over the last decade, prison populations have surged by nearly 50%. The proportion of undertrials—people awaiting completion of investigation or trial—has escalated from 66% to 76%.
  - Nationally, average overcrowding in prisons stands at 131%.
- **Legal Aid**
  - The last decade has seen legal aid emphasise support for specific mechanisms, such as the **Legal Aid**

**Defence Counsel (LADC) system**, jail clinics, and the careful calibration of timelines and funds for National Lok Adalats.

- This focus on targeted interventions has been accompanied by a significant shrinkage of resources for broader, community-based interventions.

- **State Human Rights Commissions**

- The **India Justice Report 2022 (published in 2023)** assessed the capacity of State Human Rights Commissions (SHRCs) to effectuate their broad mandates for the first time.
- Two years on, their functioning remains underscored by a recurring theme of gaps between their intended mandate and actual capability on the ground.





## PERSONALITIES IN NEWS

## ADI SHANKARACHARYA

**Why in News:** Four panchaloha idols of Adi Shankaracharya, crafted by a team of artisans at Thimmakudi village near Swamimalai in Thanjavur district, are set to be installed at Kedarnath, Badrinath, and Uttaramanya Jyotirmath in Uttarakhand.

## About Adi Shankaracharya



- **Birth and Family Background**
  - Adi Shankaracharya was born in Kalady, a **village in present-day Kerala**, to Shivaguru and Aryamba, a devout Brahmin couple.
  - While historical sources debate his exact birth date—with estimates ranging from 507 BCE to 788 CE—the most widely accepted timeline places him in the early 8th century CE.
- **Early Education and Propensity for Spirituality**
  - Shankara exhibited extraordinary intellectual and spiritual prowess from a young age. By age five, he **mastered the Vedas, Upanishads, and auxiliary texts like the Puranas** under his mother's guidance.
  - At eight, he **formally embraced sannyasa** (monastic life), defying societal norms that discouraged renunciation without parental consent.
- **Foundation of Advaita Vedanta Philosophy**
  - Principles of Advaita Vedanta
    - ◆ **Brahman Satyam** (Brahman alone is real): The ultimate reality is Brahman, an infinite, non-dual consciousness transcending time, space, and causality.
    - ◆ **Jagat Mithya** (The world is illusory): The perceived universe, shaped by Maya (cosmic illusion), is a transient projection of Brahman, akin to a mirage superimposed on reality.
    - ◆ **Jivo Brahmaiva Naparah** (The individual soul is Brahman): The Atman (individual self) is identical to Brahman, with apparent separation arising from ignorance (avidya).
- **Commentaries on Sacred Texts:** Shankaracharya composed bhashyas (commentaries) on principal Hindu scriptures.
  - **Brahma Sutras:** His interpretation of Badarayana's aphorisms systematised Vedanta, refuting dualism by arguing that Brahman alone underpins all existence.
  - **Principal Upanishads:** Commentaries on the Brihadaranyaka, Chandogya, and ten other Upanishads demystified their metaphysical teachings, emphasising neti neti ("not this, not this") to negate finite descriptions of Brahman.
  - **Bhagavad Gita:** His analysis framed the Gita as a dialogue on realising Brahman through jnana (knowledge), bhakti (devotion), and karma (selfless action).
- **Establishment of the Four Mathas:** To propagate Advaita Vedanta and unify Hindu practices, Shankaracharya founded four mathas (monastic centres) across India.
  - **Sringeri Sharada Peetham** (Karnataka): Dedicated to the study of Yajur Veda and the Aitareya Upanishad, this southern centre became a bastion of Vedic scholarship.
  - **Jyotir Math** (Uttarakhand): Situated in the Himalayas, this northern institution focused on Rig Veda and Brihadaranyaka Upanishad teachings.
  - **Govardhana Math** (Odisha): This eastern centre, linked to the Sama Veda and Chandogya Upanishad, emphasised ritual and devotion.
  - **Sharda Peetham** (Gujarat): The western matha, associated with Atharva Veda and Mandukya Upanishad, integrated meditation and metaphysics.
- **Key Teachings and Theological Debates**
  - **The Role of Maya and Avidya:** Shankaracharya's ontology hinges on Maya, the cosmic force that veils Brahman and projects the phenomenal world. Unlike Buddhist shunyata (emptiness), **Maya is not negation but a creative power of Brahman**, enabling multiplicity while remaining subordinate to non-dual reality. **Ignorance (avidya) perpetuates the illusion of separateness**, which can only be dispelled through jnana (knowledge) gained via scripture, contemplation, and Guru guidance.
  - **Synthesis of Jnana, Karma, and Bhakti:** While prioritising jnana yoga (path of knowledge), Shankaracharya **harmonised it with devotion and action**. He advocated **nishkama karma** (selfless action) as preparatory discipline, purifying the mind for higher inquiry. Similarly, his hymns to deities like Shiva and



- He was honoured with an invitation to the **World's Columbian Exhibition at Chicago in 1893**, where Swami Vivekananda gave his now well-known speech. Ravi Varma showcased ten of his paintings there.
- In 1894, he established the **Ravi Varma Fine Arts Lithographic Press**. This kicked off a print movement of colour lithographs in India.
- **Influence of Raja Ravi Varma**
  - Over the years, many of us have forgotten how Raja Ravi Varma has influenced our lives in subtle yet defining ways.
  - His visual images of gods and goddesses, which attained celestial reverence, have impacted almost all walks of life.
  - These can be related to his influence on Indian comic books, temple architecture, jewellery, textiles and ceramics.

### Works of Raja Ravi Varma

- Raja Ravi Varma's works are **catalogued as Paintings (Oils), Portraits (Oils) and Works from the Raja Ravi Varma Press** and others across India.
- His vision helped forge a new identity and stature for Indian art by fusing Indian tradition and classical European technique.
- **Examples**
  - Damayanti
  - Yashoda Krishna
  - The Coquette
  - Hanuman's Discourse
  - Radha and Krishna
  - The Reverie

### EXPECTED QUESTIONS FOR UPSC CSE

#### Prelims MCQ

Q. Consider the following statements regarding works of Raja Ravi varma:

1. In 1894, he established Ravi Varma Fine Arts lithographic press.
2. He fused European and Indian art together.
3. His works exclusively focused on paintings.

How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Answer: (b) (1 and 2 only)

#### Descriptive Question

Q. Elucidate the contribution of Raja Ravi Varma to the Indian art landscape. [150 words] [10 marks]

## RAJE RAGHUJI BHONSLE I

**Why in News:** The Maharashtra government reclaimed the iconic sword of Maratha warrior Raje Raghujji Bhonsle I at an auction in London for Rs 47.15 lakh.



### About the Sword

- The **basket-hilt sword** has a **European-style single-edged blade**, which is slightly curved, and two fullers — grooves or channels that run the length of the sword.
- The spine of the sword is inlaid in gold with an **inscription in Devanagari script**. The inscription reads: "*Shrimant Raghujji Bhosale Sena Saheb Subah Firang*", suggesting the ceremonial nature of the sword.
- Sena Saheb Subah was a title of high military rank associated with the Maratha Empire, typically conferred by the Chhatrapatis of Satara. The person receiving the title would also get a sword and a robe.
- This particular sword was likely a gift from Chhatrapati Shahu Maharaj to Raghujji Raje Bhonsle, who was conferred with the title of Sena Saheb Subah.
- **How did the sword leave India?**
  - Following the 1817 **Battle of Sitabuldi**, where the East India Company defeated the Nagpur Bhonsles, the British looted the Bhonsle treasury, seizing priceless treasures, ornaments, and weapons.
  - This sword may have been a part of that war loot or a gift presented to the British in the aftermath of the battle.

### About Nagpur Bhonsles

- The Nagpur Bhonsle family played a **significant role in expanding the Maratha Empire**, like the Peshwe, Holkar, Gaikwad, and Scindia families.
- The family was one of the royal or Kshatriya clans of the Marathas, and considered itself as the **descendants of Udaipur's Sisodia Rajputs**.
- The Bhonsles of Nagpur were known as **Hinganikars**, as one of their ancestors rehabilitated the village of Beradi near Hingani in the present-day district of Pune.
- After the death of Shivaji Maharaj, his obsequies were performed by Sabaji Bhosle, as Sambhaji, the eldest son, was in confinement on the fort of Panhala.

### About Raghujji Raje Bhonsle I

- Raghujji Bhonsle I was an **important figure in 18th-century Maratha history**, whose power was shaped by both family conflict and strategic alliances.
- **Backed by Chhatrapati Shahu in 1728**, Raghujji Bhonsle



set out to confront his uncle Kanhoji and carved out a legacy of power, earning new titles, lands, and the right to collect taxes across Berar and Gondawana.

- His **decisive victory in 1730** after the siege of Bham marked a turning point, securing his leadership and laying the foundation for the Bhonsle dynasty's rise in Nagpur.
- **Taking Control of Odisha:** In the second half of the 18th century, as Mughal authority crumbled and Maratha power expanded, **Raghuji Bhonsle I emerged as the key figure in bringing Odisha under Maratha rule** following the 1751 treaty with Nawab Alivardi Khan, marking the start of Maratha administration over the region and the Jagannath temple in Puri.
- **Reviving Shree Jagannath Temple:** Raghuji Bhonsle I, after taking control of Odisha in 1751, played a pivotal role in reviving the Shree Jagannath Temple's activities, which had languished under Mughal rule.
  - He **appointed priests, restarted daily offerings, ensured temple upkeep, and made generous endowments**—including the MohunBhog established by his mother—and assigned land revenue worth Rs 27,000 (Satais Hazari Mahal) for its support.
  - To aid pilgrims, **Raghuji Bhonsle built over 22 Dharamshalas**, spent Rs 20,000 annually to conduct the yatra in full grandeur, introduced the **Annachhatra charity scheme**, and developed roads connecting Puri to the rest of the country, restoring the temple's sanctity and making it a vibrant hub for Hindu worship again.
- Raghuji Bhonsle I **expanded the Maratha empire to Odisha, Bihar, West Bengal, Uttar Pradesh, Madhya Pradesh and Chhattisgarh**. He led pivotal military campaigns in Bengal from 1745 and 1755.

#### EXPECTED QUESTION FOR UPSC CSE

##### Prelims MCQ

Q. Consider the following statements regarding Raje Raghuji Bhonsle I:

1. He played a pivotal role in bringing Odisha under Maratha rule and significantly contributed to reviving the Shree Jagannath Temple.
2. His sword features an inscription in Devanagari script suggesting its ceremonial nature.

Which of the above statements is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Answer: (c)

## MAHARANA PRATAP

**Why in News:** Recently Prime Minister Narendra Modi paid tributes to Maharana Pratap on the occasion of **Maharana Pratap Jayanti on 9th May, 2025**.

### Key Details

- Maharana Pratap was a brave Rajput king in India who **ruled the Mewar region** for 35 years and stood up against the powerful Mughal Empire.
- He was the **13th Maharana of Mewar** and a member of the **Sisodia dynasty**.
- He is **famous for his courage and refusal to surrender**, making him a symbol of resistance and pride for many.



### Birth and Early life

- Born in **Kumbhalgarh, Mewar** (modern-day Rajasthan), on May 9, 1540.
- Belonged to the **Rajput dynasty of Sisodia**.
- **Son of Rani Jeevant Kanwa and Maharana Udai Singh II**.
- He took over the **throne at the age of 32 in 1572**.
- His kingdom's capital was Chittorgarh.

### The Mughals' challenges

- He **encountered Akbar's expansionist Mughal policies and remained independent** and refused to submit to Mughal suzerainty.
- The most well-known conflict in Maharana Pratap's life was the **Battle of Haldighati (1576) against Raja Man Singh's Mughal forces**.
- He showed extraordinary bravery in spite of being outnumbered.
- Though not a clear victory, it became a symbol of his resistance.
- Maharana Pratap and his followers **went to the Aravalli Hills following the Battle of Haldighati**.
- He **continued his guerrilla warfare against the Mughals** while living in the wilderness.

### Perseverance and Struggle

- Maharana Pratap's **reign was characterised by an ongoing fight against the Mughals**.
- Despite a number of obstacles and conflicts, **he remained dedicated to regaining his kingdom**.
- On January 29, 1597, Maharana Pratap died in Chavand, Mewar.

### Conclusion

Maharana Pratap remains an enduring icon of **valor, patriotism, and unwavering resistance** against imperial domination. His steadfast refusal to submit to the Mughals, even in the face of adversity, has made him a timeless symbol of Rajput pride and self-respect. His life **continues to inspire the spirit of courage and sacrifice across India.**

## DR. FAKHRUDDIN ALI AHMED

**Why in News:** Recently, President of India, Droupadi Murmu, paid floral tributes to former President Fakhruddin Ali Ahmed on the occasion of his **121st birth anniversary at Rashtrapati Bhavan.**

### Key Details

- The **fifth president of India**, Fakhruddin Ali Ahmed, was in office **from August 24, 1974, until his death on February 11, 1977.**

### Early life

- Ahmed was born in the **Hauz Qazi area of Old Delhi** on May 13, 1905, and his devotion to the country had a long-lasting effect on Indian politics.
- Ahmed first **attended the Government High School** in the Gonda district of **Uttar Pradesh.**



- He **then went on to St. Stephen's College in Delhi**, where he earned his degree. He then travelled to England, where he was called to the London Bar from Inner Temple.

### Political Career

- He actively participated in the Indian freedom movement, which marked the beginning of his political career.
- He became a **supporter of Mahatma Gandhi and joined the Indian National Congress.**
- He was arrested in 1942 for his involvement in the **Quit India Movement and Individual Satyagraha.**
- Ahmed occupied several important political posts following independence.
- He was elected to the Rajya Sabha in 1952 and subsequently to the Lok Sabha in 1967
- He held various portfolios** such as Food and Agriculture, Cooperation, Education, Industrial Development, and Company Laws.
- During his presidency, he signed the **proclamation of emergency in 1975** following a meeting with Prime Minister Gandhi, one of the most significant and controversial moments in India's constitutional history.
- Fakhruddin Ali Ahmed **passed away in office on February 11, 1977, the second Indian president to die in office.**

### Conclusion

President Murmu's tribute today served as a reminder of Fakhruddin Ali Ahmed's contributions to India's legal, political, and freedom movements.

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## WAVES – EMPOWERING INDIA'S CREATIVE ECONOMY FOR THE GLOBAL STAGE

### Introduction

The inaugural **World Audio Visual and Entertainment Summit (WAVES)**, held in Mumbai from May 1st to 4th, 2025, represents a landmark initiative in catapulting India to the forefront of the global creative economy. As digital technology reshapes global media and entertainment (M&E), India is transitioning from being a major consumer to becoming a global creator, innovator, and cultural influencer.

### Prime Minister's Vision and Announcements

- **'Mann Ki Baat' (Dec 29, 2024):**
  - PM Narendra Modi announced WAVES.
  - Invited **stakeholders** from Bollywood, regional cinema, animation, gaming, TV, and entertainment tech to showcase India's creative potential.
  - Proposed a global creator forum for collaborative dialogue and opportunity-sharing.
- **Independence Day Address (2024):**
  - Emphasized India's leadership potential in gaming and animation.
  - Encouraged leveraging India's cultural heritage and literature for game development.
  - Highlighted youth-led growth in the creator economy as part of India's **\$5 trillion economy** vision.
- **Rising Bharat Summit (April 8, 2025):**
  - Reinforced the **'Create in India, Create for the World'** mantra.
  - Encouraged Indian artists to reach global audiences and invited global creators to India.
  - Urged youth participation in the creative movement.

### WAVES: Objectives and Structure

WAVES is designed as a global platform for:

- Cross-border collaboration and innovation.
- Knowledge-sharing across cinema, OTT, animation, gaming, and immersive content (AR/VR).
- Bridging Eastern and Western creative traditions.
- Promoting sustainable livelihoods through creative expression.

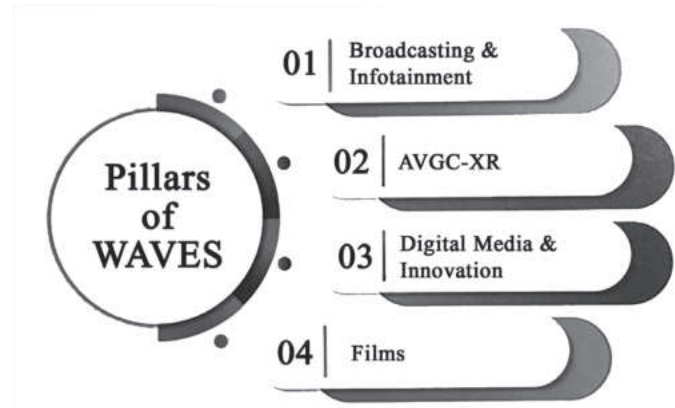
### Core Functions:

- Empowering creative entrepreneurs.
- Supporting digital content creators.
- Linking local talent with global markets.

### India as a Rising Power in Media and Entertainment

India's rise is supported by:

- **Cultural Capital:** Rich storytelling, diverse regional narratives.
- **Demographic Advantage:** Young, tech-savvy population.
- **Technological Strength:** Emerging digital infrastructure.



### Pillars of WAVES:

#### (i) Cinema and Series:

- Promotes international film collaborations.
- Encourages co-productions and global showcasing of regional cinema.

#### (ii) AVGC-XR (Animation, VFX, Gaming, Comics, Extended Reality):

- Positions India as a global hub for talent and outsourcing.
- Drives innovation in immersive technologies like AR/VR.

#### (iii) OTT and Digital Media:

- Promotes new-age storytelling and digital platform partnerships.
- Focuses on monetisation models for global reach.

#### (iv) Music and Live Entertainment:

- Highlights India's musical traditions.
- Facilitates global collaborations and live events.

## India and the Orange Economy

- **Definition:** Orange Economy includes sectors based on creativity, cultural heritage, and intellectual property.
- **India's Contribution:**
  - A thriving startup ecosystem and youth-driven creativity.
  - Rise of regional content and local creators.
  - Transition from content consumer to global content creator.
- **Sectors Involved:**
  - Cinema, OTT, gaming, animation, comics, immersive media.

## Policy Support and Infrastructure Initiatives

- **Government Reforms:**
  - Simplification of foreign investment norms.
  - Introduction of single-window clearance systems.
  - Incentives for production and AVGC exports.
- **Key Institutions and Initiatives:**
  - **National Centre of Excellence (NCOE) for AVGC-XR:**
    - ◆ Based in Mumbai.
    - ◆ Focuses on skilling, capacity building, and immersive tech innovation.
  - **Centres of Excellence for Skilling:**
    - ◆ Support talent development and professional training.
- **Ministerial Support:**
  - **Ashwini Vaishnaw (Union Minister):**
    - ◆ Described WAVES as a “game-changer.”
    - ◆ Advocated for robust physical, digital, and institutional infrastructure for the M&E sector.

## Strategic Impact of WAVES

- Enhances India's global soft power through films, music, and digital media.
- Facilitates cultural diplomacy and international co-creation.
- Catalyzes employment, exports, and innovation.
- Establishes India as a central node in the global creative supply chain.

## Conclusion

WAVES represents more than a summit—it is a transformational platform that aligns with India's aspirations to be a cultural and creative superpower. By harnessing India's storytelling legacy, youth energy, and digital dynamism, WAVES provides the momentum needed to build sustainable creative industries and position India as a global leader in the creative economy. In a world where creativity is currency, WAVES is India's next big cultural export engine.

# INDIA LEADS THE CREATIVE REVOLUTION OF THE WORLD

## Introduction: India's Storytelling Legacy

- India has long been a pioneer in storytelling—from epic literature like the *Ramayana* and *Mahabharata* to the intricate sculptures of ancient temples depicting folklore and lifestyle.
- The essence of storytelling has united India's diverse cultures and continues to bridge global audiences in today's interconnected world.
- In the 21st century, storytelling is the fulcrum of media and entertainment—via **reels, podcasts, blogs, comics, interactive games**, and more—offering India a leadership role in the global creative revolution.

## WAVES 2025: A Global Creative Movement

- The World Audio Visual & Entertainment Summit (WAVES), held in Mumbai, is India's flagship initiative to become the global epicenter of the creative economy.
- **It aspires to:**
  - Unite global creators under the spirit of *One Earth, One Family, One Future*.
  - Transform India from a creative hub into a global creative leader.
  - Provide creators a platform for recognition, collaboration, and monetization.

## Building India's Soft Power and Cultural Diplomacy

- **Global Engagement:**
  - India reached out to **100+ countries** via its embassies to invite creators, policymakers, and industry leaders to WAVES.
  - Aims to emulate and surpass global models like **Davos (WEF)** and **Cannes (Film Festival)**.
- **Cultural Capital as Strategic Soft Power:**
  - Ancient and modern stories resonate across boundaries.
  - India's multilingual, multi-ethnic narratives have global appeal and depth.





### The Fusion of Creativity and Technology

- **Storytelling in the Digital Age:**
  - Modern content (AR/VR/XR, AI-enhanced animation) blends immersive experiences with Indian ethos.
  - High-tech storytelling now matches the depth of traditional narrative art.
- **Impactful Narratives:**
  - Indian creators have a proven record of addressing sensitive social issues with nuance.
  - Global relevance lies in merging traditional wisdom with contemporary concerns.

### WAVES as a Creator Economy Catalyst

- **Digital Inclusivity and Democratization:**
  - WAVES empowers talent from rural, semi-urban, and underserved areas.
  - Workshops, training sessions, and networking events bridge the digital divide.
- **CreatoSphere Talent Zone:**
  - Handpicks and mentors **800+ creators** from across India.
  - Professional bodies from gaming, comics, broadcasting, music, animation, and more shortlist talent.
  - Participants receive industry mentorship and fund facilitation support.
- **WAVES Bazaar:**
  - A marketplace for creators to showcase and sell their IP-protected products.
  - Major entertainment firms attend to scout talent and innovations.
- **WAVEXcelerator:**
  - Connects startups with investors and mentors.
  - Facilitates live pitching, fostering entrepreneurial growth in M&E.

### Policy and Infrastructure to Support Creative Leadership

- **₹391.15 Crore Allocation for Indian Institute of Creative Technologies (IICT), Mumbai:**
  - Modeled on IITs and IIMs.
  - Focuses on Animation, VFX, Gaming, Comics, and Extended Reality (AVGC-XR).
  - Public-private partnership for IP creation, innovation, and skill development.
- **\$1 Billion Creator Fund:**
  - Empowers content creators with capital, skill upgrades, and global reach.
  - Supports scaling production, enhancing quality, and technological advancement.

### Positioning India in the Orange Economy

- **Orange Economy Defined:**
  - Encompasses sectors driven by creativity, culture, and IP—film, animation, gaming, music, design, and media.
- **India's Strategic Advantages:**
  - Youth-driven demographic dividend.
  - Rich cultural heritage across languages and regions.
  - Rapid digital transformation and entrepreneurial ecosystem.
- **Global Market Potential:**
  - Global M&E industry is projected to reach **USD 50 billion by 2029**.
  - India is poised to capture a significant share through FDI-friendly policies, co-productions, and trade facilitation.

### WAVES as a Platform for Global Collaboration

- **Global Media Dialogue:**
  - Facilitates international conversations on common challenges.
  - Promotes peace, harmony, and brotherhood through meaningful storytelling.
- **Promoting Healthy Entertainment:**
  - Focuses on socially relevant content that uplifts and unites.
  - Encourages collaboration over competition among global creators.

### Conclusion: India as a Cultural Superpower

- WAVES 2025 is not just a summit—it is a movement.
- It positions India as the global capital of the creative and Orange economy.
- By empowering creators, embracing technology, and honoring tradition, India is poised to lead the global creative revolution.
- WAVES extends the legacy of **Swami Vivekananda's** global cultural outreach, ensuring Indian stories inspire, heal, and unite the world.

# ARTICLE FROM KURUKSHETRA (MAY 2025)

## EMPOWERING MSMEs THROUGH SCIENCE AND TECHNOLOGY INTERVENTIONS IN INDIA

### Introduction

India's Micro, Small, and Medium Enterprises (MSMEs) are the backbone of its industrial economy, accounting for over 30% of the GDP and employing more than 110 million people. As the global economy transitions into a knowledge-based, digital-first ecosystem, the role of science, technology, and innovation (STI) in transforming MSMEs into globally competitive, sustainable, and resilient enterprises has become pivotal. This document explores the multifaceted ways in which science and technology interventions are empowering MSMEs in India to overcome traditional bottlenecks and emerge as drivers of inclusive and sustainable growth.

### Significance of MSMEs in India's Economy:

- **Economic Contribution:** Contribute ~30% to India's GDP and 48% to exports.
- **Employment Generator:** Second-largest employer after agriculture.
- **Diversity of Enterprises:** Spans across manufacturing, trade, services, agritech, and creative industries.
- **Regional Development:** A key tool in decentralizing industrial development to semi-urban and rural areas.

### Challenges Faced by Indian MSMEs:

- Limited Access to Finance
- Lack of Advanced Technology and R&D
- Low Productivity and Operational Inefficiencies
- Skilling and Talent Shortage
- Low Integration into Global Value Chains
- Compliance and Regulatory Hurdles

### Science and Technology as Catalysts for MSME Empowerment

Science and technology interventions have the potential to address these challenges by enabling process innovation, product diversification, cost-efficiency, and quality assurance. They promote competitiveness, scalability, and sustainability through the following strategic pathways:

#### (i) Technology Incubation and Innovation Support

- **MSME Innovation Scheme (Merged schemes under MoMSME):**
  - **Components:** Incubation, Design, IPR support.
  - **Objective:** Nurturing innovation through support to business incubators and startups.
- **Technology Business Incubators (TBIs) under DST and BIRAC (Biotech Ignition Grant):**
  - Provide seed funding, mentoring, and lab access.
  - Promote deep-tech and biotech startups.

#### (ii) Digital Transformation and Industry 4.0 Adoption

- **SAMARTH (Smart Advanced Manufacturing and Rapid Transformation Hub):**
  - Industry 4.0 adoption including AI/ML, IoT, additive manufacturing.
  - Promotes smart factories and lean production.
- **Digital MSME Scheme:**
  - Encourages adoption of cloud-based ERP, CRM, and cybersecurity tools.
  - Reduces cost and enhances productivity.
- **Centre for Industry 4.0 (C4i4) Labs:**
  - Public-private partnership to demonstrate and deploy I4.0 technologies for MSMEs.

#### (iii) Research-Industry Collaboration Platforms

- **MSME-Technology Development Centre (TDC) Network:**
  - 18 centres offer design, prototyping, and skill development support.
- **Council of Scientific and Industrial Research (CSIR):**
  - Licensing affordable, scalable technologies to MSMEs.
  - Supports clean energy, agri-tech, process reengineering.
- **Technical Education-Industry Interface Cells:**
  - Facilitate collaboration between engineering colleges and MSMEs.
  - Promote applied R&D and internship models.

#### (iv) Technology Upgradation and Quality Certification

- **Credit Linked Capital Subsidy Scheme (CLCSS):**
  - 15% capital subsidy for technology upgrades.
- **ZED (Zero Defect Zero Effect) Certification:**
  - Promotes lean manufacturing, quality assurance, and eco-friendly practices.

- **Support for International Certifications (ISO, CE, etc.):**
  - Enhances market access for MSMEs.

**(v) Sustainable and Green Technology Integration**

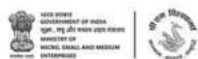
- **Technology Centres for Energy Efficiency (BEE):**
  - Promote adoption of energy-efficient machines, solar dryers, biomass gasifiers.
- **Waste to Wealth and Circular Economy Platforms:**
  - Innovations in reusing industrial by-products.
  - Promoted by DST, Atal Innovation Mission, and local universities.
- **Green MSME Scheme:**
  - Promotes environmental management and clean technology.

**(vi) Rural and Agro-based Technology Empowerment**

- **CSIR–Rural Technology Incubators:**
  - Facilitate rural innovation for MSMEs in food processing, herbal products, rural crafts.
- **MGIRI (Mahatma Gandhi Institute for Rural Industrialisation):**
  - Promotes appropriate technology for khadi, textiles, rural manufacturing.
- **SFURTI (Scheme of Fund for Regeneration of Traditional Industries):**
  - Revives traditional clusters through modern tech infusion and capacity building.
- **Unnat Bharat Abhiyan:**
  - Academic-rural-industrial partnerships to upgrade technologies in rural enterprises.

**Financing Innovation and Tech Adoption in MSMEs**

- **Fund of Funds for Startups (FFS) and SIDBI’s India Aspiration Fund:**
  - Venture funding and equity infusion for tech-driven MSMEs.
- **Technology and Innovation Fund (TIF) under SIDBI:**
  - Targets emerging tech areas (green tech, medtech, AI).
- **PSBLoansIn59Minutes and Credit Guarantee Schemes:**
  - Fast-track credit access for tech adoption.



## SELF RELIANT INDIA (SRI) FUND

Empowering MSMEs for Aatmanirbhar Bharat



Designed to Leverage the strength of the Private Sector in providing growth capital to viable MSMEs.



### Objectives

- Enhancing Equity/Equity like financing to MSMEs
- Supporting MSMEs in their growth & expansion and also creating employment opportunities.
- Supporting enterprises with a potential to graduate beyond the MSME bracket and become National/International Champions.
- Supporting MSMEs in the objective of making India self-reliant by producing relevant goods, services and technologies.

### Skilling, Capacity Building, and Human Resource Development

- **Technology Centres (Tool Rooms):**
  - Offer advanced manufacturing training (CNC, CAD/CAM, robotics).
- **Skill Development Programmes under Skill India and NSDC:**
  - Specific modules on Industry 4.0, data analytics, blockchain, AR/VR.
- **TIDE 2.0 Centres:**
  - Promote tech entrepreneurship and digital skilling in tier-2 cities.
- **Digital Skilling for Women and Marginalised Communities:**
  - Promoted by MeitY and NGOs using technology-enabled learning platforms.

### Integration into Global Value Chains through Technology

- **Udyam Portal and ONDC Integration:**
  - Digitally integrates MSMEs into e-commerce and logistics.
- **B2B Global Tech Marketplaces (e.g., GeM, Amazon Global Selling):**
  - Provides market access to MSMEs with compliant tech products.
- **Technology Upgradation for Export Competitiveness:**
  - Promoted by EEPC, EPCs, and EXIM Bank.

### Case Studies of Impact

#### (a) Morbi Ceramic Cluster (Gujarat)

- Adopted energy-efficient kilns and digital design software with CSIR support.
- Reduced production cost by 25%, increased export orders.

#### (b) Coimbatore Foundry Cluster

- Transitioned to Industry 4.0 via SAMARTH and C4i4 Labs.
- Integrated IoT in casting operations, reducing defects by 30%.

#### (c) Bamboo MSMEs in Northeast India

- Benefited from CSIR–NEIST and MGRI's technology transfer in laminated bamboo boards and bamboo composites.
- Created sustainable livelihoods, especially for women entrepreneurs.

#### (d) Rural Agro-Processing Units in Odisha

- Supported by Unnat Bharat Abhiyan and DST's SEED program.
- Installed solar dryers, cold chains, and digital quality control systems.
- Improved farmer-MSME integration and reduced post-harvest losses.

### Policy Recommendations and Way Forward

- **Promote Tech Diffusion Networks:**
  - Scale up TDCs, TBIs, and TIDE centres across tier-2/3 towns.
- **Enhance Public-Private-Academic Collaborations:**
  - Promote mission-mode innovation alliances for high-impact MSME sectors (biotech, greentech, textiles, food processing).
- **Simplify Access to Tech Finance:**
  - Unified MSME tech-financing portal with real-time eligibility filters.
- **Create Sector-Specific Centres of Excellence:**
  - In robotics, additive manufacturing, medtech, agri-tech.
- **Expand Tech Skilling and Apprenticeship Programs:**
  - Blended learning, AI-based adaptive training modules, industry tie-ups.
- **Strengthen International Tech Partnerships:**
  - Facilitate Indo-ASEAN, Indo-EU MSME tech corridors and IP co-creation models.
- **Digital Infrastructure Boost:**
  - Last-mile broadband, cloud access, cybersecurity services for rural MSMEs.

### Conclusion

India's ambition to become a \$5 trillion economy and a global manufacturing hub hinges significantly on the technological empowerment of its MSMEs. Strategic and coordinated science and technology interventions—across digitalisation, innovation, sustainability, and skill development—are already demonstrating transformative results. To scale this impact, a holistic ecosystem approach involving government, academia, industry, and civil society is essential. Empowered MSMEs, backed by robust technology frameworks, can not only drive inclusive economic growth but also position India as a global leader in sustainable, tech-driven entrepreneurship.

## NAVIGATING THE FUTURE OF MSME FINANCES

### Introduction: MSMEs as the Bedrock of Economic Growth

Micro, Small and Medium Enterprises (MSMEs) represent the backbone of global and national economies. According to the United Nations, MSMEs account for 90% of global businesses, 60-70% of global employment, and nearly 50% of global GDP. In India, their role is particularly critical. As of April 7, 2025, India had over 6.23 crore registered MSMEs employing approximately 26.66 crore people, contributing around 30% to GDP and more than 45% to exports.

These enterprises are pivotal in fostering inclusive growth, especially in rural and backward areas. MSMEs in India span diverse sectors—from food processing and textiles to auto components and even high-end applications such as space mission components. Around 70% of registered MSMEs operate in the service sector, with micro-enterprises forming the majority.

#### Global Relevance

- Account for 90% of global businesses
- Employ 60–70% of global workforce
- Contribute nearly 50% to global GDP

#### Indian Context

- 6.23 crore registered MSMEs (as of April 2025)
- Employ ~26.66 crore people
- Contribute ~30% to India’s GDP and >45% to exports

#### Role in Inclusive Development

- Spread across rural and backward regions
- Cover sectors from food processing, textiles to high-end components for space

### Evolution of MSME Classification and Formalization

#### Classification Milestones

- **MSMED Act (2006):** Defined by investment in plant/ machinery
- **July 2020:** Shift to investment + turnover (twin-criterion)
- **2025 Budget:**
  - ◆ Doubled turnover thresholds
  - ◆ Investment limits raised 2.5x
  - ◆ Unified definition for manufacturing & services

#### Formalization Tools

- Udyam Registration Portal (URP) and Udyam Assist Platform (UAP)
  - ◆ Simplify registration and credit linkages
- **Impact:** Registered MSMEs increased from 1.65 crore (2023) to 6.23 crore (2025)

Category	Investment not exceeding (₹ in Crore)	(Revised) Investment not exceeding (₹ in Crore)	Turnover not exceeding (₹ in Crore)	(Revised) Turnover not exceeding (₹ in Crore)
Micro	1	2.5	5	10
Small	10	25	50	100
Medium	50	125	250	500

### Strengthening MSMEs Through Finance

#### Priority Sector Lending (PSL)

- 40% of banks’ ANBC to PSL; 7.5% reserved for micro-enterprises
- **Year-on-Year (YoY) Lending Mandates:**
  - ◆ 20% growth in MSE credit
  - ◆ 10% growth in micro-enterprise accounts
  - ◆ 60% of total MSE lending to micro units

#### Collateral-Free Lending

- ₹10 lakh loans under PSL/PMEGP without collateral
- Can be extended to ₹25 lakh based on creditworthiness

- **Foreclosure Flexibility**
  - **RBI's Feb 2025 draft:** No foreclosure/prepayment charges on floating-rate MSME loans

### Credit Guarantee Mechanism

- **Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE)**
  - **Coverage Limit:** Raised from ₹5 crore to ₹10 crore (Apr 2025)
  - **Guarantee Coverage:**
    - ◆ 90%: Women-led enterprises
    - ◆ 85%: SC/ST enterprises
    - ◆ 80%: NE, J&K, Ladakh
    - ◆ 75%: Other MSMEs
- **Performance:**
  - 2000–2023: 71 lakh guarantees worth ₹4.27 lakh crore
  - 2023–2025: 44 lakh guarantees worth ₹5.02 lakh crore
  - Boost due to 50% cut in guarantee fees (April 2023)

### Key Financing Schemes for MSMEs

- **Prime Minister's Employment Generation Programme (PMEGP)**
  - Micro-enterprises in non-farm sectors
  - **Loan:** Up to 95% of project cost
  - **Subsidy:** Up to 35%
  - Supported 10.18 lakh enterprises, 83 lakh jobs (till 2025)
- **Pradhan Mantri Mudra Yojana (PMMY)**

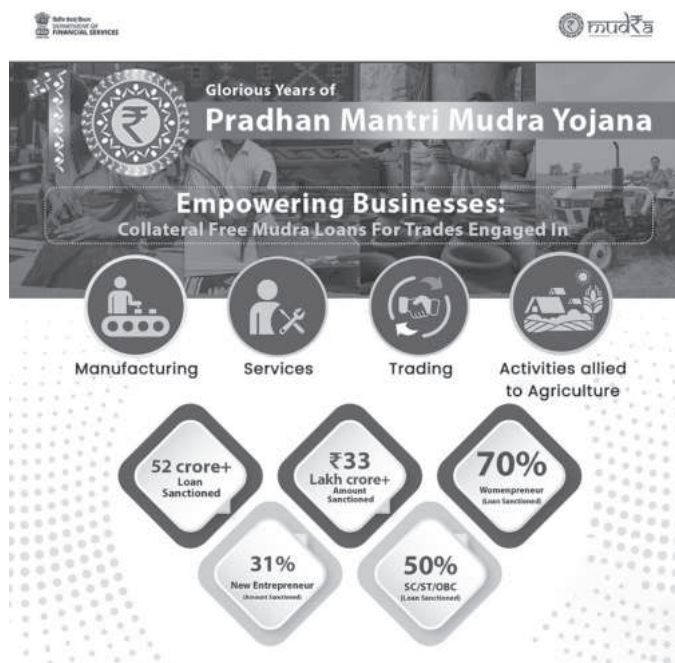
- Launched 2015; Collateral-free loans for micro units
- Disbursed 51.67 crore loans worth ₹32.61 lakh crore
- **PM Vishwakarma Scheme**
  - **Target:** Traditional artisans and craftspeople
  - **Benefits:** Skill training, toolkits, marketing, and loans up to ₹3 lakh @ 5% interest
  - **Progress:** 29.6 lakh registered, 4 lakh received loans (mid-2025)
- **Self Reliant India Fund (SRI)**
  - **Govt:** ₹10,000 crore; aims to mobilize ₹50,000 crore via private capital
  - **Purpose:** Equity support for scale-up and listing
  - **Status:** ₹10,979 crore invested in 577 MSMEs (by Mar 2025)
- **Emergency Credit Line Guarantee Scheme (ECLGS)**
  - COVID-19 relief; closed March 2023
  - Provided 1.13 crore guarantees worth ₹2.42 lakh crore
  - **SBI study:** Prevented 14.6 lakh MSME NPAs

### Budget 2025 Innovations and Way Forward

- **New Initiatives**
  - Credit Cards for Micro Enterprises
  - Fund of Funds for Startups
  - Dedicated credit for SC/ST/Women entrepreneurs (first-time)
  - Extended credit guarantee for exporter MSMEs & startups

### Conclusion: Toward a Resilient Financial Ecosystem

- MSMEs are now central to India's economic transformation toward a \$5 trillion economy.
- Robust financial architecture—from PSL to equity infusion—is catalyzing MSME growth.
- Budget 2025 lays the foundation for "Amrit Kaal" goals and the vision of Viksit Bharat @2047.



# ARTICLES FROM DOWN TO EARTH (MAY 2025)

## BREWING CRISIS: HOW CLIMATE CHANGE IS UNRAVELLING INDIA'S TEA HEARTLAND

**Context:** As rainfall grows erratic and temperatures soar, tea yields are falling — and women workers are bearing the brunt with low pay, no protections and rising risks.

### Tea Industry in India

- India is the **second-largest producer of tea globally**, following China, and holds the top position in black tea production. It is also the fourth-largest exporter of tea worldwide. Additionally, India is the leading consumer of black tea, accounting for 18% of global tea consumption.
- Tea cultivation in India is overseen by the **Tea Board of India**. The major tea-producing areas are located in the Northeast, particularly Assam, and in northern West Bengal, including the Darjeeling district and the Dooars region. In southern India, tea is also widely grown in the Nilgiri Hills.
- Tea grows best in cool to warm climates with a **minimum of 5 hours of sunlight daily**. The ideal annual temperature range for healthy growth is **between 15°C and 23°C**. It also requires rainfall between **150 and 200 cm each year**.

### Key Challenges

- **Working conditions:** Women workers pluck tea for **nearly nine months each year**, and during the lean season, they engage in soil digging, garden cleaning and clearing piles of dry leaves.
- **Climatic conditions:** Women workers work even during **scorching sun heat & erratic rains**. As there is **no shade in the gardens**, the summer becomes much hotter.
- **Inadequate wages:** Women workers earn daily wages in the range of 250 Rs.
- **Man-animal conflicts:** Leopards are often spotted in the gardens, and there have been **incidents of attacks on women pluckers**.
- **Absence of crèche facilities:** Due to the absence of crèche facilities, children are hung in cloth cradles and tied to tree branches.
- **Rainfall:** Rainfall patterns have become erratic across the region due to **short but intense rainfall bursts**. Due to inadequate rainfall, soil dries up and the groundwater table drops.

- **Crop yield:** Climate change also impacts the health of tea bushes, **increasing their susceptibility to pests and diseases**.

### Way forward

- **Preventing soil erosion:** Soil conservation methods such as **mulching and intercropping with legumes** help prevent soil erosion during sudden downpours.
- **Water Management: Drip irrigation and rainwater harvesting** helps preserve yield and save water during droughts or unpredictable rainfall.
- **Regeneration and Conservation of Soil:** Techniques that enhance soil fertility and structure, such as cover crops, contour planting, and the use of organic compost, guarantee long-term sustainability.
- **Climate-Smart Varieties:** Development of tea crop varieties which are resistant to pests and drought.
- **Systems for early warning and advisory:** By using **mobile advisories, weather forecasting, and community training**, tea growers can get ready for extreme weather events like heat waves or floods.

### Conclusion

Climate change and unresolved labour issues are pushing some tea gardens towards closure. But with **institutional support and climate-resilient cropping systems**, the enhanced profitability of tea gardens as well as women workers can be achieved.

## ACCESS AND BENEFIT SHARING: NEW RULES FOR USE OF BIODIVERSITY PUT IN PLACE BY CENTRE

**Context:** Recently, the Biological Diversity (Access to biological Resources and Knowledge Associated thereto and Fair and Equitable Sharing of Benefits) Regulation 2025 was approved by the Central government and notified on April 29, 2025.

### Key Highlights of Rules notified by National Biodiversity Authority

- **Prior Informed Consent (PIC):** Any individual or industry wishing to access biological resources must **notify the NBA in advance for approval**; this requirement

does not apply to access to cultivated medicinal plants notified under BDA 2002.

- **Benefit Sharing slabs:** The number of benefit sharing slabs is **determined by the annual turnover** of the individual or industry using the resource;
  - Users with an annual turnover of up to Rs 5 crore are exempt from sharing benefits
  - While those with an annual turnover between Rs 5 crore and Rs 50 crore are required to share 0.2% of the product's gross ex-factory sale price (excluding government taxes).
  - According to the remaining two slabs, 0.4% and 0.6% of the turnover between Rs 50 and Rs 250 crore and over Rs 250 crore, respectively, would have to be distributed.
  - A statement detailing the resources used annually must be shared by all users with an annual turnover of more than one crore.
  - **Benefit sharing for biological resources with high conservation or economic value must not be less than 5% of the sale or auction proceeds or the purchase price, and it may exceed 20% in the case of commercial use. For instance, agarwood, red sanders, etc.**
- **Commercialisation of Intellectual Property Rights:** The applicant must give the NBA the agreed-upon monetary or non-monetary benefit.
- The **2014 Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations** are superseded by this regulation.

#### What is Access and Benefit-Sharing (ABS)?

- The term "access and benefit-sharing" (ABS) describes **how genetic resources can be obtained and how the advantages that arise from their use are distributed**

**between the individuals or nations that use the resources (users) and the individuals or nations that supply them (providers).**

- The **Convention on Biological Diversity's (CBD)** provisions on access and benefit-sharing are intended to guarantee that genetic resources are physically accessible and that the advantages derived from their use are distributed fairly to the providers.
- This also includes **important traditional knowledge related to genetic resources derived from ILCs.**
- The advantages to be shared can be **non-monetary**, like the growth of research skills and knowledge, or **monetary**, like sharing royalties when the resources are used to produce a commercial product.

#### How does it work?

- In order to guarantee the just and equitable distribution of genetic resources and related benefits, access and benefit-sharing is predicated on a provider giving a user prior informed consent (PIC) and on the two parties negotiating mutually agreed terms (MAT).
- **Prior Informed Consent (PIC):** In accordance with a suitable national legal and institutional framework, prior informed consent (PIC) is the **authorisation granted to a user by the competent national authority of a provider country before they have access to genetic resources.**
- **Mutually Agreed Terms (MAT):** It is an **agreement that has been reached between users and genetic resource providers regarding the terms of access and use, as well as the benefits that will be shared by both parties.**

#### Conclusion

Thus, the new Act encouraged the production of medicinal plants and **released Indian medical practitioners from obtaining permission to use or benefit from them.**

# ARTICLES FROM EPW

## (MAY 2025)

### DELIMITATION AND DEEPENING FEDERALISM

**Context:** The article discusses the upcoming delimitation exercise in India, highlighting concerns over its potential to undermine federalism and the equal representation of states.

#### Impending Delimitation Crisis and its Federal Implications

- The delimitation exercise is the **process of redrawing boundaries for parliamentary constituencies**.
- This process is **mandated by Article 82 of the Constitution**, as amended in 2003, stipulating that it should occur after the first census published after 2026.
- While originally anticipated after the 2031 Census, it is now **more likely to happen after the deferred 2021 Census**.
- The delimitation exercise is deemed problematic if undertaken in a way that overrides the federal principle. The core concern is that an **imbalanced allocation of parliamentary seats could lead to the “overbearing power of some states”** in determining general election outcomes and legislative processes, thereby undermining the federal nature of Indian democracy.
- **Fears of Southern States:** Leaders from southern Indian states are spearheading the case against delimitation due to fears that it would lead to a disproportionate increase in parliamentary seats for northern Indian states. This, in turn, is perceived as diminishing the voice of the southern states in Parliament.
- **Constitutional Dilemma:** Opponents of delimitation suggest freezing the exercise, perhaps indefinitely, to ensure southern states maintain an equal voice. It contradicts **Articles 81 and 170 of the Constitution** and **subverts the principle of “one person, one vote, one value”**. This highlights a tension between the constitutional mandate for equitable representation based on population and the desire to protect the political influence of states that have successfully managed population growth.
- **Cause of Anxiety in Southern States:** The anxieties of southern states are rooted in concerns demonstrated by the actions of the union government in recent years. **Southern states cannot be “punished” for their demographic achievements**, such as declining birth rates and population. Conversely, the higher population

and birth rates in certain states are not attributed to a “collective moral failure” but rather to the “structural outcome of uneven development”.

#### Challenges to India’s Federal Character

- **Disproportionate State Power:** The existing arrangement, even without new delimitation, already leads to situations where the concerns of states with greater parliamentary strength overshadow those of smaller states.
  - **Example:** The crisis in Manipur, where despite being an extraordinary crisis, it has not garnered the same parliamentary attention as crises in larger regions.
- **Centralising Tendencies:** The concerns of southern states have been heightened by a centralising tendency that seeks to stifle state autonomy.
  - Supreme Court judgment on the Governor’s Powers, which has exposed the misuse of the governor’s office to subvert the legislative and executive powers of duly elected state governments.

#### Proposed Reforms to Deepen Federalism

- **Enhanced State Autonomy**
  - Increasing the autonomy of states
  - Expanding the state list in the Seventh Schedule of the Constitution while minimising the union list.
  - Ensuring safeguards to protect the shared nature of subjects in the concurrent list.
- **Reforming the Governor’s Post:** Opening a debate over abolishing the post of the governor (at least in its current form) or severely cutting down on gubernatorial powers is proposed as the next step. The aim is to prevent the union government from impinging upon the “constitutionally mandated rights and powers of elected state governments”.
- **Rethinking Bicameralism**
  - Reformulating the Council of States (Rajya Sabha) to ensure equitable representation for all states.
  - Emulating examples like the United States Senate to enhance the parliamentary status and stature of smaller states, moving them away from dependent federalism.
- **Electoral System Reforms**
  - Rethinking the first-past-the-post electoral system.
  - **Introducing an element of proportional representation** to the existing system, along the lines

of systems employed by the German Bundestag or the Parliament of Sri Lanka. This would enable “greater representation of states at the union,” contributing to an “increased federalisation of the electoral system”.

### Conclusion

The impending delimitation exercise, while constitutionally mandated, is poised to exacerbate federal tensions, particularly for southern states concerned about a diminished voice in Parliament. Successfully navigating this crisis necessitates a **deeper commitment to federal principles, involving institutional reforms like curbing centralising tendencies and rethinking the Rajya Sabha and Governor’s role.** A true democracy in India must balance numerical representation with equal voice and trust among its diverse constituent states.

## EARLY AND OFTEN: HEATWAVES IN FOCUS

**Context:** The article highlights the growing frequency and severity of heatwaves in India, urging a shift from individual-level responses to broader systemic changes involving green infrastructure, water access, energy equity, and social protection to address the root causes of climate-induced risks.

### Understanding Heatwaves and Their Impact

- Heatwaves are defined as temperatures exceeding 40 °C in low areas and 30 °C in mountains.
- **Cause:** They occur when high-pressure atmospheric systems (anticyclones) trap warm air, preventing it from dissipating, leading to several days of high solar radiation exposure for air and ground.
- **Health and Mortality Risks**
  - Heatwaves were attributed to many deaths in 2024.
  - Urban residents face a significant mortality risk during heatwave periods.
  - Beyond visible stress effects like a propensity for cardiovascular and respiratory episodes, rising temperatures followed by cooling thunderstorms can spread autoimmune diseases over time.
- **Vulnerable Populations and Settings**
  - Large public gatherings and outdoor work are particularly risky due to exposure. Those affected include tourists, election officials, pilgrims, construction and agricultural workers, and the elderly.
  - Special attention is needed for migrant informal labour, construction workers, agricultural workers, indoor cooks, and those exposed to heat due to livelihood necessities.

### Broader Dimensions of Mitigation: Social Justice and Planetary Health

- Climate risk is seen as an outcome of “societal success” shaped by technological revolution and consumer capitalism, yet these risks are not equally distributed.
- **Green (Trees) and Blue (Water) Spaces**
  - **Heat Island Effect:** The spectacular growth of world cities, often leading to deforestation and extensive built structures, generates heat island effects. Maintaining a habitable microclimate requires protecting tree cover and reducing the use of impervious substances.
  - **Public Engagement:** Technical and citizen experts should engage in large public consultations regarding the role of green spaces and waterbodies in reducing heat island effects. Despite judicial orders and environmental laws, massive deforestation is a routine practice in cities prone to heat waves like Delhi and Hyderabad.
- **Drinking Water**
  - **Scarcity and Quality:** Rising heat leads to water-related scarcities for poorer households, especially in underserved urban and rural communities. Water quality also deteriorates under climate change, posing severe public health hazards.
  - **Public Health Concerns:** An outbreak of Guillain-Barré Syndrome in Pune was attributed to sewage contamination of drinking water.
  - **Mitigation Measures:** Heat action plans should include supplies of purified water to underserved areas, traffic intersections, and construction sites.
    - ◆ **Example:** The Delhi government is implementing GPS tracker-enabled water tanker systems to ensure supply in summer.
- **Energy Use and Poverty**
  - **Increased Consumption:** Hot weather promotes high energy use in residential and commercial sectors.
  - **Inequality and Pollution:** Energy use and distribution are generally skewed and unequal. Wealthier segments have energy-dense consumption, requiring sustainability measures through education, information, and regulation.
  - **Indoor Air Pollution:** A less visible link to heatwave risk in rural areas is the adverse effects of indoor use of biomass cooking fuel. According to NFHS-5, 56.1% of rural and 9.5% of urban households use solid fuels for cooking. High-income households consume more liquid petroleum gas and electricity than low-income households.
  - **Industrial Pollution:** Highly dense urban areas, particularly on the western coast, face high air pollution due to concentrated industrial and manufacturing units. The association between energy use, energy poverty, and heatwaves requires further discussion.

• **Social Protection Measures**

- **Governmental Response:** Following last year’s heatwave, some state governments (e.g. Uttar Pradesh, Tamil Nadu, Telangana) have implemented advisories, action plans, and upfront compensatory measures. They have declared up to ₹4,00,000 ex gratia for heat mortality deaths.
- **Action Plans:** Heat advisories are published in local languages, schools are in focus, healthcare is promised at construction sites, and greater responsiveness from medical facilities for heat emergencies is being discussed.

- **Activating Programs:** It is urgent to activate social protection measures linked to existing programs like the Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act and public health insurance such as Ayushman Bharat Yojana.

**Conclusion**

The early and frequent visits of heatwaves indicate **how planetary life is jeopardised by rising temperatures**. Moving forward, states and citizens have critical roles in ensuring **green cities, uncontaminated water, sustainable energy, and social protection** for the most vulnerable groups. The heatwave focus needs to include not only the ‘sites’ but also the ‘source’ of climate-induced risks.

## IMPORTANT DAYS IN MAY 2025

Date	Day	Significance / Remark / Detail
1 May	<b>International Labour Day</b>	<ul style="list-style-type: none"> <li>1st of May is celebrated as International Labour Day is dedicated to all the workers and labourers across the world.</li> <li>This day honours the industrious people whose commitment and work have moulded economies and communities all around the world.</li> </ul>
3 May	<b>World Press Freedom Day</b>	<ul style="list-style-type: none"> <li>World Press Freedom Day was proclaimed by the UN General Assembly in December 1993, following the recommendation of UNESCO's General Conference.</li> <li>Since then, 3 May, the anniversary of the Declaration of Windhoek, is celebrated worldwide as World Press Freedom Day.</li> <li>World Press Freedom Day 2025 focuses on how AI affects press freedom, the free flow of information, media independence, and the global goal of ensuring access to information and protecting fundamental freedoms (SDG 16.10).</li> </ul>
10 May	<b>World Migratory Bird Day</b>	<ul style="list-style-type: none"> <li>World Migratory Bird Day is a global campaign that aims to raise awareness of migratory birds and issues related to their conservation.</li> <li><b>2025 Theme:</b> Shared Spaces: Creating Bird-Friendly Cities and Communities</li> </ul>
11 May	<b>National Technological Day</b>	<ul style="list-style-type: none"> <li>On May 11, 1998, India marked a significant milestone with successful nuclear tests at the Pokhran range in Rajasthan.</li> <li>National Technology Day is celebrated on May 11 every year to honour the contributions of India's scientific community including scientists, researchers and engineers.</li> </ul>
12 May	<b>International Day of Plant Health</b>	<ul style="list-style-type: none"> <li>The United Nations designated 12 May the International Day of Plant Health (IDPH) to raise global awareness on how protecting plant health can help end hunger, reduce poverty, protect biodiversity and the environment, and boost economic development.</li> <li>The Day is a key legacy of the International Year of Plant Health 2020.</li> <li><b>2025 Theme:</b> The importance of plant health in One Health</li> </ul>
16 May	<b>International Day of Light</b>	<ul style="list-style-type: none"> <li>International Day of Light is celebrated on 16 May each year, on the anniversary of the first successful laser operation in 1960 by physicist and engineer, Theodore Maiman.</li> <li>On this Day, UNESCO calls to strengthen scientific cooperation and harness its potential to foster peace and sustainable development.</li> </ul>

17 May	<b>World Telecommunication and Information Society Day</b>	<ul style="list-style-type: none"> <li>World Telecommunication Day has been celebrated annually on 17 May since 1969, marking the founding of ITU and the signing of the first International Telegraph Convention in 1865. It was instituted by the Plenipotentiary Conference in Malaga-Torremolinos in 1973.</li> <li>In November 2005, the World Summit on the Information Society called upon the UN General Assembly to declare 17 May as World Information Society Day to focus on the importance of ICT and the wide range of issues related to the Information Society raised by WSIS.</li> <li>In November 2006, the ITU Plenipotentiary Conference in Antalya, Turkey, decided to celebrate both events on 17 May as World Telecommunication and Information Society Day.</li> </ul>
20 May	<b>World Bee Day</b>	<ul style="list-style-type: none"> <li>To raise awareness of the importance of pollinators, the threats they face and their contribution to sustainable development, the UN designated 20 May as World Bee Day.</li> <li>The goal is to strengthen measures aimed at protecting bees and other pollinators, which would significantly contribute to solving problems related to the global food supply and eliminate hunger in developing countries.</li> <li><b>2025 Theme:</b> Bee inspired by nature to nourish us all</li> </ul>
21 May	<b>National Anti-Terrorism Day</b>	<ul style="list-style-type: none"> <li>National Anti-Terrorism Day in India is observed on May 21st each year to commemorate the death of former Prime Minister Rajiv Gandhi, who was assassinated on this date in 1991 by LTTE terrorists.</li> <li>The objective behind the observance of Anti-Terrorism Day is to wean away the people from terrorism and violence.</li> </ul>
22 May	<b>International Day for Biological Diversity</b>	<ul style="list-style-type: none"> <li>In December 2022, the world came together and agreed on a global plan to transform our relationship with nature. The adoption of the Kunming-Montreal Global Biodiversity Framework sets 23 targets for 2030 and 5 global goals for 2050 to stop and reverse the loss of nature in 25 years. Among its goals: restore 20% of degraded ecosystems and reduce the introduction or settlement of invasive alien species by 50%.</li> <li><b>2025 Theme:</b> Harmony with nature and sustainable development</li> </ul>
29 May	<b>International Day of UN Peacekeepers</b>	<ul style="list-style-type: none"> <li>For nearly 80 years, United Nations peacekeepers have delivered tangible change to communities worldwide.</li> <li>Observed under the theme “The Future of Peacekeeping” this year’s International Day looks at the invaluable contributions military, police and civilian peacekeepers have made over the last nearly eight decades.</li> </ul>
31 May	<b>World No Tobacco Day</b>	<ul style="list-style-type: none"> <li>The Member States of the World Health Organization created World No Tobacco Day in 1987 to draw global attention to the tobacco epidemic and the preventable death and disease it causes.</li> <li>In 1987, the World Health Assembly passed a resolution calling for 7 April 1988 to be a “World No-Smoking Day.”</li> <li>In 1988, a resolution was passed, calling for the celebration of World No Tobacco Day, every year on 31 May.</li> </ul>

## IMPORTANT EVENTS/SUMMITTS/CONFERENCES IN MAY 2025

	Events / Summits / Conferences	Details
1	<b>BRS COPs 2025</b>	<p>India supported stronger global action on chemicals and waste, especially managing plastic waste.</p> <p>The conference was held in Geneva, Switzerland.</p> <p>Theme: Make visible the invisible: Sound management of chemicals and wastes.</p>
2	<b>World Bank Land Conference, 2025</b>	<p>India showcased achievements of SVAMITVA Scheme at the World Bank Land Conference, 2025.</p> <p>Theme: Securing Land Tenure and Access for Climate Action</p>
3	<b>20th Session United Nations Forum on Forests (UNFF20)</b>	<p>The event was held in New York from May 5 to 9, 2025.</p> <p>The conference discussed topics such as forest conservation, sustainable forest management, big cat conservation, ecosystem valuation.</p>
4	<b>Inclusive India Summit, 2025</b>	<p>It was organized by the Department of Empowerment of Persons with Disabilities to celebrate Global Accessibility Awareness Day.</p> <p>The summit was held in India international Centre, New Delhi.</p> <p>It aims to promote digital accessibility for persons with disabilities.</p>
5	<b>International Tea Day Convention</b>	<p>The event was organized by Ministry of Commerce at Vanijya Bhawan Convention.</p> <p>The events focuses to strengthen India's tea export presence and domestic value recognition.</p>
6	<b>78th World Health Assembly</b>	<p>It was held in Geneva, on May 21st, 2025.</p> <p>India strongly reaffirmed its commitment to global health equity and universal health coverage.</p> <p>India also highlighted its achievement under Ayushman Bharat.</p>
7	<b>Rising North East Investors Summit</b>	<p>The summit was held at Bharat Mandapam, New Delhi.</p> <p>The event aims to accelerate comprehensive development in India's North Eastern states by attracting investment and partnership across diverse sectors.</p>
8	<b>9th BRICS Industry Ministers Meeting</b>	<p>The meeting was held in Brasilia, Brazil.</p> <p><b>Theme:</b> Strengthening Global South Cooperation for More Inclusive and Sustainable Governance.</p> <p>India unveiled a new initiative to foster cross-border startup collaboration and advocating inclusive industrial growth.</p>

## AWARDS AND PRIZES IN MAY 2025

	Award	Awarded to	Details
1	<b>Humanitarian Award</b>	<b>Actor Sonu Sood</b>	<p>Sonu Sood was honoured for his philanthropic services during COVID-19 pandemic.</p> <p>The award was given by Miss World Organisation.</p>

2	<b>Medal of Honour</b>	<b>Bhuwan Ribhu</b>	<p>Bhuwan Ribhu became the first Indian lawyer to receive World Law Congress honour.</p> <p>The award was given by the World Jurist Association.</p> <p>The award underlines his legal work in areas of human trafficking, especially child protection laws.</p>
3	<b>58th Jnanpith Award</b>	<b>Gulzar and Rambhadracharya</b>	<p>The award was given by the President of India for literary achievements.</p> <p>Gulzar was honoured for his lyrical poetry and screen writing whereas Rambhadracharya was celebrated for his Sanskrit epics and spiritual works.</p>
4	<b>International Booker Prize</b>	<b>Banu Mushtaq</b>	<p>International Booker Prize for her Kannada short story collection Heart Lamp.</p> <p>The book, translated into English by Deepa Bhashti.</p> <p>The book is a powerful portrayal of the challenges faced by Muslim women in S. India</p>

### TERMS IN NEWS: MAY 2025

	<b>Term</b>	<b>Meaning and Details</b>
1.	<b>Lapu-Lapu Day</b>	<ul style="list-style-type: none"> <li>Lapu-Lapu Day is observed on the anniversary of the Battle of Mactan, fought in 1521.</li> <li>In this battle, the chieftain (or Datu) of the Mactan island, Lapulapu, defeated Spanish forces under Ferdinand Magellan.</li> </ul>
2.	<b>Ketamine</b>	<ul style="list-style-type: none"> <li>Ketamine is an anaesthetic that has been listed as a hallucinogen by the US Drug Enforcement Administration. It is referred to as a “dissociative anaesthetic hallucinogen” because it creates a feeling of detachment from pain and the environment.</li> <li>Ketamine is consumed by those patients who haven’t responded to traditional therapies.</li> <li>Ketamine is also used as a recreational drug, popularly known as K or Special K among clubgoers.</li> </ul>
3.	<b>Field Marshall</b>	<ul style="list-style-type: none"> <li>The Indian and Pakistani armies are modelled on the British army’s system of ranks and privileges. A Field Marshal or FM is a five-star officer rank, and the highest attainable rank, above the general.</li> <li>The FM rank in the Indian Army is equivalent to the Admiral of the fleet in the Indian Navy and the Marshal of the Indian Air Force.</li> <li>India has had two FMs: Sam Manekshaw was the first, ascending to the rank in January 1973. KM Cariappa was the second Field Marshal and was promoted in January 1986. India has also had one Marshal of the Air Force, Arjan Singh, who was elevated to the rank in 2002.</li> </ul>
4.	<b>Cuauhtémoc</b>	<ul style="list-style-type: none"> <li>A Mexican ship known as the Cuauhtémoc struck New York’s iconic Brooklyn Bridge.</li> <li>The Cuauhtemoc is an academy training vessel, which had left a pier in Manhattan and was supposed to have been headed out to sea.</li> </ul>

### OBITUARIES IN MAY 2025

	<b>PERSON</b>	<b>IMPORTANT INFORMATION</b>
1.	<b>Subbanna Ayyappan</b>	<ul style="list-style-type: none"> <li>He was a pioneering fisheries scientist and recipient of the Padma Shri.</li> <li>He is known as the architect of India’s Blue Revolution.</li> </ul>

2.	<b>Dr. Saroj Ghose</b>	<ul style="list-style-type: none"> <li>• He was a renowned science communicator and the founding figure behind India's science museum movement.</li> <li>• As the founding Director General of the National Council of Science Museums (NCSM), Dr. Ghose revolutionised informal science learning in India, laying the foundation for a robust network of science centres across the country.</li> </ul>
3.	<b>M.R. Srinivasan</b>	<ul style="list-style-type: none"> <li>• He was one of the foremost leaders in India's nuclear energy sector and a former chief of the Atomic Energy Commission.</li> <li>• A close associate of Dr. Homi Bhabha, Srinivasan was instrumental in shaping India's atomic energy infrastructure.</li> <li>• Revered as one of the key architects of India's peaceful nuclear program, he played a pivotal role in the construction of the country's first nuclear research reactor and significantly expanded India's nuclear power capacity.</li> </ul>
4.	<b>Jyant Narlikar</b>	<ul style="list-style-type: none"> <li>• He was a renowned astrophysicist, visionary science communicator, and Padma Vibhushan awardee.</li> <li>• He founded the Inter-University Centre for Astronomy and Astrophysics (IUCAA) in Pune. As Founding Director, he shaped IUCAA into a world-class research and teaching institution.</li> </ul>

**Free Initiative by Chahal Academy**

**Editorial Analysis of Indian Express**

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# MAY 2025 - DAILY MCQs FROM THE HINDU & INDIAN EXPRESS

## DAILY MCQs PRACTICE

Q1. Consider the following statements regarding the International Space Station (ISS):

1. It functions as a microgravity laboratory for conducting scientific research across various disciplines.
2. The ISS orbits Earth approximately every 90 minutes.

Which of the statements above is/are correct?

- (a) 1 Only                      (b) 2 Only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Q2. Article 25 and Article 26 of the Indian Constitution deal with which of the following fundamental rights in India?

- (a) Right against exploitation, prohibiting all forms of forced labour, child labour and traffic in human beings.
- (b) Right to constitutional remedies for enforcement of Fundamental Rights.
- (c) Right to freedom of conscience and free profession, practice, and propagation of religion.
- (d) Right of any section of citizens to conserve their culture, language or script, and right of minorities to establish and administer educational institutions of their choice.

Q3. Which of the following statements correctly describe the current status of the WTO's dispute settlement mechanism:

1. The Appellate Body of the WTO is currently non-functional due to appointments being blocked.
2. Countries can still initiate disputes at the WTO, but final appellate rulings cannot be delivered.
3. The WTO has permanently suspended its dispute resolution function.

Select the answer using the code given below:

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

Q4. Consider the following with reference to Heat Action Plans (HAPs):

1. HAPs include measures like early prediction of heatwaves, increasing awareness, and preparing the health system.
2. Long-term measures in HAPs focus on increasing the number of parks and trees and making gardens publicly accessible.
3. Collecting, analyzing, and interpreting heat stress and mortality data is not part of the HAPs.
4. Successful implementation of HAPs largely depends on collaboration between city authorities, state governments, and community organizations.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                      (d) All four

Q5. Consider the following with reference to 'The Tsangpo River':

1. The Tsangpo River originates in Tibet, flows through Arunachal Pradesh, and eventually becomes the Brahmaputra in Assam.
2. It is one of the major rivers in South Asia and is known for having one of the deepest gorges in the world.
3. The Tsangpo River is also called the Yarlung Tsangpo in Tibet.
4. The river passes through the Great Himalayan Range, creating significant hydroelectric potential for the region.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                    (d) All four

Q6. Which of the following is a major geographical feature of Eastern Ladakh that has strategic importance in the context of India-China relations?

- (a) Pangong Tso                (b) Zaskar Range  
(c) Siachen Glacier        (d) Tawang Plateau

Q7. What is the primary purpose of Liquidity Coverage Ratio (LCR)?

- (a) To ensure that banks maintain a certain level of profitability by optimising interest income.  
(b) To increase a bank's leverage ratio, allowing it to make larger investments in risky assets.  
(c) To ensure that banks hold a sufficient level of high-quality liquid assets (HQLA) to meet its short-term obligations.  
(d) To set a minimum reserve requirement for banks in case of a recession.

Q8. Which of the following is the most characteristic health effect of chronic arsenic exposure in humans?

- (a) Hyperpigmentation and hyperkeratosis of the skin  
(b) Rickets  
(c) Kidney Stones  
(d) Liver cirrhosis

Q9. Consider the following statements regarding Amber Fort:

1. An UNESCO World Heritage site, the fort is renowned for its intricate Rajput architecture and overlooks Maota Lake.
2. Construction of the Fort was primarily initiated by Raja Man Singh I in the 16th century.

Which of the statements above is/are correct?

- (a) 1 only                        (b) 2 only  
(c) Both 1 and 2                (d) Neither 1 nor 2

Q10. Which of the following statements are correct in respect of Pahalgam:

1. It is located at the confluence of the Lidder River and the Sheshnag Lake.
2. It is a starting point of the annual Amarnath Yatra.
3. It is situated in the Anantnag district of Jammu and Kashmir.

Select the answer using the code given below:

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

Q11. Which of the following is not included in the calculation of GDP?

- (a) Private consumption  
(b) Government spending  
(c) Import of goods and services  
(d) Investment by businesses

Q12. Consider the following with reference to the powers of the Supreme Court and High Courts under Articles 32 and 226 of the Constitution of India:

1. The Supreme Court can issue writs only for the enforcement of Fundamental Rights.
2. The remedy under Article 32 is itself a Fundamental Right.
3. The High Courts can issue writs for the enforcement of Fundamental Rights as well as for any other legal right.
4. The jurisdiction of High Courts under Article 226 is narrower than that of the Supreme Court under Article 32.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                    (d) All four

Q13. Consider the following statements:

1. The F-35B is capable of vertical takeoff and landing (VTOL).
2. The F-35B is primarily designed for carrier operations.

Which of the statements given above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Q14. Consider the following with reference to the Cabinet Committee on Security (CCS):

1. The CCS is chaired by the Union Home Minister.
2. It is the final decision-making body on matters related to defence expenditure and national security.
3. The External Affairs Minister is a member of this committee.
4. The decisions of the CCS are subject to approval by the Parliament.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                    (d) All four

Q15. Which of the following statements best describes Antimicrobial Resistance (AMR)?

- (a) It occurs when the immune system becomes resistant to infections due to excessive use of antibiotics.
- (b) It is the phenomenon where antibiotics lose their effectiveness due to changes in human metabolism.
- (c) It occurs when pathogens like bacteria become resistant to the effects of medications, making infections harder to treat.
- (d) It refers to the body's natural adaptation to antibiotics, making them unnecessary over time.

Q16. The ancient city of Palmyra is located in ...

- (a) Italy                              (b) Greece  
(c) Syria                            (d) Iraq

Q17. The term Adjusted Gross Revenue (AGR) often seen in news is used in the context of ...

- (a) River-water Transportation  
(b) Space Tourism  
(c) Telecom Sector  
(d) Agricultural cooperative sector

Q18. Which of the following is the Indian Navy's first Artificial Intelligence enabled warship?

- (a) INS Nilgiri                    (b) INS Vaghsheer  
(c) INS Surat                      (d) INS Visakhapatnam

Q19. Consider the following with reference to the major consequence of Russia's invasion of Ukraine for global energy markets:

1. A significant rise in global oil and gas prices
2. A decrease in the reliance on Russian natural gas in Europe
3. Increased global oil supply due to Russian oil sanctions

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                        (d) None

Q20. What is the significance of the Instrument of Accession signed by Maharaja Hari Singh in 1947 for Jammu and Kashmir?

- (a) It marked the integration of Jammu and Kashmir into Pakistan
- (b) It allowed Jammu and Kashmir to maintain its sovereignty
- (c) It gave India control over defense, foreign affairs, finance, and communications
- (d) It gave the state full autonomy to govern itself

Q21. The ideal average ratio of Nitrogen-Phosphorus-Potassium (NPK) for fertilisers is:

- (a) 1:2:3                            (b) 3:2:1  
(c) 4:2:1                            (d) 1:2:4

Q22. Consider the following statements regarding the Shimla Agreement 1972:

1. The Shimla Agreement was signed between India and Pakistan following the 1971 Indo-Pak war, converting the 1971 ceasefire line into the Line of Control (LoC).
2. Both India and Pakistan agreed to resolve all bilateral disputes, including Kashmir, through third-party mediation under the auspices of the United Nations.

3. It creates a legally-binding obligation on both the parties to resolve the disputes in case of treaty violations by one country.

How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q23. Consider the following with reference to the U.S. and Iran nuclear talks:

1. The U.S. and Iran have held two rounds of talks, with Oman acting as a mediator.
2. The Trump administration has been fully supportive of the nuclear talks with Iran since 2018.
3. Iran has signalled its willingness to scale back its nuclear activities in exchange for the removal of sanctions and threats.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q24. Consider the following with reference to 'The School Health and Wellness Programme':

1. The programme is part of the government's Swachh Bharat Abhiyan initiative.
2. It aims to implement health and wellness activities in schools, such as regular health check-ups, counseling, and physical education.
3. The School Health and Wellness Programme is implemented only in government-run schools.
4. It is a centrally sponsored scheme launched by the Ministry of Health and Family Welfare.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                      (d) All four

Q25. Consider the following with reference to countries are referred to as the East Asian Tigers:

1. Hong Kong                      2. Japan
3. South Korea                      4. Taiwan
5. Singapore

Select the answer using the code given below:

- (a) 1, 3, 4, and 5 only                      (a) 1, 2, 4, and 5 only  
(c) 1, 2, 3, and 4 only                      (d) 1, 3, 4, 5, and 2

Q26. Consider the following with reference to the Nutrition for Growth (N4G) Summit:

1. The Summit is hosted exclusively by UN agencies.
2. It aims to align international financing and efforts to address global malnutrition.
3. It focuses on commitments from governments, private sector, and civil society to combat malnutrition.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q27. Consider the following statements regarding Monsoon in India:

1. The onset of the southwest monsoon over India is primarily triggered by the differential heating of the Indian subcontinent relative to the surrounding oceans.
2. The northeast monsoon is the major source of annual rainfall for most parts of India.

Which of the statements above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2                      (d) Neither 1 nor 2

Q28. Consider the following statements:

1. Jurisdictions under Increased Monitoring of FATF is commonly referred as Black List.
2. North Korea, Iran and Russia are present in FATF Black list.

Which of the statements above is/are incorrect?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2                      (d) Neither 1 nor 2

Q29. Consider the following statements regarding Rajamannar Committee:

1. It was set-up by the Government of India in 1969 to inquire into the centre-state relations.



How many of the above diamonds were mined in Golconda?

- (a) Only one                      (b) Only two  
(c) Only three                      (d) All four

Q37. Consider the following with reference to the 'nine-dash line' in the South China Sea:

1. The nine-dash line refers to China's territorial claim over a large portion of the South China Sea.
2. The nine-dash line is universally recognized by all countries in the region.
3. The nine-dash line has led to territorial disputes between China and other Southeast Asian countries.

How many of the above is/are incorrect?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q38. Consider the following with reference to the International Labour Organisation (ILO):

1. The ILO is a specialized agency of the United Nations.
2. The ILO's headquarters is located in Geneva, Switzerland.
3. The ILO's primary mandate is to regulate international trade and commerce.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q39. Which of the following best describes Shiv-Shakti point, recently seen in news?

- (a) The lunar landing site of ISRO's Chandrayaan-3 mission.
- (b) A deep-sea hydrothermal vent in the Indian Ocean.
- (c) A mountain range on the Moon discovered by Chandrayaan-2 mission.
- (d) Launch site for India's human space missions.

Q40. Consider the following statements regarding WAVES 2025:

1. WAVES 2025 is the inaugural edition of the World Audio Visual & Entertainment Summit.
2. It aims to foster collaboration between academia, industry, and policymakers to drive innovation and adoption of next-generation communication networks and renewable energy sources.

Which of the statements above is/are correct?

- (a) 1 only                              (b) 2 only  
(c) Both 1 and 2                      (d) Neither 1 nor 2

Q41. Which of the following statements are correct in respect of Private Member's Bills (PMBs):

1. A PMB can only be introduced by a Member of Parliament who is not a Minister.
2. PMBs are discussed exclusively on Thursday in both Houses of Parliament.
3. The last Private Member's Bill to be passed by both Houses and receive Presidential assent was in 1970.

Select the answer using the code given below:

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

Q42. Which country was the first to sign the ASEAN Free Trade Area (AFTA) agreement?

- (a) Malaysia                      (b) Thailand  
(c) Singapore                      (d) Indonesia

Q43. Vantablack, one of the darkest artificial materials, is composed of ...

- (a) Horizontally arranged graphene sheets
- (b) Vertically aligned carbon nanotubes
- (c) Amorphous carbon particles
- (d) Metallic nanoparticles in a polymer matrix

Q44. Consider the following statements regarding Census in India:

1. Since 1881, it is conducted every 10 years but was not done in 2021.

2. It is conducted by Registrar General and Census Commissioner of India under Ministry of Statistics and Program Implementation.

Which of the statements above is/are correct?

- (a) 1 only (b) 2 only  
(c) Both 1 and 2 (d) Neither 1 nor 2

Q45. Which of the following statements is correct regarding the Department-related Standing Committees (DRSC) in the Indian Parliament?

- (a) DRSCs are established by the Speaker of the Lok Sabha to discuss and deliberate on matters related to the functioning of various ministries.
- (b) Each DRSC is assigned to a specific ministry or department and performs functions related to scrutinizing its budget, policies, and programs.
- (c) The DRSCs are formed every year before the beginning of the Budget session.
- (d) The Chairman of each DRSC is appointed by the President of India.

Q46. Consider the following with reference to the Bandung Conference (1955):

1. A major objective of the conference was to promote Afro-Asian economic and cultural cooperation.
2. It was attended by countries from Asia, Africa, and Latin America.
3. The conference emphasized non-alignment and peaceful coexistence in international relations.

How many of the above is/are correct?

- (a) Only one (b) Only two  
(c) All three (d) None

Q47. Consider the following statements regarding Scheduled Castes (SCs) and Scheduled Tribes (STs) lists

1. Scheduled Castes (SCs) and Scheduled Tribes (STs), official lists are notified under constitutional orders of 1950.
2. The SC and ST lists are updated through parliamentary amendments.

Which of the statements above is/are correct?

- (a) 1 only (b) 2 only  
(c) Both 1 and 2 (d) Neither 1 nor 2

Q48. Which of the following is the fifth highest mountain peak in the world?

- (a) Lhotse (b) Makalu  
(c) Dhaulagiri (d) Nanda Devi

Q49. Consider the following with reference to the China-Pakistan Economic Corridor (CPEC):

1. The CPEC is a series of infrastructure projects that connects Gwadar Port in Pakistan to China's Xinjiang region.
2. The CPEC is primarily funded by the International Monetary Fund (IMF).
3. It is expected to reduce the travel time between China and the Arabian Sea, boosting trade.

How many of the above is/are correct?

- (a) Only one (b) Only two  
(c) All three (d) None

Answer: b (1 and 3 only)

Q50. Which Indian military force was most prominently involved in Operation Parakram?

- (a) Indian Air Force (b) Indian Navy  
(c) Indian Army (d) Border Security Force (BSF)

Q51. Consider the following statements regarding the Finance Commission of India:

1. The Finance Commission is a constitutional body established under Article 280 of the Indian Constitution.
2. The recommendations of the Finance Commission are legally binding on the central government.

Which of the statements given above is/are correct?

- (a) 1 only (b) 2 only  
(c) Both 1 and 2 (d) Neither 1 nor 2

Q52. The practise of Santhara or Sallekhana is associated with which of the following religion in India?

- (a) Buddhism (b) Sikhism  
(c) Jainism (d) Judaism



How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q60. What is the primary purpose of the United Nations Relief and Works Agency (UNRWA)?

- (a) To provide financial aid to all countries affected by war
- (b) To offer military support to refugees in conflict zones
- (c) To establish permanent settlements for displaced populations around the world
- (d) To assist Palestinian refugees with education, health care, and social services

Q61. Which areas in Pakistan were primarily targeted during Operation Sindoor?

- (a) Karachi and Islamabad
- (b) Balakot and Rawalpindi
- (c) Muridke and Bahawalpur
- (d) Lahore and Quetta

Q62. Consider the following with reference of the U.S.-India Initiative on Critical and Emerging Technology (iCET):

- 1. It aims to promote cooperation between the United States and India in the development of critical and emerging technologies such as Artificial Intelligence (AI), 5G, and Quantum Computing.
- 2. The initiative was launched to reduce technological dependence on China and ensure technological security for both nations.
- 3. It involves the creation of a joint venture between U.S. and Indian companies to commercialize space technologies.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q63. Consider the following statements regarding Starlink project:

- 1. It is a satellite internet constellation project developed by SpaceX to provide high-speed broadband internet globally, especially in remote areas.
- 2. Starlink satellites are communication satellites orbiting in a geosynchronous orbit.

3. These satellites are impeding the work of astronomers by creating radio noise.

How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q64. Consider the following statements regarding the Prevention of Money Laundering Act (PMLA), 2002:

- 1. The Enforcement Directorate (ED) can arrest individuals without a warrant if they have material evidence suggesting involvement in money laundering.
- 2. Under PMLA, the burden of proof lies with the prosecution to establish that a property is linked to money laundering.

Which of the statements above is/are is correct?

- (a) 1 only                          (b) 2 only  
(c) Both 1 and 2                  (d) Neither 1 nor 2

Q65. Consider the following with reference to 'Engineering Exports Promotion Council (EEPC) of India':

- 1. The EEPC of India functions under the Ministry of Commerce and Industry.
- 2. It acts as an advisory body for Indian engineering exporters and provides assistance in international marketing.
- 3. Its membership is limited to public sector enterprises in the engineering sector.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q66. Consider the following with reference to the process of electing the Pope:

- 1. The papal conclave is held in the Sistine Chapel in Vatican City.
- 2. Only Cardinals who are under the age of 80 are eligible to vote in a papal conclave.
- 3. After the election, white smoke is released from the chimney to announce the election of a new Pope.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q67. Carbon Border Adjustment Mechanism (CABM) is an initiative of ...

- (a) African Union  
(b) ASEAN  
(c) European Union  
(d) Organisation for Economic Co-operation and Development (OECD)

Q68. Consider the following statements regarding Nipah Virus:

1. It is a zoonotic virus and can also be transmitted between humans.
2. The primary animal reservoir for the Nipah virus is the bat, particularly the fruit bat.
3. There are currently no drugs and no vaccines specific for Nipah virus infection.

How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q69. Consider the following statements regarding Songar Drones:

1. The Songar Drone is a man-portable tactical UAV developed by Israel for real-time surveillance and target acquisition.
2. It is a loitering munition designed to carry explosive payloads and execute suicide missions.

Which of the statements above is/are is correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2                      (d) Neither 1 nor 2

Q70. BHISHM cubes are used to ...

- (a) Make navigation satellites  
(b) Develop cooling systems for supercomputers

(c) Provide emergency medical care

(d) Develop Light Combat Vehicles

Q71. Consider the following with reference to 'The National Family Health Survey (NFHS-5)':

1. NFHS-5 is the fifth round of the National Family Health Survey conducted by the Ministry of Health and Family Welfare.
2. NFHS-5 provides data on various indicators such as fertility, mortality, maternal and child health, and nutrition.
3. It was conducted in the year 2020-21 and covered all 9 states and 4 Union Territories of India.
4. The NFHS-5 survey primarily focuses on improving the health infrastructure in rural areas.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                      (d) All four

Q72. Which of the following statements are correct in respect of the National Disaster Management Authority (NDMA):

1. It is headed by the Prime Minister of India.
2. It is a constitutional body established under the Disaster Management Act, 2005.
3. It is responsible for laying down the policies, plans and guidelines for disaster management to ensure timely and effective response to disasters.

Select the answer using the code given below:

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

Q73. Consider the following statements regarding Commission for Air Quality Management (CAQM):

1. It is an executive body set up by the Delhi government for better co-ordination, research, identification and resolution of problems surrounding the air quality index.
2. It is composed of a chairperson and two members, one technical and one administrative.



3. The freedom of speech and expression includes the right to freedom of press.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q81. Consider the following countries:

1. France                      2. Germany  
3. Switzerland              4. United Kingdom

How many of the above countries are the members of European Free Trade Association (EFTA)?

- (a) Only one                      (b) Only two  
(c) Only three                    (d) All four

Q82. Consider the following statements:

- The constitution mandates all the Supreme Court judges to make a public declaration of their assets periodically.
- The RTI Act has pushed government officials to annually declare their assets to their respective cadre controlling authorities.

Which of the statements above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Q83. Which of the following statements are correct in respect of Director Generals of Military Operations (DGMOs) of India:

- The DGMO is a senior-ranking officer in the Indian Army, typically holding the rank of Lieutenant General.
- The DGMO is responsible for overseeing the functioning of India's tri-service commands including the Andaman and Nicobar Command.
- DGMO-level communication is a legacy mechanism established after the 1971 war to ensure military-to-military contact.

Select the answer using the code given below:

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

Q84. Consider the following with reference to the primary objectives of the Civil Registration System (CRS) in India:

- To register births, deaths, and marriages.

2. To collect data on population dynamics for policy-making and planning.

3. To maintain records of government employees' personal details.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q85. Which of the following statements are correct in respect of 'Persona non grata':

- It is a diplomatic term used to signify that a foreign diplomat is no longer welcome in the host country.
- The declaration of a person as 'persona non grata' must be approved by the United Nations General Assembly.
- Under the Vienna Convention on Diplomatic Relations, a host country is not obliged to provide any reason for declaring someone persona non grata.

Select the answer using the code given below:

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

Q86. What is the significance of Adampur Airbase in the context of Indian defense?

- It serves as a training base for the Indian Army.
- It is an important base for air combat operations in the western sector.
- It is the main naval airbase in northern India.
- It is primarily used for humanitarian airlifts.

Q87. Consider the following statements regarding International Civil Aviation Organization (ICAO):

- ICAO is a United Nations agency responsible for establishing global standards for aviation safety and efficiency.
- It was established by the Montreal Convention in 1944.

Which of the statements above is/are correct?

- (a) 1 only                      (b) 2 only  
(c) Both 1 and 2              (d) Neither 1 nor 2

Q88. Consider the following statements regarding Inflation in India:

- Headline inflation includes the prices of volatile items like food and fuel, while core inflation excludes them.

2. Core inflation is a more stable measure of underlying inflation trends because it is not affected by temporary price shocks in food and energy markets.
3. The retail inflation is based on the Consumer Price Index (combined).
4. The medium-term inflation target set by the RBI is 4+/-2 percent.

How many of the above statements are correct?

- (a) Only one                      (b) Only two  
(c) Only three                    (d) All four

Q89. Which of the following statements are correct in respect of Unmanned Aerial Vehicles (UAVs):

1. UAVs are primarily used for military surveillance and reconnaissance operations.
2. UAVs are incapable of being used for commercial applications like cargo delivery and agriculture.
3. UAVs can operate autonomously or be remotely controlled by human operators.

Select the answer using the code given below:

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

Q90. Consider the following with reference to e SkyStriker loitering munition:

1. The SkyStriker is an autonomous loitering munition used primarily for reconnaissance and intelligence gathering.
2. It is equipped with a 5-10 kg warhead for high-precision strikes on designated targets.
3. The SkyStriker has a maximum range of up to 100 kilometers.
4. It is powered by electric propulsion, which provides stealth and low noise during operations.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                    (d) All four

Q91. Lunar Polar Exploration (LUPEX) is a joint mission of ...

- (a) NASA and ESA              (b) ISRO and NASA

- (c) ESA and JAXA              (d) ISRO and JAXA

Q92. What is the primary focus of the United Nations Security Council's 1267 Sanctions Committee?

- (a) Enforcing nuclear non-proliferation agreements.  
(b) Imposing sanctions on entities linked to the Taliban only.  
(c) Targeting ISIL (Da'esh), Al-Qaeda, and associated individuals & groups.  
(d) Addressing human rights violations in conflict zones.

Q93. Which of the following statements are correct in respect of Free Movement Regime (FMR):

1. It allows tribal people living along the India-Myanmar border to travel up to 16 km across the border without a visa.
2. The FMR applies uniformly to all nationals of India and Myanmar.
3. The FMR was established to preserve the age-old socio-cultural ties between border communities.

Select the answer using the code given below:

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

Q94. What was the primary objective of Operation All-Clear?

- (a) To establish diplomatic relations with neighboring countries.  
(b) To expel insurgent groups operating in Bhutanese territory.  
(c) To conduct joint military exercises with India.  
(d) To promote economic development in southern Bhutan.

Q95. According to the International Atomic Energy Agency (IAEA), consider the following statements

1. It was the result of U.S. President Eisenhower's "Atoms for Peace" address to the General Assembly of the United Nations on 8 December 1953.
2. In 2005, it was awarded the Nobel Peace Prize for their work for a safer and more peaceful world.
3. IAEA Safeguards are embedded in legally binding agreements.

How many of the above statements is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q96. With reference to Integrated Air Command and Control System (IACCS), consider the following statements

1. It is an automated command and control system of Israel given to India.
2. It integrates data from various air defence sources.
3. It helps reduce reaction time and allows commanders to deploy air defence assets effectively.

How many of the above statements is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q97. Consider the following with reference to the Wagah-Attari border crossing:

1. It is the only road border crossing between India and Pakistan.
2. The famous Beating Retreat ceremony is conducted here daily.
3. It is located near the city of Amritsar in India and Lahore in Pakistan.
4. It serves as a key trade and transit point between India and Pakistan.

How many of the above is/are correct?

- (a) Only one                      (b) Only two  
(c) Only three                      (d) All four

Q98. Consider the following with reference to the Prime Minister's Overarching Scheme for Holistic Nourishment (POSHAN):

1. POSHAN aims to reduce stunting, undernutrition, anemia, and low birth weight in children.
2. It was launched by the Ministry of Women and Child Development in 2018.
3. POSHAN integrates and converges various nutrition-related schemes across different ministries.

How many of the above is/are incorrect?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q99. With reference to recent research on vaccines and their broader health impacts, consider the following statements:

1. The shingles vaccine may reduce the risk of both cardiovascular diseases and dementia.
2. The varicella-zoster virus, which causes chickenpox and shingles, remains dormant in the body and can reactivate later in life.
3. Shingrix is a live attenuated vaccine, while Zostavax is based on recombinant technology.
4. Some studies have found associations between reduced dementia risk and common vaccines such as diphtheria, pneumococcal, and hepatitis A.

Which of the statements given above are correct?

- (a) 1 and 2 only                      (b) 1, 2 and 4 only  
(c) 2, 3 and 4 only                      (d) 1, 2, 3 and 4

Q100. With reference to tariffs and their impact on the Indian economy, consider the following statements:

1. High tariffs in India have protected inefficient domestic producers by limiting foreign competition.
2. A simplified tariff structure with fewer and uniform rates leads to better economic efficiency.
3. Reducing tariffs can lead to lower consumer prices and encourage industrial competitiveness.

How many of the statements given above is/are correct?

- (a) Only one                      (b) Only two  
(c) All three                      (d) None

Q101. Which of the following statements are correct in respect of EOS-09 satellite?

1. It was designed to capture high-quality radar images using synthetic aperture radar.
2. It provides data for both civilian land-use mapping and defense surveillance.
3. It was primarily intended for weather forecasting and climate modeling.

Select the answer using the code given below:

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

Q102. Consider the following with reference to the Financial Action Task Force (FATF):

1. India is a founding member of FATE.
2. FATF maintains a "blacklist" of countries that are non-cooperative in preventing money laundering and terrorism financing.
3. FATF recommendations are legally binding on member countries.

How many of the above is/are correct?

- (a) Only one                              (b) Only two  
(c) All three                              (d) None

Q103. With reference to Kaladan project, consider the following statements:

1. With the help of the project, cargo will reach from Vizag and Kolkata to the Northeast, without being dependent on Bangladesh.
2. Bamar ethnic group make up more than 65% of the population in Myanmar.
3. The project involves road, river, and sea transport components.

Which of the statements given above are correct?

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

Q104. With reference to inflation measurement in India, consider the following statements:

1. Core inflation excludes food and fuel prices from the Consumer Price Index (CPI) basket.
2. General CPI inflation is more volatile compared to core inflation due to seasonal and global price shocks.
3. The Reserve Bank of India (RBI) primarily targets core inflation while setting monetary policy.

Which of the statements given above is/are incorrect?

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

Q105. Consider the following with reference to the Governor of a State in India:

1. The Governor must be a resident of the State for at least five years before his appointment.
2. The Governor can hold office for an indefinite period, subject to the discretion of the President.

How many of the above is/are correct?

- (a) 1 only                                  (b) 2 only  
(c) Both 1 and 2                      (d) Neither 1 nor 2

Q106. Which of the following statements are correct in respect of Kargil War?

1. The war was fought primarily by the Indian Army and the Indian Air Force.
2. The LoC was crossed by regular Pakistani Army troops disguised as militants.
3. The war led to improved India-Pakistan diplomatic relations immediately after the conflict.

Select the answer using the code given below:

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

Q107. What is the correct definition of diglossia?

- (a) The ability of an individual to switch between two unrelated languages
- (b) A situation where two languages are mixed to create a new one
- (c) The coexistence of two distinct varieties of the same language used in different social contexts
- (d) A disorder related to difficulty in speech production

Q108. With respect to One Rank One Pension (OROP), consider the following statements

1. OROP ensures that all armed forces personnel retiring at the same rank receive the same pension, regardless of their retirement date.

2. The Supreme Court in Indian Ex-Servicemen Movement v Union of India Case, affirmed the constitutional validity of the OROP scheme.

Which of the above statements is/are correct

- (a) 1 only (b) 2 only  
(c) Both 1 & 2 (d) Neither 1 nor 2

**Answer Key**

Q1.	c	Q23.	b (1 and 3 only)	Q45.	b	Q67.	c	Q89.	c
Q2.	c	Q24.	b (2 and 4 only)	Q46.	b (1 and 3 only)	Q68.	c	Q90.	c
Q3.	a	Q25.	a	Q47.	c	Q69.	d	Q91.	d
Q4.	c (1, 2, and 4 only)	Q26.	b (2 and 3 only)	Q48.	b	Q70.	c	Q92.	c
Q5.	d	Q27.	a	Q49.	b (1 and 3 only)	Q71.	b	Q93.	c
Q6.	a	Q28.	c	Q50.	c	Q72.	c	Q94.	b
Q7.	c	Q29.	b	Q51.	a	Q73.	d	Q95.	c
Q8.	a	Q30.	a	Q52.	c	Q74.	b	Q96.	b
Q9.	c	Q31.	c	Q53.	a	Q75.	a	Q97.	c
Q10.	b	Q32.	b	Q54.	c	Q76.	b	Q98.	a
Q11.	c	Q33.	b (1 and 3 only)	Q55.	a	Q77.	b	Q99.	b
Q12.	c (1, 2, and 3 only)	Q34.	a	Q56.	d	Q78.	c	Q100.	c
Q13.	a	Q35.	c	Q57.	a	Q79.	c	Q101.	a
Q14.	c (2, 3, and 4 only)	Q36.	d	Q58.	c	Q80.	c	Q102.	a
Q15.	c	Q37.	a (2 only)	Q59.	b	Q81.	a	Q103.	d
Q16.	c	Q38.	b (1 and 2 only)	Q60.	d	Q82.	b	Q104.	b
Q17.	c	Q39.	a	Q61.	c	Q83.	c	Q105.	a
Q18.	c	Q40.	c	Q62.	b	Q84.	b	Q106.	a
Q19.	b (1 and 2 only)	Q41.	c	Q63.	b	Q85.	c	Q107.	c
Q20.	c	Q42.	c	Q64.	a	Q86.	b	Q108.	c
Q21.	c	Q43.	b	Q65.	b	Q87.	a		
Q22.	a (1 only)	Q44.	a	Q66.	c	Q88.	d		



**DAILY MAINS ANSWER WRITING**

Q1: Manual scavenging highlights critical concerns such as caste discrimination, human rights and sanitation. What measures are taken by the government to eradicate manual scavenging? Discuss the reasons for prevalence of manual scavenging in India. (GS 1; 15 Marks; 250 Words)

- Q2: Highlight the objectives and key pillars of Mission Karmayogi. Examine its effectiveness in enhancing the efficiency and effectiveness of civil services in India. (GS 2, 15 Marks, 250 words)
- Q3: United Nations chose the Earth Day in 2016 to sign the Paris Agreement for limiting global warming to below 1.5°C. Describe the significance of 1.5°C threshold in combating climate change. How can the world stay within this threshold? (GS3, 15 Marks, 250 Words)
- Q4: Land degradation is emerging as one of the world’s most pressing environmental problems. Discuss the factors causing land degradation and the significance of land restoration. (GS 3; 15 Marks; 250 Words)
- Q5: The sooner India becomes a permanent member of the United Nations Security Council (UNSC), the better it will be for the UN organ. Comment. (GS 2; 15 marks; 250 words)
- Q6: Amid security challenges of terrorism and insurgency in the country, critically examine the office of National Security Advisor (NSA) in the current national security framework. (GS 3, 10 Marks, 150 Words)

- Q7: Despite constitutional backing and digital interventions, Panchayati Raj Institutions struggle with financial autonomy and transparency. Comment. (GS2; 15 marks; 250 words)
- Q8: Highlight the significance of agriculture research and development in enhancing agriculture productivity. What are the implications of reduced investment in agriculture research and development (R&D) on India's food security and economic growth? (GS 3, 15 Marks, 250 Words)
- Q9: What is a National Security Strategy and how is it different from a doctrine? Evaluate the need for India to have a National Security Strategy. (GS 3, 15 Marks, 250 Words)
- Q10: Decline in snow levels across the Hindu Kush Himalaya region is raising serious concerns about water and climate security. Discuss the impact of shrinking snow cover on water security and biodiversity. Suggest adaptation strategies to overcome these impacts. (GS 1 and 3, 15 Marks, 250 Words)
- Q11: Joblessness has been a persistent problem in the Indian economy. Discuss the immediate and long-term strategies and policies to address the issue of joblessness in India. (GS 3, 10 Marks, 150 Words)
- Q12: What is Gross Domestic Product (GDP) and why is it considered a key measure of economic growth? Discuss various approaches of measuring GDP and the limitations of GDP as a measure of economic growth. (GS 3, 10 Marks, 150 Words)
- Q13: What is the significance of palliative care in the Indian healthcare system? Discuss the challenges in implementing palliative care and the ways to improve access to palliative care in India. (GS 1 and 2, 15 Marks, 250 Words)
- Q14: China has suspended exports of rare earth elements amid the trade war with USA. What are rare earth metals and their major geographical hotspots? Discuss why rare earth metals are called seeds of technology. (GS 3, 15 Marks, 250 Words)
- Q15: Environmental Impact Assessment (EIA) is an important management tool for ensuring optimal use of natural resources for sustainable development. Discuss the evolution of Environment Impact Assessment (EIA) in India. What are the steps involved in an Environment Impact Assessment (EIA)? (GS 3, 15 Marks, 250 Words)
- Q16: India's fiscal deficit remains a key concern amid US President Donald Trump's tariff regime. What are the different types of macroeconomic deficits in the economy? Discuss the management of fiscal deficit and the need for fiscal discipline. (GS 3, 15 Marks, 250 Words)
- Q17: With AI technology improvements, deepfakes are becoming common on the internet and can be challenging to detect. Describe the concerns

associated with deepfakes. What are the global and Indian initiatives to tackle and regulate deepfakes? (GS 3, 15 Marks, 250 Words)

- Q18: How do constitutional and judicial interventions aim to balance the Governor's formal authority with the democratic functioning of the elected state government? (GS 2, 15 Marks, 250 Words)
- Q19: What are the challenges associated with the existing intensive agriculture system in India? Evaluate the benefits of regenerative farming as a sustainable alternative to ensure food, nutritional, and ecological security. (GS 3, 15 Marks, 250 Words)
- Q20: The lateral entry system in India's bureaucracy has been a subject of debate and political friction for decades. What is the policy of lateral entry? Examine the need and criticism of lateral entry in bureaucracy. (GS 2, 15 Marks, 250 Words)
- Q21: As India accelerates its transition to sustainable transportation, various sectors are embracing green hydrogen mobility. Examine the operational advantages of Hydrogen Fuel Cell Vehicles against their technical and economic challenges. (GS 3, 15 Marks, 250 Words)
- Q22: According to the recent IQAir report, thirteen out of the world's twenty most polluted cities are in India. Examine the status of air pollution in India. Discuss the impact of major air pollutants. (GS 3, 10 Marks, 150 Words)
- Q23: What is Quantum technology and the principles of quantum mechanics? Discuss the key domains of the National Quantum Mission. (GS 3, 10 Marks, 150 Words)
- Q24: SVAMITVA is transforming rural governance, boosting economic growth and showcasing India's land tech globally. Discuss the implementation and benefits of the scheme. (GS 3; 15 Marks; 250 Words)
- Q25: The India-Saudi Arabia bilateral relationship evolved beyond conventional areas like trade and energy into areas like climate change, food security, and cultural ties. Comment. (GS 2, 15 Marks, 250 Words)
- Q26: What is denial-of-service (DoS) attack? How is it different from a distributed denial of service (DDoS) attack? Discuss the ways in which DoS attacks are carried and ways to deal with such attacks. (GS 3, 15 Marks, 250 Words)

For Detailed  
Explanation

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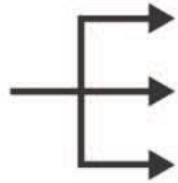
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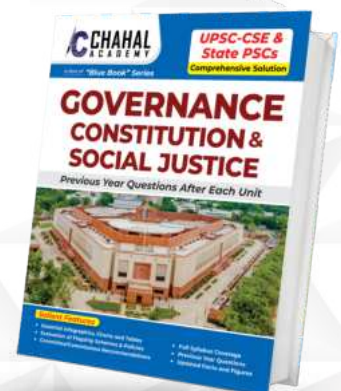
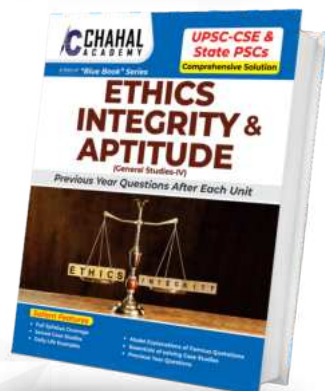
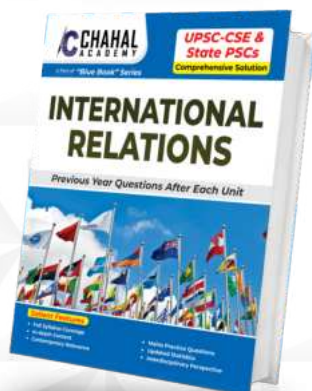
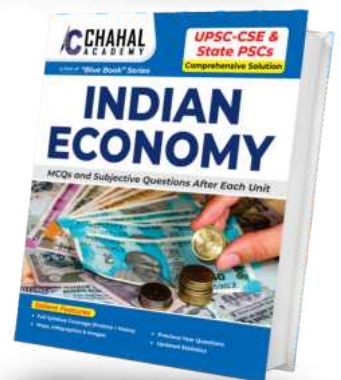
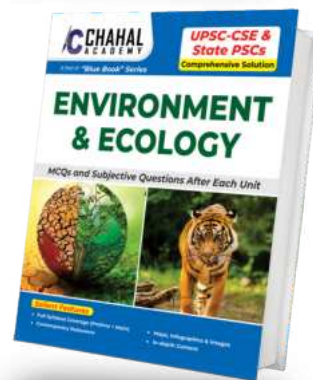
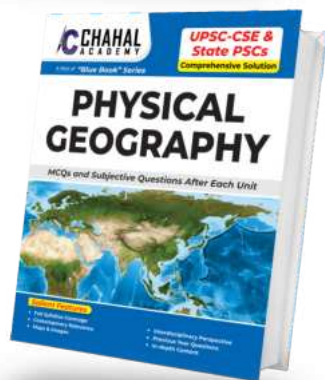
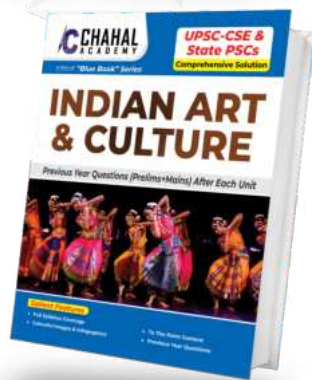
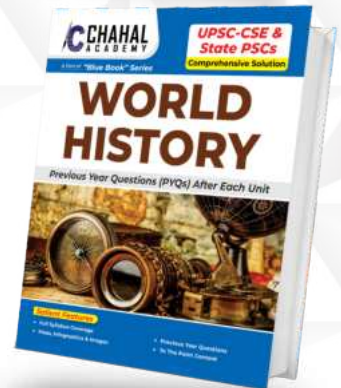
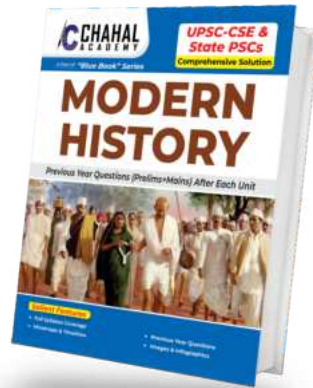
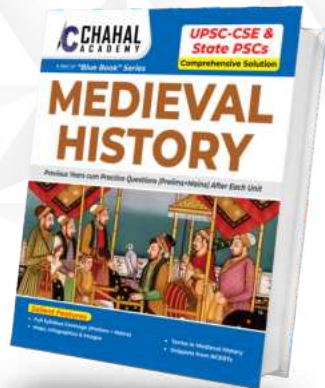
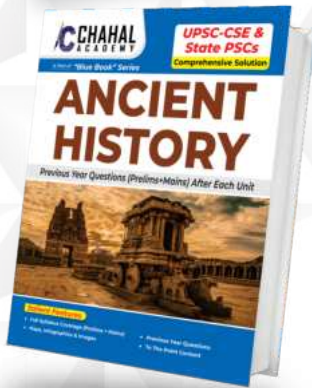
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