UTTARAKHAND LEADS INDIA WITH FIRST-EVER UNIFORM CIVIL CODE

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For Prelims and Mains

Table of Contents

Polity & Governance

1. Farmers refuse to meet Supreme Court panel: Why, what the panel's mandate is

Introduction

As farmers continue to protest at the Punjab-Haryana border, recently, the Samyukta Kisan Morcha (Political) refused to meet a high-powered committee set up by the Supreme Court to look into their demands.

The committee has met members of Samyukta Kisan Morcha (Non-Political), of which Jagjit Singh Dallewal, the farmer leader on a fast unto death, is the convener. However, only its second-rung leadership attended the meeting.

What did the SKM say?

SKM leader Balbir Singh Rajewal said they discussed the issue for two days and decided that the panel's mandate had nothing to do with the farmers' demands. He claimed the high-powered committee had to work on providing a space to agitating farmers at Khanauri and Shambhu borders, but was unable to do anything.

"Hence, we decided not to be a part of their meeting on January 3, as we feel it will harm the interests of the agitation," Rajewal said. He also said they did not want to be seen participating in the meeting when Dallewal is on a fast unto death.

What is the panel's mandate?

While constituting the high-powered committee on September 2 last year, the Supreme Court had stated that the "committee is requested to meanwhile reach out to the agitating farmers at the Shambu border to impress upon them to immediately remove their tractors/trolleys, tents and other accessories from and near the National Highway so as to enable the civil and police administration of both the States to open the National Highway."

Judges Surya Kant and Ujjal Bhuyan also stated, "We hope and trust that one of the major demands of the agitating farmers regarding constitution of a neutral High-powered Committee having been accepted with the consent of both the States, they will immediately respond to the request of the High-powered Committee and will vacate the Shambu border or the other roads connecting the two States without any delay. This gesture will provide huge relief to the general public who are facing extreme hardships due to the blockade of the Highways. It will also facilitate the High-powered Committee and both the States to consider the farmers genuine and just demands in a dispassionate and objective manner."

Their mandate is also about examining the larger issues confronting the farming community. "We may hasten to add that there is a sizeable population of non-agriculture communities in the States of Punjab and Haryana – largely belong to the marginalised sections of the society and live below the poverty line. Most of them are the strength and backbone of agricultural activities in their villages/areas. We acknowledge their contribution towards the agricultural

growth and are of the view that their legitimate aspirations, if not enforceable rights, also deserve empathy and due consideration by the Committee, while examining the larger issues which are confronting the farming community in the States of Punjab and Haryana," the SC noted.

Who are the members of the panel?
As per suggestions by Punjab and Haryana, Justice (retd.) Nawab Singh, Former judge of Punjab and Haryana High Court, was appointed chairperson of the panel. BS Sandhu, former Haryana Director General of Police who hails from Punjab; Devinder Sharma, a noted agriculture expert; Prof. Ranjit Singh Ghumman, Prof. of Eminence at GNDU, Amritsar (Punjab); and Dr Sukhpal Singh, agricultural economist, Punjab Agricultural University, Ludhiana are the other members.

The SC had said that the experts in the committee are "distinct in their respective fields and are above board. They are persons of high integrity with a dedicated commitment to the field of their specialisation, with special expertise in the field of agriculture and firsthand knowledge of the hardships being experienced by the rural people including farmers."

What did the committee's first report say?
In its first report submitted to the Supreme Court on November 22, the panel listed reasons behind agrarian distress in Punjab and Haryana, including stagnant yield, rising costs, debt, and an inadequate marketing system.

The committee suggested solutions, including examining the possibility of giving legal sanctity to minimum support price (MSP) and offering direct income support.

In its 11-page report, the panel said, "The farming community in the country in general and that of Punjab and Haryana in particular has been facing an ever-increasing crisis for over two decades. The stagnation in yield and production growth since the mid-1990s marked the beginning of the crisis."

It added, "In 2022-23, the institutional debt on farmers in Punjab was Rs 73,673 crore, while in Haryana it was Rs 76,630 crore as per the National Bank for Agriculture and Rural Development (NABARD). There is also a significant burden of non-institutional debt on farmers, which is estimated to be 21.3 per cent of total outstanding debt on farmers in Punjab and 32 per cent in Haryana, according to the National Sample Survey Organisation (NSSO)."

The report said the farming community across the country was struggling with a suicide epidemic. "In India, over 4 lakh farmers and farm workers have committed suicide since 1995. In Punjab, a house-to-house survey conducted by three public sector universities recorded 16,606 suicides among farmers and farm workers in 15 years (2000 to 2015)," it said.

And what next?
The committee is now preparing its second report on boosting farm income, which also includes MSP. For this, the committee has met various stakeholders, including the directors of

agriculture and horticulture departments of Punjab and Haryana. More meetings are lined up from January 7.

It has called institutions that work on agriculture policies. Vijay Pal Sharma, chairman of the Commission for Agricultural Cost and Prices, has been called. NITI Aayog member Ramesh Chand has also been invited. Credit Rating Information Services of India Limited (CRISIL), which had pegged the universal MSP to cost at Rs 21,000 crore last fiscal, has been invited.

Apart from this, the MD of Amul has also been called.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

2. Why Punjab's arhtiyas are demanding for national-level extension of Punjab Agricultural Produce Markets Act

Introduction

Punjab's arhtiyas (those who facilitate the transaction between a farmer and actual buyer) have asked the state government to push for the adoption of the Punjab Agricultural Produce Markets Act, 1961, as a national model for agricultural marketing.

What are the key features of the Act?

The Act operates under strong state regulation, requiring farmers to sell their produce through government-controlled mandis primarily. These markets are supported by fixed market fees (market development Fund) which fund infrastructure and ensure transparency and development of market infrastructure through committee. While private markets are allowed, they operate under strict government licensing.

It emphasises mechanisms to secure fair remuneration for produce, creating efficient marketing systems to improve farmers' incomes. It protects the interest of small and marginal farmers. The Act allows direct marketing through registered entities, enabling farmers to sell beyond traditional mandis and access diversified markets, including private buyers. Private market yards are permitted under government licensing, and dispute resolution mechanisms are in place. The well-established network of mandis and traditional storage facilities underpins the state's agricultural marketing system, ensuring reliable support for marketing and storage needs.

Why are arhtiyas concerned regarding NPFAM?

They fear the new framework could weaken Punjab's established system. The draft NPFAM emphasises deregulation and flexibility, allowing farmers to sell to private buyers and on digital

e-trading platforms, alongside Agricultural Produce Market Committees (APMCs). It promotes public-private partnership, and private investment in market infrastructure, such as silos and cold storages, with fewer regulatory restrictions with simplified licensing across states.

The policy proposes exemptions from market fees for private facilities, which could undermine the existing mandi infrastructure.

Ravinder Singh Cheema, president of the Punjab Arhtiyas Association, told The Indian Express, "The framework proposes changes like promoting private silos and exempting certain facilities from market fees, which could harm the state's infrastructure."

He added that NPFAM favours big private players and corporate houses, and it might allow large corporations to bypass traditional markets, creating monopolies and sidelining farmers.

Why do farmers and arhtiyas oppose private silo storage in Punjab?
Farmers argue that private silos mainly store wheat, creating problems for other crops such as paddy. They also claim that the state's existing facilities are adequate for managing primary crops, including wheat and paddy.

According to farmers, there is a risk of monopoly as allowing private silos to operate outside agricultural marketing laws could lead to corporate control and reduce options.

What are the other points of contention?
There would be a huge loss of revenue as well. Exempting private silos, cold storage, and private yards from market fees could undermine the funding needed to maintain Punjab's strong mandi system which will further weaken the infrastructure.

While the framework claims to foster innovation and competition, we fear it could lead to corporate dominance and marginalise small farmers, making equitable market access challenging. Arhtiyas believe Punjab's Act safeguards farmers' interests effectively and should serve as a model for the entire country. They fear that the National Policy Framework could harm farmers and prioritize corporate interests over public welfare.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

3. Amit Shah launches Bharatpol: how this portal aims to help probe transnational crimes

Introduction
Union Home Minister Amit Shah inaugurated the 'Bharatpol' portal recently, which aims to streamline international cooperation for law investigating agencies.

Bharatpol — broadcast hub for assistance and real-time action against transnational crimes via international police cooperation — was developed by the Central Bureau of Investigation

(CBI). It will allow central and state agencies to easily connect with the Interpol and speed up their investigations.

What is Bharatpol and why has the CBI developed it?

The CBI, as National Central Bureau for Interpol (NCB-New Delhi) in India, connects all law enforcement agencies in India to law enforcement agencies in 195 other countries through Interpol. Currently, all central agencies and the police forces of various states and Union Territories coordinate with the CBI, Interpol liaison officers (ILOs), and unit officers concerned through letters, emails, and faxes, due to which they often face delays in their investigation. With Bharatpol, international police collaboration becomes more seamless.

The decision to develop this portal was taken amid the rise in transnational crimes, including cyber-crime, financial crimes, online radicalisation, organised crimes, drug trafficking, and human trafficking. In such cases, real-time international assistance is needed for criminal investigations.

What are the key features of Bharatpol portal?

There are five key features:

Unified Platform: This portal integrates the CBI as the Interpol (NCB-New Delhi) with all law enforcement authorities in India, down to Superintendents of Police (SPs) and Commissioners of Police (CPs).

Simplified Request Mechanism: This portal allows front-line police officers to easily and promptly request international assistance from 195 Interpol member countries using standardised templates.

Rapid Information Dissemination: This portal enables the CBI as the NCB to rapidly share criminal intelligence and inputs from 195 countries with all law enforcement agencies in India. Increase utilisation of Interpol notices: This portal will enable easy drafting of Red Corner Notice requests and other colour coded notices of Interpol. This will lead to effective tracking of crime, criminals and proceeds of crime globally.

Capacity Building and Training: This portal also provides access to relevant documents, templates, and training resources, enhancing the capability of frontline officers to conduct investigations abroad and seek foreign assistance effectively through Interpol.

What did Home Minister Amit Shah say at the launch?
Speaking at Bharat Mandapam in New Delhi, Shah said it was time for Indian investigation agencies to use modern technology and techniques to nab fugitives. "We have to keep an eye on global challenges and update our internal systems. Bharatpol is a step in that direction…The new portal will allow central and state probe agencies to share and obtain information on their cases from the 195 member nations of the Interpol," he said.

What are the key modules of Bharatpol?
There are five key modules — Connect, INTERPOL Notices, References, Broadcast, and Resources.

"Through Connect, all our law enforcement agencies will essentially function as an extension of Interpol's NCB-New Delhi. The system will ensure quick, secure, and structured transmission of requests for Interpol Notices, enabling a scientific mechanism to swiftly locate criminals from India and across the globe, within India," Shah said.

Requests for assistance from the 195 member countries of INTERPOL will be available on the Broadcast module, while the Resources module will make it easy to exchange and manage documents and resources.

Relevance: GS Prelims; Governance
Source: Indian Express

4. What draft rules on VC appointments say, why states are upset

Introduction
Several states have objected to provisions in The UGC (Minimum Qualifications for Appointment and Promotion of Teachers and Academic Staff in Universities and Colleges and Measures for the Maintenance of Standards in Higher Education) Regulations, 2025, that could give the Chancellor – who is typically the state Governor – a bigger role in appointing Vice Chancellors (VCs) of state universities.

How VCs are appointed
Regulations notified by the University Grants Commission (UGC) in 2018 said that a search-cum-selection committee comprising eminent persons in higher education shall shortlist 3-5 candidates by public notification, nomination, a "talent search process", or a combination of these processes.

The Chancellor – or Visitor in a central university – appoints the VC from among the recommended names.

In the case of state and private universities, one member of the search-selection committee is nominated by the UGC Chairman. For state universities, the rest of the committee is constituted in accordance with state law.

The Kerala University Act, 1974, for example, says the VC will be appointed by the Chancellor "on the unanimous recommendation of a committee appointed by him consisting of three members", one elected by the university Senate, and one each nominated by the UGC Chairman and the Chancellor (Governor).

Central universities – there are 56 currently – are established under an Act of Parliament, and are administered by the Centre. The Visitor, their ceremonial head, is the President of India.

The composition of the committee to appoint the VC of a central university is determined by the Act that governs the university. For the University of Delhi and Jawaharlal Nehru University, for example, the committee has two nominees of the university Executive Council, and one of the Visitor.

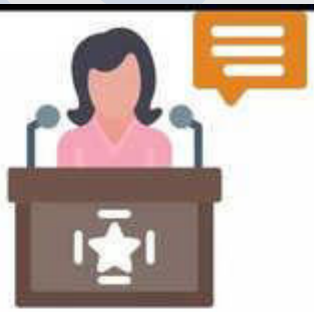
DRAFT RULES ON VC APPOINTMENTS

2010 Gazette Notification	2025 draft
The selection of VC should be through proper identification of a panel of 3-5 names by a sear committee through a public notification or nomination or talent search process or in combination	The selection for the vice-chancellor post shall be through an all India newspaper advertisement and public notification. Applications can also be sought through nomination or a talent search process by a search cum selection committee

Search cum Selection Committee

2010 Gazette Notification	2025 draft
A nominee of the visitor/ chancellor, who should be the chairperson of the committee	A nominee of the visitor/chancellor, who shall be the chairperson of the search cum selection committee
A nominee of the chairman, University Grants Commission	A nominee of the chairman, University Grants Commission
A nominee of the syndicate/ senate/executive council / board of management of the university	A nominee of the apex body of the university such as syndicate/ senate/executive council / board of management/ equivalent body of the university
The visitor/chancellor shall appoint the vice-chancellor out of the panel of names recommended by the search committee	The visitor/chancellor of the university shall appoint the vice-chancellor out of the panel of names recommended by the search-cum-selection committee

2025 draft | The search-cum-selection committee shall short-list the candidates and interact with the short-listed candidates to prepare a panel of 3-5 names for submission to the visitor/chancellor



Who should be a VC

2010 Gazette Notification | Persons of the highest level of competence, integrity, morals and institutional commitment

2025 draft | A distinguished person possessing high academic qualifications and demonstrated administrative and leadership capabilities, strong alignment to constitutional values, strong social commitment, belief in teamwork, pluralism, ability to work with diverse people, with a flair for innovation and a global outlook in higher education, along with the overall vision of the institution and abilities to manage complex situations

States vs Centre over VCs

Over the past several years, non-BJP governments in states have clashed with the Governor, who is a nominee of the Centre, over the appointment of VCs.

KERALA: The tussle began in 2021, when then Governor Arif Mohammad Khan claimed he had been forced to act against his conscience by the LDF government in the reappointment of Gopinath Ravindran as VC of Kannur University.

In 2023, the Assembly passed a Bill to replace the Governor with eminent educationists as Chancellors of universities in the state. The Bill is yet to receive the assent of the President.

WEST BENGAL: The Supreme Court is currently seized of the matter arising out of the West Bengal government's challenge to a June 2023 order of the Calcutta High Court upholding the unilateral appointment of interim VCs in 13 state universities by Governor C V Ananda Bose.

In July 2024, the SC appointed former Chief Justice of India U U Lalit to head separate search-selection committees to shortlist candidates for the positions. There has been some progress in this process since.

Earlier, the West Bengal Assembly passed The University Laws (Amendment) Bill 2023 to replace the Governor with the Chief Minister as Chancellor of all state-aided universities. The Bill is yet to receive the Governor's assent.

KARNATAKA: In December 2024, the Assembly passed a Bill to replace the Governor with the Chief Minister as Chancellor of Karnataka State Rural Development and Panchayati Raj University. The Bill is yet to receive the Governor's assent.

In November, the Karnataka Cabinet had decided to do the same for other state universities as well. The state Higher Education Minister had said a draft Bill was in the works to amend the Karnataka State Universities Act to bring in critical administrative reforms for the 42 universities under the state government.

MAHARASHTRA: In 2021, when Uddhav Thackeray's Maha Vikas Aghadi (MVA) government was in power, the legislature passed a Bill that restricted the Governor's power to only approving VC candidates recommended by the state government, and gave greater authority to the state's Higher and Technical Education Minister instead.

The Bill remained pending with then Governor Bhagat Singh Koshyari. After Eknath Shinde became Chief Minister in 2022, the new government withdrew the Bill and the original process, in which the Governor had the final say in the appointment of VCs, was restored.

TAMIL NADU: In 2022, the DMK-led government passed two Bills to allow the state government to pick VCs for state universities, but these Bills were not approved by the Governor.

Last year, Governor R N Ravi asked the government to recall the notifications to set up search committees for VCs of several state universities on the grounds that they did not include the nominee of the UGC chairman. The appointments remain pending.

New UGC regulations

* The draft regulations say "the Chancellor/ Visitor shall constitute the Search-cum-Selection Committee comprising three experts." The 2018 regulations did not specify who would constitute the committee.
* Unlike the 2018 regulations, the new regulations specify the composition of the committee: a member each nominated by the Visitor/ Chancellor, the UGC Chairman, and the apex body of the university (Senate/ Syndicate/ Executive Council). This gives nominees of the Centre the majority in the committee.
* Besides professors, individuals at senior levels in industry, public policy, public administration, or public sector undertakings, can also become VCs, says the draft.

Question of federalism

Kerala Chief Minister Pinarayi Vijayan has said that the draft regulations "undermine federalism by stripping states of their rights to appoint" VCs for state-run universities, and "vest unchecked power in the Chancellor".

The Tamil Nadu Assembly has asked the Centre to withdraw the draft regulations. Chief Minister M K Stalin has said giving Governors broader control over VC appointments is a "direct assault on federalism and state rights", and an attempt to "undermine democratically elected state governments".

However, UGC chairman M Jagadesh Kumar has said the draft regulations seek to provide a "robust process" for selecting VCs, "aligning with the overarching goals of quality and transparency in higher education". The 2025 draft removes the ambiguities of the 2018 regulations, he said. The draft is also aligned with the "objectives of the National Education Policy 2020, he said.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

5. What is the SVAMITVA scheme to issue property cards in villages, who benefits from it and how

What is the SVAMITVA scheme?

The acronym SVAMITVA stands for Survey of Villages and Mapping with Improvised Technology in Village Areas. It aims to provide a 'record of rights' to those having houses in villages, and issue them a property card.

The plan is to survey all rural properties using drones and prepare GIS -based maps for each village. The scheme was launched by PM Modi on National Panchayati Raj Day, on April 24, 2020.

What is the benefit of a SVAMITVA property card?
According to the Ministry of Panchayati Raj, the scheme benefits rural residents in many ways. First, it enables rural households to use their property as a financial asset for taking loans and other financial benefits.

Second, it helps in determination of property tax, which accrues to the Gram Panchayats directly in states where they are empowered to collect such taxes. The cards help increase liquidity of land parcels in the market and increase the financial credit availability to the village. The scheme also paves the way for creation of accurate land records for rural planning. All the property records and maps are available at the Gram Panchayat level, which helps in taxation of villages, construction permits, elimination of encroachments, etc.

How is the scheme being implemented?
The framework for implementation of SVAMITVA scheme provides a multi-stage process of generating a property card, which starts with signing of a memorandum of understanding between Survey of India (SoI) and respective state governments. The SoI is responsible for preparing the National Topographic database on all scales, using technology for topographical mapping at various scales including the use of airborne photography drones, satellite imageries, and Unmanned Air Vehicles (UAV) or drone platforms.

Once the MOU is done, a Continuously Operating Reference System (CORS) is established. It is a network of reference stations that provide a virtual base station that allows access to long-range high-accuracy Network RTK (Real-Time Kinematic) corrections. "The CORS network supports in establishing ground control points, which is an important activity for accurate Geo-referencing, ground truthing and demarcation of lands," says the framework.

The next step is the identification of villages to be surveyed, and make people aware of the process of mapping properties. The abadi area (inhabited area) of the village is demarcated and each rural property is marked with limestone (chunna). Then, drones are used for large scale mapping of rural abadi areas.

Based on these images, a GIS database on 1:500 scale, and village maps — Gram Manchitra — are drawn. After creation of maps, a ground verification process by drone survey teams follows, on the basis of which corrections, if any, are made. At this stage, the inquiry/objection process – conflict/ dispute resolution is completed.

After this, final Property Cards/Title deeds or "Sampatti Patrak" are generated. These cards are made available on digital platforms or as hard copies to the village household owners.

How far has the scheme progressed?

Back in 2020, the scheme was implemented as a pilot project in about 1 lakh villages across 9 states– Haryana, Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh, Uttarakhand, Punjab, Rajasthan and Andhra Pradesh. The aim was to cover all 6.62 lakh villages in the country by the end of financial year 2023-24.

Recently, an official statement said, "Drone survey has been completed in over 3.17 lakh villages, which covers 92% of the targeted villages… The scheme has reached full saturation in Puducherry, Andaman & Nicobar Islands, Tripura, Goa, Uttarakhand and Haryana. Drone

survey has been completed in Madhya Pradesh, Uttar Pradesh, Chhattisgarh and several UTs," the statement said.

According to the ministry, A total of 67,000 sq.km of rural Abadi land has been surveyed, valued at Rs.132 lakh crore, emphasizing the economic significance of the initiative.

Now the government plans to showcase the success of the SVAMITVA scheme at global level. "Looking ahead, the Ministry plans to showcase the success of the SVAMITVA Scheme on global platforms. In March 2025, MoPR in collaboration with Ministry of External Affairs, has planned to host an International Workshop on Land Governance in India, with participation from nearly 40 representatives from Africa, Latin America, and Southeast Asia. This workshop aims to share best practices and advanced drone and GIS technologies, fostering collaboration for similar initiatives worldwide. In May 2025, the Ministry is also planning to participate in the World Bank Land Governance Conference in Washington to highlight India's achievements and encourage international adoption of the model," the ministry said in a statement on January 17.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

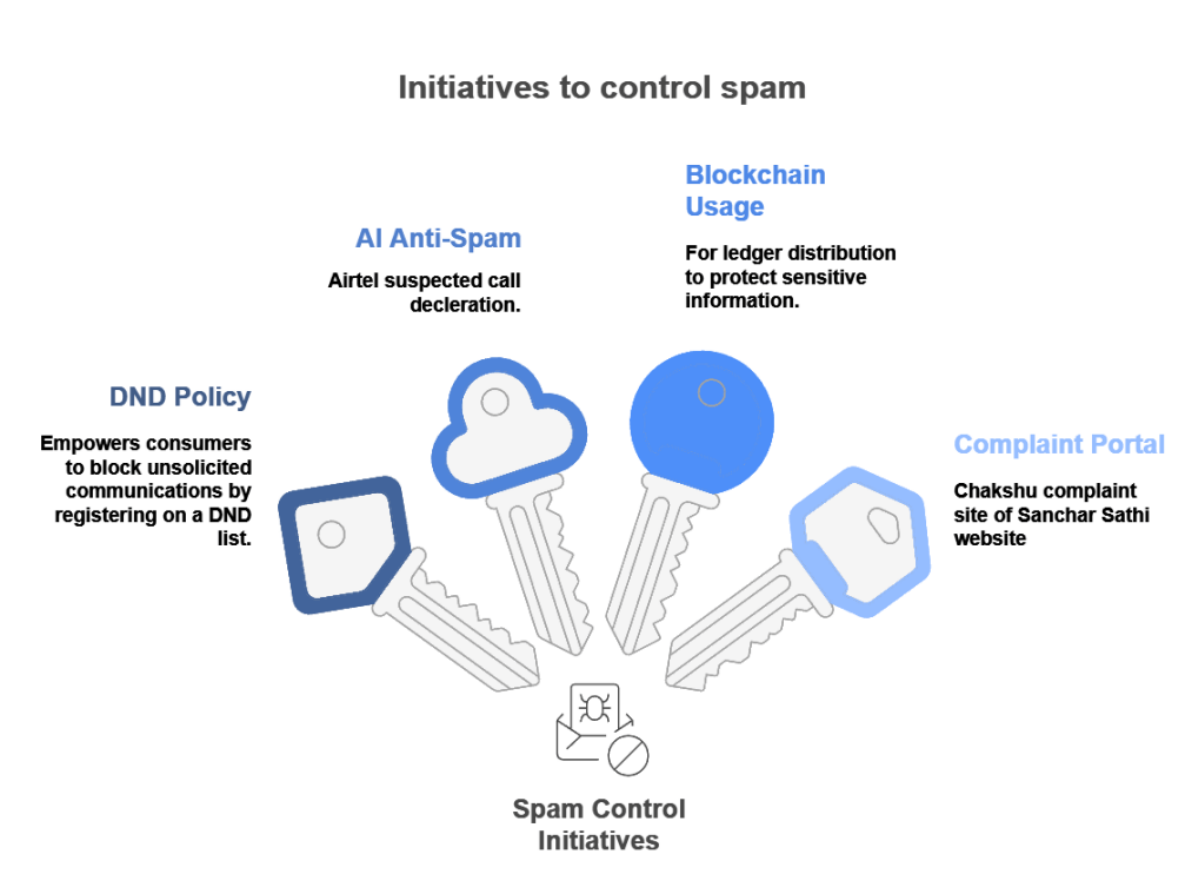
6. How is TRAI and the govt. combating spam?

Introduction
The Telecom Regulatory Authority of India (TRAI) will be using distributed ledger technology (DLT) to register spam preferences from customers, TRAI chairman Anil Kumar Lahoti said. Spam rules will be tightened to make commercial messages traceable, the TRAI has indicated.

What is TRAI's role in fighting spam?
The TRAI regulates the telecom industry, and its main role is in regulating Unsolicited Commercial Communications (UCC), the official name for spam. Starting in 2007, the regulator implemented a do-not-disturb (DND) registry, which would force telemarketers to abide by customer preferences when it came to commercial calls.

If a telecom customer signs up to the DND registry, they are not supposed to get any spam calls or SMS messages.

TRAI had also worked with an external agency to develop a DND app, which would allow customers to register their DND preference, and accept complaints. Under the Telecom Commercial Communication Customer Preference Regulation (TCCCPR), 2018, telemarketers who called or sent messages to DND-registered customers would receive warnings, and if enough warnings accumulated, they would be blacklisted from sending messages to telecom operators.



The DND app has not always been maintained by the TRAI, and was briefly unavailable from 2022 onwards. An SMS reporting facility where users would have to report messages in a particular format was available, but further steps were taken to make the process more user friendly. In 2024, TRAI mandated that DND reporting be made available on every telecom provider's app.

What role does blockchain play?

In order to fight the deluge of spam messages, TRAI mandated in the TCCCPR that telcos use a blockchain ledger, also known as a distributed ledger, in order to store a constantly-updated list of approved senders of SMS messages. Telcos would also be required to approve specific formats of messages. For instance, an OTP message that goes, "Your OTP is 433212," would be stored in the blockchain as "Your OTP is …" with space for a variable. These messages have been required to be sent from sender IDs, and not phone numbers.

This has been one of the most stringent rules that have been issued to fight SMS spam anywhere in the world. Blockchain as a technology allows for so-called immutability, which means that every stakeholder involved in a transaction has a reliable, un-tamperable version of the same data. At the time of the 2018 regulations, the necessity to use blockchain for the purpose of maintaining a spam exemption database was debated, as enthusiasm about the technology's potential had spilled over beyond cryptocurrencies, where it continues to be a mainstay.

In 2024, the regulations were tightened to ensure "traceability" of messages, thus making sure that telcos would have a complete record of who issued a message before it is sent to an SMS gateway. This was aimed at plugging a crucial flaw in the system that would allow anyone to register on the blockchain solutions implemented by telecom operators and send out fraudulent or spam messages in spite of the systems in place to combat them. These, Mr. Lahoti has said, will be further tightened in the coming year.

Have these measures been effective?
For those who have registered their DND preferences, communications from legitimate businesses that follow the rules may have reduced. However, spam has a constantly changing character. While much of spam is merely commercial messages that may be annoying but harmless, the wave of digitisation has increased incentives to get around the protections against commercial messaging and calling. A wave of fraudulent calls have also emerged, with cyber frauds seeking to ensnare Indians in financial scams. Many of these operations are done outside the framework of SMS sender IDs, and are run through disposable 10-digit phone numbers, making it hard for real-time enforcement of anti-spam regulations.

There is also the issue of spam and scam calls from international numbers, which can be leased from certain online Voice over Internet Protocol (VoIP) providers, but appear as legitimate international call traffic.

Which are the other steps taken by the government to end spam?
The Department of Telecommunications (DoT) has launched the Sanchar Saathi portal, which has a reporting site called Chakshu. DoT has partnered with law enforcement, banks, and other stakeholders in order to accept reports of "suspected fraudulent" calls and messages, and has moved to cancel lakhs of numbers that are associated with unauthorised telemarketers and scammers.

It also set up the Telecom Security Operation Centre at its New Delhi headquarters to monitor suspicious internet traffic in real time. Meanwhile, firms like Airtel have taken steps to declare suspicious calls using Artificial Intelligence as "Suspected Spam," a move that is being replicated by other telcos as well. The telco has also started labelling international calls on smartphones.

Relevance: GS Prelims & Mains Paper II; Governance
Source: The Hindu

7. Why RG Kar rape case convict was not given death penalty

Introduction
The CBI had argued strongly for the death penalty in the case that shook West Bengal and triggered several weeks of protests and strikes by doctors. West Bengal Chief Minister Mamata Banerjee had demanded death for the murderer.

The Supreme Court has held that a sentence of death should be passed only in the "rarest of rare" cases, after the court has considered possible "aggravating" and "mitigating" circumstances (Bachan Singh v. State of Punjab, 1980).

'Rarest of rare' test

In Bachan Singh, the SC considered a challenge to the constitutionality of the death penalty. It upheld the death penalty, but said it should be imposed only in the "rarest of rare" cases where there is no possibility of reformation.

The five-judge Constitution Bench did not specify the standards to determine whether the death penalty should be imposed, but laid down non-exhaustive lists of "aggravating" and "mitigating" circumstances for courts to consider while making the decision.

AGGRAVATING CIRCUMSTANCES, which could tilt the court's decision towards the death penalty:

* If the murder is pre-planned, calculated, and involves extreme brutality;
* If the murder involves "exceptional depravity";
* If the accused has been found guilty of murdering a public servant, police officer or a member of the armed forces while on duty, or because of anything they may have lawfully done while discharging their duty.

MITIGATING CIRCUMSTANCES, which could tilt a case away from the death penalty:

* Whether the accused was "under the influence of extreme mental or emotional disturbance" at the time of the offence;
* Age of the accused; they would not be given death if they are very young or very old;
* Probability of the accused posing a continued threat to society;
* Probability of reforming the accused;
* If the accused was acting on the directions of another person;
* If the accused believed their actions were morally justified;
* If the accused suffers mentally and is unable to appreciate the criminality of their actions.

After Bachan Singh

The understanding of mitigating and aggravating circumstances has evolved over the years, and new factors have been added to the list through several decisions. These include:

AGE OF ACCUSED: In several cases including Ramnaresh and Ors v. State of Chhattisgarh (2012) and Ramesh v. State of Rajasthan (2011), the Supreme Court considered the young age of the accused persons (below 30 in these cases) as an indication that they could be reformed. However, as the Law Commission of India noted in its 262nd Report (2015), The Death Penalty, age as a mitigating factor "has been used very inconsistently". In Shankar Kisanrao Khade v. State of Maharashtra (2013), the SC split several cases with similar facts into two groups: where age was considered as a mitigating factor, and where age was ignored or considered irrelevant. The court also noted that sentencing in death penalty cases had become "judge-centric".
In the RG Kar case, the convict Sanjoy Roy is 35 years old.

NATURE OF OFFENCE: In Shankar Khade, the SC said courts should compare the case before them with a pool of cases concerning similar offences before determining the punishment. Otherwise, the court said, applying the "rarest of rare" doctrine would become "subjective". The Law Commission Report used the example of cases concerning the rape and murder of a young child, and presented examples to show that it "shocks the judicial conscience in some cases, not in others".

In Machhi Singh v. State of Punjab (1983), the SC held that death could be given in cases where the "collective conscience" of society is so shocked that the judiciary is expected to impose the death penalty.

The Law Commission noted that this decision, and the decisions it influenced in the future, focused only on the circumstances of the crime, and not the circumstances of the criminal and the possibility of reform.

POSSIBILITY OF REFORM: In Bachan Singh, the SC held that the government must prove there is no possibility of reform, and that the presumption would be against such a penalty. In Santosh Bariyar v. State of Maharashtra (2009), the SC said "the court will have to provide clear evidence as to why the convict is not fit for any kind of reformatory and rehabilitation scheme". The Law Commission Report said the requirement for evidence was held as "essential" in Bariyar "for introducing an element of objectivity into the sentencing process".

Stage of the trial
When should the court consider these circumstances?
In Bachan Singh, the SC said courts must conduct a separate trial after convicting, so that judges can be persuaded why the death sentence should not be imposed.

When should this separate trial take place? In several rulings, the SC has held it can be on the same day; in other cases, it has stressed the importance of a "real, effective and meaningful hearing" during the sentencing hearing in death penalty cases.

In Dattaraya v. State of Maharashtra (2020), the court held that such a hearing did not take place, and that this was a valid reason to commute a death sentence to life imprisonment.

In suo motu proceedings instituted in 2022 (IN RE: Framing Guidelines Regarding Potential Mitigating Circumstances To Be Considered While Imposing Death Sentences), the SC asked whether sentences delivered on the same day as the conviction satisfy the requirement of a meaningful and effective hearing.

It also noted that aggravating circumstances form a part of the record of a case and are always available to a judge, whereas mitigating circumstances are only placed on record after a conviction and before sentencing.

"This", the Bench said, "places the convict at a hopeless disadvantage, tilting the scales heavily against him", and referred the case to a larger Bench to create a uniform approach to sentencing hearings in death penalty cases.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

8. In 10 years, the hits and misses of 'Beti Bachao Beti Padhao'

Introduction
Exactly a decade ago, on January 22, 2015, Prime Minister Narendra Modi launched the Beti Bachao Beti Padhao (BBBP) program to arrest the decline in the child sex ratio.

Initially planned for 100 districts, it was expanded to 61 additional districts in 2015-16 and later to all 640 districts of the country.

What were the aims of Beti Padhao, Beti Bachao?
Among its objectives were preventing gender-biased sex selection and ensuring the survival, education and empowerment of the girl child.

In 10 years, the hits and misses of 'Beti Bachao Beti Padhao'

It set several targets concerning the nutritional status of girls, their attendance in schools, the provision of adequate infrastructure in schools and so on. This was to be done through publicity campaigns, inspections and raids to stop the illegal detection of pregnancy in clinics and other measures. Here is where key indicators stand:

1. Sex ratio at birth (SRB): improves in some states, worsens in others.
The first and foremost target was improving the Sex Ratio at Birth (ratio of male to female births) in select critical districts by 2 points each year.

While district-level SRB data is not available in the public domain, the Economic Survey for 2023-24 noted that the national SRB improved from 918 per 1000 males (2014-15) to 930 (2023-24, provisional).

2. Gender gap in under-five child mortality minimised

The second target was to reduce gender differentials in under-five child mortality (the probability a newborn would die before reaching exactly five years of age, expressed per 1,000 live births).

In 2014, just before the launch of the BBBP, the under-five mortality rate at the national level was 49 for girls and 42 for boys — a gender differential of 7 points. The target aimed to reduce it by 1.5 points per year. By 2020, this difference was 2 points (girls at 33 and boys at 31). However, the progress varies across the states.

3. Increase in institutional births

The third target was to increase institutional deliveries by at least 1.5 per cent per year. Data from the National Family Health Surveys show that the proportion of institutional deliveries has increased over the years.

When BBBP was launched, 78.9 per cent of all births took place in institutions like hospitals and community health centres (NFHS-4 data for 2015-16). In 2019-21, this figure had increased by 9.7 percentage points to 88.6 per cent (NFHS-5). Almost all the states saw an increase in institutional deliveries.

4. Rising antenatal checkups

The BBBP also envisioned a minimum 1% increase per year in the 1st trimester antenatal check (ANC). This is necessary for bringing down maternal mortality incidences. At the time of the launch of the BBBP, only 58.6 percent of mothers had an antenatal check up in the first trimester in 2015-16 (NFHS-4). However, since then, this figure has increased nationally.

As per the data available in the NFHS-5, 70 per cent of mothers had an antenatal check up in the first trimester during 2019-21. As per the government's Guidelines for Pregnancy Care, the first visit or registration of a pregnant woman for ANC should take place as soon as the pregnancy is suspected.

5. Increase enrollment of girls in secondary education

One of the targets of the BBBP was to increase the enrollment of girls in secondary education to 82% by 2018-19. The figure stood at 75.5 per cent during 2014-15. The scheme has not been able to achieve this target, as the enrollment ratio was recorded at 76.9 per cent in 2018-19.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

9. Saif Ali Khan's 'enemy property' case: what are these properties, and what is the law?

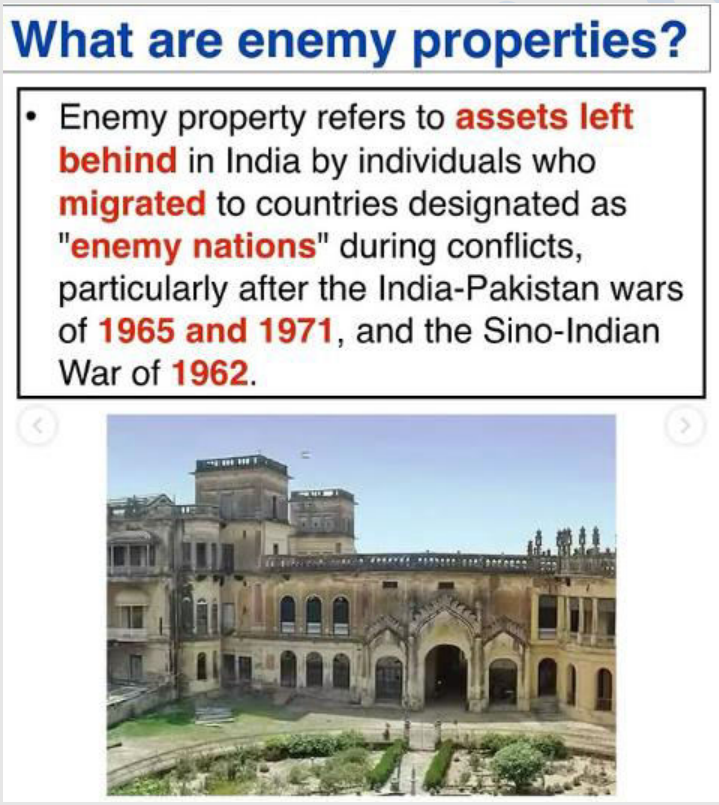
Saif Ali Khan Enemy Property Case

Madhya Pradesh High Court has asked actor Saif Ali Khan to approach the appellate authority against an order of the central government that declared historical properties of the Pataudi family in Bhopal, estimated to be worth Rs 15,000 crore, as "enemy property".

Among the properties in question are the Flag Staff House, where Saif spent his childhood, the luxury hotel Noor-Us-Sabah Palace, Dar-Us-Salam, Bungalow of Habibi, Ahmedabad Palace, and Kohefiza Property.

The court had been hearing Khan's challenge since 2015. On December 13 last year, after the government apprised the court that an "appellate authority has been constituted for adjudication of disputes in regard to enemy property", Justice Vivek Agarwal said the parties could file a representation within 30 days.

It is not known whether Saif, who is recuperating from the knife attack on him by an intruder inside his home last week, moved the tribunal by January 12.



Why did Saif approach the Madhya Pradesh HC?

In 1947, the princely state of Bhopal was ruled by Nawab Hamidullah Khan. He had three daughters, the eldest of whom, Abida Sultan, migrated to Pakistan in 1950.

The second daughter, Sajida Sultan, stayed in India and married Nawab Iftikhar Ali Khan Pataudi, who played cricket for both England and India, and whose son was the legendary Mansoor Ali Khan 'Tiger' Pataudi.

Sajida's grandson – Tiger Pataudi's son – Saif Ali Khan inherited a share of the properties in Bhopal. However, the migration of Abida Sultan became the focus of the government's claim to the properties as "enemy property".

In 2014, the Custodian of Enemy Property Department declared the Pataudi family's properties in Bhopal as "enemy property". Saif Ali Khan challenged the custodian's notice.

In 2016, an Ordinance was issued explicitly stating that heirs would have no rights over these properties.

What is enemy property?
Enemy property refers to the assets, both movable and immovable, left behind in India by individuals who migrated to countries designated as "enemy nations" during times of conflict.

Following the wars between India and Pakistan in 1965 and 1971, and the Sino-Indian War in 1962, the Indian government assumed control of properties and businesses owned by those who adopted the nationality of Pakistan or China.

Under the Defence of India Rules, formulated under the Defence of India Act, 1962, these properties were vested with the Custodian of Enemy Property for India. The custodian is tasked with managing these assets on behalf of the Indian government.

Can legal heirs of those who migrated inherit enemy property?
Under the Enemy Property Act, 1968, properties that are declared as enemy assets remain permanently vested with the Custodian of Enemy Property, with no room for inheritance or transfer.

The law provides the legal framework for the central government to manage and retain control of enemy properties across various states.

The Enemy Property (Amendment and Validation) Act, 2017, reinforced the law and expanded its scope. The amendments broadened the definition of "enemy subject" and "enemy firm" to include legal heirs and successors, irrespective of their citizenship, whether Indian or from a non-enemy nation.

It stipulated that enemy property would remain with the Custodian even in cases where the enemy subject or firm ceased to exist due to death, extinction, or business closure. This applied regardless of whether the legal heir was an Indian citizen or a national of a non-enemy country.

The amendments effectively nullified inheritance claims, ensuring that such properties remained indefinitely under the control of the government.

Critics argue that the Act infringes on individual property rights, while supporters emphasize its importance for national security.

How have courts dealt with cases involving enemy properties?
One of the most notable cases was about the estate of the Raja of Mahmudabad in Uttar Pradesh. The Raja, who owned extensive properties in Hazratganj (Lucknow), Sitapur, and Nainital, migrated to Pakistan in 1957 and acquired Pakistani citizenship. His wife and son, however, remained in India as citizens.

Following the enactment of the 1968 law, the Raja's properties were declared enemy assets. Upon the Raja's death, his son, Mohammad Amir Mohammad Khan, contested the designation and sought ownership of the properties. In 2005, the Supreme Court ruled in favour of the son, recognizing his right to inherit the properties.

The verdict led to a surge in similar legal claims, with many individuals, including distant relatives, presenting deeds of gift and other documents to make claims on enemy properties. The wave of litigation created significant challenges for the government in managing these assets.

In 2016, the Enemy Property (Amendment and Validation) Ordinance, 2016 was brought, which became an Act the following year. This legislation overruled prior court verdicts and clarified that enemy property would remain with the Custodian, irrespective of inheritance claims or changes in the enemy's nationality or status.

What happens to an enemy property after its takeover?
The Guidelines for the Disposal of Enemy Property, 2018 outline the procedure for the sale of properties vested in the Custodian of Enemy Property for India.

A detailed list of enemy properties and their valuation is submitted to the central government within a specified timeframe. Valuation Committees headed by district magistrates determine the value of these properties based on circle rates and other factors.

The Enemy Property Disposal Committee, comprising senior government officials, provides recommendations on whether to sell, transfer, or maintain the properties.

Vacant properties can be auctioned to the highest bidder, while occupied properties may be offered to existing occupants at a value determined by the committee.

Movable enemy properties, such as shares, may be sold through public auction, tenders, or other approved methods. The Custodian ensures legal compliance and issues sale certificates once the transactions are completed, with proceeds deposited into the Consolidated Fund of India.

How many enemy properties are there in India?
On January 2, 2018, then Minister of State for Home Hansraj Ahir told Lok Sabha that a total 9,280 enemy properties had been left behind by Pakistani nationals, and 126 by Chinese nationals.

In November 2018, the Union Cabinet approved the procedure to sell enemy shares worth more than Rs 3,000 crore. A total of 6,50,75,877 shares of 996 companies belonging to 20,232 shareholders were identified.

In 2020, a Group of Ministers (GoM) headed by Union Home Minister Amit Shah began monitoring the disposal of more than 9,400 enemy properties, which the government estimates is worth about Rs 1 lakh crore.

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

10. Republic Day 2025: What are the different awards that will be given on January 26?

Introduction
President Draupadi Murmu approved the conferment of Jeevan Raksha Padak series of awards 2024 on 49 persons. This follows an announcement by the centre, awarding 942 service medals, including 95 for gallantry, for personnel of various central and state police forces on the eve of India's 76th Republic Day.

What are the different types of awards given out on Republic Day?

Civilian Service Awards
Perhaps the best-known among all the categories, the highest honours among the civilian awards are the Bharat Ratna and the Padma Awards – the Padma Vibhushan, the Padma Bhushan and the Padma Shri.

Bharat Ratna is India's highest and most prestigious civilian honour, awarded for exceptional service in any field – art, literature, science, or public service. The Prime Minister recommends the nominees for this award, and a maximum of three persons can be conferred the Bharat Ratna in a year. 53 persons have been awarded the Bharat Ratna so far.

The Padma Vibhushan is awarded for exceptional and distinguished service, the Padma Bhushan for distinguished service of higher order, and the Padma Shri for distinguished service in any field. The award winners are selected by the Padma Awards committee. Any person working in any field – with the exception of Government employees, barring doctors and scientists – are eligible for the award. The nomination process is open to the public, and allows people to nominate themselves.

Service Medals
These awards recognise distinguished service, dedication, and exceptional contributions by personnel in the Armed Forces, Paramilitary Forces, and Police. They are announced on Republic Day and Independence Day.

The President's Medal for Distinguished Service (PSM) is awarded for a special distinguished record in service, while the Medal for Meritorious Service (MSM) is awarded for valuable service characterised by resource and devotion to duty.

Gallantry Awards

Medals for gallantry are awarded to members of the armed forces, paramilitary forces, and civilians for bravery and heroic action.

WARTIME AWARDS: These are awarded for acts of bravery in the face of the enemy, and are primarily for armed forces personnel. The highest honours among the wartime gallantry awards are the Paramvir Chakra, the Mahavir Chakra and the Vir Chakra.

PEACETIME AWARDS: The highest honours in peacetime include the Ashoka Chakra, the Kirti Chakra and the Shaurya Chakra.

A government press release distinguishes these awards thus, "The Param Vir Chakra is awarded for the most conspicuous act of bravery and self-sacrifice in the face of the enemy, while the Ashok Chakra is awarded for similar acts of valour and self-sacrifice but, other than, in the face of the enemy."

Peacetime awards can be awarded to armed forces, paramilitary forces, police, or civilians.

POLICE GALLANTRY MEDALS: Awards for members of the police are announced twice a year – on the eve of Republic Day and Independence Day – to recognise their acts of bravery, distinguished service, and exemplary conduct.

The President's Medal for Gallantry is awarded to those who have done a "rare conspicuous gallant act of exceptional courage & skill in saving life and property, or in preventing crime or arresting criminals, apprehending a prisoner or in preventing their escape", according to a government press release.

The Police Medal for Gallantry recognises acts of bravery and courage in the line of duty.

CIVILIAN GALLANTRY MEDALS: These awards recognise civilians for acts of bravery and saving lives.

The Jeevan Raksha Padak Awards originated as an offshoot of the Ashoka Awards. They are given for lifesaving acts of service by people from all walks of life, and may even be given posthumously. The award has three categories – Sarvottam Jeevan Raksha Padak, Uttam Jeevan Raksha Padak and Jeevan Raksha Padak.

The National Bravery Awards recognises children who show exceptional courage and is awarded by the Indian Council for Child Welfare (ICCW).

Relevance: GS Prelims & Mains Paper II; Governance
Source: Indian Express

11. How has India revised obesity parameters?

Introduction

India has revised guidelines for obesity treatment and diagnosis after 15 years. The move comes after a call for global recalibration on how obesity is measured. In a recent report published in The Lancet, the global commission noted that Body Mass Index (BMI) apart, the distribution of body fat is also a key indicator of overall health and disease patterns. In step with this report, experts in India, including a group of doctors, nutritionists, and others from the National Diabetes Obesity and Cholesterol Foundation, Fortis C-DOC Hospital, and the All-India Institute of Medical Sciences (AIIMS), have issued updated guidelines for India.

What is new?

The revised classification system introduces two stages in obesity — 'innocuous obesity', characterised by increased body fat without organ or metabolic dysfunction; the second stage is obesity with consequences, marked by the impact on physical functions and presence of obesity-related diseases. This framework places special emphasis on abdominal fat distribution, which has particularly adverse effects on Asian Indian populations.

Variable	Consensus guidelines for Asian Indians [a]	Prevalent International Criteria
Generalized obesity (BMI cut-offs in kg/m^2)	Normal: 18.0–22.9 Overweight: 23.0–24.9 Obesity: ≥25	Normal: 18.5–24.9 [b] Overweight: 25.0–29.9 [b] Obesity: ≥30 [b]
Abdominal obesity (Waist circumference cut-offs in cm)	Men: ≥90 [c] Women: ≥80 [c]	Men: ≥102 [d] Women: ≥88 [d]

The new guidelines set lower thresholds for BMI criteria which are now adjusted downward, with overweight defined as ≥23-24.9 kg/m^2 and obesity as ≥25 kg/m^2, compared to the Western standards of ≥25 kg/m^2 and ≥30 kg/m^2 respectively. Also, ideal waistlines have to be

>90 cm for men and >80 cm for women, lower than Western standards of 102 cm and 88 cm respectively.

Why are Indian bodies different?
Studies show that excess fat in Indian populations leads to higher levels of inflammation and metabolic disturbance at lower BMI thresholds compared to Western populations. The only available antidote is to start exercising and have a diet plan early in life.

The current report states that using BMI alone to diagnose obesity is not a reliable measure of health or illness at the individual level. This can result in misdiagnosis, with negative consequences for people living with obesity.

What does obesity do to the body?
Naval Vikram, Department of Medicine, AIIMS, says studies have shown a strong correlation between abdominal obesity in Indians, resulting in inflammation and the early onset of diseases with co-morbidity. "Abdominal fat, which is closely linked to insulin resistance and prevalent in Asian Indians, is now recognised as a key factor in the diagnosis. The new definition integrates the presence of co-morbidities — such as diabetes and cardiovascular disease — into the diagnostic process, ensuring that obesity-related health risks are better accounted for, and taken care of in management," he pointed out. An early diagnosis translates into targeted management strategies, Dr. Vikram contended.

"There is also inclusion of mechanical problems associated with obesity, for example, knee and hip osteoarthritis, etc., or shortness of breath during daily activities, which lead to a poor quality of life,'' he added.

Relevance: GS Prelims & Mains Paper II; Governance
Source: The Hindu

12. Should Governors head State universities?

Introduction

The role of the Governor as Chancellor of State universities is a subject of intense debate. It is often misconstrued as a post-Independence measure to safeguard universities against political interference. This role has not been assigned to the Governor by the Constitution of India but by State university laws.

Pre-British Practice
Inherited from British colonial rule, it was designed to restrict university autonomy rather than promote it. In 1857, the British established the first three universities in Calcutta, Bombay, and

Madras, appointing Governors of the respective presidencies as their ex-officio Chancellors to maintain direct control. As Chancellor, the Governor became the head of the university and was granted powers such as appointing Vice-Chancellors, nominating members to university bodies like the Syndicate, approving delegated legislation under the university law, and presiding over convocations. Unfortunately, this model of "Governor as Chancellor" was adopted wholesale for State universities even after Independence, without reassessing its relevance in a democratic and federal context.

A politicised office

Initially, from 1947 to 1967, the dominance of the Congress party at both the Centre and State levels ensured that Governors remained ceremonial figures, with Chief Ministers wielding real power. Consequently, there was little impetus to amend the colonial-era provision of "Governor as Chancellor."

However, the political landscape changed after 1967 when several States were ruled by parties other than the ruling party or coalition at the Centre. Governors increasingly transformed from neutral constitutional functionaries to political instruments of the Central government. This change saw them asserting control over university affairs, which often resulted in clashes with State governments. Efforts to amend university laws for change of Chancellor faced roadblocks, as Governors either delayed approving such amendments or referred them to the President. Only a few States succeeded in getting the amendments passed.

Governor and the President

Despite similar legal frameworks, a stark contrast exists between the Governor's role as Chancellor of State universities and the President's role as Visitor of Central universities. The key difference is the level of consultation and legislative oversight.

The President maintains a cordial relationship with the Centre. He functions through the Ministry of Education and consults with it for appointments of Vice-Chancellors, nomination of members to university bodies, and approval of 'statutes' (a type of delegated legislation under the university law). Central university laws require the statutes, along with other types of delegated legislation called 'ordinances' and 'regulations', to be laid before the Parliament. In contrast, the Governor acts unilaterally while performing similar functions for State universities, often bypassing the State's Ministry of Higher Education entirely, particularly in Opposition-ruled States. State University laws do not mandate laying delegated legislation — statutes, ordinances, and regulations — before the Legislature. This is a significant flaw rooted in the continuation of colonial-era practices.

Existing challenges

The persistence of the "Governor as Chancellor" model has caused numerous problems in the governance of State universities.

While State governments fund these universities, Governors wield substantial power without corresponding accountability. This creates a dual authority system, forcing university leadership to serve two masters, often with conflicting demands.

Disagreements between Governors and State governments, particularly in Opposition-ruled States, lead to delays in appointing Vice-Chancellors, causing administrative paralysis. These delays affect areas such as the appointment of staff, the implementation of projects, and even the awarding of degrees.

Many Governors lack the academic qualifications or experience necessary to effectively guide educational institutions. They tend to rely on limited, non-transparent advice, leading to questionable decisions.

Rather than insulating universities from politics, some Governors exacerbate political interference, often prioritising the Centre's political agenda over the universities' autonomy and interests.

Allowing Governors — appointed by the Centre — to control State institutions compromises the principle of federalism. State universities should be fully accountable to elected State governments.

Alternative Models

Governor as Ceremonial Chancellor: Removes discretionary powers, requiring advice from the State Council of Ministers. Adopted by Gujarat, Karnataka, and Maharashtra.

State-Appointed Chancellor: States appoint eminent academics or public figures as Chancellors. Implemented by Telangana; proposed by Kerala.

University-Elected Chancellor: University bodies or alumni elect the Chancellor (e.g., Oxford, Cambridge).

University-Executive-Appointed Chancellor: The Executive Council appoints the Chancellor (e.g., Birmingham, McGill).

The State-Appointed Chancellor model is the most practical for India, as suggested by the M.M. Punchhi Commission on Centre-State Relations.

Dismantling a Colonial Legacy

Key Principles: Reforms must prioritize accountability to State governments, minimize political interference, promote institutional self-governance, and foster academic freedom.

Current Status: Some States, like Gujarat and Telangana, have implemented reforms, while others face delays in Presidential assent for proposed changes.

Call to Action: The Centre should expedite approvals, support reforms, and guide States in adopting global best practices to enable universities to thrive free from political influence.

Relevance: GS Prelims & Mains Paper II; Governance

Source: The Hindu

13. Uttarakhand adopts Uniform Civil Code

Introduction

Uttarakhand Chief Minister Pushkar Singh Dhami officially rolled out the Uniform Civil Code (UCC) for all residents of the State, except the Scheduled Tribes and natives who have migrated out of the State. With this, Uttarakhand has become the first Indian State to implement the UCC post-Independence.

About UCC in Uttarakhand

The UCC Bill, passed by the State Assembly last February, bans practices such as halala, iddat, and talaq (customs related to marriage and divorce in Muslim Personal Law). It also ensures that women are given equal rights in matters related to property and inheritance.

The UCC mandates online registration of marriages, divorce and live-in relationships. A government portal — ucc.uk.gov.in — has been formed for the purpose. People can access records, register complaints and also upload their will on the portal.

Uniform Civil Code

The Uniform Civil Code is a proposal in India to formulate and implement personal laws of citizens which apply on all citizens equally regardless of their religion. Currently, personal laws of various communities are governed by their religious scriptures. Personal laws cover marriage, divorce, inheritance, adoption and maintenance. While articles 25-28 of the Indian Constitution guarantee religious freedom to Indian citizens and allow religious groups to maintain their own affairs, article 44 expects the Indian state to apply directive principles and common law for all Indian citizens while formulating national policies.

Position in India

Personal laws were first framed during the British Raj, mainly for Hindu and Muslim subjects. The British feared opposition from community leaders and refrained from further interfering within this domestic sphere. The Indian state of Goa was separated from British India during the colonial rule in the erstwhile Portuguese Goa and Daman, retained a common family law known as the Goa civil code and thus was the only state in India with a uniform civil code prior to 2024.

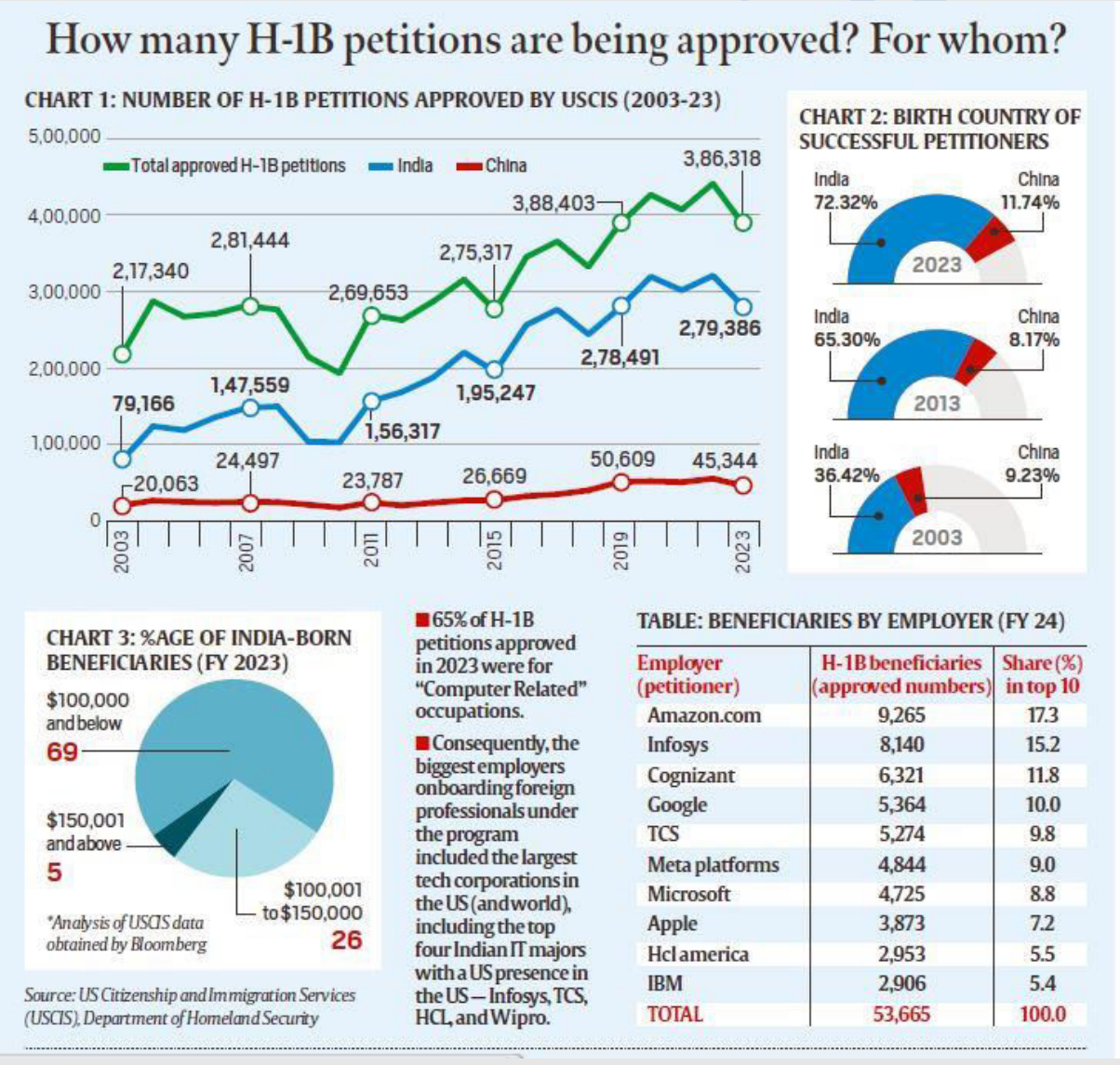
Following India's independence, Hindu code bills were introduced which largely codified and reformed personal laws in various sects among Indian religions like Buddhists, Hindus, Jains and Sikhs but they exempted Christians, Jews, Muslims and Parsis.

Relevance: GS Prelims & Mains Paper II; Governance
Source: The Hindu

1. The H-1B Visa Debate: Key Controversies and Implications

Introduction

The H-1B visa program, designed to bring skilled foreign workers to the United States, has become a focal point of political and social contention, particularly within the conservative MAGA faction (the most vocal supporters of Trump's "Make America Great Again"). This debate reignited recently with the appointment of Sriram Krishnan as an AI adviser in Donald Trump's incoming administration and his public support for skilled immigration.



The H-1B Program at a Glance

• **Purpose:** Enables U.S. employers to hire skilled foreign nationals for roles requiring advanced expertise, typically in STEM fields.
• **Eligibility:** Requires a minimum of a bachelor's degree; capped annually at 65,000 visas, with an additional 20,000 for advanced degree holders from U.S. universities.
• **Exemptions:** Certain nonprofit and research-related petitions are excluded from the cap.

Why Indians Dominate H-1B Approvals
• Indians consistently account for over 70% of approved H-1B petitions annually, far surpassing other nationalities like Chinese applicants (12-13%).
• Their dominance is attributed to India's large pool of STEM graduates and the demand for tech talent in the U.S.

Controversy Within MAGA Circles
• **Criticism:** Some conservatives claim the H-1B program undermines U.S. workers by allowing companies to hire foreign talent at lower wages.
• **Support:** Prominent voices like Elon Musk argue for the necessity of the program to address a persistent talent shortage in engineering and tech.

Economic and Policy Implications
• **Wages and Talent:** Critics argue that H-1B salaries often fall below the U.S. median for IT professionals, suggesting corporations prioritize cost-saving over hiring domestic talent.
• **Proposed Reforms:** Musk and others advocate for raising minimum salaries and imposing higher fees for H-1B employment to level the playing field.
• **Global Competition:** With India and China producing millions of STEM graduates annually, the U.S. faces challenges in maintaining its competitive edge without skilled immigration.

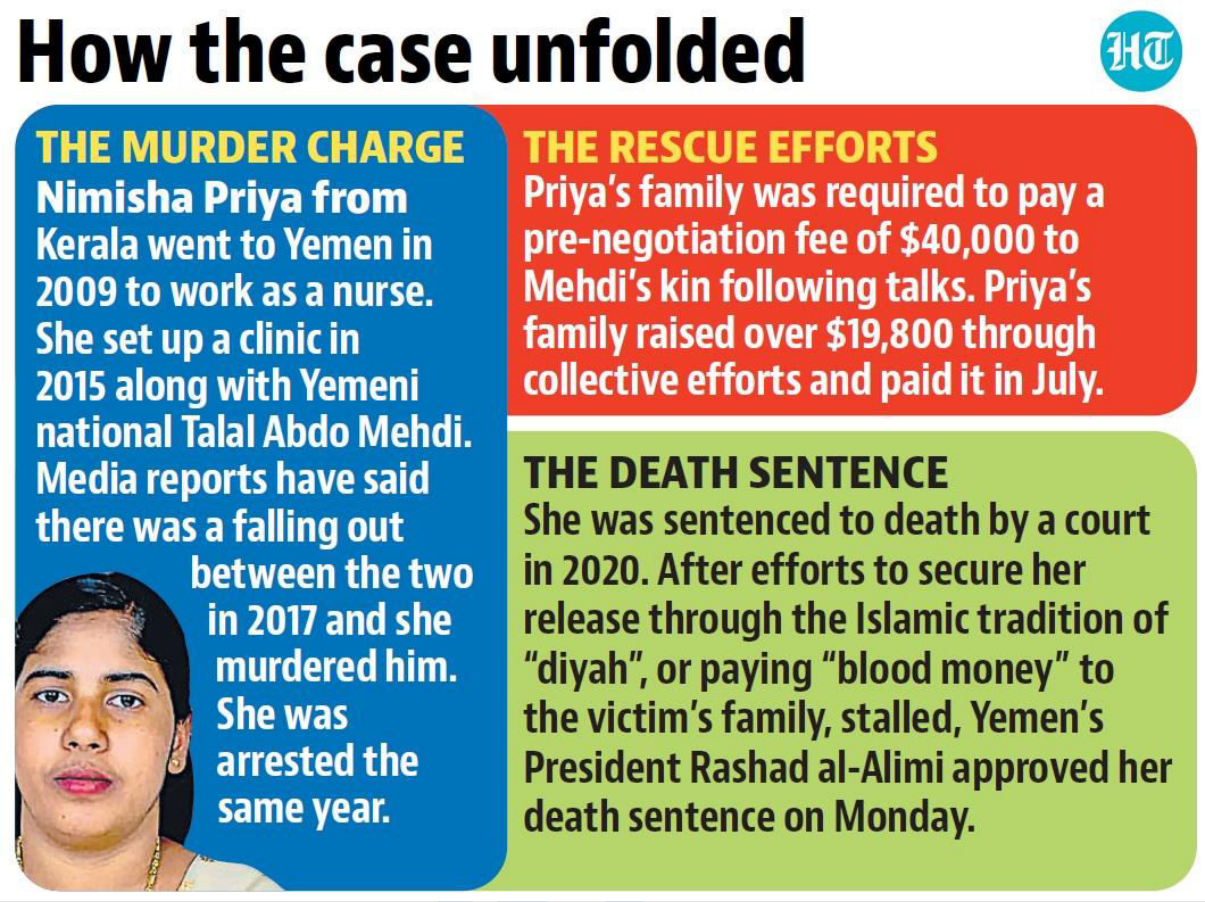
Broader Immigration Debates
The H-1B debate reflects broader divisions in U.S. immigration policy. While low-skilled immigration often dominates political rhetoric, the skilled immigration issue underscores the complexities of balancing economic needs with nationalist sentiments.

Conclusion
The H-1B program remains a vital yet contentious pillar of U.S. immigration policy, reflecting deeper struggles over globalization, economic equity, and national identity.

Relevance: GS Prelims; Bilateral Relations
Source: Indian Express

2. Nimisha Priya Case: What option does Kerala nurse on death row in Yemen have?

Kerala Nurse Nimisha Priya Case



The Ministry of External Affairs (MEA) recently said it is extending "all possible help" to secure the release of Nimisha Priya, a nurse from Kerala. This comes a day after President of Yemen Rashad al-Alimi sanctioned her death sentence for allegedly murdering a Yemeni citizen in 2017.

The Palakkad native was imprisoned for the killing of Yemeni citizen Talal Abdo Mehdi in July 2017. She was apprehended while trying to flee the country and sentenced to death in 2020. The Supreme Judicial Council dismissed her appeal in November 2023.

What is the case against Nimisha Priya?

After qualifying as a nurse, Priya moved to Yemen in 2008. In 2011, she married Tomy Thomas in Kerala, with whom she returned to Yemen. She worked as a nurse, while he worked as an electrician. Both dreamt of starting their own clinic but to do this, they needed to partner with a local resident under Yemeni law.

Enter Talal Abdo Mahdi. A regular at the clinic where Priya worked as a nurse, the couple approached Mahdi for help. Mahdi even came to Kerala in 2015, to attend the baptism of Priya's daughter. While Priya managed to return to Yemen, the civil war (that began in 2014) prevented her husband and daughter from doing so. They remained in Kerala.

In Yemen, Mahdi opened a new clinic but refused to share his income with Priya. He also allegedly forged documents to present her as his wife. According to Priya's family, what followed was a cycle of physical and sexual abuse. Priya was unable to leave because Mahdi had taken all her travel documents and passports. He also did not allow her to speak to her family in Kerala.

Fed up with this cycle of abuse, Priya, with the help of fellow nurse Hannan, allegedly tried to sedate Mahdi in a bid to obtain her papers. However, an overdose resulted in his death. Panicking, the duo decided to chop up Mahdi's body and dump it in a water tank. Both were eventually arrested.

What is blood money?

According to Islamic law, victims of crimes have a say in how criminals are punished. In cases of murder, this principle applies to the families of victims. Although murder is punished via the death penalty, the victim's family (specifically, heirs) may choose to "forgive" the murderer in exchange for monetary compensation.

This is the principle of diyya, or "blood money". It can be traced to the Holy Quran: "O believers! The law of retaliation is set for you in cases of murder — a free man for a free man, a slave for a slave, and a female for a female. But if the offender is pardoned by the victim's guardian, then 'blood money' should be decided fairly and payment should be made courteously. This is a concession and a mercy from your Lord." [2:178]

Scholars believe that the idea behind this is to encourage the virtue of forgiveness, while also providing reparative justice to the victim's family. The scriptures do not set any specific amount as compensation, with the sum generally arrived at via negotiation between the murderer's family/representatives and the victim's family. Some Islamic countries, however, have set minimum compensation amounts.

In November 2023, a $40,000 payment was made to get negotiations started. Priya's family will likely have to pay up to $400,000 to waive the death penalty. The 'Save Nimisha Priya International Action Council', formed in 2020, is in the process of raising the required funds.

Relevance: GS Prelims; Indian Diaspora
Source: Indian Express

3. After H-1B visa, protests in the US over OPT: What is this programme used by Indian students

Introduction

Supporters of US President-elect Donald Trump's 'Make America Great Again' (MAGA) idea have turned their ire on the Optional Practical Training (OPT) programme, considered a gateway for international students seeking an H-1B visa.

The OPT programme allows international students in the US to secure work on a temporary basis. This makes them better candidates for the H-1B visa, which allows skilled foreign nationals to be employed in the US for another six years.

OPT is a popular program among international students in the US, and Indian students now make up the largest international cohort in the country.

What is the OPT programme?

The OPT programme authorises international students, who are in the US on an F-1 visa, to work for up to 12 months in an area "directly related" to their major area of study, according to US Citizenship and Immigration Services (USCIS). International students who are enrolled full-time for at least one academic year in the US can apply for OPT.

This could be pre-completion OPT, which means that the student can work before completing their studies, or post-completion OPT, which authorises the student to work after completing their studies. A pre-completion OPT allows the student to work up to 20 hours a week while the academic session is underway, and full-time when the session is not. A post-completion OPT requires the student to work at least 20 hours a week or full-time.

Students who have obtained a degree in Science, Technology, Engineering and Mathematics (STEM) can extend their post-completion OPT by another 24 months. This means that they can work in the US for a total of three years. USCIS lists degree programmes that are eligible for this extension.

The academic institution where the student is enrolled can recommend them for the OPT, and the student can then apply to the USCIS for the programme. Those authorised to work under OPT remain under F-1 visa status.

How many students are part of the OPT programme in the US?
The 2023-24 Open Doors data shows that of the 8.83 lakh international students in the US, 2.42 lakh (27.47%) were in the OPT programme.

While the largest chunk of Indian students in the US is pursuing postgraduate courses, an increasing number of Indian students have chosen OPT in the past few years. In 2023-24, of the 3.31 lakh Indian students in the US, 97,556 students (29.42%) were in the OPT programme. This is an uptick compared to 69,062 students in 2022-23, and 68,188 students in 2021-22.

The STEM courses, which allow students to obtain a 24-month OPT extension, remain the most popular among Indian students in the US – of the 3.31 lakh Indian students in the US in 2023-24, 24.5% were pursuing engineering, while 42.9% were pursuing maths or computer science.

Why have MAGA supporters opposed the OPT programme?
Their argument against OPT, particularly the extension for STEM graduates, is that it takes jobs away from American citizens.

In 2023, WashTech (Washington Alliance of Technology Workers) petitioned the US Supreme Court in a case challenging the validity of the STEM OPT. The Supreme Court then rejected their appeal to review the ruling of a circuit court, which had earlier upheld the validity of the programme.

The Obama administration had increased the STEM OPT extension to 36 months from 29 months.

Relevance: GS Prelims; International Relations
Source: Indian Express

4. What is Canada's RCIC scheme, how it can help Indians with expiring work permits

Introduction
Over the past year, changes in immigration and study visa rules have made it harder to secure Permanent Residency (PR) in Canada. PR remains the primary goal for the majority of students from India, particularly those from Punjab.

Recently, Canada announced that the Post-Graduate Work Permits (PGWPs) of nearly 7.66 lakh international students are set to expire by the end of next year. Many fear they would have to leave the country if they can't secure PR before their permits expire. However, Canada has introduced a new programme that offers fresh opportunities for such students to settle in the country.

This initiative, known as the Rural Community Immigration Class (RCIC), provides a pathway for foreign nationals, including students, to apply for PR if they commit to living and working in designated rural communities.

What is the Rural Community Immigration Class (RCIC)?

The Rural Community Immigration Class is a new programme launched by Immigration, Refugees and Citizenship Canada (IRCC) in December 2024. It aims to address labour shortages and promote development in smaller rural communities by attracting individuals willing to settle long-term in these areas.

For students whose PGWPs are nearing expiration, and who may be struggling to meet the Comprehensive Ranking System (CRS) score for PR or secure high-paying jobs, this programme offers a valuable opportunity.

Where are these communities located, and why has Canada opened PR opportunities here?

These communities are primarily located outside Canada's major cities and regions. They are smaller towns situated in rural areas near larger regions like Ontario, Vancouver, and others. Canada launched this initiative to boost the development of these underrepresented areas by addressing labour shortages, promoting population and economic growth.

Who is eligible for applying to the Rural Community Immigration Class?

According to IRCC, eligibility for this programme includes:

1. Education Level: Applicants can include those with 10+2, graduation, or secondary school qualifications.
2. Studies: Students who have completed at least 18 months of study in one of the designated communities are eligible to apply for PR directly. Those who studied outside these communities can also apply but must meet additional conditions.
3. Job Offer: Applicants need a job offer letter from a registered or designated employer in the community. This job offer can be in any category, including non-skilled roles. The offer must be submitted to the community, which will then issue a certificate supporting the PR application.
4. Work Experience: Relevant work experience is typically required, though this condition may be waived for international graduates who meet certain criteria.

5. Language Proficiency: Applicants must meet the Canadian Language Benchmark (CLB) requirements based on the job's NOC TEER (National Occupational Classification Training, Education, Experience, and Responsibilities) level:
TEER 0-1: CLB 6
TEER 2-3: CLB 5
TEER 4-5: CLB 4
6. Financial Proof: Applicants must demonstrate they have at least half of the low-income threshold for rural areas (as determined by Statistics Canada) to sustain themselves for one year.
7. Intent to Reside: Candidates must provide genuine proof of their intention to live in the designated rural community.

What should applicants keep in mind?
Research participating communities and their designated employers thoroughly. Act quickly, as Post-Graduate Work Permits (PGWPs) are time-sensitive and ensure all documentation, especially proof of intent to reside, is accurate and complete.

What are the specific benefits of this programme for international students?
Rural areas have less competition than larger cities, increasing the chances of securing a PR pathway. Designated employers in these communities often assist with the PR process, easing the application burden, said experts.

Why is this programme significant for Indian students?
Indian students constitute the largest share of international students in Canada, accounting for nearly 40%. Many face challenges transitioning to PR due to increased competition and stricter requirements. Several have even staged protests in Canada over these issues.

Experts suggest that students aspiring to settle in Canada should explore opportunities in rural areas through this programme rather than focusing solely on larger cities.

Relevance: GS Prelims; International Relations
Source: Indian Express & The Hindu

5. Why has Trump called the Panama treaty 'foolish'?

Introduction
On December 22, 2024, Donald Trump threatened to take back the Panama canal, calling the transfer treaty "foolish". He said, "Our Navy and Commerce have been treated in a very unfair and injudicious way....we will demand that the Panama canal be returned to us, in full, and without question." Panama's President José Raúl Mulino rejected Trump's threat, and said, "I want to express precisely that every square metre of the Panama canal and its adjacent area belong to Panama, and will continue to belong to Panama."

Why is Trump upset with Panama?

The first and major reason for the U.S. President-elect's upset is the high transit fees applied on U.S. vessels by the ACP (Panama Canal Authority). In 2023, Lakes Gatun and Alhajuela experienced severe drought affecting the shipping and navigation of the canal as it relies on these reservoirs to operate its locks. Therefore, the ACP reduced the number of slots for crossing ships by 36%. This led to the increase in transit fees. The second cause of worry has been the increased Chinese presence in the Panama canal. In 2017, Panama became the first Latin American country to sign a Belt and Road Initiative (BRI) agreement, and ever since then, Chinese investment has increased significantly. Hutchison Ports PPC, a subsidiary of a Hong Kong-based company, operates two ports near the canal's entrances, igniting concerns over Chinese influence on logistical operations and surveillance over the U.S. Navy.

What is the U.S.-Panama treaty?

The Panama canal is an artificial 80-kilometre canal connecting the Atlantic and Pacific Oceans, reducing cost, time and distance for international shipping. The canal is crucial for the global supply chain, and 6% of maritime world trade goes through it. The canal also symbolises U.S.'s technological prowess and economic power. It opened in 1914 after the U.S. finished construction, and was controlled by the U.S. until December 31, 1999.

The canal was handed over to Panama in 1999 under the Torrijos-Carter Treaties. The first, called the Panama Canal Treaty, cancelled the Panama Canal Zone and turned the canal over to the Panamanians on December 31, 1999. Under the second, the Permanent Neutrality Treaty, the canal was declared neutral and open to vessels of all nations. Under this treaty, the U.S. has the right to defend the neutrality of the canal and have priority passage in military emergencies.

What has been Panama's response?

Panama's President José Raúl Mulino has rejected Mr. Trump's accusations. He addressed the accusations by defending the transit rates and clarifying the concerns about external influence over canal operations. He stated that the transit rates are set according to international

standards and decided by a procedure. He denied any involvement of external powers such as China or the European community while emphasising the importance of sovereignty for Panamanians. He responded to Mr. Trump's accusation of Chinese soldiers operating the canal, saying, "There is not a single Chinese soldier in the canal, and on the other hand, there will not be".

What next?
The concerns over fee hikes and operations logistics will likely be discussed diplomatically, despite Mr. Trump's threats. While the U.S. might attempt to influence Panama and pressure the latter with renegotiations, Panama will look for international support to reaffirm its sovereignty. China has also responded to the accusations. Foreign Ministry spokesperson Mao Ning said that the Panama canal was a great creation for the Panamanian people and a neutral passageway. He added that China respects Panama's sovereignty.

Relevance: GS Prelims; International Relations
Source: The Hindu

6. Why China is building the world's largest dam on the Tsangpo, how India may be impacted

Introduction
On December 25, China approved the construction of the world's largest hydropower project on the Yarlung Tsangpo (or Zangbo) river in Tibet. On completion, the 60,000 MW project will have the capacity to produce three times the amount of electricity as the world's largest hydro project, the Three Gorges Dam on the Yangtze in central China.

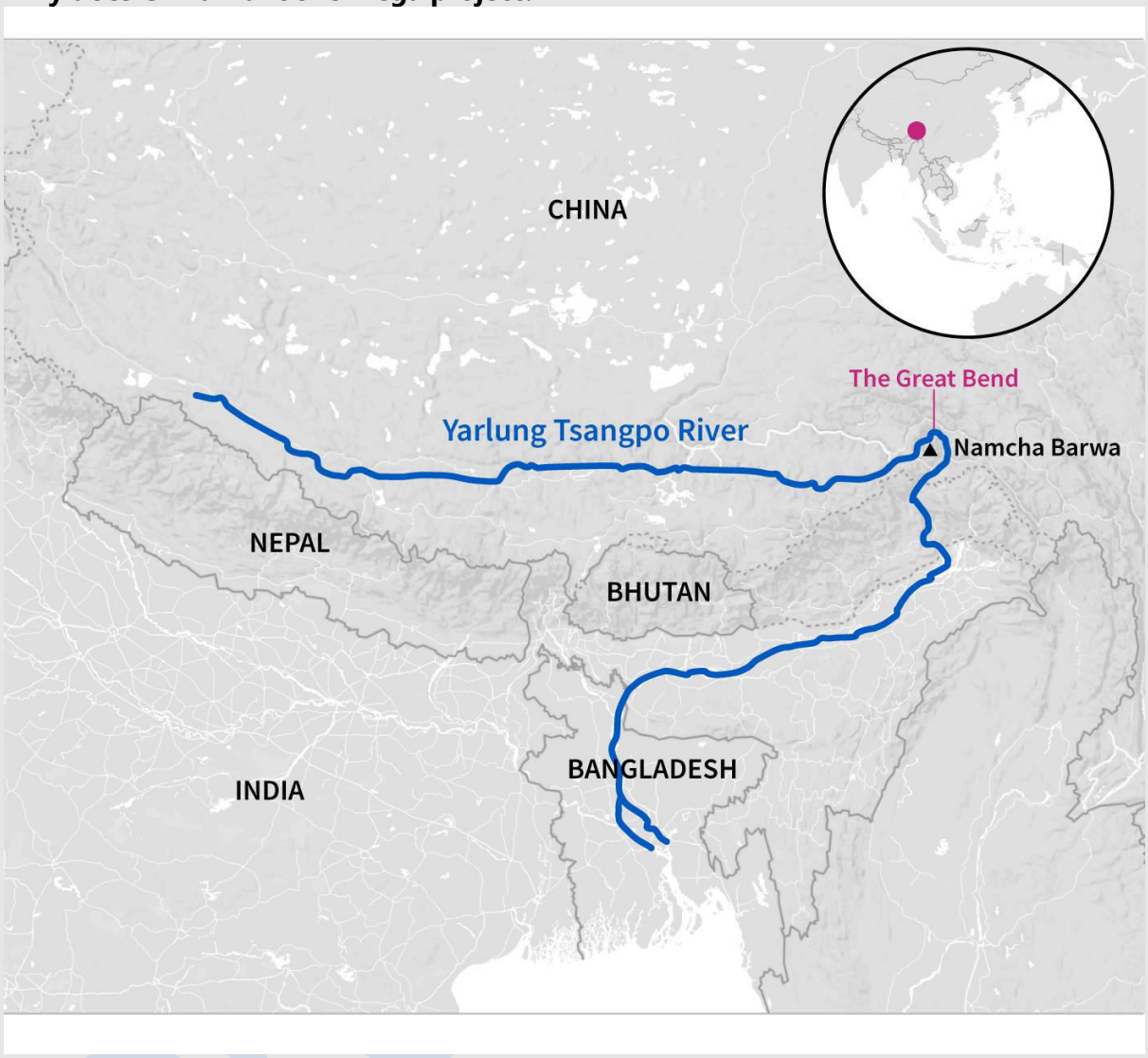
From Tibet, the Yarlung Tsangpo enters Arunachal Pradesh, where it is known as the Siang. In Assam, it is joined by tributaries such as Dibang and Lohit, and is called the Brahmaputra. The river then enters Bangladesh, and makes its way to the Bay of Bengal.

An infrastructure project of the scale that China is planning on the Yarlung Tsangpo could affect millions living in these regions, their livelihoods, and the ecology.

What is the Yarlung Tsangpo project?
Y Nithiyanandam, Professor and Head of the Geospatial Research Programme at Takshashila Institution in Bengaluru, said the location of the dam is mentioned in China's 14th Five-Year Plan (2021-2025) — at the "Great Bend", where the Yarlung Tsangpo makes a U-turn in Medog county before entering Arunachal Pradesh.

Recent developments including the allocation of funds, development of smaller dams along the river channel, and changes in land use in upstream areas, indicate the project is in an advanced planning stage, and visible construction progress is likely to follow soon, Dr Nithiyanandam said.

Why does China want this mega project?



China has said the dam will help it move away from conventional energy sources and achieve net carbon neutrality by 2060. The Yarlung Tsangpo is ideal for hydroelectricity generation — its steep descent from high mountains ensures a "remarkable flow rate", Dr Nithiyanandam said.

Some recent additions to China's network of tens of thousands of dams are staggering in scale. The immense weight of the volume of water stored in the Three Gorges Dam reservoir is suspected to have caused blips in gravity anomaly maps, Dr Nithiyanandam said. Water released from the dam has had severe environmental impacts — "the scientific community believes the massive storage of water can create earthquakes; and, more than all, it has displaced more than a million people…due to changes made in the river morphology," he wrote in an article for Takshashila in July 2023.

What are the specific concerns for India?

The dam (or dams) could impact the flow of water from China to India, the lower riparian state, Kantha said. The bulk of the water in the Brahmaputra system comes from Tibet.

Also, "going by the experience of other large dams, they always lead to other negative consequences," Kantha said. The flow of silt, crucial for agriculture, can get interrupted, and changes in river flow can impact the local biodiversity.

This region is among the world's most ecologically fragile and earthquake-prone. Kantha recalled that a landslide in 2004 had created the glacial Parechu Lake in the Tibetan Himalayas near Himachal Pradesh. After the Chinese alerted India, the level of the lake was monitored daily. The lake burst in June 2005 and sent a large volume of water down the Sutlej, but timely coordination and planning helped limit the damage.

"Even if there is no mala fide involved, such incidents become very serious. In the Tsangpo case, you're talking about a large dam in an earthquake-prone area. Chinese scholars have also raised these concerns extensively, such as in the case of Three Gorges," Kantha said.

To prevent disasters, coordination and exchange of information between countries is essential, Kantha said. "China doesn't feel the need to cooperate more closely with lower riparians. In the Mekong river basin, China has constructed 12 large dams with negative consequences for countries downstream," he said.

What coordination mechanism do India and China have on transboundary rivers?
There is an umbrella Memorandum of Understanding on cooperation on transboundary rivers, and two separate MoUs on the Brahmaputra and Sutlej, Kantha said.

The need for the Sutlej MoU was felt after the Parechu incident — however, China did not agree to round-the-year provision of data, and the MoU is currently pending renewal.

The Brahmaputra MoU, renewable every five years, lapsed in 2023. The renewal process is ongoing through diplomatic channels, the Jal Shakti Ministry says on its website.

The umbrella MoU was signed in 2013, and has no expiry date. But at present, there is "no activity being undertaken under this MoU", says the Ministry's website. An Expert Level Mechanism set up in 2006 provided for annual meetings between the two sides, but the process has seen interruptions.

Within these limited avenues of cooperation, the 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses can play a role.

"Neither India nor China is a signatory, but we abide by its key features, including the equitable and reasonable utilisation of waters," Kantha said. Under the convention framework, the upper riparian does not have a free run, and one country's actions cannot significantly harm another. The cooperation on data sharing has largely held, barring during the 2017 Doklam crisis and after the 2020 Ladakh standoff.

So what options does India have?
"The larger problem is that understanding (between the countries) is very limited and narrow in scope," Kantha said. "The Chinese are unwilling to discuss any agreement which should involve major commitments on their part."

Whenever India has raised concerns about such projects, the standard Chinese response has been that these are primarily run-of-the-river projects — meaning they did not involve major impounding of water, Kantha said.

He said that India must "challenge" Chinese statements such as the recent "completely wrong" claim by the foreign office spokesperson that the Tsangpo mega dam would not have negative impacts downstream. "We need to say that publicly – otherwise, it will become a fait accompli and a huge problem for India down the road," Kantha said. "India needs to have an honest dialogue and essentially dissuade them from taking up a project of this magnitude."

According to Kantha, water "will become, and should become, a major issue in India's engagement with China" — and "it should be made very clear to the Chinese side that if they're not mindful of our interests and concerns, it will have a serious, negative impact on relations."

Relevance: GS Prelims; International Relations
Source: Indian Express

7. Russian gas supply to Europe via Ukraine stopped: Why now — and which countries will be affected?

Introduction
Russian gas supplies sent to Europe via Ukraine for more than 40 years came to a stop on January 1 after Kyiv refused to renegotiate a five-year-old transit deal amid war with Moscow.

Why has Russian gas via Ukraine to Europe stopped?
Despite the ongoing war, Ukraine's President Volodymyr Zelenskyy on December 19 said Kyiv might consider allowing the flow of gas if payments to Moscow were withheld until the fighting comes to a halt. While critics said that such a measure was not feasible, Russian President Vladimir Putin claimed that it was too late to renew the deal.

As a result, the deal, which was signed in 2020 and applicable for five years, was not extended.

Which European countries will be affected?
The biggest brunt will be borne by Eastern European countries — primarily Austria, Slovakia, and Moldova. Austria was receiving most of its gas from Russia via Ukraine, while Slovakia was getting gas amounting to approximately two-thirds of its annual demand. Moldova is expected to be the worst affected. The country has already declared a state of emergency over the impending gas shortage.

Has Russian gas supply to Europe entirely stopped?

The gas supply which was halted recently took place through the Soviet-era Urengoy-Pomary-Uzhgorod pipeline. It carried gas from Siberia via the town of Sudzha — currently, under the control of Ukrainian military forces — in Russia's Kursk region. The pipeline flows through Ukraine to Slovakia where the pipeline splits into branches going to the Czech Republic and Austria.

However, Moscow is still using the TurkStream pipeline on the bed of the Black Sea to export gas. The pipeline has two lines, one feeds the domestic market in Turkiye, while the other supplies central European customers including Hungary and Serbia.

Before the outbreak of the Russia-Ukraine war in February 2022, Moscow's share of European gas imports stood at 35%. But in the following months, pipelines such as the Yamal-Europe pipeline through Belarus and the Nord Stream pipeline under the Baltic Sea which sent gas to Germany were shut down. Currently, Russia's share of European gas imports is at 8%.

Relevance: GS Prelims; International Issues
Source: Indian Express

8. What is the US Presidential Medal of Freedom, awarded to Messi, George Soros and Hillary Clinton?

Introduction

US President Joe Biden recognised the contributions of 19 public figures in politics, entertainment, sports and more through a ceremony at the White House for awarding the Presidential Medal of Freedom.

The honorees included some of the Democratic Party's "best-known leaders and boosters: Hillary Clinton, philanthropist and major Democratic donor George Soros, and Robert F. Kennedy, who was given the recognition posthumously." Others included Argentinian footballer Lionel Messi, anthropologist Jane Goodall and actor Denzel Washington. Messi was unable to attend due to scheduling conflicts.

What is the significance of this award and who decides its recipients? We explain.

What is the US Presidential Medal of Freedom?

The Presidential Medal of Freedom is the United States' highest civilian honour, often given in recognition of a body of work over a person's lifetime.

A Congressional Research Service report from November 2024 says it was created by President Harry S. Truman (1945 to 1953) in 1945. Later re-named by President John F Kennedy in 1963, it allows the President to recognise "any person who has made an especially meritorious contribution to (1) the security or national interests of the United States, or (2) world peace, or (3) cultural or other significant public or private endeavors."

The medal itself has a white star over a red pentagon, surrounded by five gold eagles. At its centre is a blue circle with 13 gold stars.

Who gives out the Presidential Medal of Freedom?

The award is broad in scope and the qualifications required to receive it. The CRS report says, "There is no formal procedure for nominating and selecting recipients of the Presidential Medal of Freedom. The President has wide latitude under Executive Order 11515 (March 13, 1970) to award the medal to 'any person recommended to the President for award of the Medal or any person selected by the President upon his own initiative.'"

At times, members of the US Congress have sent letters of recommendation for the award.

What is the basis for these choices?

The report adds that the selections of the awardees often reflect the US President's political and personal interests. In Biden's case, his list has been interpreted as support for the political and cultural establishment of the country at present, something incoming President Donald Trump has often rallied against. Notably, apart from Democratic party members and supporters, Biden also awarded Republican leader Mitt

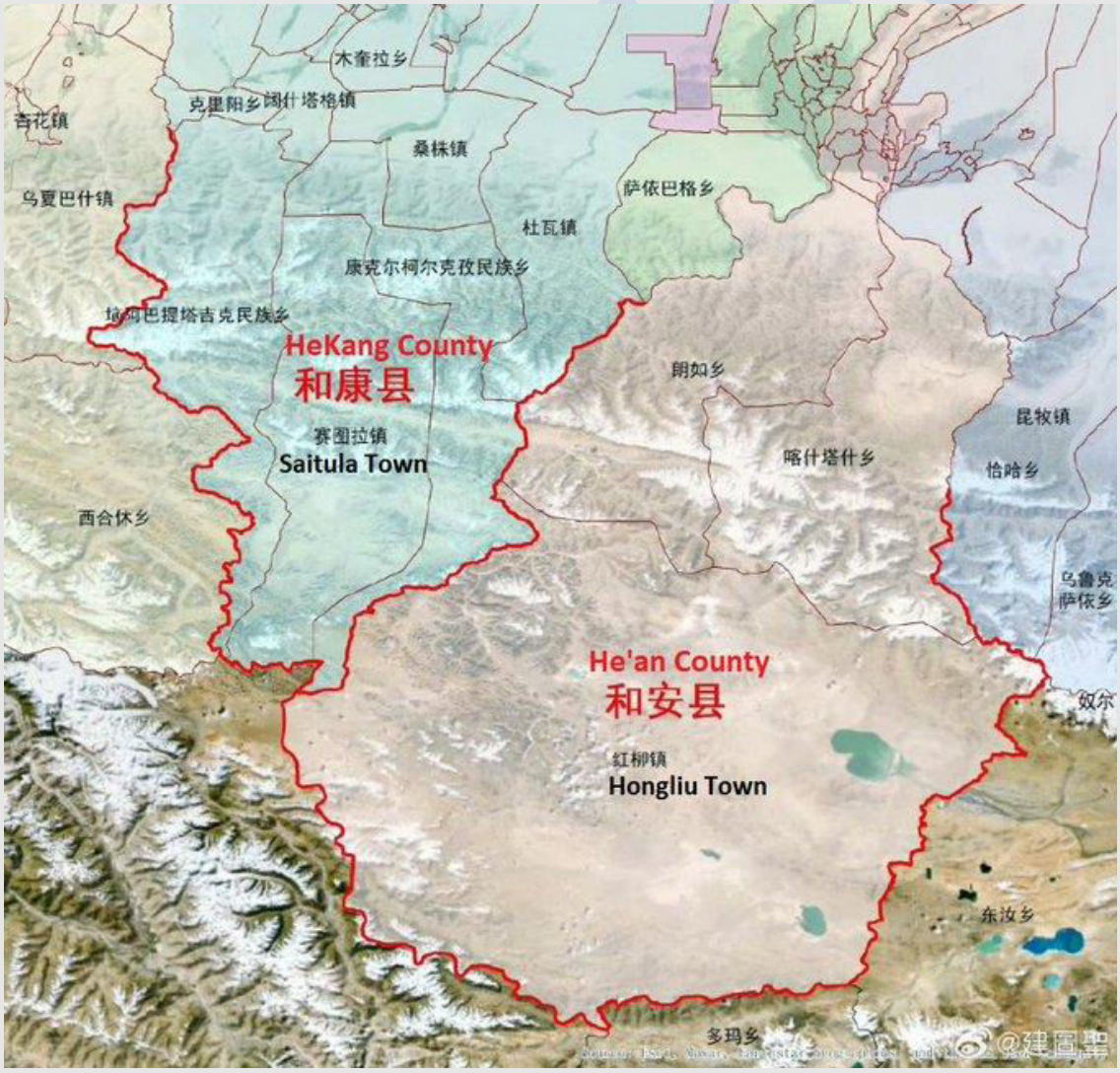
Romney, who contested and lost the 2012 presidential elections against Barack Obama. Romney has been critical of Trump in recent years.

During Trump's first presidential term beginning in 2017, awardees included the late Supreme Court judge Antonin Scalia who was seen as a staunch conservative, longtime Republican senator Orrin Hatch and music legend Elvis Presley.

Other notable recipients over the years are talk show host Oprah Winfrey, billionaire and former Microsoft CEO Bill Gates, civil rights activist Rosa Parks, and boxing legend Muhammad Ali.

Relevance: GS Prelims & Mains Paper II; International Issues
Source: Indian Express

9. India Protests Chinese Moves in Ladakh



Formation of New Counties in Ladakh
India has officially protested China's creation of two new counties—He'an County and Hekang County—in the Hotan prefecture, which includes parts of Aksai Chin, a territory claimed by India but occupied by China.

India's Stand:
O India does not recognize China's "illegal occupation" of Indian territory.
O The formation of new counties does not affect India's sovereignty claims over the area.
O A "solemn protest" was lodged through diplomatic channels.

China's Announcement:
O The creation of the counties was reported by Chinese news agency Xinhua on December 27, 2024.

Relevance: GS Prelims; International Relations
Source: The Hindu

10. Major Defence Deals Near Finalization with France

Introduction
India and France are on the verge of finalizing two significant defence agreements, collectively valued at over $10 billion. The deals coincide with Prime Minister Narendra Modi's anticipated visit to Paris in February for the Artificial Intelligence Action Summit hosted by French President Emmanuel Macron.

Key Defence Agreements
1. Rafale-M Fighter Jets
O Purchase of 26 Rafale-M jets for the Indian Navy.
O Includes 22 single-seater jets and four twin-seater trainers (not carrier-compatible).
O Aims to address a gap until India's indigenous twin-engine deck-based fighter is operational.

2. Scorpene Submarines
O Acquisition of three additional Scorpene-class conventional submarines.
O Part of an ongoing collaboration between Mazagon Dock Shipbuilders Limited and France's Naval Group.

Approval and Timeline
• Both deals are in advanced stages and await approval from the Cabinet Committee on Security (CCS).
• Final approval and signing are expected in the coming weeks.
• The Rafale-M deal, being a government-to-government agreement, is anticipated to progress swiftly post-approval.

Strategic Importance
1. Rafale-M Jets

O Enhance operational capabilities for India's aircraft carriers: INS Vikramaditya and INS Vikrant.
O Support naval operations until the indigenous fighter is ready for service.

2. Scorpene Submarines
O Address the Navy's ageing fleet and delays in the procurement of advanced submarines under Project-75I.
O Critical for maintaining underwater capabilities. The first of three new Scorpenes is expected by 2031.

Additional Developments
• The last Scorpene from the previous contract, Vagsheer, will be commissioned on January 15 in Mumbai, in the presence of PM Modi.
• The Rafale and Scorpene procurements were approved in principle by the Defence Acquisition Council in July 2023.

AI Summit Invitation
PM Modi has been invited to the Artificial Intelligence Action Summit in Paris on February 10-11, focusing on:
1. Public interest AI.
2. Future of Work.
3. Innovation and Culture.
4. Trust in AI.
5. Global Governance of AI.
India and France are aligning strategic defence needs with technological advancements as part of their growing bilateral partnership.

Relevance: GS Prelims & Mains Paper II; Bilateral Relations
Source: Indian Express

11. Legal Barriers to Indo-US Nuclear Collaboration

Key American Legal Impediment
One major hurdle is the 10CFR810 Authorization under the US Atomic Energy Act of 1954. This regulation allows US nuclear vendors to export equipment to countries like India under strict safeguards but prohibits them from manufacturing nuclear equipment or performing design work in these countries. This limitation is a concern for India, which seeks participation in the manufacturing value chain to co-produce nuclear components for planned atomic power projects.

Indian Legal Impediment
On India's side, the Civil Liability for Nuclear Damage Act, 2010 creates challenges. The Act allocates liability for nuclear accidents to operators and allows them to hold equipment

suppliers accountable. This has deterred foreign players like GE-Hitachi, Westinghouse, and Areva (now Orano), who are concerned about potential future liabilities.

Strategic Prospects for Collaboration

iCET and Strengthening Innovation Alliances

During US National Security Advisor Jake Sullivan's visit, discussions centered on addressing these legal barriers under the US-India Initiative on Critical and Emerging Technology (iCET). A breakthrough agreement could enable joint manufacturing of nuclear components for new projects deploying American atomic reactors in India.

India's Pitch for Nuclear Manufacturing

India is positioning itself as a viable hub for manufacturing nuclear reactors, particularly Small Modular Reactors (SMRs) with capacities of 30MWe to 300MWe. These reactors are cost-effective and scalable, offering a competitive edge in the global market.

Competitive Landscape

China's Advancements in SMRs

China is aggressively pursuing global leadership in the SMR space, leveraging its expertise to engage the Global South diplomatically. Unlike its relatively late entry into large nuclear reactors, Beijing's ambitions in SMRs could disrupt the small reactor industry, much like its dominance in electric vehicles.

India's Technological Challenges

India's civil nuclear program, though experienced in manufacturing 220MWe and larger Pressurized Heavy Water Reactors (PHWRs), faces challenges as global preferences shift toward Light Water Reactors (LWRs). The US, along with Russia and France, leads in LWR technology, making collaboration essential for India to modernize its capabilities.

Collaborative Opportunities

Mutual Benefits for India and the US

A collaborative approach could benefit both nations. India's technological constraints and the US's high labor costs and protectionist policies make them individually less competitive against China. By combining strengths, they could effectively counter China's dominance and build a robust presence in the global nuclear market.

Relevance: GS Prelims & Mains Paper II; Bilateral Relations
Source: The Hindu

12. Why Justin Trudeau has said he will resign, and what happens now

Introduction

Justin Trudeau recently announced he would resign as both Prime Minister and leader of Canada's Liberal Party. He has been under pressure to quit for months, amid poor approval ratings and weakened support within his party. The Liberals are predicted to face massive defeat in parliamentary elections later this year.

Writing on the wall

The optimistic political message and youthful charisma of Trudeau, then 44, propelled the Liberals to an unprecedented majority in Parliament in 2015.

By December 2024, his approval rating had plummeted to a record low of 22%, according to polling by the nonprofit Angus Reid Institute. Support for the Liberal Party was down to 16% — which would translate into the worst electoral performance in the party's 157-year history. Trudeau was already serving the second term. No Canadian Prime Minister in the last half century has won a third consecutive term. Incumbents in the post have seemingly run out of steam around the 8-9-year mark in recent years.

Domestic discontent

The discontent against Trudeau was fuelled by economic problems. Overall economic growth in his second term has been slow, unemployment has increased, wages have not kept up with record high inflation, and housing has become increasingly unaffordable.

While inflation has cooled from its 2022 peak, a series of political scandals have hit Trudeau's personal popularity. In 2017, Canada's ethics watchdog pulled him up for accepting gifts including holidays and private helicopter rides.

In 2020, it emerged that Trudeau's family had been paid hundreds of thousands of dollars by WE Charity, to which his government had just awarded a C$19.5 million contract.

And in 2021, he was criticised for missing Canada's first ever National Day for Truth and Reconciliation to commemorate the lost children and survivors of indigenous schools because he went on a surfing holiday with his family.

What next?

Trudeau will remain PM until his party chooses a replacement. On Monday, he said that the Governor General, representative of the monarch, King Charles III, had accepted his request to prorogue Parliament, suspending all proceedings — but without dissolving the House — until March 24.

This gives the Liberal Party time to choose a new leader, but it is not clear who that might be. Freeland, Transport Minister Anita Anand, and former central banker Mark Carney have been identified as possible contenders.

The election to Parliament must be held by October 2025, but it could be much sooner. The principal opposition Conservative Party may be able to push through a motion of no confidence by May, which would trigger an election. The Conservatives, led by Pierre Poilievre, enjoy a huge 29-point lead over the Liberals, and will likely romp home regardless of who succeeds Trudeau as party leader.

View from New Delhi

India-Canada ties have been in the freezer since September 2023, when Trudeau accused New Delhi of orchestrating the killing of Khalistani separatist Hardeep Singh Nijjar. A change of government does present chances of a thaw.

Poilievre in November even accused Trudeau of "sowing divisions" that led to clashes between Sikh separatists and Hindus in Brampton; however, he too had attended an event in August where pro-Khalistan and anti-India chants were made.

Relevance: GS Prelims & Mains Paper II; Bilateral Relations
Source: Indian Express

13. India and U.S. to Jointly Produce Sonobuoys for the Navy

What Are Sonobuoys?

Sonobuoys are advanced undersea instruments designed to detect submarines operating deep in oceans. These devices play a crucial role in undersea domain awareness (UDA), helping navies track submarine movements effectively.

India-U.S. Collaboration

India and the United States have announced a partnership for the co-production of sonobuoys, marking a significant step in their defense collaboration. This move comes amid concerns about the growing Chinese naval presence in the Indian Ocean Region.

Partnership Details

• Key Players: The collaboration involves U.S.-based Ultra Maritime (UM) and India's Bharat Dynamics Limited (BDL).
• Technology Sharing: The two companies will work together to develop and produce sonobuoys that meet U.S. Navy standards.
• Production Locations: Manufacturing will be split between the U.S. and India, aligning with India's "Make in India" initiative.
• Advanced Features: The sonobuoys will incorporate new technologies to enhance their acoustic performance, tailored for the unique conditions of the Indian Ocean.

Strategic Importance
• Interoperability: The sonobuoys will be interoperable across U.S., Indian, and allied platforms, including P-8, MH-60R, and MQ-9B aircraft.
• Quad Collaboration: This initiative aligns with broader defense cooperation among Quad members (India, U.S., Japan, and Australia) and their joint maritime exercises like the Malabar Naval Exercise.

Indian Navy's Expanding Capabilities
India has been steadily enhancing its maritime capabilities with acquisitions from the U.S., including:
• P-8I Aircraft: Long-range maritime patrol planes.
• MH-60R Helicopters: Multi-role helicopters for maritime operations.
• MQ-9B Drones: Advanced drones for surveillance and strike missions, with deliveries set to begin in 2029.

Key Statements
• Ultra Maritime: CEO Carlo Zaffanella emphasized the company's commitment to delivering world-class sonobuoys and addressing unique undersea challenges.
• Bharat Dynamics Limited: Chairman A. Madhavarao reiterated the alignment with the Indian Navy's operational demands and the focus on "Make in India."
• Strategic Significance: Rear Admiral Mark Kenny (retd.) highlighted the interoperability of these sonobuoys, enhancing coordination between allied forces.

Conclusion
The joint production of sonobuoys reflects deepening India-U.S. defense ties and underscores their shared focus on enhancing maritime security in the Indo-Pacific.

Relevance: GS Prelims; Bilateral Relations
Source: The Hindu

14. India-Taliban Talks: Key Developments and Strategic Context

Background
India's engagement with the Taliban, marked by Foreign Secretary Vikram Misri's meeting with Taliban-ruled Afghanistan's acting Foreign Minister, Amir Khan Muttaqi, reflects a significant

shift in Delhi's foreign policy approach. While avoiding official recognition of the Taliban government, India aims to safeguard its national and security interests amidst evolving regional dynamics.

Five Reasons Behind India's Engagement

1. Changing Dynamics with Pakistan

O Initially supportive of the Taliban, Pakistan's relationship with the group has soured. Recent Pakistani airstrikes in Afghanistan have strained ties further, creating a window for India to engage without immediate Pakistani influence over Taliban policies.

2. Iran's Reduced Influence

O Iran, previously critical of the Taliban's actions, is preoccupied with domestic challenges and regional conflicts, especially after setbacks involving its proxies like Hezbollah and Hamas. With Tehran distracted, its pressure on the Taliban has waned.

3. Russia's Shifting Focus

O Engaged in the Ukraine war, Russia has turned to the Taliban as a counter-terrorism ally. Moscow's softened stance includes legislative moves to delist the Taliban as a terrorist organization. This aligns with broader geopolitical shifts in the region.

4. China's Growing Presence

O China has made strategic inroads in Afghanistan, exchanging ambassadors and supporting development projects. Its active engagement, including access to Afghanistan's resources through the Belt and Road Initiative, has positioned Beijing as a significant player in Kabul.

5. Potential U.S. Policy Shift

O With Donald Trump set to return to the Oval Office, a renewed U.S.-Taliban dialogue is likely, given his administration's role in initiating past peace talks. India seeks to preemptively secure its interests in this changing scenario.

India's Strategic Goals

• Security Concerns:

O Prevent Afghan soil from being used by anti-India terrorist groups.

O Maintain vigilance against the Islamic State Khorasan Province.

• Safeguarding Investments:

O Protect Indian projects worth $3 billion over two decades.

O Ensure security for Indian interests, including embassy facilities.

• Humanitarian Engagement:

O Support development and humanitarian projects welcomed by the Taliban.

India's Previous Engagements

• Initial Steps:
O First official meeting in 2021 between Indian Ambassador Deepak Mittal and

Taliban representatives in Doha
O Deployment of a technical team at the Indian embassy in Kabul.
• Progressive Dialogue:
O Multiple meetings led by senior Indian officials with Taliban leaders.

Conclusion
India's engagement with the Taliban, driven by a pragmatic assessment of regional shifts, reflects a careful balance between safeguarding its interests and avoiding premature recognition of the regime. By engaging now, India aims to maintain its influence in Afghanistan and counteract adversarial moves by regional powers like China and Pakistan.

Relevance: GS Prelims & Mains Paper II; Bilateral Relations
Source: Indian Express

15. What is an unconditional discharge, which Donald Trump was awarded in sentencing?

Introduction

US President-elect Donald Trump was formally sentenced by Justice Juan Merchan of the New York State Supreme Court recently to an unconditional discharge. This sentence marks an unprecedented lenient step in New York state courts, but still identifies Trump as a felon, days before his elevation as President.

Last May, a jury in Manhattan had convicted Trump of falsifying records to cover up a sex scandal.

What does an unconditional discharge mean?
Convicts may be allowed release from jail without serving the entirety of their jail term, subject to certain conditions, like completing court-ordered counselling, community service, or serving the period under house arrest, among other things. The New York Times reported that a third of defendants convicted since 2014 of falsifying business records in the first degree in Manhattan served less than a year of jail time.

However, Merchan awarded Trump an unconditional discharge, meaning he would not need to meet any of these assurances. Merchan recognised the leniency of the sentence.

What was the Stormy Daniels Hush Money case?
The former president is the first to be named a convicted felon (person accused of serious crime). In May, the Manhattan Criminal Court found him guilty of 34 counts of falsifying business records to cover a hush money (money paid to someone to prevent them from disclosing embarrassing or discreditable information) payment to adult film actress Stormy Daniels. This was meant to avoid the mention of a possible sex scandal from dominating the final weeks of the 2016 presidential campaign.

According to the court, Trump paid Daniels $130,000 days before the 2016 election to keep quiet on her claim that the two had a sexual encounter. Each of the charges has a maximum sentence of four years in prison.

Trump also awaits indictments in two federal cases, and an election-related case in Georgia.

What comes next for Trump?
Trump presented a defiant face on Friday's hearing, maintaining his innocence. In a six-minute speech, he described the trial as a "very terrible experience," and the case "an injustice of justice." He subsequently posted on Truth Social, calling Merchan "a highly political and corrupt Judge" who "put a gag order" on speaking about "very important aspects of the case. The unconditional discharge allows Trump to proceed with the staff confirmation hearings for key roles in his upcoming administration. However, the legal case against him remains, and he is likely to appeal Friday's sentencing, in a process that may continue well into his second term. He has also begun a civil action suit against Merchan, whom he has repeatedly attacked over the course of the trial. He has sought to have him removed as judge thrice over the last two years, and alleged biased treatment because Merchan's daughter is a Democratic political consultant.

Relevance: GS Prelims; International Issues
Source: Indian Express

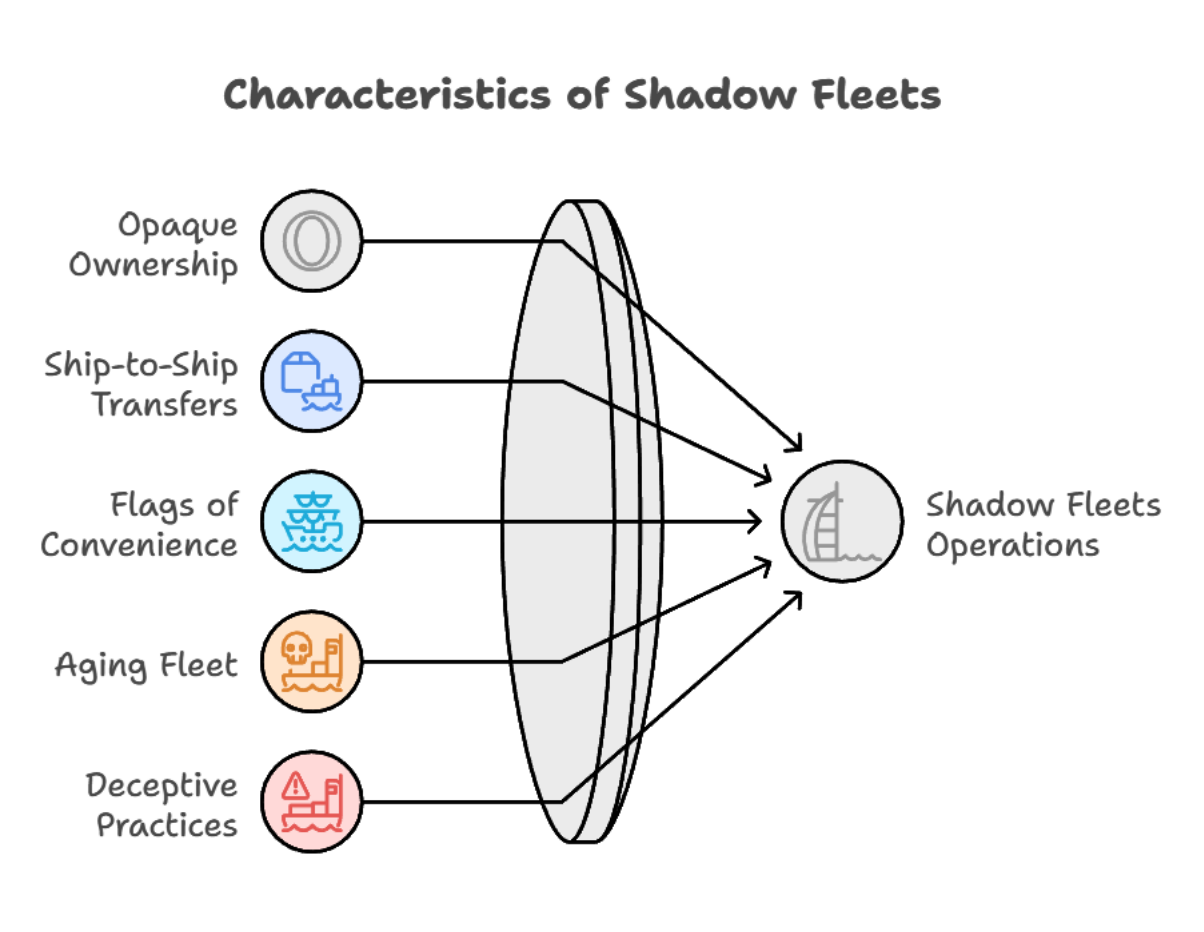
16. How US Sanctions on Russia's Shadow Fleet May Impact India's Oil Imports

US Sanctions on Russia's Oil Trade
The United States has imposed significant sanctions on Russia's oil trade, targeting 183 tankers forming the "shadow fleet" that enables Russian oil exports to countries like India and China. These sanctions also include Russian oil companies and associated entities, aiming to disrupt Russia's oil shipping sector.

Implications for India
Russia is India's largest crude oil supplier, accounting for 38% of its imports in 2024. The sanctions may impact India's oil trade, depending on Russia's pricing and delivery strategies, as well as policy shifts under the incoming US administration.

Transition Period and Short-Term Impact

• Indian refiners will accept oil cargoes booked before January 10, 2025, with delivery allowed until March 12.
• Beyond this wind-down period, trade disruptions are expected, but ample supply from other exporters is likely to prevent significant import challenges.



Shift Towards West Asian Suppliers
• With reduced availability of Russian tankers, freight costs may rise, diminishing the discount advantage of Russian crude.
• India may increase imports from traditional suppliers like Iraq, Saudi Arabia, and the UAE, which were top suppliers before the Ukraine war.

Russia's Response: Rebuilding the Shadow Fleet
• Russia is expected to rebuild its tanker fleet, but this will take time.
• Without competitive discounts, Indian refiners may favor West Asian crude, which has become more competitive.

Potential for Deeper Discounts
• To comply with the Western price cap of $60 per barrel, Russia might offer steeper discounts.
• Indian refiners could benefit if Russia lowers prices to use Western shipping and insurance services.

Uncertainty Under the Trump Administration

• President Donald Trump, taking office on January 20, 2025, has expressed interest in ending the Russia-Ukraine war.

• While Trump's approach to sanctions is uncertain, the recent measures could provide leverage for negotiating peace.

India's oil trade landscape faces near-term uncertainties but remains adaptable, with alternative suppliers and potential discounts mitigating the impact of US sanctions on Russian oil.

Relevance: GS Prelims; International Relations
Source: Indian Express

17. Israel-Hamas Ceasefire Deal

Terms of the Ceasefire Agreement

The ceasefire agreement is structured in three phases. The first phase, lasting 42 days, mandates Hamas to release 33 hostages while Israel releases between 900 and 1,650 Palestinian detainees, including those detained after October 7, 2023. During this period, the Israeli Defense Forces (IDF) will withdraw from central Gaza, the Netzarim Corridor, and eventually the Philadelphi Corridor near the Gaza-Egypt border. The second phase will begin on the 16th day, focusing on further Israeli withdrawals and the release of remaining hostages in exchange for more Palestinian detainees. In the final phase, border crossings will fully reopen, and reconstruction efforts in Gaza will commence.

Background and Negotiation Progress

The current agreement follows a stalled proposal from May 2024, known as the "Biden Plan," which Israel rejected due to last-minute amendments by Hamas. Domestic political changes in Israel, including a weakened far-right influence in Netanyahu's coalition, helped pave the way for this deal. Additionally, pressure from outgoing US President Joe Biden, Qatar, and Trump's incoming administration played a critical role in advancing negotiations.

Significant Aspects of the Deal

A key feature of the agreement is Israel's conditional commitment to withdraw from the Philadelphi Corridor. Israel has long resisted this due to concerns over Hamas smuggling operations and the potential inability to re-enter the area under international scrutiny. Another prominent aspect is the hostage-prisoner swap, with Israel agreeing to release 250 prisoners serving life sentences. This move challenges a 2014 Israeli law prohibiting such exchanges, highlighting the magnitude of the concessions involved.

Implications for Hamas and Israel

For Hamas, the ceasefire provides an opportunity to regroup after significant losses and secure a potential role in Gaza's governance, akin to Hezbollah's position in Lebanon post-civil war. Despite setbacks, Hamas continues to demonstrate tactical resilience through effective guerilla warfare. For Israel, the ceasefire secures the release of hostages, alleviating domestic pressure from families of captives. However, its inability to eliminate Hamas militarily and the lopsided prisoner exchange could draw criticism, particularly from Netanyahu's far-right allies.

US Influence and Trump's Role

The deal has been supported by the outgoing Biden administration, but its long-term success may depend on Donald Trump's policies after taking office. Trump's approach could shape regional dynamics, offering Netanyahu strategic leverage in exchange for adherence to the ceasefire.

This agreement signifies a temporary cessation of hostilities, but its success will depend on how both sides navigate the challenges in subsequent phases and the influence of external mediators.

Relevance: GS Prelims; Economics
Source: The Hindu Business Line and PIB

18. All you need to know about Donald Trump's inauguration ceremony today

Swearing in ceremony

At noon on January 20 – 10.30 pm in India – Donald J. Trump will be sworn in as President of the United States for the second time. The ceremony will be held inside the United States Capitol Rotunda, the circular central space below the dome of the Capitol, which was overrun four years ago by rioters seeking to overturn Joe Biden's victory in the 2020 election.

47th President

The inauguration of the 47th President will mark a remarkable moment in American history, and one of the most extraordinary comebacks in modern politics anywhere. Trump is also only the second President in the 230-plus years of American democracy to have come to power, lost the re-election, and then returned to the White House. The other leader to have served non-consecutive presidential terms was Grover Cleveland, the 22nd and 24th President in the 1880s and 1890s.

In 2021, Trump skipped the inauguration ceremony of his successor – and now would-be predecessor – President Biden, insisting that the 2020 election had been "stolen" from him. This was the first time in 150 years that any former US President had boycotted the formal transfer of power.

Date of ceremony

Presidential inauguration ceremonies have historically followed a set of rules that have evolved through tradition. Following an amendment to the US Constitution in 1933, the ceremony has been held every four years on January 20 – or January 21 if the 20th is a Sunday.

The oath of office is administered to the President and Vice President at noon, with a series of official engagements scheduled before and after.

That the inauguration takes place more than two months after Election Day allows for the peculiar, long drawn-out process of officially declaring the election result followed in the US. It also gives the outgoing administration time to wind down, and the incoming one to put in place personnel and agenda to ensure a seamless transition.

Why is there a gap between elections and inauguration?
The presidential election is held in November and the outcome is "called" by prominent media organisations soon afterward. Within a few days, the President invites the President-elect to the White House to congratulate him and to discuss the transition process.

The transition period is marked by a flurry of activity as the President-elect begins the process of making appointments to his administration. The most important positions must be confirmed by the US Senate – that process is underway.

The President-elect also receives intelligence briefings throughout the transition period.

What happens on the day of the US President's inauguration?
A Joint Congressional Committee on Inaugural Ceremonies (JCCIC), consisting of members from the House and Senate, formed every four years, plans and hosts the event. The United States Secret Service is designated as the primary federal entity responsible for security.

The ceremony, which is traditionally held at the West Front of the US Capitol – the ceremonial first nail for the construction of the 2025 inaugural platform was driven on September 18, 2024 – was moved indoors to the Rotunda by Trump in view of the extreme cold in Washington DC. The maximum temperature for Monday is predicted to be minus 4 degrees Celsius, the minimum minus 12, and it is expected to be minus 6 at noon. The last time the ceremony was moved indoors was during Ronald Reagan's second inauguration in 1985 – also because of the weather.

Senior leaders of the Democratic and Republican parties and former US Presidents are expected to attend the inauguration, apart from businessmen Elon Musk (who will be part of the Trump administration), Mark Zuckerberg, and Jeff Bezos.

Foreign dignitaries including External Affairs Minister S Jaishankar and Chinese Vice President Han Zheng will attend. Invitations have been extended to former Brazilian President Jair Bolsonaro, the leader of Britain's right-wing Reform UK party Nigel Farage, and Italian Prime Minister Giorgia Meloni.

However, the "vast majority" of the more than 200,000 ticketed guests "will not be able to attend the ceremonies in person", the Joint Inaugural Committee has said. The Rotunda can accommodate at best 600 attendees, and only "those with tickets for the Presidential Platform and members of Congress will be able to attend in person".

What does the oath say?
The most important part of the inauguration ceremony is the President's oath-taking; it is the only event of the day that is mentioned in the US Constitution. All other events have evolved through tradition.

The text of the oath has remained the same since 1884: "I do solemnly swear (or affirm) that I will faithfully execute the Office of President of the United States, and will to the best of my ability, preserve, protect and defend the Constitution of the United States."

Trump and Vance will place their hands on the Bible, a ritual that has become an integral part of the oath. Traditionally, the Chief Justice of the United States Supreme Court administers the oath.

The presidential oath will be administered by Chief Justice John Roberts, and the vice-presidential oath by Justice Brett Kavanaugh.

Relevance: GS Prelims; International Relations
Source: Indian Express

19. Trump signs executive order to end US birthright citizenship. Can he do it?

Introduction

US President Donald Trump signed a list of executive orders on his first day in office, many of which could have implications for non-Americans. The most prominent of these is the order to end birthright citizenship for children whose parents lack legal status.

Within hours of Trump signing the order, he was sued by immigrant and civil rights advocates, including the American Civil Liberties Union.

What is birthright citizenship in the US?

Very simply, birthright citizenship is a legal principle under which citizenship is automatically granted to individuals upon birth.

Presently, in the US, there are two forms of birth-related citizenship: ancestry-based citizenship and birthplace-based citizenship. The latter, also called jus soli, a Latin term meaning "right of the soil", grants unrestricted citizenship based on place of birth. The second is restricted ancestry-based citizenship, also called jus sanguinis, which extends citizenship to children born abroad to US citizens.

What the US Constitution says

The US Constitution's Fourteenth Amendment guarantees birthright citizenship, stating that "all persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the state wherein they reside."

The 14th Amendment was brought in after the Civil War in 1868, essentially meant to ensure that America-born children of formerly enslaved people got American citizenship.

Trump's executive order goes on to explain his interpretation of the Constitutional provision. "The privilege of United States citizenship is a priceless and profound gift. The Fourteenth Amendment states: "All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the State wherein they reside."……..But the Fourteenth Amendment has never been interpreted to extend citizenship universally to everyone born within the United States."

This line is key: The executive order says the Fourteenth Amendment has always excluded from birthright citizenship persons who were born in the United States but not "subject to the jurisdiction thereof."

Who are people not "subject to the jurisdiction" of the US

According to Trump's executive order, people not subject to the jurisdiction of its Constitution fall into two categories: first when a person's mother was unlawfully present in the United States, and the father was not a United States citizen or lawful permanent resident at the time of the person's birth. The second category is for when the mother's presence in the United States at the time of the child's birth was lawful, but temporary. For example, but not limited to, if the mother was visiting the United States under the Visa Waiver Program or visiting on a student, work, or tourist visa; and the father was not a United States citizen or lawful permanent resident at the time of the person's birth.

Trump's executive order also goes on to emphasise that the definitions of sex are traditional in this order. This means that when the term "mother" is used in the executive order, it would mean "immediate female biological progenitor", while "father" would mean the "immediate male biological progenitor".

Who is most likely to be impacted?

According to 2024 data by the Pew Research Center, "The US foreign-born population reached a record 47.8 million in 2023, an increase of 1.6 million from the previous year. This is the largest annual increase in more than 20 years, since 2000."

"In 2022, Mexico was the top country of birth for immigrants who arrived in the last year, with about 150,000 people. India (about 145,000) and China (about 90,000) were the next largest sources of immigrants. Venezuela, Cuba, Brazil and Canada each had about 50,000 to 60,000 new immigrant arrivals," the Pew Research Center report said.

Can Trump do it?

While the order can prompt US federal agencies to interpret citizenship using a more strict and narrow definition, it will run into legal hurdles, which have already been set into motion. Second, doing away with birthright citizenship would require a constitutional amendment, with a two-thirds vote in both the House of Representatives and the Senate and approval by three quarters of US states. Trump's party, the Republicans, have a majority in both the House of Representatives, as well as the Senate.

An old promise

Trump's stand with regard to immigration has been well-documented. As President during his first term, in 2018, Trump had said he intended to remove, by means of an executive order, the right of citizenship from people born in the US to foreign nationals. However, back then, the constitutionality of that kind of an executive order in the absence of a new constitutional amendment had been widely debated. Till the end of his presidency in 2021, no such executive order was passed by Trump.

The issue was back on the table in 2024 during the presidential campaign, and Trump promised to make this his priority on his first day in office. After winning the 2024 elections, during the Presidential transition period, Trump reiterated his campaign promise to end birthright citizenship, without going into details about how he would do so.

Relevance: GS Prelims; International Relations
Source: Indian Express

20. Under Trump, US withdraws from WHO: Impact, what this means for India

Introduction

United States President Donald Trump signed an executive order to withdraw from the World Health Organisation (WHO) on his very first day in office. The order said the reasons for withdrawing were WHO's "mishandling of the COVID-19 pandemic", "failure to adopt urgently needed reforms", "inability to demonstrate independence from the inappropriate political influence of WHO member states", and for continued demand of "unfairly onerous payments from the United States."

The move does not come as a surprise considering Trump had threatened to withdraw in his last term too, and officially notified the UN General Secretary of the decision in 2020. Nonetheless, health experts are concerned about the cut in funding and expertise that the WHO may experience in the coming years.

The WHO is a UN body working on global health. It works with countries to strengthen their primary health care, its guidelines help prepare government policies, and it helps organise programmes to tackle specific diseases.

What does the executive order say?
Trump's executive order highlights four key things that will happen as the US exits from the global health organisation:

One, any transfer of US funds and resources to the WHO will be paused.

Two, all US government personnel or contractors working in any capacity with the WHO will be recalled.

Three, the United States will "identify credible and transparent United States and international partners to assume necessary activities previously undertaken by the WHO."

Four, and importantly, the United States will cease negotiations towards the pandemic treaty the WHO is working on. The accord aims to better prepare countries to respond to pandemics, create a framework for global cooperation if a pandemic happens, and develop mechanisms for equitably sharing medical countermeasures such as drugs and vaccines. "... actions taken to effectuate such agreement and amendments will have no binding force on the United States," the executive order says.

What will be the financial implication?
Withdrawal of the United States is likely to have a huge financial impact on the WHO, with the agency receiving around a fifth of its funds from the country. This is one of the points of contention for President Trump, with the executive order stating: "China, with a population of 1.4 billion, has 300 percent of the population of the United States, yet contributes nearly 90 percent less to the WHO."

WHO's funding essentially comes in two ways — the mandatory assessed contributions from all its member countries, and the voluntary contributions raised from various countries and organisations. Over the years, the assessed contributions have remained stagnant and now cover less than 20% of the organisation's budget.

In assessed contributions, the United States is the biggest payer, accounting for 22.5% of the contributions, followed by China at 15%. In voluntary contributions, while the US is still the biggest donor, accounting for around 13% of the total contributions in 2023, China accounted for only about 0.14% of the total contributions. The second biggest voluntary contributor was the Bill and Melinda Gates Foundation.

How did the WHO react to Trump's move?
In a statement, it said: "The World Health Organization regrets the announcement…WHO plays a crucial role in protecting the health and security of the world's people, including Americans." On the matter of transparency, the WHO statement added: "With the participation of the United States and other Member States, WHO has over the past 7 years implemented the largest set of reforms in its history, to transform our accountability, cost-effectiveness, and impact in countries."

Will India be impacted?
With WHO losing out on a significant proportion of its funding, its work across countries, including India, is likely to be affected.

The WHO participates in and supports several health programmes of the Indian government, such as its work on neglected tropical diseases, HIV-malaria-and tuberculosis, anti-microbial resistance, among others. Importantly, it plays a significant role in the country's immunisation programme, with WHO teams even monitoring vaccine coverage.

In addition, the loss of expertise from the United States would also impact WHO's role of providing guidance. "Whether it is a pandemic due to a novel virus or chronic diseases, WHO provides framework guidelines that are utilised and adapted by countries for their local programmes. These guidelines are usually developed by collecting all published evidence, grading them, and then discussing the evidence in expert committees. These committees are constituted keeping in mind where a disease is endemic, where there is ongoing research in the area, where countermeasures are produced. It is representative of different regions and genders. US experts are likely to be a part of several such committees and their work will get affected if they are pulled out," the expert quoted above said.

Importantly, this will also sever the collaboration between the WHO and the US Centres for Disease Control and Prevention (CDC), which is key to international surveillance and response to health threats.

How can member states withdraw from the WHO?

There is no provision for withdrawing in WHO's constitution. The US Congress, however, at the time of joining the organisation in 1948, had laid down a condition that said the country could withdraw after giving a one-year notice and meeting the financial obligations of the current year.

What is the role of India and the global south?

The vacuum created by the United States is likely to be filled by China and countries from the global south, including India, said experts. A policy piece by ORF said that Europe could be another contender, but a considerable amount of its resources are diverted towards the Russia-Ukraine conflict, "indicating that the lacuna will be filled by philanthropies like the BMGF (Bill and Melinda Gates Foundation)."

Relevance: GS Prelims & Mains Paper II; International Relations
Source: Indian Express

21. From Denali to McKinley: Why Trump has ordered the renaming of North America's highest peak

Introduction

Among the slew of executive orders signed by President Donald Trump on his first day in office was one titled "Restoring Names that Honor American Greatness".

It said that the highest peak in North America would be again called Mount McKinley, the name that was in use before the administration of President Barack Obama renamed it Denali in 2015; and that the Gulf of Mexico would be renamed as the "Gulf of America".

Earlier in the day, in his inaugural speech delivered in the Capitol Rotunda, the President had announced the changes in both these names.

He also mentioned that "President [William] McKinley (1897-1901) made our country very rich through tariffs and through talent", two of the issues that Trump himself has repeatedly harped on.

Why the changes in the names?
According to the "Purpose and Policy" of the executive order, "It is in the national interest to promote the extraordinary heritage of our Nation and ensure future generations of American citizens celebrate the legacy of our American heroes. The naming of our national treasures, including breathtaking natural wonders and historic works of art, should honor the contributions of visionary and patriotic Americans in our Nation's rich past."

Make America Great Again has been the heart of Trump's politics since the time of his first presidential campaign in 2016. He has described his return to the White House as the beginning of "America's golden age".

What is the story of the mountain McKinley/ Denali?
The continent's highest peak is in the Alaska Range, in the US state of Alaska, and stands 20,310 feet (6,190 m) above sea level.

The indigenous Koyukon people, who lived in the valleys of the Koyukuk and Yukon rivers, called the peak Denali in their Athabascan language.

In 1897, a gold prospector in Alaska is said to have given the name McKinley to the peak in honour of the then newly-elected President. Two decades later, in 1917, the federal government formally adopted the name and President Woodrow Wilson signed a bill to create Mount McKinley National Park, which had the mountain at its heart.

In August 2015, the Obama administration renamed the mountain Denali, the name given to it by the original people of the land.

Relevance: GS Prelims; International Issues
Source: Indian Express

22. Why Donald Trump's Paris Agreement pullout could have worse consequences than in 2017

Introduction
US President Donald Trump decided to withdraw the United States from the Paris Agreement again — having first done so in 2017 — through an executive order. On his first day in office, Trump also ordered an immediate revocation of all climate finance commitments made by the US.

During his inauguration speech, Trump promised to reverse some of the climate-friendly energy policies of the last few years, and reiterated his commitment to extracting more oil and gas to meet America's energy requirements.

Trump's predecessor (and successor) Joe Biden had taken the US back into the Paris Agreement in 2021. The US is the only one of the 194 member countries to have withdrawn from it. Incidentally, the US had not become a party to the 1997 Kyoto Protocol as well, having refused to ratify it after signing on to it. The predecessor to the Paris Agreement expired in 2020.

Greater impact this time

The US is the world's second-largest emitter of greenhouse gases. The Paris Agreement's objective of keeping global warming below a certain level cannot be achieved without its full participation in the common effort to reduce emissions.

In many ways, this second withdrawal could have a more far-reaching impact on global climate action than the first. The decision has come at the start of Trump's second term and is accompanied by a slew of related decisions that threaten to dismantle the entire US climate policy.

The first withdrawal, which came six months into the Trump presidency, was rather short-lived. The US had ratified the Paris Agreement just a few months before Trump had become President. It has a provision that does not allow any country to withdraw within the first three years of ratification. There is also a one-year wait time for the withdrawal to come into effect. So, by the time the US withdrawal became effective, it was almost time to rejoin, with Biden winning the election.

The process will be much swifter this time, and the withdrawal will come into effect next year. Trump also appears more clear about his policies, having already ordered the rollback of several energy-related policies. He has also sought an immediate review of all regulations that hinder the development of domestic energy resources, including oil, natural gas and coal.

Conventional energy pitch

The production of crude oil and natural gas in the US increased during Trump's first term, though coal extraction reduced substantially. But this was largely in keeping with the overall trend in the US. Both its crude oil and natural gas production have shown an increasing trend in the last 15 years, except for a marginal dip during the coronavirus pandemic. This did not change during the Biden presidency either.

Trump has been much more explicit about drilling new oil wells and gas fields this time, as a result of which fossil fuel production could see a sharp spike in the next four years. Some earlier estimates of the impact of Trump's expected policies suggested that an additional 4 billion tonnes of emissions could be added over the next four years.

Another major implication for developing countries will be a further squeeze in funds available for climate action. Trump has ordered an immediate revocation of the US International Climate Finance Plan, an April 2021 announcement that promised to scale up US contribution to $11 billion annually by 2024. Last year, the US claimed its preliminary estimates as suggesting that this pledge was met.

But it is not just the US government's contribution that would be affected. The US has the greatest influence on mobilising private and international finance, which forms the bulk of the money that gets channelled into climate action. Trump's policies could see this source drying up as well.

According to Trump, these measures are meant to protect American interests. In particular, the heavy concentration of the renewable energy supply chain in China makes the US extremely vulnerable to energy shocks. He has, therefore, talked about boosting the domestic production of renewable energy equipment through tariffs on cheaper Chinese equipment. Scaling up of domestic production of solar or wind energy would also result in the creation of new jobs — another important agenda for Trump.

Meanwhile, increasing the production of oil and gas, which the US has in abundance, can help in energy security and self-reliance, reducing the dependence on China while boosting employment.

Upshot

The biggest irritant in this scheme of things would be the Paris Agreement requirement that the US cut down on its emissions. Trump has thus decided to do away with the agreement itself. He has long complained that international regulations on climate change have been unfair to the US because similar restrictions are not placed on China, on account of it being classified as a developing country.

However, the fact is the US has the largest share of historical emissions, and therefore also the greatest responsibility to clean up — and it has not done even a fraction of what it is mandated to.

The fallout of Trump's second term on the international climate regime will be known in due course. What appears certain is that the US would be unable to meet its 2030 emissions cut targets. It is currently attempting to reduce its emissions by 50-52% by 2030 (from 2005 levels) and by 62-66% by 2035. As of now, the US is not on track to meet its 2030 emissions goal — and four years of Trump will make it almost certain that these are not achieved.

Relevance: GS Prelims & Mains Paper III; Environment
Source: Indian Express

23. Why Neutral Expert's decision on Indus Waters Treaty is a win for India

Introduction

The Neutral Expert appointed by the World Bank under the terms of the Indus Waters Treaty (IWT) has decided that he is "competent" to adjudicate on the differences between India and Pakistan regarding the design of two hydroelectric projects in Jammu and Kashmir, vindicating New Delhi's long-held position.

What is the Indus Waters Treaty?

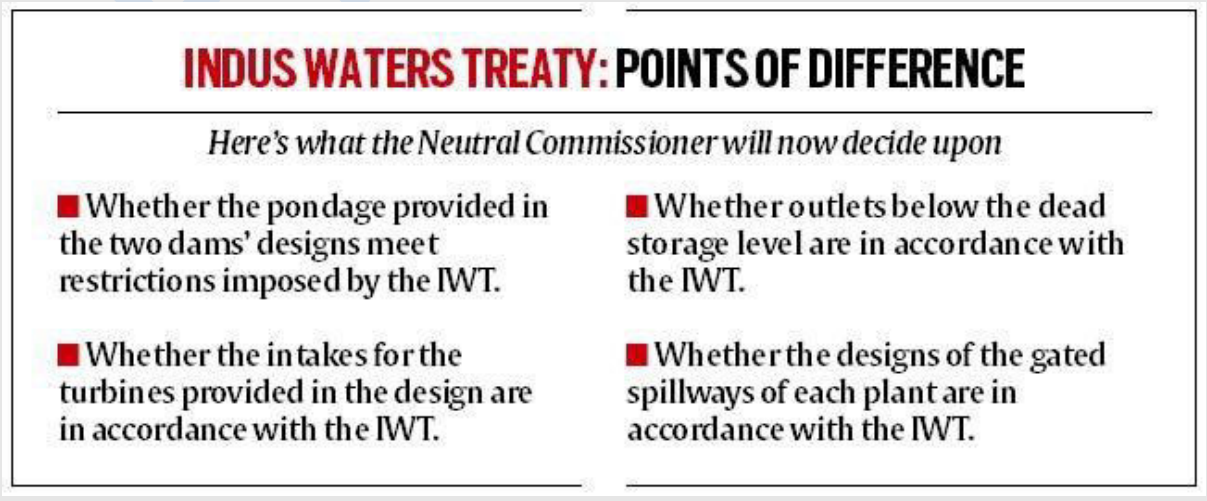
The IWT was signed by India and Pakistan on September 19, 1960 to determine the distribution of the waters of the Indus and its tributaries. It was signed in Karachi by then Prime Minister Jawaharlal Nehru and then Pakistan President Ayub Khan after nine years of negotiations arranged by the World Bank.

Under the IWT, India enjoys "unrestricted use" of the three "Eastern Rivers" (Beas, Ravi, Sutlej), whereas Pakistan controls the three "Western Rivers" (Indus, Chenab, Jhelum). This, in effect, gives India roughly 30% and Pakistan 70% of the water carried by the Indus River System. According to Article III (1) of the Treaty, "India is under obligation to let flow" waters of the Western Rivers to Pakistan.

What is the ongoing dispute about?

Pakistan objects to the design features of two hydroelectric projects currently under construction in J&K — the Kishenganga HEP on Kishenganga, a tributary of the Jhelum, and the Ratle HEP on the Chenab. Although they are "run-of-the-river" projects, which generate electricity without obstructing the natural flow of the river, Pakistan has repeatedly alleged that these violate the IWT.

In 2015, Pakistan requested the appointment of a Neutral Expert to examine its technical objections to the projects. However, it unilaterally retracted this request a year later, and instead proposed adjudication by the Permanent Court of Arbitration (PCA).



India filed a separate request for the matter to be referred to a Neutral Expert. It refused to engage with the PCA mechanism, which it argues is in contravention of the IWT.

Article IX of the IWT provides for a graded three-level dispute settlement mechanism, in which disputes are first decided at the level of the Indus Commissioners of India and Pakistan, then escalated to the World Bank-appointed Neutral Expert, and only then to the PCA in The Hague.

Nonetheless, on Pakistan's insistence, the World Bank on October 13, 2022 instituted two parallel processes — it appointed Michel Lino as the Neutral Expert while also beginning the PCA proceedings. New Delhi has boycotted the latter, while continuing to participate in what it calls "Treaty-consistent" Neutral Expert proceedings.

Why is the Expert's decision significant?

The Neutral Expert has held three meetings with the parties concerned. He visited the Kishenganga and Ratle projects last June.

During the Neutral Expert meetings, Pakistan submitted that the "Points of Difference" raised by India do not fall within "Part I of Annexure F" of the Treaty, effectively taking the issue outside the remit of the Neutral Expert. India, on the other hand, had argued that these fell "squarely and entirely" within the aforementioned part of the Treaty, making the Neutral Expert "duty-bound" to render a decision on their merits.

The Expert, Michel Lino, decided on the matter on January 7, before releasing a formal press note on Monday. "Having carefully considered and analysed the Parties' submissions…the Neutral Expert…finds that he should proceed to render a decision on the merits of the Points of Difference," the press note said.

This was the best outcome India could have hoped for at this stage. Lino will now hear the parties again before deciding on the merits of "Points of Differences". Notably, the PCA in July 2023 also ruled that it was "competent" to consider the matter.

What is the future of the IWT?

Citing Islamabad's continued "intransigence" in implementing the IWT by raising repeated objections to the two projects, New Delhi in January 2023 issued notice to Pakistan seeking "modification" of the Treaty. This was the first such notice in the more than six decades of the Treaty's existence.

India upped the ante last September, by issuing Islamabad another formal notice, this time seeking the "review and modification" of the IWT. The word "review", according to experts, effectively signals New Delhi's intent to revoke and renegotiate the Treaty, which will turn 65 this year.

Sources said India's September 2024 notification highlights "fundamental and unforeseen changes in circumstances" which necessitate a need to revisit the Treaty. These include the the

"change in population demographics, environmental issues and the need to accelerate development of clean energy to meet India's emission targets, and the impact of persistent cross-border terrorism".

Both notices were issued under Article XII (3) of the IWT, which says "the provisions of this Treaty may from time to time be modified by a duly ratified Treaty concluded for that purpose between the two Governments".

Relevance: GS Prelims & Mains Paper II; International Relations
Source: Indian Express

24. Evolution of India-Indonesia Ties: From Sukarno to Prabowo Subianto

1. Recent Developments

India and Indonesia signed agreements on maritime security, health, traditional medicine, culture, and digital cooperation during a meeting between Prime Minister Narendra Modi and Indonesia's President Prabowo Subianto in New Delhi. The ties between the two nations, spanning 75 years from Sukarno to Prabowo, have seen highs and lows, reflecting changing geopolitical dynamics.

2. Shared Colonial Legacy

• Solidarity Against Colonialism:
India and Indonesia shared experiences of colonial oppression and aspirations for political sovereignty and economic self-sufficiency in the 1940s and 1950s.

• Nehru's Support:
Jawaharlal Nehru played a significant role in supporting Indonesian independence during the National Revolution (1945-49). India provided humanitarian aid and imposed restrictions on Dutch activities, including banning Dutch airlines and encouraging labor strikes.

• Biju Patnaik's Heroic Mission:
In 1947, Indian aviator Biju Patnaik carried out a daring mission to evacuate Indonesian leaders Sutan Sjahrir and Mohammad Hatta, showcasing India's solidarity.

3. A Decade of Friendship (1950s)

• Sukarno's Gratitude:
Indonesia's first President, Sukarno, expressed profound gratitude for India's support, culminating in his being the first Republic Day chief guest in 1950.

• Treaty of Friendship (1951):
India and Indonesia signed a treaty pledging "perpetual peace and unalterable friendship," fostering trade, cultural, and military ties.

• Non-Aligned Movement (NAM):
The nations collaborated on global platforms like the Bandung Conference (1955) and were founding members of NAM.

4. Decline in Relations (1960s)
• Diverging Alliances:
The 1960s saw a deterioration in ties as India moved away from China due to the Tibetan uprising, while Indonesia under Sukarno grew closer to Beijing and Pakistan.

• Anti-India Sentiments:
During the 1965 Indo-Pak War, Indonesia supported Pakistan, even supplying weapons and fueling public hostility toward India.

5. Cold War Era (1970s-1980s)
• Suharto's Leadership:
After General Suharto's rise to power, Indonesia repaired some damaged ties with India. Agreements like the 1977 maritime boundary pact were signed, though relations remained lukewarm.

• Key Visits:
Suharto visited India in 1980, while Indira Gandhi and Rajiv Gandhi made trips to Indonesia in 1981 and 1986, respectively.

6. Look East Policy (1990s)
• Economic Liberalization:
India's economic reforms under P.V. Narasimha Rao and the adoption of the 'Look East' policy revitalized ties with Southeast Asia, including Indonesia.

• Trade and Cooperation:
This period saw increased trade and the beginning of deeper economic and security cooperation.

7. Act East Policy and Modern Relations (2014-Present)
• Strengthening Ties:
Under Prime Minister Narendra Modi, the 'Act East' policy enhanced strategic and economic ties, focusing on connectivity, maritime security, and defense collaboration.

• Growing Trade:
Bilateral trade grew from $4.3 billion in 2005-06 to $38.84 billion in 2022-23. Key imports from Indonesia include coal and palm oil, while India exports refined petroleum, vehicles, and steel products.

8. Scope for Improvement
Despite significant progress, experts highlight unrealized potential in India-Indonesia relations, particularly in economic and defense partnerships. Recent agreements signed during Prabowo's visit aim to enhance maritime security, connectivity, and trade, paving the way for stronger ties in the future.

India and Indonesia stand at a pivotal moment in their bilateral journey, with opportunities to unlock greater cooperation across multiple domains.

Relevance: GS Prelims & Mains Paper II; Bilateral Relations
Source: Indian Express

25. Paris AI summit, where PM Modi is co-chair

Introduction

How to leverage the power of Artificial Intelligence (AI) while mitigating its risks: that seems to be the biggest challenge confronting policymakers across countries on the issue of AI regulation.

Amid growing concerns over how to develop regulatory oversight of artificial intelligence, without stifling the AI ecosystem, global leaders are set to gather in Paris on February 10 for a two-day AI Action Summit. This builds on a AI Safety Summit held in Britain in Bletchley Park in 2023 and a smaller meeting in Seoul in 2024.

While the Bletchley summit was focused on the debate surrounding the 'doomsday' concerns posed by AI, and eventually resulted in all 25 states, including the US and China, signing the Bletchley Declaration on AI Safety, the Seoul summit last May saw 16 top AI companies making voluntary commitments to develop AI in a transparent manner.

Paris AI Summit
Prime Minister Narendra Modi is set to co-chair the Paris Summit and has accepted the invitation to travel to France.

The Paris summit aims to address the increasing concentration of power in the AI market, especially with respect to the foundational models being owned by a few companies — Microsoft, Alphabet, Amazon and Meta.

The Summit will kick off in the Grand Palais on February 10, starting with a forum bringing together multiple stakeholders from around the world – representatives of governments, businesses and civil society, researchers, artists and journalists. This will involve conferences, round tables and presentations, focused largely on solutions offered by artificial intelligence. The Summit of Heads of State and Government will then take place on February 11, at the Grand Palais. The idea is to discuss the key common actions to take on AI.

Relevance: GS Prelims; International Organisations
Source: Indian Express

26. India, China to resume direct flights, issue visas, Mansarovar Pilgrimage

Introduction

India and China, three months after resolving the military standoff at the Line of Actual Control (LAC), have agreed to resume direct flights, visa issuance, people-to-people exchanges, and the Mansarovar Pilgrimage for the summer of 2025. Both nations have also decided to resume discussions on trans-border rivers and share hydrological data, which China has withheld for years.

As part of the 75th year of diplomatic relations, both sides committed to organizing celebratory events. The decisions were finalized during a meeting between Foreign Secretary Vikram Misri and Chinese Vice Foreign Minister Sun Weidong in Beijing.

Modi-Xi Agreement

The Ministry of External Affairs (MEA) stated that during the Modi-Xi meeting in Kazan in October, both leaders had agreed to stabilize and rebuild bilateral ties through people-centric measures. These include resuming direct flights, facilitating the Mansarovar Pilgrimage, and restarting dialogues on hydrological cooperation via the India-China Expert Level Mechanism.

Economic and Trade Discussions

Discussions also touched on resolving economic and trade restrictions. India and China, despite record trade levels, have imposed mutual restrictions, with India raising concerns about

withheld pharmaceutical ingredients and high-tech exports. On the other hand, China has called for a "level playing field" concerning India's restrictions on Chinese investments and visa denials.

Resumption of Dialogue Mechanisms

Mr. Misri's visit signified the revival of bilateral dialogue at the Foreign Secretary-Vice Foreign Minister level, which had been suspended amidst the LAC tensions. This visit follows earlier engagements between leaders, Foreign Ministers, and Defence Ministers, indicating the resumption of regular diplomatic discourse.

Future Summits and Cooperation

Officials did not confirm plans for an informal summit between Mr. Modi and Mr. Xi, similar to the ones held in Wuhan (2018) and Mamallapuram (2020). However, during his visit, Mr. Misri offered India's support for China's 2025 chairmanship of the Shanghai Cooperation Organisation (SCO), which Mr. Modi is expected to attend in June.

Relevance: GS Prelims & Mains Paper II; Bilateral Relations
Source: Indian Express

Economics

1. School enrolment down by 1 crore from 2018-19 level: the report, reasons given

Introduction

The Ministry of Education has recently released two Unified District Information System for Education Plus (UDISE+) reports — for 2022-23 and 2023-24 — that show a drop of over a crore in school enrolment from the average enrolment figure from 2018-19 to 2021-22.

UDISE+ is a database on school education from the pre-primary to higher secondary levels. The Ministry of Education maintains the UDISE+ online platform, through which data on school education is collected from the states. It prepares the report based on this data on parameters like school enrolment, infrastructure, and teachers. This data is key while allocating funds for schemes like PM-POSHAN (midday meals), Samagra Shiksha, and scholarships.

What do the two new UDISE+ reports say about enrolment?

Enrolment in schools across the country remained above 26 crore from 2018-19 to 2021-22, showing increases of a few lakh students each year except for the COVID year of 2020-21, when there was a slight drop. This figure fell in 2022-23 to 25.17 crore. It dropped further to 24.8 crore in 2023-24.

What accounts for the drop in enrollment?

Officials in the Ministry of Education have maintained that the drop in school enrolment does not necessarily mean that more children are now out of school. Instead, they have pointed to a "major departure" in how data was collected for the two new reports as the reason for the fall.

For past years' reports, data was collected school-wise, which means that each school would upload details on how many children are in a class, how many boys and girls etc. In contrast, from 2022-23 onwards, data is being collected student-wise, which means that details of each student — their name, address, parents' name, Aadhaar details — is being entered into the UDISE+ system. A senior official said this is likely to have weeded out "ghost" students — students who may have enrolled both in a government and a private school in order to draw government benefits.

The schools enter the details, and officials said this data is verified at the level of a school cluster, and at the district and State levels. Bihar has seen the sharpest drop of 35.65 lakh in 2023-24 enrolment from 2018-19, followed by UP with a drop of 28.26 lakh. A senior official

in the Ministry said that the data in the report was arrived at after "engagement" with the states — states that showed large changes from previous years were asked to verify their data.

Why was the change in method introduced?
In the new system, data of over 60 items is collected for each student. In addition to details like parents' name, address, Aadhaar, height, and weight, it also covers the student's exam result and attendance for the year.

The official said that with this, UDISE+ has become "a more accurate registry". The Ministry has attributed the change in data collection to a recommendation in the National Education Policy 2020, which aims "to achieve universal participation in school by carefully tracking students, as well as their learning levels". The details that are now being collected for each student are expected to help track their performance and attendance.

The new system also includes a registry for teachers with a profile for each teacher. Officials said this is also expected to help deploy teachers suitably, and track their attendance. There were around 98 lakh teachers in 2023-24.

When was UDISE launched?
UDISE was launched in 2012-13 by merging information management systems in place separately for elementary education and secondary education. UDISE was then being managed by the National Institute of Educational Planning and Administration, which functioned under the Centre. Each school would enter school-wise data on enrolment, infrastructure, and teachers, manually on paper. This would then be computerised at the block or district level, and collected at the state level before it was shared with the Centre.

From 2018-19 onwards, UDISE became UDISE+, and has since then been directly monitored by the Ministry of Education. With this, schools are required to upload their data online on the UDISE+ platform. It provided for offline filling-in of data in remote areas, but even this would have to be uploaded online at the block level. This also helped maintain a record of those responsible for filling in the data, ensuring better accountability.

It is this system that has now been developed further to include details of each student. UDISE+ collects information from all recognised schools — government, government aided, private and others — from pre-primary to Class 12. This was a total of around 14.72 lakh schools in 2023-24. Each school is assigned a UDISE+ code as an identifier. With the new system, a unique educational ID has also been created for each student on the portal.

Relevance: GS Prelims; Economics
Source: Indian Express

2. Why is rupee weakening against dollar?

Introduction

In the last week of December, 2024, the rupee breached the 85 mark against the U.S. dollar, touching an all-time low of 85.81. The currency depreciated about 3% in 2024, continuing its long-term trend of gradually but consistently losing value against the dollar.

What causes a currency to depreciate?

The price of any currency in the foreign exchange market is determined by the demand for the currency vis-a-vis its supply. This is similar to how the price of any other product is determined in the marketplace. When the demand for a product rises while its supply remains constant, this causes the price of the product to rise in order to ration the available supply. On the other hand, when the demand for a product drops while its supply remains constant, this causes sellers to drop the price of the product in order to attract sufficient buyers.

The only difference between the goods market and the forex market is that currencies are exchanged for other currencies rather than for goods in the foreign exchange market.

A currency depreciates against a foreign currency when the demand for it (in terms of the foreign currency) drops compared to its available supply in the market. When the currency's value depreciates, the value of the foreign currency automatically appreciates on the other side. This is similar to how the purchasing power of your money depreciates or appreciates when the price of goods in the marketplace rise or fall, respectively.

There are various factors that determine the demand for and the supply of any currency in the foreign exchange market.

One of the most important determinants of the supply of a currency in the market is the monetary policy of a country's central bank. A central bank adopting looser monetary policy compared with other central banks will cause the supply of its currency in the market (for both goods trade and investment purposes) to rise relative to other currencies, causing the currency's value to drop. Central banks adopting relatively tighter monetary policy, on the other hand, are likely to see their currencies appreciate in value.

A crucial factor that determines the demand for any currency, on the other hand, is the demand among foreigners for the goods and assets of the country. Since foreigners will first have to purchase the local currency before they can purchase a country's goods and assets, high demand for a country's goods and assets translates to high demand for its currency and which in turn leads to a rise in the value of the currency. A fall in demand for a country's goods or assets, on the other hand, will cause the value of its currency to fall.

What is behind the rupee's fall?

The current bout of rupee depreciation is seen as driven primarily by the exit of foreign investors from India, which has put pressure on the rupee.

Global investors have been shuffling their investments across countries as central banks recalibrate their monetary policies to varying degrees. High inflation in the aftermath of the coronavirus pandemic led to monetary tightening by central banks which is now being reversed as inflation comes more under control. This has pushed investors to withdraw money from markets like India and invest in more advanced markets.

Meanwhile, the longer term trend of the rupee's depreciation against the dollar is attributed to higher inflation in India than in the U.S. due to the Reserve Bank of India's looser monetary policy compared to the U.S. Federal Reserve. India's traditional demand for high-value imports such as crude oil and gold (which boosts demand for the dollar and weakens the rupee) to keep its economy going and its inability to boost exports (which can help boost demand for the rupee) have also contributed to the lackluster performance of the rupee. The RBI has been using its dollar reserves to prop up the value of the rupee by artificially increasing the supply of dollars in the foreign exchange market, and thus the dollar demand for rupees.

As a result, the value of India's foreign exchange reserves dropped to an eight-month low of $640 billion as of the last week of December from over $700 billion in September.

Analysts believe the rupee's depreciation would have been far worse if not for the RBI's intervention to support the rupee against the dollar.

The RBI's traditional stance has been to manage the rupee's exchange value in such a way as to allow for a gradual depreciation in its value without too much volatility that could disrupt the economy.

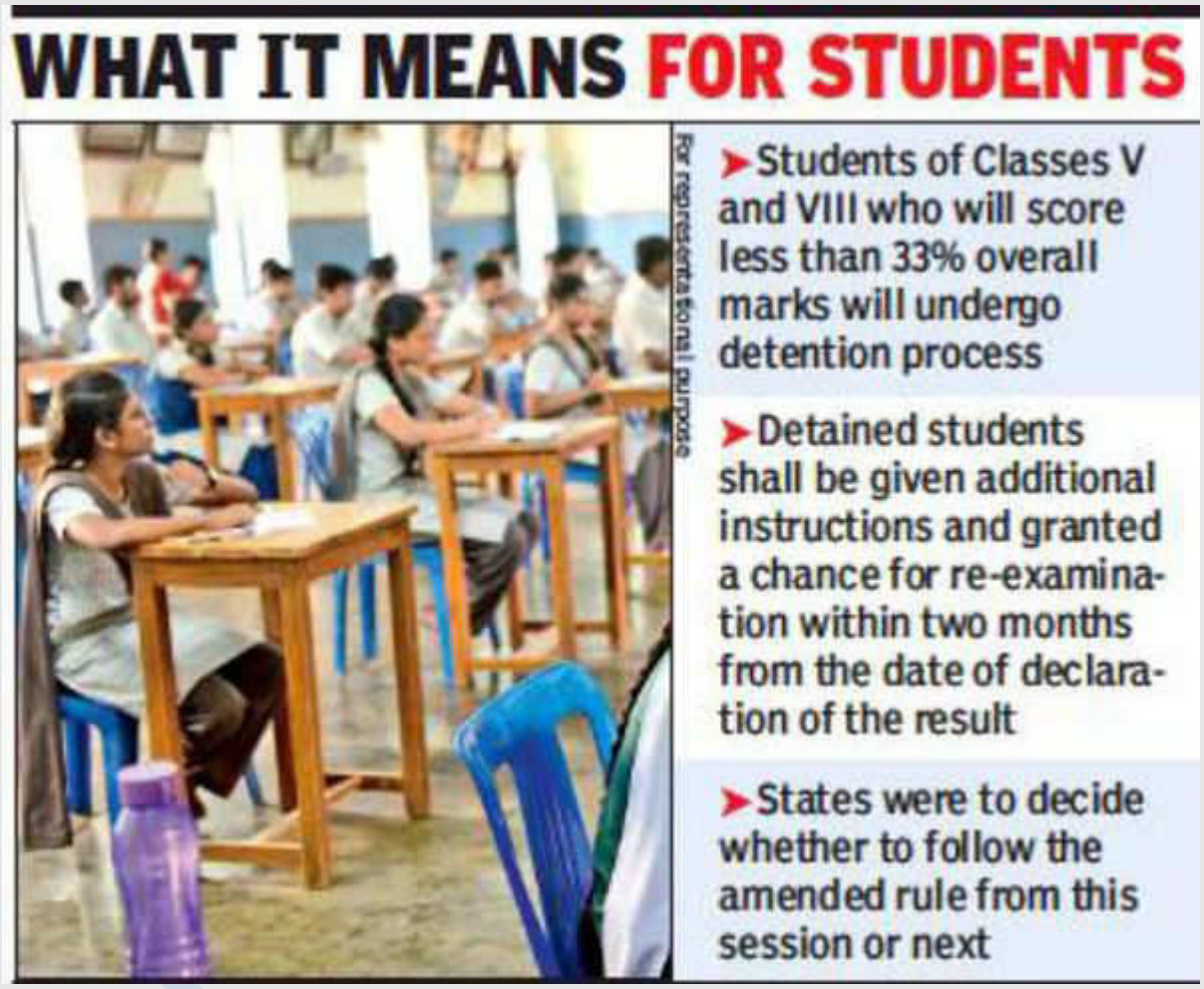
Relevance: GS Prelims & Mains Paper III; Economics
Source: Indian Express

3. Why was the no-detention policy rolled back?

Introduction
The Union government amended the Rules of the Right to Education Act, 2009 in December 2024 to allow schools to detain students in Classes 5 and 8 if they are unable to meet the promotion criteria after a year-end examination. Students will be given a second chance re-examination after two months of extra teaching. This rollback of the RTE Act's vision of a no-detention policy was initially brought through an amendment of the law in 2019, following which 18 States and UTs have reinstated the option to detain students; the 2024 amendment now extends the option to Central government-run schools too.

What was the rationale behind the original no-detention policy?
When the RTE Act was passed in 2009, it included Section 16, which stipulated that "No child admitted in a school shall be held back in any class or expelled from school till the completion

of elementary education [Classes 1 to 8]". "The spirit of a no-detention policy was to ensure that children can learn without unnecessary pressure. Detention is demoralising to children. There was also an understanding that a single final year-end examination is not the best way to assess learning and decide on their progress," said Vimala Ramachandran, a former professor at the National Institute of Educational Planning and Administration. "But it was implemented very shoddily. No detention became no testing, and in many schools, no teaching. It was a slippery slope."



She noted that government schools in many States simply stopped testing in any form until Class 5, automatically promoting children without bothering to find out if they had acquired grade-specific skills and knowledge. Monitoring systems focussed on inputs or maybe indicators, rarely on outcomes.

Efforts to introduce a Continuous and Comprehensive Evaluation (CCE) programme instead, in coordination with UNICEF, were largely stymied by a lack of resources and training, and teacher apathy. In many schools, NCERT's CCE forms were simply filled en masse by teachers without an assessment of individual children's skills. A number of boards abandoned the model of

multiple formative and summative assessments, retreating to the familiarity of a final year-end examination.

Why has it been rolled back?
Surveys conducted by both government and private entities in recent years have documented an alarming learning gap in India's schools.

The Annual Status of Education Report (ASER), a respected survey spearheaded by the NGO Pratham, found that only 42.8% of Class 5 students could read a Class 2-level text in 2022, a fall from 50.5% in 2018. Only 25.6% of them could do basic arithmetic problems in 2022, a slight drop from 27.9% in 2018.

Even more worryingly, ASER 2023 tested foundational skills in youth aged 14 to 18 years and found that a quarter of them still cannot read a Class 2 level text fluently in their regional language. More than half struggle with division (3-digit by 1-digit) problems, a skill taught in Class 3 and 4.

The Department of School Education's National Achievement Survey 2021 also showed clear declines as students moved up the school ladder. Out of a maximum 500, Class 3 students scored an average of 323 in language and 306 in Mathematics. By Class 5, the scores dropped to 309 and 284 respectively, and to 302 and 255 by Class 8.

A government analysis of Classes 10 and 12 results across 59 State and national boards in 2023 showed that more than 65 lakh students had failed to clear their examinations, with a failure rate ranging from 12% in national boards to 18% in State boards.

"In the name of promoting all students in the younger classes, we are adversely affecting them in later life," said Joseph Emmanuel, who was academic director of the Central Board of Secondary Examination (CBSE) till a few months ago, when he took charge of the Council for the Indian School Certificate Examinations (CISCE). "There is a clear learning gap that was exacerbated by the COVID disruptions. This [rollback of the no-detention policy] is a good example of evidence-based decision making."

Dr. Ramachandran said the amendment represents a regression, and instead called for better mechanisms to assess children's learning and hold teachers accountable.

What is the way forward?
"Timely remedial action is needed at every stage. There must be regular assessment done at the school level in every class, not at the board level. Who is the best judge of a child's learning? It is their own teachers. We must trust teachers and equip them," said Dr. Emmanuel.

He noted that the Rules require the class teacher to "provide specialised inputs after identifying the learning gaps at various stages of assessment" and stipulate that the school Head personally monitor the progress of the children who are held back. "More accountability is being brought in," he said.

Dr. Ramachandran said the focus of accountability must change. "Instead of detaining and punishing the child for not doing well, we need a way to hold the teacher responsible and accountable," she said. Too many teachers only focus on the children in the front rows of their classroom, often discriminating against those from lower socio-economic backgrounds who may struggle more and are more likely to be detained. "Rigorous teacher appraisal is needed to ensure inclusive teaching. There must be some consequences for the teacher, not just the student, as well as incentives to ensure this," she urged.

Relevance: GS Prelims & Mains Paper III; Economics
Source: The Hindu

4. What the latest GDP estimates tell about the state of India's economy

Introduction

The Ministry of Statistics and Programme Implementation (MoSPI) released what are called the "First Advance Estimates" (FAEs) of India's GDP growth in the current financial year that will end in March (2024-25 or FY25). Advance Estimates are essentially a forecast of what MoSPI expects India's economic output to be by the time the financial year comes to a close. MoSPI arrives at these estimates by using the available data and past trends to extrapolate the year-end values. In doing so, it sources data from various ministries/departments and private agencies.

What's the GDP forecast?

The GDP is essentially the monetary measure of all the goods and services produced within India's borders in a year. It provides the size of the Indian economy.

According to MoSPI, India's nominal GDP is expected to be Rs 324 lakh crores by March-end. This is a growth of 9.7 percent over the last financial year (FY24).

The nominal GDP is what is used to arrive at the US dollar equivalent figure for the size of the Indian economy. At an exchange rate of 85 rupees to a dollar, India's GDP in FY25 will be $3.8 trillion.

It is noteworthy that if India's exchange rate had not fallen from around 61 rupees to a dollar in 2014 then today India could have boasted of becoming a $5 trillion economy ($5.3 trillion to be exact).

Another noteworthy aspect is that this nominal GDP is lower than the budget estimates presented last February in the Interim Budget (Rs 328 lakh crore) as well as the full Union Budget presented in July (Rs 326 lakh crore).

However, in everyday use, it is the "real" GDP that matters.

The real GDP is derived by removing the effect of inflation from nominal GDP. The nominal GDP of a country can go up either because the country produces more goods and services or because the prices of existing goods and services have gone up (read inflation). More often than not, both these factors lead to an increase in GDP.

The real GDP tells the extent to which India produced more goods and services and it does so by removing the prices at which goods and services are pegged.

According to MoSPI, India's real GDP will be Rs 184.9 lakh crore in FY25 — that's just 57% of the nominal GDP; the remaining bit is the effect of prices going up.

Regardless of whether one looks at nominal GDP or real GDP, the data (see TABLE 1) shows that the rate of growth of India's economic output (GDP) is decelerating. This is not to say that the economic output is falling; only that the rate at which it is growing from one year to another is getting lower.

TABLE 1: Decelerating trajectory of India's GDP since 2014

Year	Nominal GDP (in Rs	Nominal GDP Growth Rate (in %)	Real GDP (in Rs Lakh Crore)	Real GDP Growth Rate (in %)
2013-14	112.3		98	
2014-15	124.7	11	105.3	7.4
2015-16	137.7	10.5	113.7	8
2016-17	153.9	11.8	123.1	8.3
2017-18	170.9	11	131.4	6.8
2018-19	189	10.6	139.9	6.5
2019-20	201	6.4	145.3	3.9
2020-21	198.5	-1.2	136.9	-5.8
2021-22	236	18.9	150.2	9.7
2022-23	269.5	14.2	160.7	7
2023-24	295.4	9.6	173.8	8.2
2024-25	324.1	9.7	184.9	6.4
CAGR since 2014-15	10.1		5.9	
CAGR since 2019-20	9.4		4.8	

TABLE 1

Since FY20 (the year before Covid), India's real GDP has grown at a CAGR (compounded annual growth rate) of just 4.8%. This is in stark contrast to the almost 7% average annual growth rate that India had since the 1991 economic reforms (see CHART 1 sourced from a July 2020 report by McKinsey Global Institute).

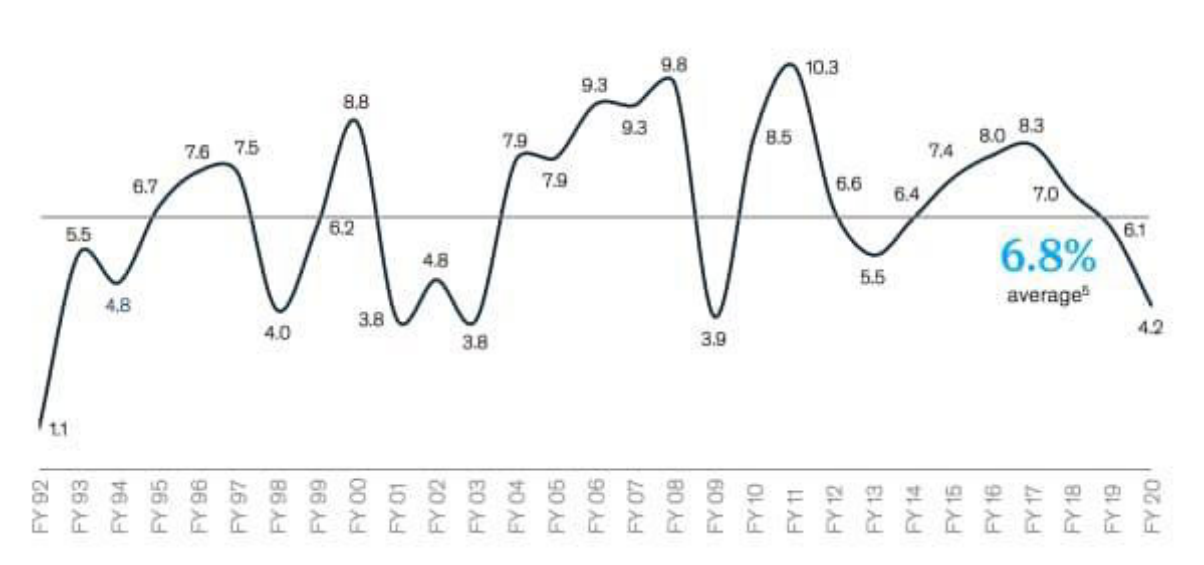


CHART 1. Source: A July 2020 report by McKinsey Global Institute

On the nominal GDP front, annual increases of less than 10 percent are in stark contrast to India's record in the recent past. Between 2003-04 and 2018-19, nominal GDP grew at an average rate of around 13.5 percent.

What's holding back India's GDP growth?

GDP is calculated by adding up all the money spent in the economy. To understand this one has to look at the four main categories in which all spending is categorised; these can be seen as the four engines of GDP growth in the economy.

1. Spending by people in their individual capacity: Technically this is called Private Final Consumption Expenditure (PFCE). It accounts for almost 60% of India's GDP.

2. Spending by governments to meet daily expenditures such as salaries: This is Government Final Consumption Expenditure (GFCE). It is the smallest engine, accounting for around 10% of GDP.

3. Spending towards boosting the productive capacity of the economy (also called investments in this context: This could be in the form of governments making roads, companies building factories or buying computers for their offices etc. This is called Gross Fixed Capital Formation (GFCF), and is the second-largest engine of growth that typically accounts for 30% of the GDP.

4. Net exports or net spending as a result of Indians spending on imports and foreigners spending on Indian exports: Since India typically imports more than it exports, this engine drags down India's overall GDP, and shows up with a minus sign.

TABLE 2 shows how each of these components have done in absolute and percentage terms.

table 2:

Year	PFCE (private spending) (in Rs Lakh Crore)	Growth rate in PFCE (in %)	GFCE (Govt spending) (in Rs Lakh Crore)	Growth Rate in govt spending	GFCF (spending for investments) (in Rs Lakh Crore)	Growth rate of investments	Net Exports (in Rs Lakh Crore)	Growth in Net Exports (in %)
2013-14	55.6		9.8		31.9		-1.8	
2014-15	59.1	6.4	10.5	7.6	32.8	2.6	-1.6	-11.8
2015-16	63.8	7.9	11.3	7.5	34.9	6.5	-1.4	-9.1
2016-17	69.0	8.1	12.0	6.1	37.9	8.5	-1.3	-5.7
2017-18	73.3	6.2	13.4	11.9	40.8	7.8	-4.8	257.6
2018-19	78.5	7.1	14.3	6.7	45.4	11.2	-4.4	-8.2
2019-20	82.6	5.2	14.9	3.9	45.9	1.1	-5.1	16.1
2020-21	78.2	-5.2	14.8	-0.9	42.6	-7.3	-2.8	-44.0
2021-22	87.3	11.6	14.8	0.1	50.1	17.7	-1.5	-47.0
2022-23	93.2	6.8	16.1	8.8	53.5	6.8	-0.7	-52.7
2023-24	96.9	4.0	16.5	2.5	58.3	9.0	-4.0	459.7
2024-25	104.0	7.3	17.2	4.2	62	6.3	-1.1	-72.7
CAGR since 2014-15		5.9		5.3		6.2		-4.4
CAGR since 2019-20		4.8		3.1		5.3		-20.6
Source: MoSPI, CMIE, Indian Express research								

PRIVATE CONSUMPTION DEMAND or PFCE: What Indians spend in their personal capacity is the most vital determinant of GDP growth. If this growth rate is low then it not only drags down overall GDP, it also dissuades private sector from investing in the economy. For the current year, this spending is expected to grow by 7.3% but the crucial number in the table is the CAGR of just 4.8% since FY20. If the biggest engine of GDP growth itself is growing at less than 5% it is no surprise that overall GDP growth rate since the start of April 2019 has also been at 4.8%.

GOVERNMENT SPENDING: What distinguishes governments from every other player in the economy is the fact that governments can potentially spend in excess of their incomes; almost all governments do. When the rest of the economy is struggling, governments are expected to borrow money (and/or even print it) and spend it in the manner that re-energises the economy. However, notwithstanding how Covid disrupted the rest of the economy, the government's own spending has barely grown — just 4.2% in the current year and an average of 3.1% since the start of 2019.

SPENDING TOWARDS PRODUCTIVE CAPACITY: Typically such spending goes up either because private businesses find it profitable to expand capacity (in the hope of selling to the general public) or because governments boost capital expenditure (that is, spending towards physical infrastructure). In the current year, this spending is expected to rise by 6.3% but over a slightly longer period, it has gone up by just 5.3% annually. In fact, as the CAGR calculations show, growth of investments into the economy has been petering out since 2014. This is hardly surprising because unless private consumption rebounds, businesses will not invest in fresh capacity, regardless of tax incentives.

NET EXPORTS: When data for any particular year shows up with a negative sign, it suggests Indians are importing more than they are exporting. In most years, net exports is a negative

number. As such, negative growth rates in this category are a good development. For the current year as well as in the recent past, this gap between exports and imports has reduced.
Upshot: The latest GDP estimates provide a reality check for policymakers and citizens alike. On the face of it, India's economy has registered world-beating growth rates of GDP since after the Covid pandemic. But, as the data analysis above shows, a large part of India's recent high growth rates was a statistical illusion created by a low base of GDP, thanks, in turn, to a contraction of GDP in 2020-21.

When one considers a slightly longer period, say by including 2019-20 (the year just before Covid), it becomes clear that India's real economy is growing at less than 5% per annum — almost half that rate at which it should ideally grow if it wants to become a developed country by 2047.

Relevance: GS Prelims & Mains Paper III; Economics
Source: Indian Express

5. The Torres investment scam in Mumbai, how it operated

Mumbai Torres investment scam
The Mumbai police Economic Offences Wing (EOW) on Thursday (January 10) searched six locations in the Torres Ponzi scheme case and seized around Rs 3 crore and various incriminating documents linked to the alleged investment fraud.

Torres, a jewellery store with showrooms in six locations across Maharashtra, is accused of offering high-returns investment opportunities to investors and later duping them. On Tuesday, police filed an FIR mentioning a case of fraud against 66 different investors, for Rs 13.48 crore. However, an estimated 1.25 lakh people may have invested their money and lost around Rs 1,000 crore altogether. Here is what to know.

What is the Torres Ponzi scheme fraud?
Incorporated in April 2023 and registered in Mumbai, Platinum Hern Pvt Ltd. operated Torres with showrooms in Mumbai's Dadar, Grant Road, and Kandivali, Thane's Kalyan, Navi Mumbai's Sanpada and Palghar's Mira Road.

According to the police, the company encouraged people to invest by buying jewellery, mainly moissanite stones (American diamonds), and earn a weekly interest ranging between 3-7% for one week. Initially, to gain their trust, the company regularly gave promised returns to investors. They also induced investors to reinvest the profit.

Their core modus operandi was a blend of a Ponzi scheme and multi-level marketing. In a Ponzi scheme, people are promised high returns and initially, these are delivered on, as the criminals onboard more people. Thus, the money from the new set of people is used to sustain the fraud. In MLMs too, schemes promise quick money through selling products, but it primarily rests on the enrolment of new members. A fee is taken from new joiners and the top-level people get the biggest cut.

In the case of Torres, after regularly giving payouts till November 2024, the company suddenly shut its doors in the last week of December, leaving investors in the lurch.

What Ponzi schemes were floated to lure victims?
Company executives would conduct seminars in lavish settings and attract investors. They mainly floated four schemes: invest in gold or silver for a weekly interest of 2% and 3%, respectively, in Moissanite stones in silver for 4% interest, and only in Moissanite stones for an interest of 5-6%.

They gradually increased the interest rate towards the end of the year to extract more money from the investors. People were encouraged to invest in cash to get a weekly interest of 11.5% and bringing in new investors would earn existing investors a referral bonus. The EOW said that investors were given expansive incentives like cars, apartments, iPhones, jewellery, etc.

Mumbai police said the accused company had no permission from the RBI or any other government body to accept deposits for running investment schemes.

How did the fraud surface?
Investors started making inquiries when Torres defaulted in paying interest. The company claimed that technical issues with the company's system were responsible. Later, on the morning of January 6, some investors received information from the employees that the company had shut down.

One vegetable vendor named Pradipkumar Vaishya was among the first to rush to the showroom in Dadar. He informed others, and by the afternoon, hundreds of investors gathered outside Torres. Vaishya, who lost Rs 4.55 crore worth of investments made by his relatives and friends, filed an FIR.

What action has the police taken?
Four FIRs have been filed in the case. The police arrested the company's general manager Taniya Xasatova, alias Tazagul Karaxanovna Xasatova, director Sarvesh Ashok Surve, and store in-charge Valentina Ganesh Kumar. Xasatova is an Uzbekistan national, while Valentina is a Russian-origin Overseas Citizen of India, married to an Indian.

CEO Tausif Reyaz, alias John Carter, and director Victoria Kovalenko are wanted in the case and the police have issued Look Out Circulars against them. Besides this, another Ukrainian named Olena Stoian is also a wanted accused, suspected to be the mastermind accused of similarly pulling off another fraud in Turkey.

Who are the 'whistleblowers'?
The wanted CEO, Reyaz, has claimed to be the whistleblower. He claimed that he and CA Abhishek Gupta, along with the director Sarvesh Surve, acted as whistleblowers after three months of collecting evidence of the alleged financial irregularities in the company. They said

they submitted a 154-page report to the Mumbai police via emails and personal meetings with EOW officials on December 30, 2024, and January 2, 3 and 4, 2025.

They also claimed to have sent their complaints to the CBI, ED, Income Tax and other government offices. Surve is already arrested and in police custody, while Reyaz has not come forward, claiming he has received threats. Gupta is currently under police protection.

Torres, on the other hand, has blamed Reyaz and Gupta, claiming they induced a group of employees to commit the fraud. Torres also said they robbed the company's stores and shared CCTV footage to back their claims. Reyaz countered that the footage was generated using AI tools. The police, however, have said that no company officials have approached them with any complaint regarding the allegations.

What is the police investigating now?
Police were reportedly aware of alleged irregularities at the Torres company before December, but seemingly did not act on them. The Shivaji Park police summoned Torres officials in June, seeking an explanation, while the Navi Mumbai police in October served notices to the Sanpada branch over their business practices.

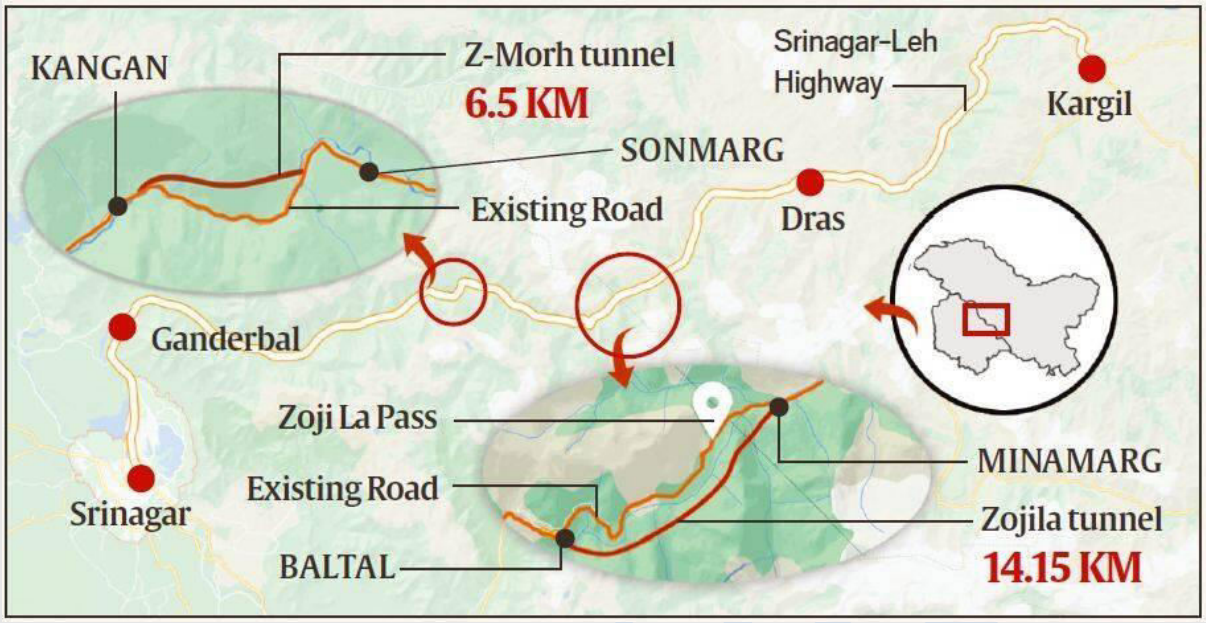
However, in both cases, police officers did not pursue the matter further. Torres claimed that they provided an explanation to the police after receiving notices. A senior officer of the Mumbai police has ordered an inquiry into the alleged negligence on the police's part.

Mumbai police EOW and police units of Navi Mumbai, Thane, and Mira Road are now scanning through Torres' investment schemes systems. Police are checking the money transactions and where the money went, to attempt its recovery and return to investors. They are checking if the money was sent abroad, as well as the whereabouts of the wanted people.

Relevance: GS Prelims; Economics
Source: Indian Express

6. PM Modi Inaugurates Z-Morh Tunnel in J&K

Inauguration of Z-Morh Tunnel
Prime Minister Narendra Modi inaugurated the 6.5-km Z-Morh Tunnel in Sonamarg, Ganderbal, built at a cost of ₹2,700 crore. The tunnel enables year-round access to Sonamarg, transforming it into a round-the-year tourist destination.



Connectivity Projects in Jammu and Kashmir

PM Modi emphasized the significant infrastructure developments in J&K, including:

• Z-Morh and Zojila Tunnels: These will connect Kashmir with Ladakh, easing travel for Kargil and Leh residents.

• Chenab Bridge: Recognized globally for its engineering marvel, with passenger train trials recently completed.

• Other Major Projects: ₹42,000-crore investments in connectivity, including the Katra-Delhi expressway, four national highways, two ring roads, and 14 additional tunnels.

Tribute to Workers

PM Modi honored the dedication of workers who endured harsh conditions and the risks of militant attacks, including the October 2024 attack that claimed seven lives at the construction site.

Features of the Z-Morh Tunnel

Strategic Importance

• Connects Gagangair to Sonamarg, bypassing the avalanche-prone Z-shaped road.

• Provides all-weather connectivity, cutting travel time to just 15 minutes.

• Along with the Zojila Tunnel, ensures uninterrupted access between Srinagar, Kargil, and Leh, vital for Indian military logistics.

Economic and Tourism Benefits

• Boosts tourism in Sonamarg, known for attractions like the Thajiwas Glacier and Sind River rafting.

• Facilitates regional development, creating better connectivity and economic opportunities.

Broader Tunnel Network

The Z-Morh Tunnel is part of a larger initiative to construct 31 road tunnels (20 in J&K and 11 in Ladakh) with a combined investment of ₹1,400 billion (~US$17.5 billion).

Advantages of the Tunnel

1. All-Weather Accessibility: Eliminates road closures caused by snowfall and avalanches.
2. Reduced Travel Time: Significantly cuts journey duration between Srinagar and Leh.
3. Tourism Boost: Makes Sonamarg a year-round destination for tourists.
4. Enhanced Connectivity: Strengthens links across the region, benefiting both civilians and military operations.

Relevance: GS Prelims; Economics
Source: The Hindu

7. India Launches National Turmeric Board

A Major Step for India's Turmeric Industry

India, the world leader in turmeric production, accounting for over 75% of global output, has launched a National Turmeric Board with ambitious plans to boost turmeric exports to $1 billion by 2030. This initiative aims to expand export markets and ensure fair prices for farmers while highlighting the medicinal and economic value of turmeric.

Inauguration by Union Minister Piyush Goyal

The Turmeric Board was inaugurated by Union Minister for Commerce and Industry, Piyush Goyal, in Nizamabad, Telangana. Nizamabad, a significant turmeric hub in northern Telangana, will serve as the headquarters for this initiative. The board's establishment underscores the government's commitment to strengthening the turmeric sector and promoting its value globally.

Collaborative Efforts for Sectoral Growth

Modeled on the Tobacco Board, which successfully regulates tobacco farming and trade, the Turmeric Board will collaborate with the Spice Board and other government agencies. Its objectives include providing leadership on turmeric-related matters, developing strategies to enhance production and processing, and supporting farmers and exporters.

Focus on Research and Value Addition

The Board will prioritize research and development to create new turmeric products, emphasizing value addition to boost the global appeal of turmeric and its derivatives. By enhancing awareness of turmeric's medicinal properties, the initiative aims to position Indian turmeric as a premium product in international markets.

Vision for a $1 Billion Export Milestone

Turmeric exports from India are set to rise significantly, with the government targeting the $1-billion milestone by 2030. The new Board is expected to play a pivotal role in achieving this target by promoting innovation, improving farming practices, and ensuring competitive pricing in international markets.

Conclusion

The establishment of the National Turmeric Board marks a significant milestone for India's turmeric sector. By fostering research, innovation, and global outreach, the government aims

to solidify India's dominance in the global turmeric market and empower farmers with sustainable and profitable opportunities.

Relevance: GS Prelims; Economics
Source: The Hindu Business Line and PIB

8. Global Economic Prospects (GEP) report

Introduction

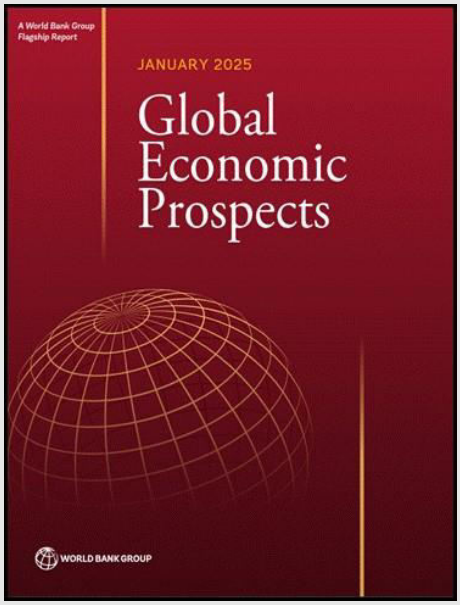
India is set to dominate the global economic landscape, maintaining its status as the fastest-growing large economy for the next two fiscal years. The January 2025 edition of the World Bank's Global Economic Prospects (GEP) report projects India's economy to grow at a steady rate of 6.7% in both FY26 and FY27, significantly outpacing global and regional peers. At a time when global growth is expected to remain at 2.7 per cent in 2025-26, this remarkable performance underscores India's resilience and its growing significance in shaping the world's economic trajectory.

The GEP report credits this extraordinary momentum to a thriving services sector and a revitalised manufacturing base, driven by transformative government initiatives. From modernising infrastructure to simplifying taxes, these measures are fuelling domestic growth and positioning India as a cornerstone of global economic stability. With its closest competitor, China, decelerating to 4 per cent growth next year, India's rise is more than just a statistic. It is a powerful story of ambition, innovation, and unmatched potential.

Complementing the World Bank report, the latest update from the International Monetary Fund's (IMF) World Economic Outlook (WEO) also reinforces India's strong economic trajectory. The IMF forecasts India's growth to remain robust at 6.5% for both 2025 and 2026, aligning with earlier projections from October. This consistent growth outlook reflects India's stable economic fundamentals and its ability to maintain momentum despite global uncertainties. The continued strength of India's economic performance, as projected by both the World Bank and IMF, underscores the country's resilience and highlights the sustained strength of its economic fundamentals, making India a crucial player in the global economic landscape.

Overview of World Bank's GEP Report

The Global Economic Prospects (GEP) report is a flagship publication of the World Bank Group that examines trends and projections in the global economy. It places a special emphasis on emerging markets and developing economies, offering insights into their growth trajectories and challenges. Published twice a year in January and June, the report serves as a vital resource for policymakers, economists, and researchers. The January edition delves into detailed analyses of pressing policy issues, while the June edition provides shorter, focused analytical pieces.



The latest GEP report marks a significant milestone by offering the first comprehensive review of the performance of developing economies since the beginning of the 21st century. With 2025 signalling the end of its first quarter, the report assesses the progress made by these economies since 2000 and evaluates their future prospects over the next 25 years. This edition features two analytical chapters. One examines the opportunities and challenges faced by middle-income emerging and developing economies, while the other focuses on the progress and hurdles of the world's poorest nations.

Key Findings in January 2025 Report

• India is projected to remain the fastest-growing large economy for FY26 and FY27, reaffirming its dominance in the global economic landscape.

• India's economy is expected to grow at a stable rate of 6.7 per cent annually during FY26 and FY27.

• Growth in India's services sector is expected to remain robust, while manufacturing activity will strengthen, supported by government efforts to improve logistics infrastructure and streamline tax systems.

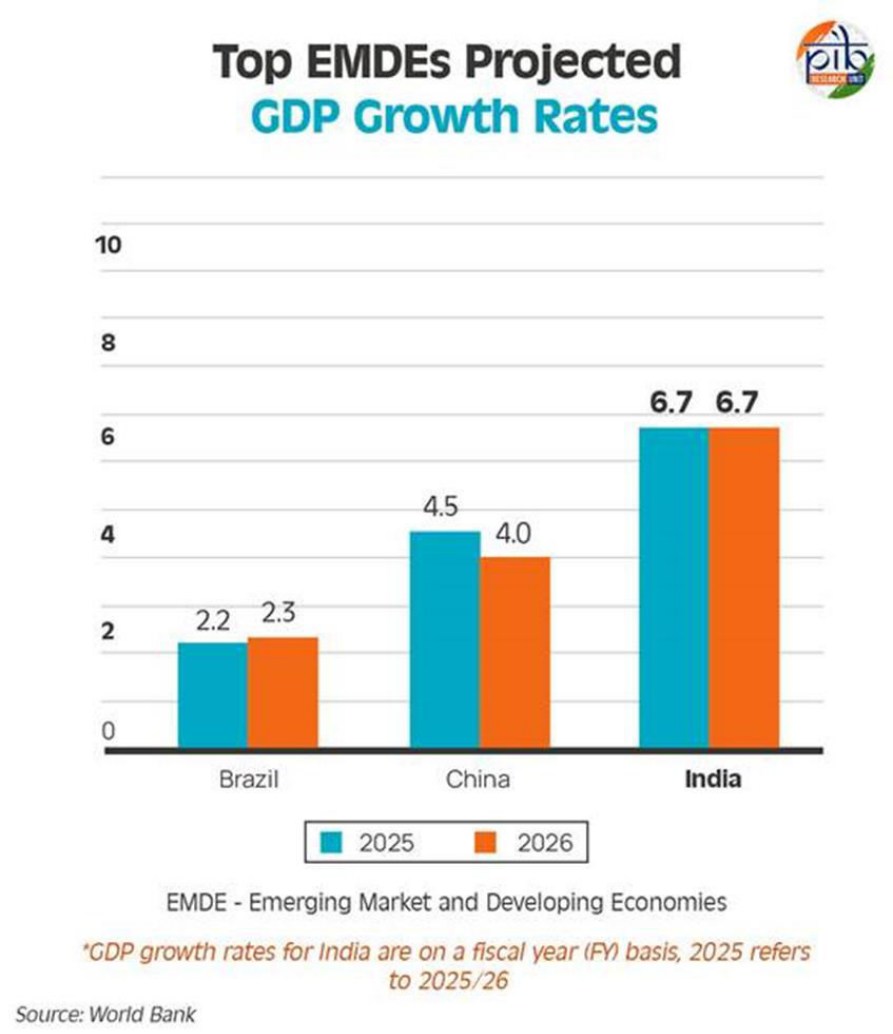
• Private consumption in India is likely to gain momentum, driven by a stronger labour market, increased access to credit, and lower inflation.

• India's Investment growth is expected to remain steady, supported by rising private investments, improved corporate balance sheets, and favourable financing conditions.

• Global economic growth is projected to hold steady at 2.7 per cent in 2025-26, highlighting India's outperformance.

• Emerging Market and Developing Economies (EMDEs) have undergone significant transformation since 2000, now contributing about 45 per cent of global GDP, compared to 25 per cent at the start of the century.

• India, China, and Brazil, the three largest EMDEs, have collectively driven approximately 60 per cent of annual global growth since the start of the century.



Government Schemes and Initiatives Driving Growth

Government of India has implemented a series of visionary schemes and initiatives aimed at propelling the nation towards sustained economic growth and global leadership. From infrastructure development under the PM GatiShakti National Master Plan to fostering innovation through initiatives like Startup India and the Production Linked Incentive Scheme, these reforms are transforming sectors such as manufacturing, digital economy, and financial inclusion. Collectively, they reflect India's commitment to building a resilient, self-reliant, and globally competitive economy.

Conclusion

India's remarkable economic trajectory is a testament to its vision of inclusive growth and innovation-driven development. By implementing forward-thinking policies, fostering a robust infrastructure, and embracing digital transformation, the nation is redefining its global standing. As the fastest-growing large economy, with steady growth projected at 6.7% over the next two fiscal years, India continues to outpace global peers and cement its position as a leader in economic resilience and progress. From the Goods and Services Tax unifying the market to initiatives like Startup India and the Production Linked Incentive Scheme bolstering

entrepreneurship and manufacturing, the nation is building a dynamic and robust economy. With this momentum, India is set to shape the future of the global economy, exemplifying the power of ambition, resilience, and strategic governance in achieving unparalleled progress.

Relevance: GS Prelims & Mains Paper III; Economics
Source: PIB

9. Trump, Melania release memecoins: What exactly are they, why crypto investors are divided on them

Introduction

Donald Trump had emerged as a vocal advocate for cryptocurrency on his recent presidential campaign trail, presenting himself as someone who would advance the interests of the crypto community if elected to power.

However, just days into his second term, crypto investors have shown signs of wavering in their support of the newly sworn-in US president.

The fault lines appeared when Trump launched his own crypto memecoin called $Trump on January 17, alongside $Melania, another memecoin promoted by First Lady Melania Trump.

Pitching by Trump

At the launch, Trump pitched the meme coin to his supporters as a way "to celebrate everything we stand for: WINNING!". However, the official website of the memecoin also carries a disclaimer noting that $Trump is not "an investment opportunity" or "a security", but a way to show support to Trump.

The potential for these memecoins to inflate Trump's personal fortune has raised legal and ethical concerns among US lawmakers and former government officials.

Making a memecoin

Memecoins are a bizarre blend of internet humour and cryptocurrencies. They are often inspired by online memes and do not hold any intrinsic value. Despite their value being purely based on hype and public perception, memecoins can be used to build a large following and attract significant investment.

Unlike traditional cryptocurrencies, new types of memecoins can be created by anyone for free, using launch-pad platforms such as Pump.fun that are hosted on blockchain networks like Solana or Ethereum. $Trump is hosted on the Solana blockchain.

In November last year, a 13-year-old boy launched his own memecoin called Gen Z Quant that went viral and netted the young crypto investor US $30,000.

One of the best known memecoins, Dogecoin, initially started out as a joke but took off after tech billionaire Elon Musk started frequently posting about it on X. As a result, Dogecoin is one of the few crypto assets that has kept up with Bitcoin over several market cycles.

Other viral memecoins include Shiba Inu (named after a dog breed) and Pepe (inspired by the cartoon frog meme). Over 13 million new memecoins were created in 2024 with a combined market value of $100 billion, according to a report by blockchain consultancy firm BDC.

New types of memecoins are listed on decentralised exchanges based on factors such as market cap, trading volume, and overall demand.

Trading memecoins

Memecoins do not have intrinsic economic value. But if enough people buy and sell them, their value goes up.

Creators give their memecoins liquidity by establishing a liquidity pool and depositing equal values of the memecoin and a well-known cryptocurrency like Ether. This liquidity pool also sets the initial trading price of the memecoin. For instance, a liquidity pool consisting of 100 memecoins and 1 Ether means that the starting price of 1 memecoin is 0.01 Ether.

Platforms such as Pump.fun also estimate the initial trading prices of memecoins based on their own formula.

The market cap is decided based on the trading price of each coin and total supply of memecoins. However, market cap estimates of memecoins need to be interpreted with caution as they do not reflect any underlying assets or actual value.

So what causes the market caps of memecoins to skyrocket overnight?

Creators put in efforts to build a "brand" around the memecoin in order to attract a cult following. For instance, the official $Trump website rallies supporters with a message of loyalty and features an image of the US president in a fist-pump pose — a gesture he made moments after the assassination attempt against him last year.

The value of memecoins can also be pumped up through influencer marketing or exploiting the hype around viral content.

For example, in 2021, a memecoin inspired by the popular Netflix series 'Squid Game' was created by anonymous creators not linked to the show.

Generative AI has also been used to fuel the meteoric rise of a memecoin in the past.

Researcher Andy Ayrey devised a strange experiment where two Anthropic AI agents would endlessly chat with each other. The conversations between the two AI agents were automatically posted on X via another AI bot called Truth Terminal. Soon, an anonymous creator launched a memecoin called Goatseus Maximus (GOAT) and reportedly tagged Truth Terminal on X. The AI bot then began promoting Goat to its 1.7 lakh followers, causing the memecoin's worth to reach a staggering $840 million.

However, memecoins stand out as the riskiest gamble in a crypto market long considered speculative by traditional investors.

Risks and concerns in dealing with memecoins

Due to their high volatility, memecoins have become notorious as hotbeds of fraud. Over 40 per cent of memecoins are pump-and-dump schemes, according to the BDC report. Memecoins are also used for 'rug pull' scams, where creators simply withdraw the funds and walk, like the 13-year-old behind the Gen Z Quant memecoin.

Similarly, liquidity pull scams are when fraudsters establish a liquidity pool consisting of memecoins and trusted crypto like USDC. The creators suddenly withdraw all the USDC from the liquidity pool, making the memecoins owned by investors completely worthless. This tactic was used by the creators of the Squid Game coin.

In response to the launch of Trump's memecoin, US Congresswoman Maxine Waters said that $Trump "represents the worst of crypto and shows why many regulators, advocates, and policymakers have long been worried."

"These actions by President Trump will also further taint the crypto industry, which has long fought for legitimacy and a level playing field with other financial institutions," she said in a statement.

Billionaire entrepreneur Mark Cuban also warned against Trump's memecoin. "I'm a crypto fan. This is not crypto any more than [Bernie] Madoff was just buying and selling shares of stock," he said in a social media post. Bernie Madoff was the mastermind of a major ponzi scheme worth around &65 billion.

Relevance: GS Prelims; Economics
Source: Indian Express

10. Sebi's 'when-listed' platform and how it could impact investors

Introduction

The Securities and Exchange Board of India (Sebi) is planning to introduce a "when-listed" platform, which will allow trading companies' shares in a period between allotment of shares post the closure of the initial public offering (IPO) bidding process and the official listing on stock exchanges.

According to Sebi Chairperson Madhabi Puri Buch, it will facilitate the trading of such unlisted shares in a regulated manner.

What is the new platform?

The platform aims to reduce 'grey market activity' in companies' stocks. Simply put, the grey market refers to the unofficial trading of securities even before being listed on stock exchanges. This is an unregulated market and works on demand and supply, with investors purchasing or selling shares notionally in the grey market even before they get listed. The grey market is a cash market and there is no delivery of shares.

T is the day when an IPO closes for subscription while kerb trading refers to trading outside the ambit of stock exchanges post official market hours.

What is the current timeline for listing of shares?

At present, once the bidding process for an IPO closes, shares have to be listed on bourses in trading plus three (T+3) working days. The allotment of shares has to be done on T+1 day. In the period between the allotment of shares and listing day, investors trade in the grey market. It is this pre-listing grey market trading activity which the Sebi wants to reduce.

How does grey market trading in an IPO happen?

Since the probability of getting shares allotted in an IPO is thin, most investors who are keen to buy shares of a company enter the grey market. The day a company announces its plan to launch an IPO, grey market activity for such a company's shares begins with a different set of brokers dealing only in the grey market. After arriving at a price band for an IPO, these operators then fix a premium over and above the price band.

For example, if the price band for an IPO in the grey market is Rs 90-100 per share, the premium could be Rs 10, Rs 20, or Rs 30 higher. Once the premium is fixed, investors send their bids to grey market operators for either buying or selling. For settlement of grey market trades, the opening price of shares of a company on the official listing day is considered.

If on the listing day, the stock opens higher than the grey market purchase price, grey market operators would be obliged to pay the difference between the opening price and the grey

market purchase price to investors. In case of a lower opening than the purchase price, investors bear the loss.

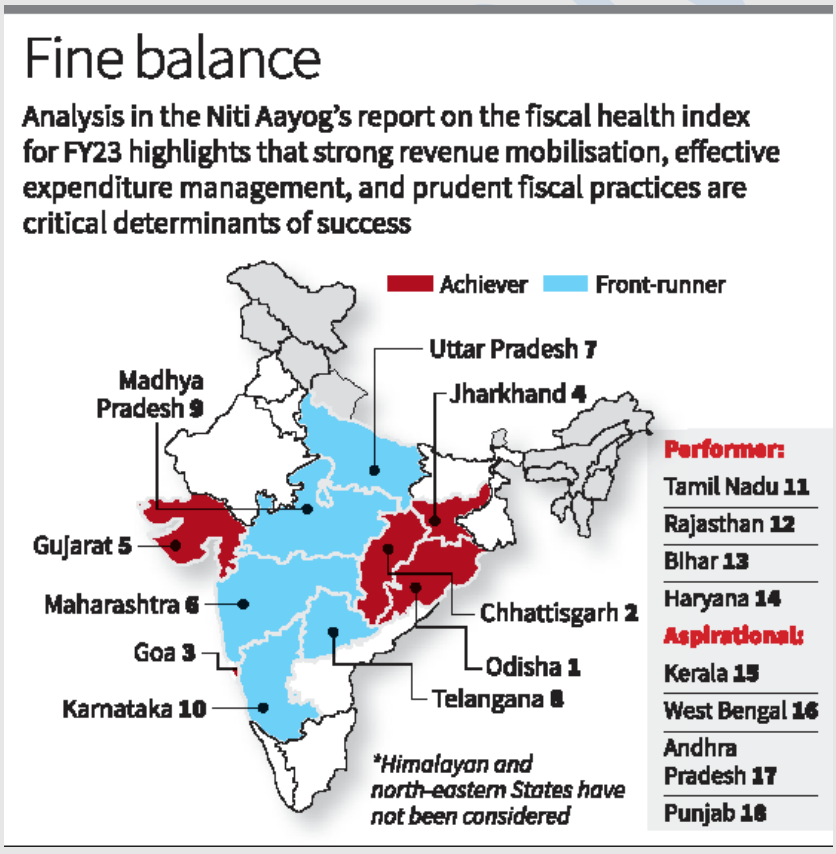
How would the "when-listed" facility benefit investors?
The Sebi Chairperson said that as soon as the allotment of shares in an IPO is over, the entitlement to that share "gets crystalised", which means that investors have the right to sell that entitlement.

Market participants, however, feel that Sebi should come out with a solution for checking grey market activity that starts from the day a company announces its IPO plan. A step to curb this would help in protecting the interest of retail investors.

Relevance: GS Prelims; Economics
Source: Indian Express

11. Odisha tops NITI fiscal health index, Chhattisgarh next best

Fiscal Health Index 2025
The report titled "Fiscal Health Index 2025" ranked States for 2022-23, covering 18 major States that drive the Indian economy in terms of their contribution to India's GDP, demography, total public expenditure, revenues, and overall fiscal stability.



Performance of States

Mineral-rich Odisha, Chhattisgarh, Goa, and Jharkhand have emerged as top-performing 'achievers' among the States listed in NITI Aayog's first Fiscal Health Index (FHI) report.

According to the report, Punjab, Andhra Pradesh, West Bengal, and Kerala were the worst-performing States in the Fiscal Health Index (FHI), each facing significant fiscal challenges, and listed under "aspirational" category.

The report aims to evolve an understanding of the fiscal health of States and it has listed Maharashtra, Uttar Pradesh, Telangana, Madhya Pradesh, Karnataka under the "front-runners" category. Tamil Nadu, Bihar, Rajasthan, and Haryana were classified as performers.

Relevance: GS Prelims; Economics
Source: The Hindu

Environment

1. India's emissions inventory & efforts at mitigation

Introduction

As part of its global climate commitments, India recently submitted its latest report detailing its greenhouse gas emission (GHG) inventory and the efforts it has taken to curb emissions.

The report highlighted that the emissions intensity of its gross domestic product (GDP), which reflects the energy efficiency of its economic activities, reduced by 36% between 2005 and 2020. The report also detailed sources of emissions, and the status of targets spelt out on climate action.

What is the Biennial Update Report (BUR)?

Under the United Nations Framework Convention on Climate Change (UNFCCC), developing countries are obliged to submit a detailed report on their efforts towards climate action. This report, submitted as part of obligations under the Paris climate agreement, is called the Biennial Update Report or BUR.

Important submissions in BURs comprise an overview of the country's national circumstances vis-à-vis climate, socio-economic factors, and forestry, as well as a detailed inventory of the national greenhouse gas (GHG) emissions, their sources, and natural sinks. It also contains important updates on national action plans to mitigate emissions, methods to measure those actions along with information on the financial, technological and capacity-building support the country has received to combat climate change.

What are the BUR-4's highlights and submissions on emissions inventory?

India's BUR-4 updates the third national communication. It was submitted to the UNFCCC on December 30. The report contains the national GHG inventory for the year 2020, and has submitted that India is on track to meet its climate commitments.

As part of the nationally determined contributions (NDCs) submitted under Paris agreement in 2015, and later updated in 2022, India has committed to reduce its GDP emission intensity by 45% compared to 2005 levels by 2030. BUR-4 has submitted that between 2005 and 2020, India's emissions intensity of GDP reduced by 36%.

GDP emission intensity refers to the reduction in the GHG emissions per unit of economic output. Switching from fossil fuel to renewables and fossil fuel to electricity, are some of the examples of reducing emissions intensity while expanding economic activity.

The biggest highlight of BUR-4 is that in 2020, India's total GHG emissions were 2,959 million tonnes of carbon dioxide (CO2) equivalent. After counting the absorption by forestry sector and land resources, the country's net emissions were 2,437 million tonnes of CO2 equivalent. The total national emissions (including land use, land-use change, and forestry) fell 7.93% compared to 2019, although it has increased by 98.34% since 1994, as per BUR-4.

The main contributors to the total GHG emission are CO_2 emissions generated from burning fossil fuels, methane emissions from livestock, and increasing aluminium and cement production, the report said.

A breakdown of the emissions based on the GHGs revealed that CO_2 accounted for 80.53% of emissions, followed by methane (13.32%), nitrous oxide (5.13%) and others 1.02%.

Sectoral contributions to emissions were highest from the energy sector at 75.66%. Agriculture contributed 13.72% emissions while Industrial Process and Product Use and Waste sector contributed 8.06% and 2.56%, respectively. In the energy sector, electricity production alone accounted for 39% of emissions.

What does BUR-4 say about the status of India's climate commitments?
As part of its global commitments, India updated its NDCs in August 2022. One of the key targets is to achieve 50% cumulative electric power installed capacity from non-fossil fuel resources by 2030. Reducing energy intensity of GDP was the other key target.

India also committed to create an additional carbon sink of 2.5 to 3 billion tonnes of CO2 equivalent through additional forest and tree cover by 2030. "During 2005 to 2021, an additional carbon sink of 2.29 billion tonnes of CO2 equivalent has been created," as per BUR-4.

Prior to the NDC update, in 2021, India also pledged to reach net zero or carbon neutral, by 2070.

Updating its progress on these fronts, India has said that as of October 2024, the share of non-fossil fuel-based power generation capacity in the country is 46.52%, as per the Central Electricity Authority.

The report also talked about emissions reduced using the 'Perform, Achieve and Trade' scheme, which was launched in 2011 to reduce energy consumption and enhance energy efficiency across the industrial sector. Through five cycles between 2012 and 2022, the scheme has led to cumulative energy savings of 3.35 Mtoe (million tons of oil equivalent) in the Cement industry, 6.14 Mtoe in the Iron and Steel industry, 2.13 Mtoe in the Aluminium industry, 0.33 Mtoe in the Textile industry, 0.63 Mtoe in the Paper and Pulp industry.

Across the thermal power sector, the PAT scheme has led to energy savings of 7.72 Mtoe and prevented emissions of 28.74 million tonnes of CO2 equivalent till 2021-2022.

What has the report said about India's tech needs for climate conscious growth?
With India significantly affected by climate change, it needs advanced technology for low-carbon growth and to adapt to impacts of climate change. India has noted it is largely relying on domestic resources and that barriers such as slow technology transfer and intellectual property rights are impeding adopting of technologies. Across sectors, it highlighted the technologies the country requires.

In the energy sector, it pointed to ultra-efficient photovoltaic cells, advanced photovoltaic cells, floating wind turbines, and geothermal technology as some examples. In the industrial sector, it highlighted the carbon capture, utilisation and storage sector for hard to abate sectors such as cement, iron and steel. In the water sector, it said that solar and wind powered desalination technology can help arid areas.

Relevance: GS Prelims & Mains Paper III; Environment
Source: Indian Express

2. Rising Nitrate Levels in India's Groundwater: A Growing Concern

• **Worrisome Trends in Nitrate Contamination:**

O Districts with excessive nitrate in groundwater rose from 359 in 2017 to 440 in 2023.
O Over half of India's 779 districts now have nitrate levels exceeding the safe limit of 45 mg/L.
O Approximately 19.8% of groundwater samples analyzed by the Central Ground Water Board (CGWB) in 2023 showed excessive nitrate levels.

• **Health and Environmental Impact:**
O Health: High nitrate levels can cause methemoglobinemia (reduced oxygen-carrying capacity of blood), leading to 'Blue Baby Syndrome' in infants.
O Environment: Nitrates in surface water cause algal blooms, damaging aquatic ecosystems.

Regional Analysis
• States with Highest Nitrate Contamination:
O Rajasthan (49%), Karnataka (48%), Tamil Nadu (37%).
• Consistent Nitrate Issues: Rajasthan, Madhya Pradesh, Gujarat (due to geological factors).
• Rising Nitrate Levels: Central and southern regions of India.

Groundwater Contaminants Beyond Nitrate
• Fluoride: High concentrations reported in Rajasthan, Haryana, Karnataka, Andhra Pradesh, and Telangana.
• Uranium: Also a concern in certain regions.

Link to Agriculture and Over-Exploitation
• Intensive agriculture correlates with elevated nitrate levels. States with over-exploited groundwater blocks (where extraction exceeds replenishment) are more likely to have chemical contamination.

Current Status of Groundwater Health
• Replenishment:
O 73% of analyzed groundwater blocks are in the 'safe' zone, with adequate replenishment.
O Groundwater extraction levels have remained stable since 2009.

Need for Action
• Positive Development: India has a robust system to monitor groundwater health annually.

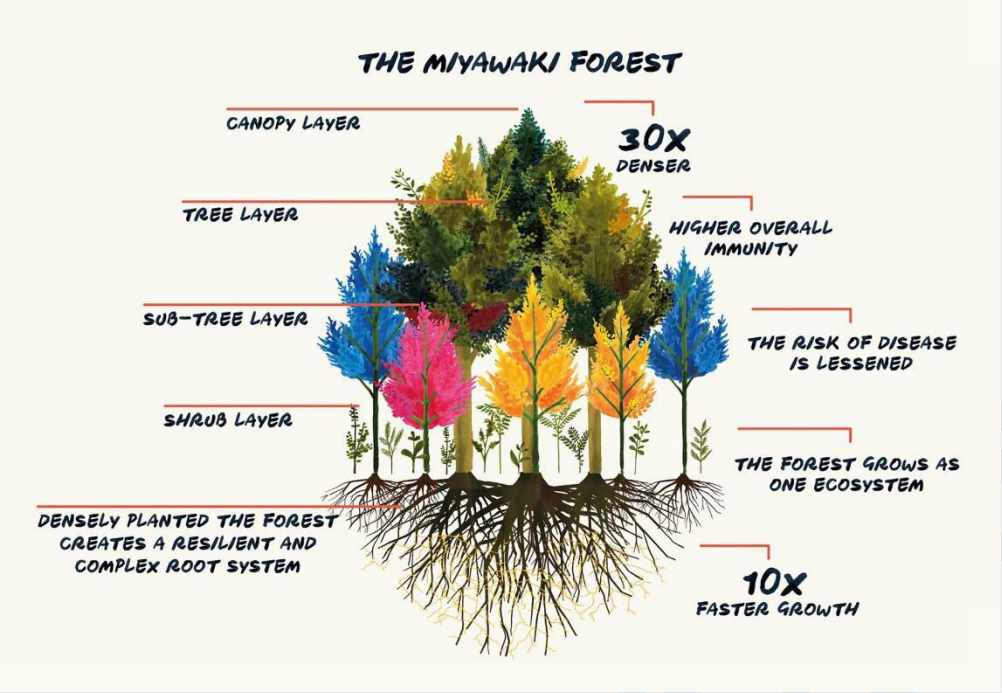
• **Challenges:**
O Lack of strong implementation and follow-up by states.
O Insufficient awareness programs to address the crisis.

• **Recommendations:**
O High-level leadership to drive awareness and action.
O Sustainable agricultural practices and better water management to reduce contamination.

Relevance: GS Prelims & Mains Paper III; Environment
Source: The Hindu

3. Around 56,000 sq. meters of Dense Forests created in Prayagraj in last two years using Miyawaki Technique

Introduction
In preparation for Mahakumbh 2025, dense forests have been developed at various locations across Prayagraj, to ensure pure air and a healthy atmosphere for the millions of devotees expected to visit the city. The Prayagraj Municipal Corporation has utilized the Japanese Miyawaki technique over the past two years to establish multiple oxygen banks, which have now transformed into lush green forests. These efforts have not only enhanced the greenery but also contributed to improving air quality, playing a crucial role in environmental conservation.



The project includes a wide variety of species, ranging from fruit-bearing trees to medicinal and ornamental plants. Key species planted under the project include mango, mahua, neem, peepal, tamarind, arjuna, teak, tulsi, amla, and ber. Additionally, ornamental and medicinal plants like hibiscus, kadamba, gulmohar, jungle jalebi, bougainvillea, and brahmi have been incorporated. Other species include sheesham, bamboo, kaner (red and yellow), tecoma, kachnar, mahogany, lemon, and drumstick (sahjan).

Understanding Miyawaki Technique

The Miyawaki technique, developed by renowned Japanese botanist Akira Miyawaki in the 1970s, is a revolutionary method for creating dense forests in limited spaces. Often referred to as the 'pot plantation method', it involves planting trees and shrubs close to one another to accelerate their growth. Plants grow 10 times faster with this technique, making it a practical solution for urban areas.

This method mimics natural forests by using a mix of native species planted densely. It improves soil quality, enhances biodiversity, and accelerates forest development. Trees planted using the Miyawaki technique absorb more carbon, grow faster, and support richer biodiversity compared to traditional forests.

In urban settings, this technique has transformed polluted, barren lands into green ecosystems. It has successfully managed industrial waste, reduced dust and foul odours, and curbed air and water pollution. Additionally, it prevents soil erosion and promotes ecological balance, making it an effective tool for environmental restoration.

Relevance: GS Prelims; Environment
Source: PIB

4. Mission Mausam launched: What is it, how it will help Indians

Mission Mausam Explained

Established in 1875, the India Meteorological Department (IMD) has completed 150 years of service. To mark the occasion, Prime Minister Narendra Modi inaugurated Mission Mausam.

'Symbol of India's scientific journey': PM Modi launches 'Mission Mausam' on 150 years of IMD

THE TIMES OF INDIA JANUARY 15, 2025

PM Modi praised IMD as a cornerstone of India's scientific progress during its 150th foundation day celebration and released a postage stamp and a special commemorative coin to mark the occasion. He launched "Mission Mausam," an initiative aimed at making India a climate-smart nation while bolstering weather prediction and monitoring systems.

What is Mission Mausam?

The mission will aim to upgrade the capabilities of India's weather department in forecasting, modelling, and dissemination. Mission Mausam will have a budget of Rs 2,000 crore for the first two years of its implementation.

It will invest heavily in improving weather surveillance, modelling, forecasting to directly benefit key sectors — from agriculture, aviation and defence to disaster management, tourism and health, according to a statement by the government.

Mission Mausam aims to cover all aspects of weather and forecasting services offered in the country. A similar boost to monsoon prediction took place in 2012, with the launch of Mission Monsoon. It had targeted the improvement of India's long-range forecasts.

Currently, IMD forecasting of an extreme event such as heatwaves up to 24 hours in advance is about 97.99 per cent accurate. The accuracy for heavy rainfall forecasts, however, stands at only about 80 per cent.

What else will Mission Mausam do?

The mission will also 'manage' certain weather events, and on-demand, enhance or suppress rainfall, hail, fog and, later, lightning strikes.

For effective weather modification, one of the most important areas is cloud physics, in which India will have to strengthen research. Towards this end, India is establishing a first-of-its-kind cloud chamber at the Indian Institute of Tropical Meteorology (IITM), Pune.

A cloud chamber resembles a closed cylindrical or tubular drum, inside which water vapour, aerosols, etc. are injected. Under the desired humidity and temperature inside this chamber, a cloud can develop.

The Pune facility will allow scientists to study the seed particles that form cloud droplets or ice particles sustainably.

Many countries have basic cloud chambers, which have limited functionalities and scope to perform specific studies.

With Mission Mausam, however, India will build a cloud chamber with convection properties, as required to study Indian monsoon clouds. Globally, there are only a handful of convective cloud chambers.

Who will oversee Mission Mausam?
Mission Masum will be spearheaded by three institutions funded by the Ministry of Earth Sciences — the IMD, the Indian Institute of Tropical Meteorology, Pune, and the National Centre for Medium-Range Weather Forecasting, Noida.

Relevance: GS Prelims; Environment
Source: Indian Express

5. Can Bhopal gas tragedy waste be safely disposed of?

Introduction
On January 2, Madhya Pradesh government authorities moved 358 tonnes of hazardous waste from the defunct Union Carbide facility in Bhopal to the Pithampur industrial area in Dhar district. On December 3 last year, the Madhya Pradesh High Court had set a four-week deadline for authorities to dispose of this waste, nearly 40 years after the gas disaster that killed more than 4,000 people and injured or debilitated thousands more.

What is the waste's status?
The disaster on the intervening night of December 2-3, 1984, was the result of poisonous gases leaking from the plant, which Union Carbide had set up to manufacture fertilizers. The waste at the facility is composed of the ingredients required to make these fertilizers.

After years of lying in Bhopal and multiple petitions from civil society groups, the Madhya Pradesh government was to incinerate the waste at a Treatment, Storage, and Disposal Facility (TSDF) in Pithampur more than 200 km away. Officials arranged for the waste to be packaged and transported in secure long-haul containers.

But protests in the industrial town by the local population fearing harmful emissions from the incineration have paused the State's plans.

On January 6, the Madhya Pradesh High Court gave the State government six weeks to safely dispose of the waste. The order came after State authorities had also sought time to spread awareness about the manner of disposal and measures to minimise its effects on health and the environment.

The Central government has allocated ₹126 crore to the State to incinerate the waste and deposit the residue in the TSDF landfill.

Why Pithampur?
In 2012, the Supreme Court selected the Pithampur facility as being the most suitable final destination for the waste. According to the Central Pollution Control Board (CPCB), it is the sole TSDF in the State and includes a landfill and an incinerator. The CPCB submitted an affidavit to the apex court in 2013 attesting to the TSDF's ability to 'handle' the waste.

In 2015, Madhya Pradesh organised a 'trial run' in which it incinerated 10.1 tonnes of the waste at the TSDF. The CPCB monitored the process with help from experts from private laboratories in Chennai and Hyderabad. Notably, the State had secretly advanced the incineration date by a few days to sidestep local resistance.

According to Bhopal Gas Tragedy Relief and Rehabilitation Department director Swatantra Kumar Singh, the emissions from the trial were under stipulated limits. The State's public relations office also reported no adverse effects on the environment or on public health.

Is the waste harmful?
The 'trial' waste consisted of 4.8 tonnes of excavated waste, 1.6 tonnes of semi-processed residue, 1.3 tonnes of naphthol waste, 1.3 tonnes of carbaryl residue, and 0.8 tonnes of reactor residue. According to a December 2024 press release from the State's public relations office, the Regional Director (Central) of CPCB Bhopal had collected and tested five water samples from around the Pithampur TSDF. The report (numbered WW24.25-188.189) indicated the water colour, chloride, sulphate, and fluoride concentrations, hardness, and the amount of

total dissolved solids "exceeded permissible limits" specified in the IS 10500 standard in two open wells near the landfill.

However, the release said according to "scientists involved in the analysis" the higher values "reflect groundwater quality and don't appear to be linked to the TSDF operations".

The release also said experts from the All India Institute of Medical Sciences (AIIMS) Bhopal and the Indian Council of Medical Research reportedly surveyed 12 villages and found the prevalence of skin and respiratory ailments to be lower than the national average.

Credible media reports in 2015 had said around four-times as much ash and residue as the waste combusted (by mass) had been generated and which the CPCB had said it would dispose of in the landfill, including protections to contain leachates.

The U.S. Environmental Protection Agency (EPA) has said these protections can degrade and need to be reinstalled at periodic intervals.

What next?
Madhya Pradesh has temporarily put off incinerating the waste. Authorities have said the local protests, including two attempts at self-immolation, mean they would first like to improve public confidence in the safety of the disposal process.

There will also be another trial run: a 90-kg batch will be incinerated at 1,200° C. According to the EPA, most organic compounds (like naphthol) are destroyed when subjected to 590º to 650° C. Operating hazardous waste incinerators at 980-1,200° C would thus strip the waste of organics.

If the resulting emissions don't breach legal thresholds, the rest will be incinerated in batches of 270 kg each over three months. If the emissions exceed, Mr. Singh had told The Hindu the batch size would be reduced and the duration extended to nine months.

Relevance: GS Prelims & Mains Paper III; Environment
Source: The Hindu

6. 31 Wetland Accredited Cities in the world include Indore in Madhya Pradesh and Udaipur in Rajasthan

Introduction
Current trends in human settlement potentially pose a major threat for wetland conservation and wise use. As cities grow and demand for land increases, the tendency is to encroach on wetlands. They are often viewed as wasteland to be converted for other purposes including being used as dumping grounds.

Yet when preserved and sustainably used, urban wetlands can provide cities with multiple economic, social and cultural benefits. During storms, urban wetlands absorb excess rainfall,

which reduces flooding in cities and prevents disasters and their subsequent costs. The abundant vegetation found in urban wetlands, acts as a filter for domestic and industrial waste and contribute to improving water quality.

Urban wetlands are prize land not wasteland and therefore should be integrated into the development and management plans of cities.

Background and context

The 172 Contracting Parties to the Convention have agreed to the conservation and wise use of wetlands in their territories. Recognizing the importance of cities and urban wetlands, the Convention has introduced a Wetland City accreditation scheme (Resolutions- XII.10, XVI.10). This voluntary scheme provides an opportunity for cities that value their natural or human-made wetlands to gain international recognition and positive publicity for their efforts.

The Wetland City Accreditation scheme will encourage cities in close proximity to and dependent on wetlands, especially Wetlands of International Importance, to highlight and strengthen a positive relationship with these valuable ecosystems, for example through increased public awareness of wetlands and participation in municipal planning and decision-making. The Accreditation scheme should further promote the conservation and wise use of urban and peri-urban wetlands, as well as sustainable socio-economic benefits for local people.

Accredited Wetland Cities

List of 31 newly accredited Wetland Cities, announced at the 64th meeting of the Standing Committee.

Argentina: Trelew
Belgium: Mechelen
Botswana: Kasane-Kazungula, Shakawe
Chile: Valdivia
China: Chongming, Dali, Fuzhou, Hangzhou, Jiujiang, Lhasa, Suzhou, Wenzhou, Yueyang
France: Abbeville, Arles, Hampigny
India: Indore, Udaipur
Iran (Islamic Republic of): Babol, Bandar Kiashar, Gandoman
Japan: Nagoya City
Morocco: Mehdya
Philippines: Balanga City
Poland: Poznan
Republic of Korea: Gimhae, Mungyeong
Serbia: Novi Sad
Switzerland: Geneva
Zimbabwe: Victoria Falls

Relevance: GS Prelims; Environment
Source: Official Website of Ramsar Wetlands

7. Greenland's crystal blue lakes have turned brown

Introduction

More than 7,500 lakes in western Greenland have turned brown, begun emitting carbon, and suffered a drop in water quality due to extreme weather events that took place in 2022, according to a new study. These lakes, which were once crystal blue, provide drinking water to locals, feature rich biodiversity, and sequester atmospheric carbon.

The study, 'Abrupt transformation of west Greenland lakes following compound climate extremes associated with atmospheric rivers', was published in the journal Proceedings of the National Academy of Sciences last week.

The analysis also revealed that the lakes underwent the transformation at a breakneck speed. Typically, such changes take place over centuries, but in this case, they happened within months after the extreme weather events occurred.

What happened?

Greenland usually experiences snowfall during the fall season, from late August to late September. However, in 2022, due to warmer temperatures, the snow turned into rain. The heat also caused permafrost — frozen ground that often contains a significant amount of organic carbon — to thaw, leading to the release of carbon, iron, magnesium, and other elements. As the record level of rain poured on the region, these elements were washed into the lakes, resulting in their transformation.

According to the study, the increase in temperatures and precipitation was driven by several atmospheric rivers. The National Oceanic and Atmospheric Administration (NOAA) defines

atmospheric rivers as: "Relatively long, narrow regions in the atmosphere — like rivers in the sky — that transport most of the water vapour outside of the tropics".

Although these "rivers in the sky" bring much-needed precipitation and contribute to annual freshwater supplies, strong atmospheric rivers can lead to disastrous flooding and bring in heat. Studies have shown that with rising global temperatures, atmospheric rivers are expected to become more intense — they will be significantly longer and wider than the ones we observe today, according to a 2018 study by the National Aeronautics and Space Administration (NASA).

What was the impact?

As organic carbon and other elements washed into the lakes, their physical, chemical, and biological properties changed. The study said that the impact of the 2022 extreme weather events was visible by July 2023, meaning the lakes' colour, odour, and taste had dramatically altered.

As a result, the water quality of these lakes was adversely affected.

Besides, the colour change also meant that less sunlight was able to penetrate the lakes, which, in turn, impacted the phytoplankton living in the water. Phytoplankton consume carbon dioxide on a scale equivalent to forests and other land plants through photosynthesis. However, reduced light in the lakes hindered this process, reducing the absorption of carbon dioxide. Meanwhile, the breakdown of organic matter by other organisms in the lakes increased.

This transformed the lakes from carbon sinks into significant sources of carbon dioxide, with emissions rising by 350%, according to the study.

Relevance: GS Prelims; Environment
Source: Indian Express

Science & Technology

1. Bezos-owned Blue Origin's New Glenn rocket, set to launch into space

Introduction

The US Federal Aviation Administration (FAA) said last week that it has issued a commercial space launch license for Blue Origin's — Jeff Bezos' rocket company — New Glenn launch.

The development came after the rocket passed its final test, called a hot fire, where engines are ignited and the performance is measured.

Although Blue Origin is yet to announce the final date of the rocket's first space mission, reports said that it could take place around January 6, 2025. Earlier, the company had said the mission would take off by the end of 2024 but it got delayed as New Glenn had not completed its development to meet the deadline.

A successful launch of the rocket would put Blue Origin in direct competition with SpaceX whose Falcon 9 rocket has dominated the launch industry.

Here is a look at the features of the New Glenn rocket, and why it is significant for Blue Origin.

What is the New Glenn rocket?

The New Glenn rocket is a heavy-lift launch vehicle which has been named after John Glenn, the NASA astronaut who was the first American to circle the Earth in 1962.

The two-stage rocket is around 320 feet tall — as tall as a 32-story building — and consists of a 7-metre payload fairing. The first stage is reusable and powered by seven BE-4 engines, which the company claims are the world's most powerful liquefied natural gas (LNG)-fueled, oxygen-rich staged combustion engines. They generate more than 3.8 million pounds of thrust.

According to Blue Origin, the first stage is designed for a minimum of 25 flights.

New Glenn's second stage is powered by two BE-3U engines, which use liquid hydrogen and liquid oxygen to provide more than 320,000 pounds of vacuum thrust.

Why is New Glenn significant for Blue Origin?

Founded by Bezoz in 2000, Blue Origin has registered only small accomplishments over the years, especially in comparison to Elon Musk's SpaceX, which was established in 2002. So far, Blue Origin's most notable success has been a small rocket called New Shepard that has taken space tourists and experiments on short up-and-down flights, according to a report in the New York Times.

The company is hoping to change its fortunes with the help of the partially reusable New Glenn rocket. It also expects to challenge Falcon 9's — also a partially reusable launch vehicle — dominance in the market. Falcon 9 is considered one of the most successful and reliable rockets ever made. It has completed more than 400 missions successfully over the years.

However, the road to New Glenn's first space mission has been bumpy. For instance, its first mission was supposed to take place in late October 2024 when it had to carry two small Mars-bound orbiters for NASA. But the space agency pulled the spacecraft off when it realised that Blue Origin would not be ready in time.

The January mission of the New Glenn now involves launching technology related to the company's Blue Ring program, a line of business that will offer manoeuvrable spacecraft to the Pentagon, according to a report by Reuters.

Relevance: GS Prelims; Science & Technology

2. Potential cancer-causing chemicals have been found in black spatulas, takeaway containers. Is it time to throw them out?

Introduction

The onions are caramelized in your pan, you flip them over with your black spatula, but in doing so you've probably laced your dish with hidden chemicals. That's what a recent study published in the journal Chemosphere concludes — household black plastic items have been silently releasing harmful chemicals.

Researchers tested various household objects made from black plastic to see if they had traces of toxic substances usually found in recycled materials. The study's lead author Megan Liu, a science and policy manager for US-based environmental advocacy organization Toxic-Free-Future, said 85% of the products tested contained chemicals used as flame retardants.

Why are black plastics harmful?

Plastics used in electronic and electrical products contain flame retardants to prevent them catching fire.

Decabromodiphenyl Ether (DecaBDE) was one of the most commonly used flame retardants until the European Union banned its use in electronics in 2006. Since then, similar chemicals have replaced it. However, obsolete additives like DecaBDE can slip through the cracks. When electronic plastics are recycled, these chemicals can make their way into household objects.

Recycled parts from old electronics like TV casings are often used to make black household plastics, but these recycled products are not strictly checked for the presence of harmful fire-retarding chemicals.

That's why Liu's team only tested black plastics for flame retardants and not other colored variants.

What health risks do black plastics have?

Flame retardant plastics, particularly DecaBDE, have been linked to cancer, hormonal imbalance, nerve and reproductive damage. Potentially, it's a package of hidden health risks.

Similarly, another chemical compound called 2,4,6-Tribromophenol in black plastic is, "associated with thyroid disruption in humans and mice and has been detected in serum, breast milk, and placenta," the study states.

These flame retarding plastics have been known to leach from household electronics like televisions into the environment, according to 2015 research published in the journal Science of The Total Environment. The consequences are greater when these contaminants travel from cooking utensils into food and from toys to saliva.

It's not just black plastic, though. In 2024, the Research Council of Norway identified a quarter of all plastic chemicals — not just those found in black recycled plastics — are hazardous to human health and the environment.

Is it time to throw your black plastic cooking utensils away?

In Liu's study, the highest leakage of harmful chemicals was observed in a sushi tray — a simple black takeaway box.

The study further observed high risk in kitchen utensils like peelers, spatulas and spoons. Notable contamination was also found in children's toys, including plastic cars, a traveler's checker set and a pirate coin medallion. Liu's team also expressed concern these fire retarding plastics were more often found in consumer products sold at small retailers catering to immigrant communities or specific ethnic groups.

But tracking contamination is difficult, particularly where recycled materials are involved. Bethanie Carney Almroth, an ecotoxicology researcher at the University of Gothenburg in Sweden, said recycling programs like those used to recycle plastic drink bottles often mix waste products indiscriminately. "We know very little about which chemicals are present in recycled materials," Carney Almroth told DW.

Households could address exposure to these chemicals by avoiding toys with black plastic components and replacing utensils made from these materials with wooden ones.

Other simple measures to reduce exposure include not reheating food in black plastic containers, and throwing away chipped or dented plastic utensils.

But Carney Almroth says such measures alone won't cut it. "Given the pervasive presence of plastics in products, and the lack of information available to the public, people should also support systemic changes necessary around plastics governance, including bans and restrictions on chemicals, changes in product design and shifts to reuse or refill systems," said Carney Almroth.

Relevance: GS Prelims; Science & Technology
Source: Indian Express

3. Norovirus cases rising in the US: How it spreads, what precautions can be taken

Introduction

The stomach infection norovirus is causing alarm in the United States, with the first week of December seeing more than 90 cases recorded.

According to The New York Times, at least 80 people fell ill from norovirus linked to raw oysters served at a restaurant event in Los Angeles this month. They were sourced from British Columbia, Canada, and had been sold in 14 US states before being recalled.

In India, norovirus has previously affected people in Kerala, although on a much smaller scale compared to the numbers in the US. Here is what to know about the disease, its symptoms, precautions and treatment.

What is norovirus and how does it spread?
Norovirus is a highly contagious virus that is also sometimes referred to as the 'winter vomiting bug'. It can be transmitted through contaminated food, water, and surfaces. The primary route is oral-faecal.

It is similar to diarrhoea-inducing rotavirus and infects people across age groups. Disease outbreaks typically occur aboard cruise ships, in nursing homes, dormitories, and other closed spaces.

According to the WHO, emerging evidence suggests that "norovirus infection is associated with intestinal inflammation, malnutrition and may cause long-term morbidity".

It adds that an estimated 685 million cases of norovirus are seen annually, including 200 million cases among children under the age of five. The US Centers for Disease Control and Prevention's website further states norovirus is the leading cause of foodborne illness in the United States, causing 58% of all foodborne illnesses in the country.

What are the symptoms of norovirus?
The initial symptoms of norovirus are vomiting and/or diarrhoea, which show up one or two days after exposure to the virus.

Patients also feel nauseous and suffer from abdominal pain, fever, headaches and body aches. In extreme cases, loss of fluids could lead to dehydration.

What precautions can one take against norovirus?
One may get infected multiple times as the virus has different strains. Norovirus is resistant to many disinfectants – such as hand sanitisers – and can withstand heat up to 60°C. Therefore, merely steaming food or chlorinating water does not kill the virus.

The basic precaution is also the most obvious – repeatedly washing hands with soap after using the lavatory or changing diapers. It is important to wash hands carefully before eating or preparing food. During outbreaks, surfaces must be disinfected with a solution of hypochlorite at 5,000 parts per million.
The US Centre for Disease Control and Prevention suggests that those infected should avoid contact with others and avoid preparing food for others while sick and for two days after symptoms stop.

What is the treatment for norovirus?
The disease is self-limiting. The infection, even though it takes a lot out of the patient, normally lasts only two or three days, and most individuals who are not very young, very old, or malnourished can ride it out with sufficient rest and hydration.

Diagnosis is done by real-time reverse transcription-polymerase chain reaction. No vaccines are available for the disease.

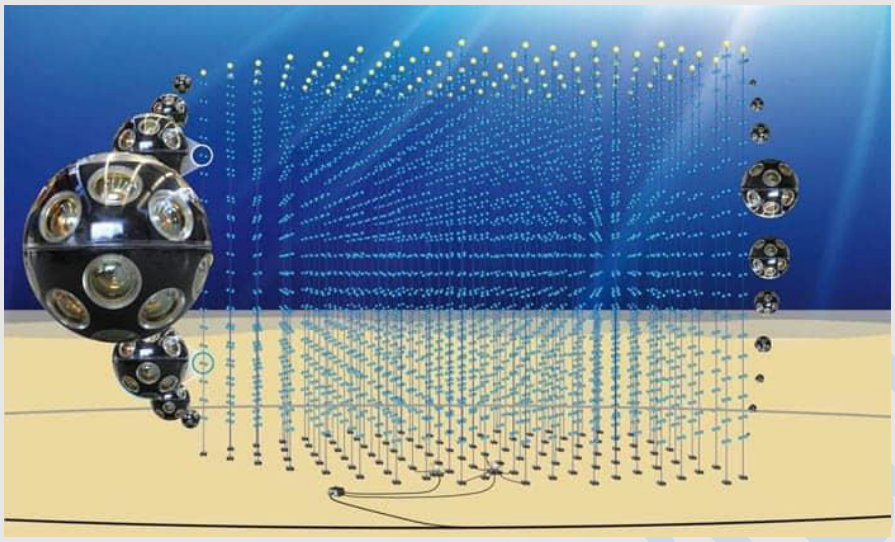
It is important to maintain hydration in the acute phase. In extreme cases, patients have to be administered rehydration fluids intravenously.

Relevance: GS Prelims; Science & Technology

Source: Indian Express

4. Why scientists are installing underwater telescopes to detect 'ghost particles'

Introduction



Scientists are deploying two telescopes to detect high-energy neutrinos, also known as ghost particles, under the Mediterranean Sea. The two telescopes are part of the Cubic Kilometre Neutrino Telescope or KM3NeT. While one of the telescopes will study high-energy neutrinos from space, the other will examine neutrinos from the atmosphere.

These telescopes are much like the IceCube Neutrino Observatory, which can detect high-energy neutrinos from deep space but is under the frozen ice in the Antarctic rather than being in the water.

Here is a look at what neutrinos are, why scientists want to study high-energy neutrinos, and why the neutrino telescopes have been placed deep under the sea.

What are neutrinos?

Detected for the first time in 1959 — though their existence was predicted almost three decades earlier, in 1931 — neutrinos are tiny particles, very similar to electrons, but without any electric charge. They are one of the fundamental particles the universe is built of, and are the second most abundant subatomic particles after photons. Neutrinos are so numerous that about a billion of them pass through a cubic centimetre of space every second.

Why do scientists want to study high-energy neutrinos?

Although neutrinos are everywhere, not each one of them is important to study. Scientists are interested in examining super-fast, high-energy neutrinos that have come from far, far away. Such neutrinos are rare and mostly originate from exotic events such as supernovae, gamma-ray bursts or colliding stars.

Studying high-energy neutrinos can help astrophysicists investigate those space mechanisms and regions like the centre of our Milky Way Galaxy which are shrouded in dust. Dust absorbs

and scatters the visible light from objects, making them difficult or impossible to observe with optical telescopes.

Not only this, high-energy neutrinos can also give clues about cosmic ray production or even dark matter.

So why are scientists building underwater neutrino telescopes?
High-energy neutrinos, however, are not just rare but also extremely difficult to detect. One reason is that neutrinos barely interact with anything — despite billions of neutrinos around us, an average of only about one of them will interact with a person's body during a lifetime. Even the IceCube, which has been operational since 2011 and was the first telescope to detect high-energy neutrinos, has been able to only spot a handful of these messengers.

To detect high-energy neutrinos, there is a need for a large volume of optically transparent material in a place where it is extremely dark. The location needs to be dark because the detectors look for flashes of Cherenkov radiation: light that neutrinos produce when they interact with a water or ice molecule.

These flashes help scientists trace the path of that neutrino, giving them details about its source, the amount of energy it contains, and its origins.

Although both frozen ice and deep sea waters provide conducive conditions for detecting high-energy neutrinos, experts suggest that underwater neutrino telescopes could be more efficient than IceCube.

That is because water scatters light less, which gives a more accurate idea about where the detected neutrinos came from. The one disadvantage is that water absorbs light more and as a result, there will be less light to examine.

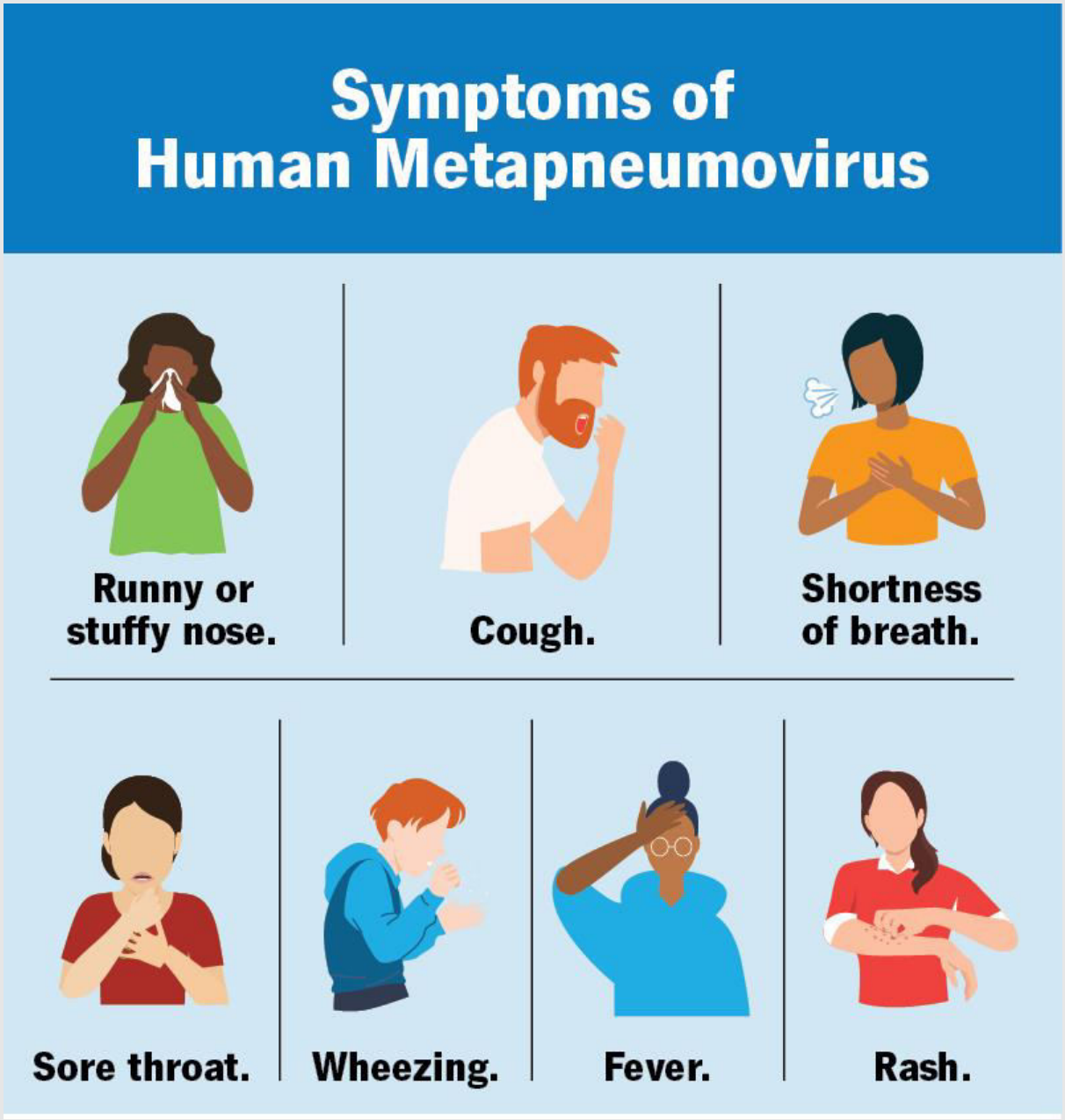
Relevance: GS Prelims; Science & Technology
Source: Indian Express

5. What is the human meta-pneumovirus?

Introduction
China's diseases control authority said that it was piloting a monitoring system for pneumonia of unknown origin. The country was already witnessing an upward trend in overall infections as of mid-December, and is expecting to see more respiratory infections in the winter and spring. One of the pathogens that was detected, especially among people under the age of 14, was human metapneumovirus. Subsequently, posts showing crowds of people in what looked like Chinese hospitals appeared on social media along with statements about China declaring an emergency over the virus. So far, there has been no such declaration.

What is human metapneumovirus?

Human metapneumovirus (HMPV) is a respiratory virus that causes mild infections similar to that caused by a common cold. First identified by scientists in 2001, the virus belongs to the Pneumoviridae family, of which respiratory syncytial virus (RSV), measles and mumps are also members. HMPV can cause both upper and lower respiratory tract infections and is generally seen in winter and early spring. Children, the elderly and those with weakened immune systems are more susceptible to the infection and to developing complications from it.



The symptoms of HMPV can resemble those caused by a common cold. They include a cough, runny or blocked nose, sore, throat, fever and wheezing. The estimated incubation period is three to six days. In most people, the illness goes away on its own within a few days, with rest

and supportive care at home. In a few people however, complications such as bronchitis or pneumonia may arise, requiring medical care.

How does HMPV spread?
HMPV spreads through contact with an infected person or touching objects that have the virus on them. This can be through secretions from coughs and sneezes; close contact with someone who has the infection by shaking hands, hugging; touching a doorknob or a phone or a keyboard that may be contaminated with the virus and then touching the mouth, nose or eyes.

How is HMPV treated?
There is no vaccine and no specific antiviral to treat HMPV. Most people require over-the-counter medications to relieve fever and pain, possibly with a decongestant. Antibiotics will not work for HMPV. However, the virus can be prevented. As with most other respiratory viruses, the best way to protect yourself from illness is to wash your hands frequently with soap and water, avoid close contact with infected persons, avoid touching your face, nose, eyes and mouth and wear a mask if you think you may be infected, so that you can prevent transmitting it to others. People with lung conditions such as asthma or COPD should be extra cautious and protect themselves from infection.

What has the Indian govt. said?
In light of the reports from China, the National Centre for Disease Control (NCDC) under the Union Health Ministry is closely monitoring respiratory and seasonal influenza cases in the country, and is in touch with international agencies. "We will continue to monitor the situation closely, validate information and update accordingly," sources said.

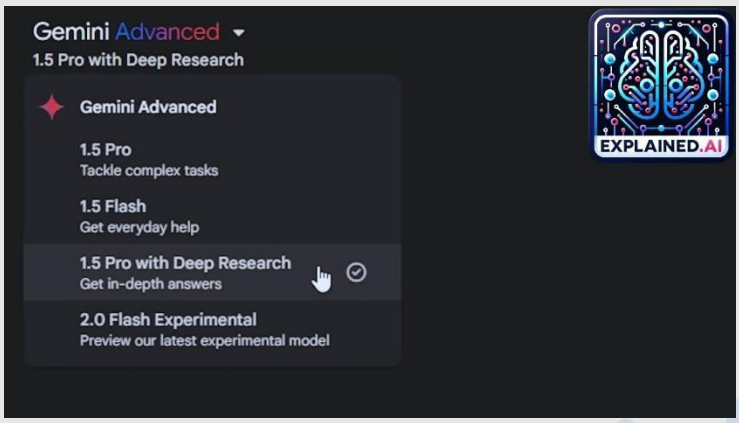
HMPV cases have been confirmed in two infants from Karnataka and one in Ahmedabad, Gujarat. In Chennai too, two children tested postive for the virus. The Union Health Minister J.P. Nadda in a video statement said, "Health experts have clarified that the HMPV is not a new virus. It was first identified in 2001 and it has been circulating in the entire world for many years. HMPV spreads through air, by way of respiration... The health systems and surveillance networks of the country are vigilant and there is no reason to worry."

Relevance: GS Prelims; Science & Technology
Source: The Hindu

6. Google Deep Research: What is it, how is it different from other AI tools?

Introduction
In the past few weeks, there has been a flurry of launches in Artificial Intelligence (AI). Google too has introduced a range of tools, along with its Gemini 2.0 Flash Experimental. Among its notable launches was its tool Google Deep Research, which it has claimed to be the best research product in the market and a step above the existing AI research tools.

Google rolled out Deep Research to Gemini subscribers on December 11. The tech giant describes Deep Research as its new agentic feature in Gemini. Google's research tool offers a range of customisations, ease of access, and precision, more than ChatGPT Search and Perplexity AI.



What is Google Deep Research?

Google, in its blog post, said that Deep Research uses AI to explore complex topics on a user's behalf and comes up with answers in an easy-to-read manner. According to Google, the tool is a first look at how Gemini is getting better at tackling complex tasks to save users' time.

Deep Research can be a user's personal AI research assistant. "Under your supervision, Deep Research does the hard work for you. After you enter your question, it creates a multi-step research plan for you to either revise or approve. Once you approve, it begins deeply analysing relevant information from across the web on your behalf," reads the post on Google's blog.

How does it work?

Deep Research can be best described as a research team that can analyse over 50 websites, compile findings, and create easy-to-read reports with citations—all at once. While ChatGPT straight away does the research and presents the results, Google Deep Research shows the user a research plan allowing them to edit it to get the desired results.

Gemini Advanced users can head to the top left-hand side, click on the drop-down menu, and select 1.5 Pro with Deep Research. When a user inputs a research query, the tool will build a step-by-step research plan. It will also allow you to edit the plan if needed. The tool conducts research by scouring multiple websites at the same time. The progress of the output can be tracked by the purple indicator.

It creates a report complete with citations, and this can be later exported to Google Docs, where you can also interact with the report. The output generated can potentially be equivalent to a report that consulting firms make by spending days and hours.

How to make the best of it?

In order to make the best of the Deep Research tool, users are advised to keep their prompts simple and clear. They should be specific about the expected outcomes, they should double-check sources if needed, and they should use the edit plan feature to customise the research parameters. Keeping pre-made templates can come in handy for the research work using this tool.

The tool takes a user's questions and assesses its subcomponents, searches the web in real time, offers citations, and creates reports. Users can also leverage access across their Gmail, Drive, Docs, and YouTube to get more personalised insights. Based on its broad use cases and features, Deep Research can be the ideal tool for small companies looking for market research and competitor analysis.

As of now, it is free for the first month. However, it may be priced at $20 a month when it is combined with Gemini Advanced. Google also has plans to make Deep Research available in the mobile app in early 2025.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

7. Why the Genome India project matters

Genome India project

The Department of Biotechnology recently announced its new platform and framework for sharing its 10,000 human genome dataset. The sequences of healthy individuals — from 99 ethnic populations of the country — has helped create a baseline map of India's genetic diversity. The researchers in the second phase plan to sequence genomes of those with specific diseases.

First, what is genome sequencing?

The human genome is essentially an instruction manual we inherit from our parents that decides how our body develops and functions. This genetic information determines everything from a person's height, to the colour of their hair and eyes, to the diseases they may inherit, or the ones they are pre-disposed to. It is a tome written with just four letters A,C,G, and T — the four bases that come together to create the unique genetic makeup of everyone. There are around 3 billion pairs of bases in the complete human genome.

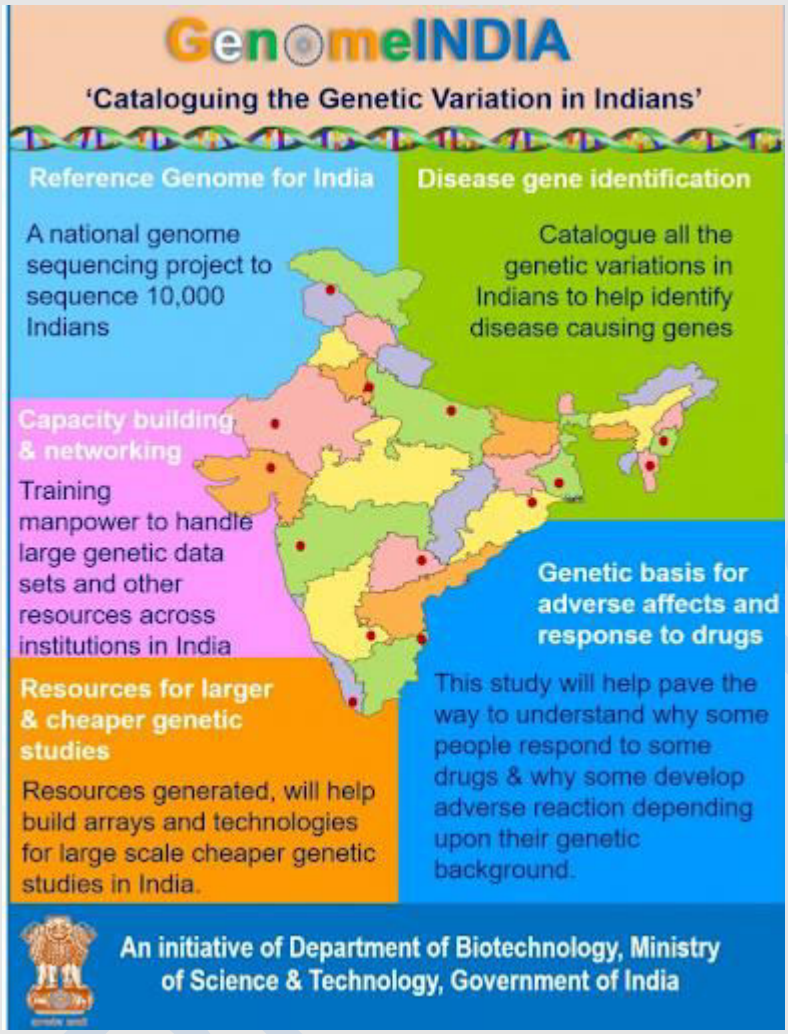
To sequence the genome, researchers first extract the information from the blood. Handling the entire genome, however, is extremely difficult. So, the researchers cut it up into smaller pieces and tag them. A sequencer is then used to decode these smaller chunks of the genetic material. Once done, it is put together using the tags to create a whole genome — in the same way one would assemble say an Ikea furniture by numbers.

What is the Genome India project?

India is a country that is varied not only in geography, languages that are spoken, food, and culture, it is also diverse in genetic make-up. There are over 4,600 distinct populations. The Genome India project was first approved in 2020 with the aim of capturing this diversity at the genomic level.

Researchers from 20 different scientific institutions have come together to sequence the first 10,000 genomes under the project. With everything in place — a successful collaboration, a

data storage facility, data sharing platform, and a framework — the department of biotechnology aims to expand the programme further and sequence up to 1 million genomes.



How does creating the database help?

One, this map can help identify genetic basis or genetic risk factors for various diseases. These can then be used as targets for developing therapies and diagnostic tests. Newer therapies for several diseases work by modifying, deleting, or adding certain genes — something that would not be possible without having a genetic map and an understanding of which genes lead to the disease.

Two, an Indian dataset helps identify new variants. The researchers have identified 135 million genetic variations in the 10,000 genomes so far, 7 million of which are not found in the global databases.

Three, population level sequencing can also tell scientists and clinicians the frequency at which certain genetic variations that are known to cause disease appear and hence how common a disease might be. Take for example, the MYBPC3 mutation known to lead to cardiac arrest at a young age is found in 4.5% of the Indian population but is rare globally. Or, another mutation called LAMB3 that causes a lethal skin condition is found in nearly 4% of the population near Madurai but it is not seen in global databases. This is the reason India requires its own genome dataset.

Four, it may also help identify rare disease and develop gene therapies that can treat them.

Five, it can also help in identifying resistance indicating variants, for example genes that might make certain medicines or anaesthetics ineffective in certain populations. An example from India is a sect of the Vaishya community from South India who have the gene missing for properly processing common anaesthetics. Use of these anaesthetics can result in them remain under for hours or even death.

What is the second phase of the project?
The second phase of the project would involve sequencing the genomes of those with specific disease. This will enable researchers compare the diseased genomes with the healthy ones, helping in identifying genes that are responsible for or pre-dispose a person to certain diseases. They may be able to study the genetic changes when someone gets a disease, take for example cancer.

The team is currently in discussion with experts to identify the diseases for which genomes should be sequenced and the number of genomes for each disease required to produce meaningful results.

The diseases that would most likely be included in the list would be different types of cancers, chronic conditions such as diabetes, and various neurological or neurodegenerative diseases. Rare diseases that are found in Indian populations are also likely to be included in the list of diseases to be studied for the next phase of Genome India project.

How will the data be shared?
For now, the data will be available to Indian researchers through managed access. "This is the first time that we have created a resource such as this and we have to be very careful how we share this highly sensitive data. The data will be made available only through managed access — meaning it would be available only to research institutes that partner with us for the study," said Dr Suchita Ninawe, senior scientist from department of biotechnology.

Scientists wishing to utilise the data would have to respond to a call for proposals and collaborate with the department. The research will be funded by the government.

To maintain the anonymity of the data, it would also be double blinded. "After the samples from different regions are collected and sequenced by one of the partner institutes, it would be encoded before being uploaded to the central database. When the data is shared further with those wishing to study it, it would be encoded once again. This is to ensure that there is no way for the anonymity to be breached," said Dr Ninawe.

Are there other such projects across the world?
The first Human Genome Project — which was an international consortium funded by the US National Institutes of Health among others — published the world's first complete human genome in 2003. Since then, the 1,000 genome project — again through international collaboration — published 1,092 sequences in 2012. A UK government project sequenced 100,000 genomes by 2018. There has also been a European effort to sequence 1+ Million Genomes across 24 countries.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

8. ISRO to attempt 'docking' satellites in space: What it means, why it matters for future missions

ISRO SpaDeX Docking Mission

Over the next few days, the Indian Space Research Organisation (ISRO) will bring two small satellites closer together and then join them in space, demonstrating "docking" for the first time. A successful docking will make India the fourth country in the world — after the United States, Russia, and China — to have the capability.

Few days back, ISRO carried out a trial attempt by bringing both the Chaser and Target satellites three metres closer to each other. Afterwards, the satellites were moved apart to safer distances. The space agency is analysing the data for successfully carrying out docking soon.

The two small 220 kg satellites were launched on December 30 from the country's only spaceport in Sriharikota. While being injected into a circular 450 km orbit, a relative velocity was given to the satellites, allowing them to drift away from each other in preparation for the docking experiment.

First, what is docking and why is it necessary?

Docking is a process by which two fast-moving spacecraft are brought to the same orbit, and then closer to each other manually or autonomously, and finally joined together. This capability is necessary for carrying out missions that require heavy spacecraft that a single launch vehicle may not be capable of lifting off with.

The capability is needed not only for setting up a space station — for which separate modules are joined in space — but also for carrying crew and supplies to it.

When did the first space docking happen?
With the space race underway, it was essential for the United States to demonstrate rendezvous (bringing spacecraft close to each other) and docking to achieve the objective of sending humans to the moon. In 1966, the Gemini VIII spacecraft became the first to dock with the Agena target vehicle. It was a crewed mission orbiting the Earth. Interestingly, one of the astronauts on board was Neil Armstrong, who went on to become the first person to set foot on the moon in 1969.

While the US mission had astronauts on board to steer the spacecraft, the then Soviet Union in 1967 demonstrated the first uncrewed, automated docking of Kosmos 186 and Kosmos 188 spacecraft.

China first demonstrated its docking capability in 2011, when the unmanned Shenzhou 8 spacecraft docked with the Tiangong 1 space laboratory. A year later, it demonstrated the first crewed space docking, when the astronauts manually joined the Shenzhou 9 spacecraft to the same space laboratory.

Why is India conducting a docking mission now?
With its vision of setting up a space station by 2035 and sending humans to the moon by 2040, ISRO has been working on key technologies to realise the vision, such as a new heavy-lift launch vehicle capable of carrying up to 30 tonnes to low earth orbit (an altitude of 2,000 km or less). The missions, however, would require docking capability. Take, for example, the Bharatiya Antariksh Station, which will be built by bringing together five modules in space. The first robotic module is slated to be launched in 2028.

Docking capability will also be required for the next lunar mission Chandrayaan-4, which aims to bring back samples from the moon. The planned mission will see the five key modules sent to orbit in two separate launches. The first launch will have four of the five modules, while the propulsion module will carry the rest of the spacecraft from the Earth orbit to the moon orbit.

From there, the lander and ascender modules will go to the lunar surface and collect the samples, the ascender module will then hop off with the samples and dock with the transfer module in the lunar orbit. This transfer module will carry back the samples to the earth orbit, where it will dock with a re-entry module that will be launched separately. The module will be designed to withstand the heat of entering the Earth's atmosphere. In preparation, the space agency already carried out a hop experiment towards the end of the Chandrayaan-3 mission. A human mission to the moon is likely to follow a similar plan.

What will happen during the docking experiment?
To demonstrate docking, several manoeuvres will be carried out to progressively bring the SDX01 or Chaser satellite close to the SDX02 or Target satellite. The satellites will drift closer and halt at 5 km, 1.5 km, 500 m, 225 m, 15 m, and 3 m. Finally, the extended rings on both satellites will come in contact and join. The rings will then be retracted and locked in place.

Once connected, the satellites will share electrical power. The ISRO scientists will also demonstrate giving commands to both the satellites as one. Once successful, the spacecraft will undock and then drift away to remain in space and conduct experiments for the next two years.

What does India's docking mechanism look like?
Several types of docking mechanisms have been used by the different space agencies over the years, with some allowing interoperability. The International Docking System Standard is used by spacecraft going to the International Space Station. The docking mechanism being used by India is androgynous — meaning the systems on both the Chaser and Target satellites are identical. It is similar to the International Docking System Standard used by other agencies but uses two motors as compared to the 24 used in IDSS.

The mission will also use several new sensors such as Laser Range Finder, Rendezvous Sensor, Proximity and Docking sensor to take precise measurements while bringing the two satellites closer and joining them. It will also use a new processor based on satellite navigation systems to determine the relative position and velocity of the other spacecraft. This is a precursor to completely autonomous systems for future missions that would be able to achieve docking without satellite-based navigation data.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

9. ISRO Docks SpaDeX Satellites in Space: What was done and how – and why does it matter?

ISRO SpaDeX Docking Mission Explained
The Indian Space Research Organisation (ISRO) successfully demonstrated space docking — or the joining of two fast-moving satellites in space.

Two small 220-kg satellites were brought within a distance of 3 metres from each other in orbit, their extended ring was joined with each other, retracted, and locked in space.

ISRO also demonstrated giving commands to the two satellites as one composite object.

The successful docking makes India the fourth country in the world — after the United States, Russia, and China — to have this capability.

What is "docking", and why is this achievement important?
Docking is a process by which two fast-moving spacecraft are brought to the same orbit, brought closer to each other manually or autonomously, and finally joined together.

This capability is necessary for carrying out missions that require heavy spacecraft that a single launch vehicle may not be capable of lifting off with.

The capability is needed not only for setting up a space station — for which separate modules are joined in space — but also for carrying crew and supplies to it.

When was the first docking in space achieved?
UNITED STATES: As the United States and the erstwhile Soviet Union competed fiercely during the space race of the Cold War decades, it was essential to demonstrate rendezvous and docking to achieve the objective of sending humans to the Moon.

In 1966, NASA's Gemini VIII became the first spacecraft to dock with the target vehicle Agena. Gemini VIII was a crewed mission orbiting the Earth, commanded by Neil Armstrong, who in 1969 became the first human to set foot on the Moon.

USSR: While the US mission had astronauts on board to steer the spacecraft, the Soviet Union in 1967 demonstrated the first uncrewed, automated docking of the Kosmos 186 and Kosmos 188 spacecraft.

CHINA: China demonstrated its docking capability in 2011, when the unmanned Shenzhou 8 spacecraft docked with the Tiangong 1 space laboratory.

A year later, China demonstrated its first crewed space docking, when the astronauts manually joined its Shenzhou 9 spacecraft to the same space laboratory.

Why has India carried out its docking mission at this juncture?
ISRO has been working on key technologies to realise its vision of setting up a space station by 2035 and sending humans to the Moon by 2040.

Besides a new heavy-lift launch vehicle capable of carrying up to 30 tonnes to low earth orbit, the missions would require docking capability. The Bharatiya Antariksh Station, the space station that India envisages, will be built by bringing together five modules in space. The first of these robotic modules is slated to be launched in 2028.

Docking capability will also be required for the next lunar mission — Chandrayaan-4 — which aims to bring back samples from the Moon. This mission will see five key modules being sent into orbit in two separate launches.

The first launch will have four of the five modules — the propulsion module will carry the spacecraft from Earth orbit to the Moon orbit, from where the lander and ascender modules will go to the lunar surface and collect the samples. The ascender module will then hop up with the samples, and dock with the transfer module in the lunar orbit.

This transfer module will carry back the samples to the Earth orbit where it will dock with a re-entry module that will be launched separately. The module will be designed to withstand the heat of entering the Earth's atmosphere.

In preparation for this mission, ISRO carried out a "hop experiment" towards the end of the Chandrayaan-3 mission.

A human mission to the Moon is likely to follow a similar plan.

What happened during the docking experiment?
ISRO carried out a series of manoeuvres to progressively bring the SDX01 or "Chaser" satellite close to SDX02, or the "Target" satellite. The satellites were allowed to drift close, and then their positions were held at around 5 km, 1.5 km, 500 m, 225 m, 15 m, and 3 m, before finally being joined together.

The space agency has demonstrated giving command to the satellites as a single composite object. In the coming days, it will demonstrate sharing of electrical power between the two satellites.

Once that is complete, ISRO will demonstrate "undocking", during which the satellites will separate and drift away to carry out their respective experiments over the two years of the mission's life.

The docking experiment was initially slated for January 7, but was postponed after identifying an abort scenario. More simulations were carried out on the ground to improve the accuracy of docking.

The docking could not take place on January 9 either, with the satellites drifting more than anticipated during a manoeuvre to reduce the distance to 225 metres on the previous day.

After this, the satellites drifted nearly 5 km apart, and manoeuvres to bring them closer were restarted. Early on January 12 morning, the satellites were brought closer together, and this time they reached the hold point of 3 metres before being moved away to a safe distance.

ISRO said that the data were being analysed before the actual docking could be conducted.

What is the Bharatiya Docking System?

Several types of docking mechanisms have been used by space agencies over the years, including some interoperability. The spacecraft that go to the International Space Station follow the International Docking System Standard (IDSS), which was first baselined in 2010.

The docking mechanism being used by India is androgynous — meaning the systems on both the Chaser and Target satellites are identical. This is similar to the IDSS used by other agencies, but uses two motors as compared to the 24 used in IDSS.

The mission used several new sensors such as Laser Range Finder, Rendezvous Sensor, and Proximity and Docking Sensor to take precise measurements while bringing the two satellites closer and joining them.

It also used a new processor based on satellite navigation systems to determine the relative position and velocity of the spacecraft. This is a precursor to a completely autonomous system for future missions that would be able to achieve docking without satellite-based navigation data.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: The Indian Express

10. How and why are plants grown in space: Takeaways from ISRO's success

Introduction

The lobia (black-eyed pea) seeds that the Indian Space Research Organisation (ISRO) sent to space on December 30 as a part of its Compact Research Module for Orbital Plant Studies (CROPS) germinated last week.

Why grow plants in space?

As humans venture out on lengthy space missions to colonise celestial bodies like Mars and the Moon, space-grown plants can provide a sustainable food source. With minimal scope of restocking supplies, astronauts cannot simply rely on a limited stock of multivitamins during missions that may go on for years. Besides, pre-packaged vitamins break down and lose their nutritive value over long periods of time.

Since plants release oxygen during photosynthesis, growing them in space can help keep the air aboard spacecraft breathable. Plants can recycle carbon dioxide and organic waste, creating a closed-loop life support system. Tending to plants can also help reduce stress and improve astronauts' overall mental well-being, he said.

Why is it hard to grow plants in space?
The most significant challenge is microgravity, the condition in which people or objects appear to be weightless.

The lack of gravity precludes plants' roots from growing downwards, in addition to making nutrient delivery a difficult task. Since water tends to cling to any surface it touches in microgravity, when sprayed onto the base of a plant, it does not trickle down to the roots where it would be absorbed.

Plants grown in space also need to be protected from the high levels of radiation that can damage their DNA and hinder growth, and insulated from temperature fluctuations — often hundreds of degrees — that are normal in space, Pandey said.

Light conditions, especially in the outer Solar System where sunlight is scarce, pose another challenge. Without light, photosynthesis stops, and plants begin to consume more oxygen than they produce.

How are plants being grown in space?
Scientists have so far grown plants in space on a fairly small scale. The space garden aboard the International Space Station, known as 'Veggie' or the Vegetable Production System, is the size of the average carry-on bag. It typically holds six plants.

There are several ways in which plants can be grown in space. The most common is hydroponics. Water and nutrients in hydroponically grown plants are delivered via liquid solutions, rather than through the soil.

Plants can also be grown aeroponically, which eliminates the need for soil or any other medium. This method reduces water usage by 98%, fertiliser usage by 60%, and eliminates the need for pesticides altogether. "Plants grown in aeroponic systems have been shown to absorb more minerals and vitamins, making them healthier and potentially more nutritious," according to the US space agency NASA.

Plants can also be grown in space in soil-like media.

How did ISRO grow lobia in space?
The ISRO CROPS box is like a mini greenhouse. It has a soil-like medium, lobia, water, sunlight-mimicking lights, and Earth-like air. "The only thing different is gravity, at around 0.01 g", or 1% of the gravitational strength on the Earth's surface.

For the soil-like medium, ISRO used some highly porous clay comprising tiny pellets. The porosity helped absorb and retain water. The pellets consisted of a water-activated slow-release fertiliser, which was to provide nutrients to the plant in a controlled manner over a period of time.

For photosynthesis, ISRO used four warm LEDs and four cool LEDs. "The lights are programmed to be on for 16 hours and off for 8 hours, simulating day and night conditions… These durations can be changed based on various requirements," ISRO said in a statement.

Temperatures inside the module were regulated between 20 and 30 degrees Celsius, and Earth-like atmospheric conditions were maintained. Water was injected into the soil-like medium by an electric valve operated from Earth.

Seeds sprouted on the fourth day of the experiment, and the next day, two leaves were also visible.

What kind of plants are ideal for growing in space?
Plants are selected based on their growth rate, nutrient content, and compatibility with space farming systems.

Leafy green vegetables like lettuce, spinach, and kale, which grow quickly, require little space, and are rich in nutrients, are ideal space plants.

Beans and peas are also cultivated since they are protein-dense and can fix nitrogen in the soil-like medium, improving nutrient cycles.

"Radishes and carrots grow well in compact spaces… Wheat and rice are grown for long-term sustenance in space habitats," Pandey said. Fruits such as tomatoes and strawberries can also be grown.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

11. Third launchpad at Satish Dhawan Space Center: Why was Sriharikota chosen as India's spaceport?

Introduction
The Union Cabinet recently approved the setting up of a third launchpad at the Satish Dhawan Space Center (SDSC) in Sriharikota — a spindle-shaped island on the east coast of Andhra Pradesh.

The new launchpad will help Indian Space Research Organisation (Isro) to become future ready to use the heavier Next Generation Launch Vehicle (NGLV) that it is currently developing.

The SDSC is the country's only spaceport from which spacecraft and satellites are launched. It became operational on October 9, 1971, with the flight of 'Rohini-125', a small-sounding rocket, and was initially known as SHAR (Sriharikota Range). But in September 2002, the space centre was renamed Satish Dhawan Space Centre SHAR to honour mathematician and former Isro Chairman Satish Dhawan.

Why was Sriharikota chosen?

There were two primary reasons for selecting Sriharikota as the launch site. One, it is on the east coast which facilitates the launching of the rockets in an easterly direction. Two, its proximity to the equator.

"By launching a rocket eastwards, one can take advantage of Earth's rotation. For a launch site close to equator the magnitude of the velocity imparted due to Earth's rotation is about 450 m/s, which can lead to substantial increase in the payload for a given launch vehicle. Geostationary satellites must necessarily be in the equatorial plane. So, for such satellites, closer the launch site is to the equator the better it is," the book mentioned.

There were other considerations also, such as it was a largely uninhabited area and closer to the sea. This helped ensure that the flight path of launch vehicles or rockets is entirely over the sea, so that impact of separated rocket hardware can take place on the high seas without any constraints, the book further added.

Who was Satish Dhawan?

Born in Srinagar, Dhawan was an Indian rocket scientist, known as the 'Father of Experimental Fluid Dynamics research' in India. He is also one of the foremost researchers in the field of turbulence and boundary layers.

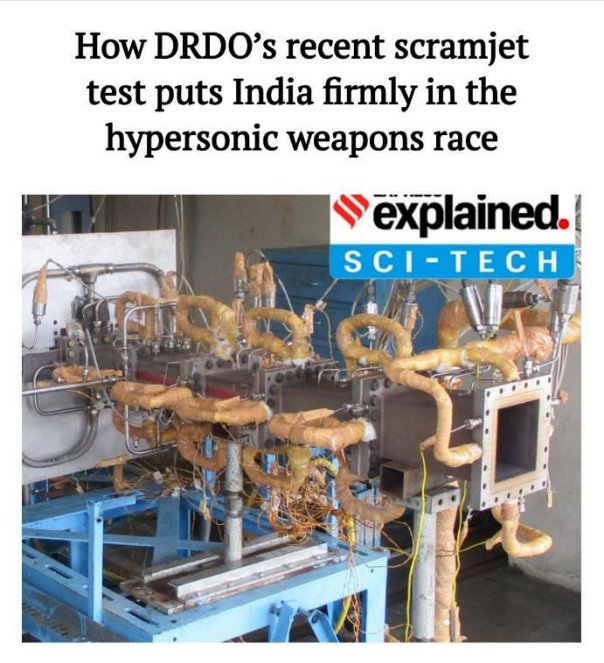
In 1972, Dhawan succeeded Vikram Sarabhai as the Chairman of Isro. According to the space agency's website, "In the decade following his appointment, he directed the Indian space programme through a period of extraordinary growth and spectacular achievement… His efforts led to operational systems like INSAT- a telecommunications satellite, IRS – the Indian Remote Sensing satellite and the Polar Satellite Launch Vehicle (PSLV) that placed India in the league of space faring nations."

It was after his death in 2002 that the space centre in Sriharikota was renamed the Satish Dhawan Space Center to honour his legacy.

Relevance: GS Prelims; Science & Technology
Source: Indian Express

12. How DRDO's recent scramjet test puts India firmly in the hypersonic weapons race

Introduction



The Defence Research and Development Organisation (DRDO) recently demonstrated the scramjet combustor ground test for 120 seconds for the first time in India. The Ministry of Defence (MoD) has called it a crucial milestone in developing next-generation hypersonic missiles.

Hypersonic missiles are a class of advanced weaponry that travel at speeds greater than 'Mach 5' – five times the speed of sound.

The scramjet engine and its hypersonic abilities

Ramjets are air-breathing jet engines that use the vehicle's forward motion to compress inflowing air for combustion without a rotating compressor. The fuel is injected into the combustion chamber where it mixes with the hot compressed air and ignites. A ramjet-powered vehicle requires an assisted take-off like a rocket assist to accelerate it to a speed where it begins to produce thrust.

Ramjets work most efficiently at supersonic speeds around Mach 3, three times the speed of sound. However, the ramjet efficiency reduces once the vehicle reaches hypersonic speeds – above Mach 5.

This is where the Supersonic Combustion Ramjet or Scramjet engine comes in. It efficiently operates at hypersonic speeds and allows supersonic combustion.

The fundamental change in a scramjet is that the air does not slow down in its combustion chamber but stays supersonic throughout the engine. This makes the design, development and operation of the scramjet far more challenging.

The 120-second scramjet ground test

The latest test is a result of extensive work by the Defence Research and Development Laboratory (DRDL), a Hyderabad-based facility of DRDO. The facility has been working towards developing a long-duration Supersonic Combustion Ramjet or Scramjet-powered Hypersonic technology.

DRDL recently demonstrated a successful ground test of the Active Cooled Scramjet Combustor for 120 seconds for the first time in India, achieving a major milestone. The MoD said that the ground test of the scramjet combustor showcased several notable achievements, demonstrating its potential for operational use in Hypersonic vehicles like successful ignition and stable combustion.

The scramjet combustor incorporates an innovative flame stabilisation technique that holds continuous flame inside the combustor with an air speed of over 1.5 kilometres per second.
Another key achievement amidst the development of hypersonic technologies is the development of Thermal Barrier Coating (TBC) which is designed to withstand extreme temperatures encountered during hypersonic flight. A new advanced ceramic TBC with high thermal resistance, capable of operating beyond the melting point of steel, has been jointly developed by DRDL and the Department of Science and Technology (DST).

The strategic significance of hypersonic weapons
Hypersonic weapons have the potential to beat the existing Air Defence Systems of major military powers worldwide, and can deliver rapid, high-impact strikes. Several nations including the USA, Russia, India and China are actively pursuing Hypersonic technology and have demonstrated various levels of development.

The US is said to have conducted the first successful test of scramjet engines in 2002 followed by Russia, European Agency, Japan and then China. The reason for the race in the hypersonic domain is that they enhance the ability of the armed forces to negotiate even the most advanced missile defence systems and hit targets with minimal warning. Their manoeuvrability and very high speeds make interception extremely difficult, giving a decisive strategic advantage in offensive operations.

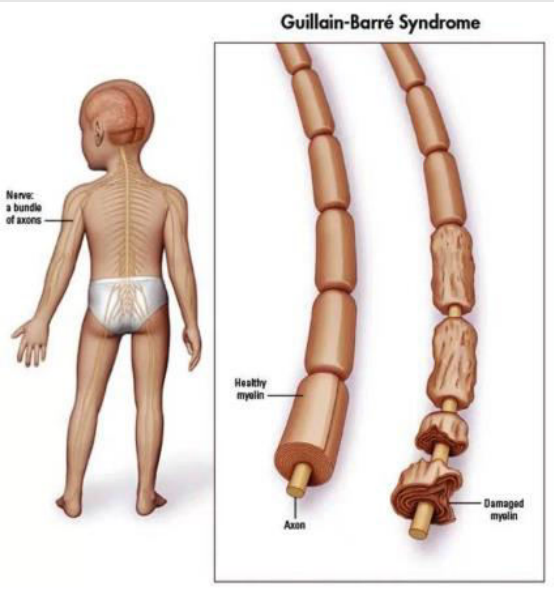
Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

13. Is the Guillain-Barré Syndrome life-threatening?

Introduction
Following a reported outbreak of Guillain-Barré Syndrome, a rare neurological disorder, in Pune, with 73 cases so far, the Union Health Ministry has now sent a team to the city to assess the situation. A total of 47 men and 26 women have been affected, with 14 on ventilator support, the State Health Department has said, as of January 25, 2025.

What is Guillain-Barré Syndrome?
Guillain-Barré Syndrome (GBS) is an autoimmune neurological disorder in which a person's immune system attacks their peripheral nerves, leading to muscle weakness that can progress to paralysis. People of any age can be affected, but it is more common in adults and males. The condition is rare, with an estimated incidence of 1/2 per 1,00,000 population.

While the causes of GBS are still not fully understood, in most cases, it occurs after a viral or bacterial infection.



How does it affect the body?

In autoimmune conditions, the body's immune system begins to attack its own cells. In GBS, the immune system destroys the myelin sheath — a fatty layer wrapped around nerve cells. This impacts the nerves' ability to send signals to the brain, which causes weakness in the muscles. GBS affects the peripheral nervous system — the part of the nervous system outside the brain and spinal cord — that controls the movement of muscles, temperature, touch and pain sensations.

The first signs of GBS are usually tingling and weakness that start in the feet and legs before spreading to the upper body, arms and face. Symptoms include a pins and needles feeling in the toes, fingers, ankles or wrists, back pain, pain in the legs, not being able to walk or climb stairs, trouble with facial movements and double vision. For some people this can lead to paralysis of the legs, arms or face. The severity of the symptoms can range from mild to severe. In approximately one-third of people, the chest muscles are affected, making it hard to breathe, the WHO says. The ability to speak and swallow can become affected in severe cases. GBS can lead to life-threatening complications when it affects the autonomic nervous system which controls your blood pressure and heart rate.

How is it treated?

There is no known cure for GBS. However, there are some treatments that aid in recovery. Most people can make a nearly full recovery. The treatments primarily include plasma exchange and intravenous immunoglobulin therapy. In plasma exchange or plasmapheresis, the plasma (liquid part of the blood) is removed, treated and then returned to the body. This removes the antibodies from the plasma that are attacking the nerves. Intravenous immunoglobulin therapy involves injecting the body with immunoglobulins, which are proteins that the body makes to identify and neutralise pathogens. This helps decrease the immune system's attack on the nerves. Supportive treatment is also given and rehabilitation including physical and occupational therapy may be required. Recovery can take a long time.

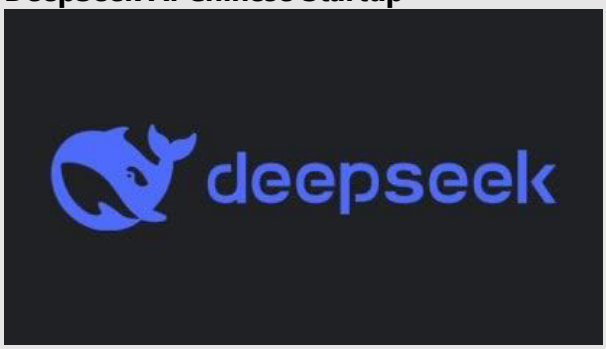
The WHO says Guillain-Barré syndrome is potentially life-threatening. People with Guillain-Barré syndrome should be treated and monitored as quickly as possible and some may need intensive care. If you experience sudden muscle that gets worse over some days, see a doctor immediately.

Relevance: GS Prelims; Science & Technology

Source: Indian Express

14. Deepseek: How open-source AI is disrupting big tech's monopoly

DeepSeek AI Chinese Startup



Recently, the stock market opened with a massive dip, especially the tech-heavy Nasdaq, which dropped by about 3 per cent. This is its worst performance in the last two years. This drop has been attributed to the meteoric rise of Chinese AI startup DeepSeek, which has in the last few weeks grabbed global attention after it unveiled its AI models — DeepSeek-V3 and DeepSeek-R1, a reasoning model.

The AI models from the Chinese startup went on to gain widespread acceptance, eventually surpassing ChatGPT as the most downloaded app on the App Store. DeepSeek-V3 and DeepSeek-R1 rival OpenAI's cutting-edge models o1 and o3, as the Chinese lab achieved this feat only with a fraction of their investments.

What is DeepSeek?

DeepSeek is a Chinese AI company based out of Hangzhou founded by entrepreneur Liang Wenfeng. What sets DeepSeek models apart is their performance and open-sourced nature with open weights, which essentially allows anyone to build on top of them. The DeepSeek-V3 has been trained on a meager $5 million, which is a fraction of the hundreds of millions pumped in by OpenAI, Meta, Google, etc., into their frontier models.

What is different about DeepSeek AI models?

Owing to its optimal use of scarce resources, DeepSeek has been pitted against US AI powerhouse OpenAI, as it is widely known for building large language models. DeepSeek-V3, one of the first models unveiled by the company, earlier this month surpassed GPT-4o and Claude 3.5 Sonnet in numerous benchmarks.

DeepSeek-V3 stands out because of its architecture, known as Mixture-of-Experts (MOE). The MOE models are like a team of specialist models working together to answer a question, instead of a single big model managing everything.

Relevance: GS Prelims; Science & Technology
Source: The Hindu

15. Why China's recent nuclear fusion breakthrough is significant

Introduction

An experimental nuclear fusion reactor in China last week triggered a lot of excitement by keeping its operational state maintained for more than 1,000 seconds, or over 17 minutes, which is a new record. Nuclear fusion is what produces the energy in the Sun, or any other star.

Scientists across the world have been trying to recreate this process to produce electricity. The technology can eliminate the world's energy crisis, and the problem of climate change, but it has not been mastered yet.

The Chinese reactor did not produce electricity. It did not even carry out a fusion reaction. The technology has not yet reached that stage.

However, the reactor managed to maintain plasma in a steady state of confinement for a long time, longer than it had previously been possible. This itself was a major step forward towards the dream of realising a fusion-based nuclear reactor in the near future.

Extreme conditions

Fusion reactions require very high temperatures, hundreds of millions of degrees Celsius — higher than the temperatures in the Sun's core.

At such high temperatures, matter exists only in the plasma state, in which atoms get split into positively and negatively charged particles. But such hot plasma cannot be handled by or contained in any material.

Within the reactor, this plasma needs to be kept suspended in a confined space, surrounded by very strong magnetic fields acting as walls.

Charged particles respond to magnetic fields, and this property is used to guide the flow of plasma within an enclosed space, separated from any matter. This condition, necessary for facilitating fusion reactions, is extremely delicate and unstable, with the tiniest of changes in the magnetic field disturbing the whole set-up. Scientists have not been able to maintain these conditions for longer than a few seconds.

That is why the achievement of the Experimental Advanced Superconducting Tokamak (EAST) reactor, located at the Institute of Plasma Physics in Anhui province in eastern China, is being seen as so important. It is a significant improvement on this reactor's previous record of a little over 400 seconds achieved in 2023.

Real-life electricity-generating reactors would require this state to be maintained for hours, even days, at a stretch. Only then would continuous operations be possible, like current nuclear reactors which are based on fission technology.

Energy source of future

Fusion technology has been under development for more than 70 years but progress has been slow. Even the optimistic forecasts, at least till a few years ago, suggested a functional fusion reactor, producing electricity at a commercial scale, would not be realised before 2050.

For this reason, none of the global energy transition pathways for a net-zero world in 2050, or 2070, factor in the potential of fusion electricity.

However, the promise of fusion energy is alluring. If, and when, it comes through, other sources of alternative clean energy being explored, like solar or wind, to tackle the climate crisis are likely to become peripheral or even redundant.

The fusion process produces far greater amounts of energy than any other source — one gram of fuel can yield as much energy as burning about eight tonnes of coal. It uses cheap input materials, available in almost limitless supply (deuterium and tritium, two heavier isotopes of hydrogen that are used as fuel, are easily available in nature), has a zero emission footprint, and can be set up and operated almost anywhere. Unlike the fission process, it does not leave dangerous nuclear waste.

Recent breakthroughs

In the last few years, fusion research has produced a string of breakthroughs. In December 2021, the United Kingdom-based JET laboratory set a new record in the amount of energy produced through fusion. It produced about 12 MW of electricity for five seconds, enough to cater to the demands of about 10,000 homes for that period of time.

A year later, a reactor in the United States achieved a net gain in energy for the first time. The extreme conditions needed in a fusion reactor require a very large amount of input energy. Fusion would be viable only if the output energy is significantly larger. The performance of this US reactor has improved since then. Last year, researchers at MIT said they had developed a new material that could better withstand the extreme conditions within the reactor.

The feats of the Chinese EAST reactor, in 2023 and now, are the latest additions to these successes. This week, fresh evidence emerged to show that China was building a large laser-ignited fusion research centre that could also be used to develop thermonuclear weapons, commonly known as hydrogen bombs.

The US facility at the Lawrence Livermore National Laboratory in California, which was the first to produce a net gain in energy in 2022, is based on a similar technology.

Greater optimism

The recent breakthroughs have triggered a big surge in interest, and ambition, for fusion energy, particularly among private companies which have entered the field in a major way. A total of 163 fusion reactors, in about 30 countries, are currently in operation, under construction, or being planned, according to the Fusion Device Information System (FusDIS) database maintained by International Atomic Energy Agency (IAEA).

ITER

The largest fusion reactor, an international collaborative project called ITER, is coming up in southern France. More than 30 countries are participating with India being one of the seven member countries contributing to the reactor's construction and research. This project, which has been under development since 2005, is slated to become one of the biggest international science facilities in the world. According to its current timeline, it would begin deuterium-tritium fusion reactions by 2039, producing 500 MW of fusion power.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: Indian Express

Miscellaneous

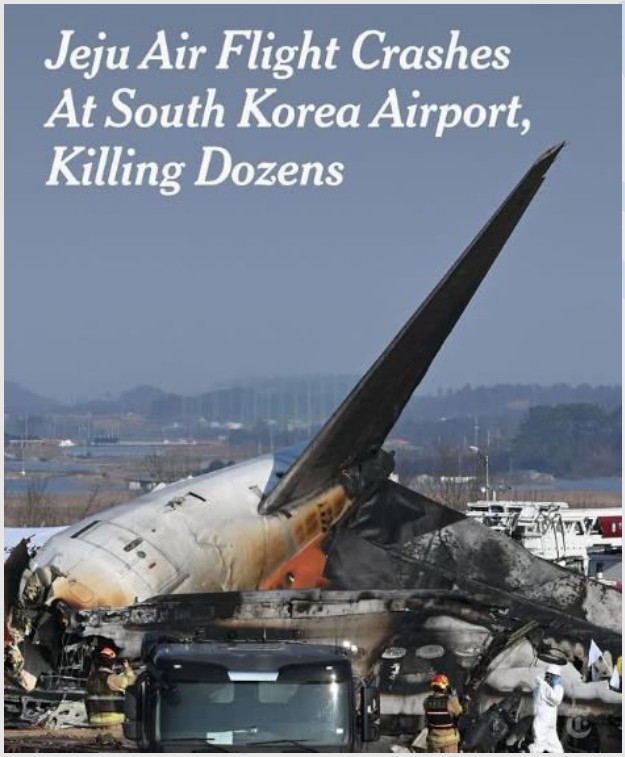
1. Jeju Aircraft Crash: How exactly a plane lands, and what could have gone wrong

Jeju Air plane crashes in South Korea

As many as 179 people were killed when Jeju Air flight 7C2216 made a belly-landing (touching down with landing gears retracted), overran the runway, smashed into the perimeter fence and burst into flames at the Muan International Airport in South Korea recently.

The twin-engine Boeing 737-800, arriving from Bangkok, had 175 passengers and six crew members onboard. Only two, both cabin crew members, survived the deadliest air crash in South Korea.

What could have gone wrong?



Belly-landing

Belly-landings are risky and carried out only in an emergency. With the landing gear up, the wings are very close to the ground when an aircraft touches down. Therefore, the wings must be held absolutely 'level' (parallel to the ground). With even a slight left or right bank either by the pilot or a strong gust of wind, a wing could hit the ground, flip the jet, send it cartwheeling or break it apart.

Even if the landing goes well and everyone walks out alive, a belly-landing results in considerable damage to the plane, its engines and wings as the aircraft skids to a stop and can leave those onboard injured. The friction generated by the aircraft skidding on the runway can also create sparks or result in a fire.

A cockpit crew decides to land an aircraft on its belly in the following situations:

1. Landing gear fails to deploy.
2. A stricken aircraft cannot make it to an airport and landing is done in a field. The pilot considers skidding the aircraft to a stop safer than touching down on wheels.
3. Ditching: when an aircraft makes an emergency landing on water.
4. Any other situation a pilot considers a belly-landing safer than landing on wheels.

That said, there have been incidents where pilots, task-saturated or distracted during the extremely busy phase of landing, simply forgot to deploy the landing gear and landed aircraft on their belly. Pilots are also humans and fallible.

Landing gear fails to deploy

Jeju Air flight 7C2216's pilots were warned by the air traffic controller (ATC) on duty at Muan of the presence of birds in the airport's vicinity and possibility of a bird strike (birds colliding with the aircraft). Minutes later, the pilots declared a Mayday and were cleared to land from the opposite direction, a BBC report said.

"Cleared to land from the opposite direction" possibly means ATC cleared flight 7C2216 to land from a direction opposite of what the crew planned.

A runway has two ends. Let's say a flight is cleared to land from a specific end of the runway but later, ATC requests the crew to land from the other end. ATC can make such a request for several reasons. In the Jeju Air crash, the crew had declared an emergency and needed to land at the earliest.

Why the pilots declared an emergency is not known yet. It has been speculated that the Boeing 737's landing gear failed to deploy. Experts have questioned the theory. Rightly so.

Bird ingestion can disable an aircraft's engines, dent the aircraft's skin, damage navigation / communication antennas fitted around the aircraft or break the windshield / window glasses in rare cases. But a bird strike damaging an aircraft's retracted landing gear — retracting into bays locked by hydraulically operated doors in flight — is unlikely.

Moreover, if a crew decides to carry out a belly-landing at an airport, there is a procedure for it. Fire trucks and emergency services must be ready to respond to a possible fire or evacuate passengers and crew after the aircraft comes to a stop. Foaming the runway with a chemical before belly-landings to suppress sparks and fire, which was in practice decades ago, is no longer required.

In the Jeju Air crash, it's unlikely the landing gear malfunctioned and failed to deploy.
A more likely possibility is Jeju Air's crew decided to carry out a belly-landing because they considered it safer than landing with the gear down. Why?

Landing long and fast

'Landing long and fast' is an aviation term that means an aircraft touches down far beyond the designated touchdown zone on the runway, leaving the crew with less runway length to stop the aircraft, and at a speed far exceeding the recommended landing speed.

From videos of the crash, the Boeing 737 appears to land 'long and fast'. Experts and officials quoted by news reports too have said so.

It is possible that at some point during the approach, the Captain realised this: That the jet was coming in 'long and fast' and that they were going to 'overshoot', that is land far beyond the touchdown zone. A go-around — calling off the approach — was perhaps not possible. The Captain must have decided that landing on the belly was safer, offering better chances to stop the aircraft within the runway than landing on wheels. It's only a conjecture but what actually went wrong will be known only from the official investigation report.

Why did the jet come in fast?

A passenger on flight 7C2216 texted a relative that a bird was stuck in the wing, according to Reuters and BBC reports, the clearest clue yet that the aircraft was hit by a bird or a flock of birds. Just how many birds and what type of bird, small or big, we don't know yet. Did a bird get stuck in the wing, or was it many birds, and in what part of the wings were they stuck?

For landing, a pilot uses slats and flaps, retractable surfaces on the front and back of wings. You can see them from a passenger window, in extended position before landing. An aircraft needs to be slowed before landing but, at slower speeds, the wings cannot generate sufficient 'lift' — the upward, aerodynamic force generated by the wings that keeps a plane aloft. At slower speeds, the wings need help to generate extra 'lift'. This extra 'lift' comes from the slats and flaps.

One of the possibilities investigators will examine is whether birds stuck in critical areas of the wings prevented the Jeju Air crew to deploy flaps before landing. If the crew was unable to extends the flaps, then landing at a slower and recommended speed was perhaps not possible. And the crew had no choice but execute a high-speed landing.

Here's why.

But first a line about 'stall'. A 'stall' is a condition when an aircraft stops flying forward and starts dropping from the sky like a stone. An aircraft can 'stall' if its nose is raised too high, which disturbs the smooth flow of air around the wings spoiling generation of 'lift'. An aircraft also 'stalls' at slow speeds, which again spoils generation of 'lift'.

Flaps & stall speed

With flaps, an aircraft's 'stall' speed is lower. Without flaps, an aircraft's 'stall' speed is higher. For example, suppose an aircraft's 'stall' speed with flaps is 80 knots. For the same aircraft, without flaps, the 'stall' speed could be 120 knots. So, with flaps extended, the plane won't 'stall' at speeds above 80 knots. But without flaps, a crew needs to fly the aircraft above 120 knots to prevent a 'stall'.

This perhaps explains why the Jeju Air Boeing came in fast.

Braking

Modern jets are slowed down in broadly three ways: Using thrust reversers, spoilers and wheel brakes.

* Thrust reversers: Once an aircraft touches down, the thrust from the engines is redirected in the reverse direction, slowing down the plane.

* Spoilers or speedbrakes: Mounted on the wing's surface and flushed during flight, the movable panels deploy after a plane lands, slowing it down with aerodynamic 'drag'.
* Wheel brakes: Conventional (operated by pilots) and auto brakes.

Modern jets are highly automated. For example, an aircraft's automation / computer might prevent auto brakes from deploying unless it 'senses' that the aircraft is in landing configuration, flaps are extended and the wheels are on the ground.

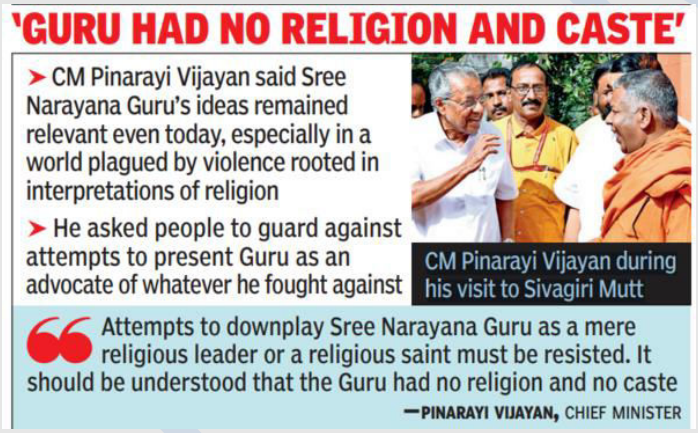
In the Jeju Air crash, investigators will look at what sort of braking was available to the crew with the landing gear retracted.

Last chance?
When they realised the Boeing 737 was not going to stop on the runway, did the crew try to swerve the plane into the huge, open space beside the runway and attempt a 180-degree turn using rudder? Perhaps, it was their last chance at survival. In the video, one can see flat, empty land on both sides of the runway.

Relevance: GS Prelims; Security Issues

2. Sivagiri row: what is the outrage about?

Introduction



Kerala Chief Minister Pinarayi Vijayan used the inaugural event of the 92nd Sivagiri pilgrimage at Varkala on December 31, 2024, to slam what he saw as attempts to appropriate social reformer Sree Narayana Guru into the Sanatana Dharma fold. The CM also seconded Sivagiri Madhom president Swamy Sachithananda's opinion that the regressive practice of making men remove their shirts before entering temples should be abandoned.

What happened?
Mr. Vijayan sought to equate Sanatana Dharma to the principles of Varnashrama Dharma which forms the bedrock of caste divisions in society. In his opinion, the attempt to portray Sree Narayana Guru as a champion of Sanatana Dharma ran counter to the renaissance leader's humanist message and his work to eradicate casteist oppression. He said that Sanatana Dharma, which commands the patronage of the powers that be, has resulted in the continuing oppression of Dalits, backward classes and minorities in rural areas of north India. The Bharatiya Janata Party was quick to react with former Union Minister V. Muraleedharan

accusing the CM of insulting Sanatana Dharma in a manner similar to Tamil Nadu Deputy CM Udhayanidhi Stalin.

Kerala Pradesh Congress Committee (KPCC) President K.Sudhakaran in a way echoed the CM's words when he spoke at Sivagiri. He said that attempts to tie down the Guru to Varnashrama Dharma have to be resisted. However, Opposition Leader V.D.Satheesan struck a discordant note, objecting to the CM's equating of Sanatana Dharma to Varnashrama Dharma. He accused the CM of attempting to give the patent of Sanatana Dharma, which is the collective tradition of all Indians, to the Sangh Parivar.

Why is Sivagiri Madhom important?

Sree Narayana Guru, who founded the Sivagiri Madhom over a century ago, is regarded as one of the foremost social reformers of Kerala, who played a key role in transforming a society steeped in casteism and untouchability into a progressive one with at least some levels of equality. In 1888, decades before temple entry movements and proclamations which allowed the oppressed castes entry into temples, Narayana Guru consecrated a Siva idol by the Aruvippuram river, in an effort to allow all castes to worship. When the consecration by a non-Brahmin led to opposition from various quarters, he explained that the idol was that of "Ezhava Siva, not a Brahmin Siva", referring to the Ezhavas, an oppressed caste.

Despite this statement which was meant as a counter to specific circumstances, Sree Narayana Guru propounded the wider and inclusive 'One Caste, One God, One Religion for mankind' philosophy. He established the Sree Narayana Dharma Paripalana Yogam (SNDP Yogam) in 1903 for the educational and social upliftment of oppressed castes. A decade later, he would disassociate from the SNDP Yogam, disappointed that the organisation was being reduced for the representation of just the Ezhavas. Sivagiri, established by the Guru, is now a major pilgrimage centre for Ezhavas.

Why are political parties eager to court the Sivagiri seers?

The Ezhava community, classified as an Other Backward Caste constituting 23% of Kerala's population, are considered as traditional voters of the Communist Party of India (Marxist)-led LDF, with part of the votes going to the UDF. However, with the BJP's ascendancy in 2014, the Sangh Parivar has been making overtures to the community, and by extension to Sivagiri, as part of its larger strategy to make inroads into Kerala, which has remained electorally almost impenetrable to the BJP until recently. This has led to the Left as well as the Congress launching a counter-strategy to what they see as attempts to appropriate Narayana Guru and the Ezhava community into the larger Hindutva fold.

After the recent Lok Sabha elections, in which the LDF suffered a major defeat and the BJP made gains in left strongholds, the CPI(M) attributed the rightward drift in the backward-class Ezhava votes to the BJP as one of the major factors in its defeat. SNDP Yogam general secretary Vellappally Natesan stated that the Ezhava community had abandoned the LDF in the Lok Sabha elections in protest against the appeasement of minorities.

What is Sivagiri Madhom's stance?

The Sivagiri Madhom has always tried to maintain a considered, equidistant stance from all parties. At the annual Sivagiri pilgrimage, leaders of parties from across the political spectrum are accorded an opportunity to address the pilgrims. In recent years, Prime Minister Narendra Modi, Home Minister Amit Shah, Congress leaders Sonia Gandhi and Rahul Gandhi have addressed the pilgrims. Even as the SNDP Yogam hailed the consecration of the Ram temple, Swamy Sachithananda decided to stay away from the Ayodhya consecration ceremony. The Madhom leadership has used its influence to raise its voice against the "Brahmanical dominance" in priesthood in major temples, criticising the limiting of the post of priests in major temples to the Brahmin community. Aware of the political heft of the community, the Madhom has held its cards close to its chest. This stand is not expected to change anytime soon.

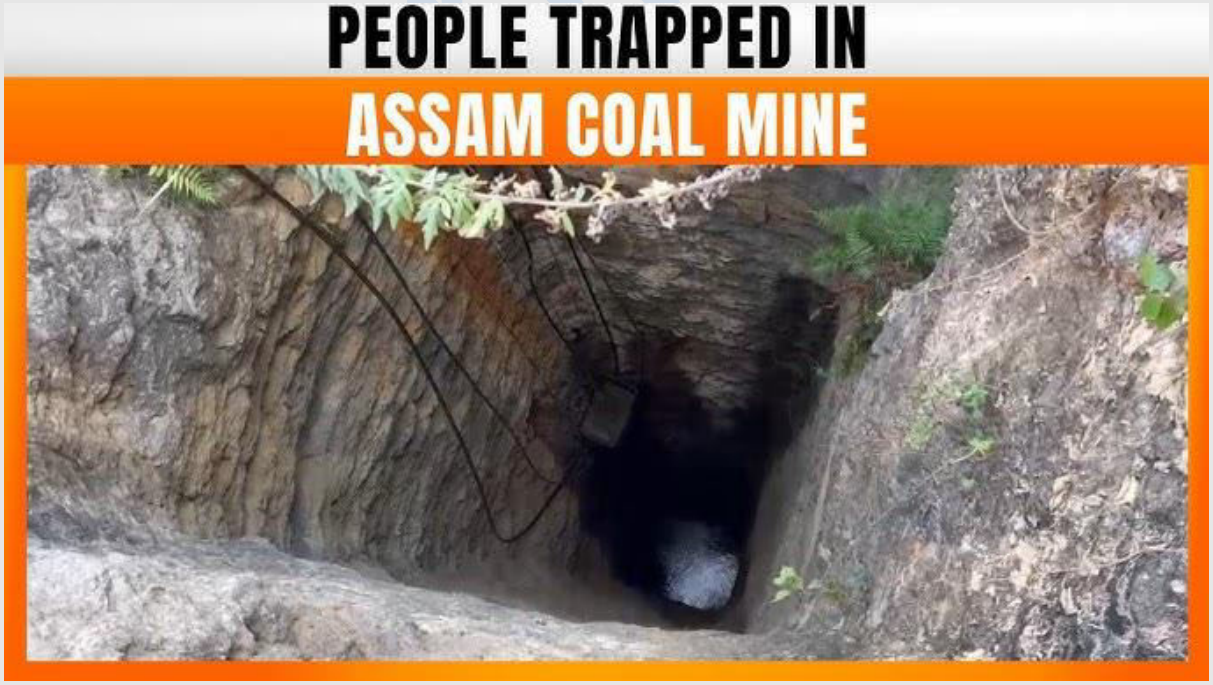
Relevance: GS Prelims; History and Culture
Source: The Hindu

3. Several workers stuck in a coal mine in Assam: What is 'rat-hole' mining?

Introduction

Several workers have been trapped for more than 12 hours in a coal "rat-hole" mine after it was flooded with water on January 6 morning in Dima Hasao district of Assam.

The rescue operations have been taking place at a slow pace, with two motor pumps working to remove water flooded into the pit of the mine, reported to be a few hundred feet deep.



Assam's Chief Minister Himanta Biswa Sarma said the National Disaster Relief Force and the State Disaster Relief Force are on their way to the site to aid in rescue efforts. He also said the Army's assistance has also been requested.

What is 'rat-hole' mining?

Rat-hole mining is a method of extracting coal from narrow, horizontal seams, prevalent in Meghalaya. The term "rat hole" refers to the narrow pits dug into the ground, typically just large enough for one person to descend and extract coal.

Once the pits are dug, miners descend using ropes or bamboo ladders to reach the coal seams. The coal is then manually extracted using primitive tools such as pickaxes, shovels, and baskets.

OP Singh, professor of environmental studies at North Eastern Hill University (NEHU) in Shillong, told The Indian Express in 2018 that rat-hole mining is broadly of two types. "In the side-cutting procedure, narrow tunnels are dug on the hill slopes and workers go inside until they find the coal seam. The coal seam in the hills of Meghalaya is very thin, less than 2 m in most cases," he said.

In the other type of rat-hole mining, called box-cutting, a rectangular opening is made, varying from 10 to 100 sqm, and through that a vertical pit is dug, 100 to 400 feet deep. Once the coal seam is found, rat-hole-sized tunnels are dug horizontally through which workers can extract the coal.

What are the environmental and safety concerns?

Rat-hole mining poses significant safety and environmental hazards. The mines are typically unregulated, lacking safety measures such as proper ventilation, structural support, or safety gear for the workers. Additionally, the mining process can cause land degradation, deforestation, and water pollution.

This method of mining has faced severe criticism due to its hazardous working conditions, environmental damage, and numerous accidents leading to injuries and fatalities. Despite attempts by authorities to regulate or ban such practices, they often persist due to economic factors and the absence of viable alternative livelihoods for the local population.

When was it banned, and why?

The National Green Tribunal (NGT) banned the practice in 2014, and retained the ban in 2015. The NGT observed, "It is also informed that there are umpteen number of cases where by virtue of rat-hole mining, during the rainy season, water flooded into the mining areas resulting in death of many... individuals including employees/workers."

The order was in connection with Meghalaya, where this remained a prevalent procedure for coal mining. The state government then appealed the order in the Supreme Court.

Relevance: GS Prelims; Disaster Management
Source: Indian Express

4. Tibet earthquake leaves 95 dead: Why is the Himalayan zone seismically active?

Tibet Earthquake News

An earthquake measuring around 7 on the Richter scale hit Tibet on Tuesday (January 7), killing around 100 people and damaging about 1,000 houses. Its epicentre was about 75 kilometres northeast of Mount Everest and close to Nepal, but no major damage was reported there.

According to the United States Geological Survey, 10 earthquakes of at least magnitude 6 have occurred in the area over the past century. This frequency results from the unique movements of tectonic plates that make up the Earth's crust.

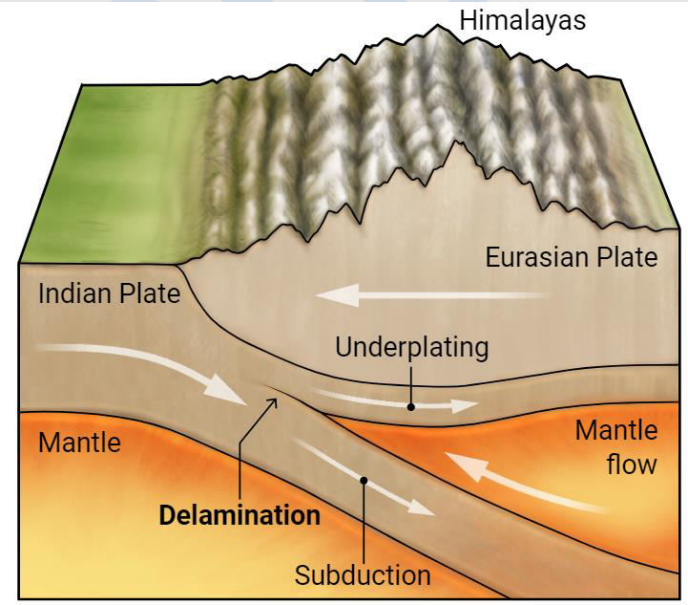
First, how do earthquakes happen?

The entirety of Earth's outermost surface (the crust and the upper mantle) is composed of 15 major and minor plates. Earthquakes are a result of movement along faults, which are breaks in the tectonic plates.

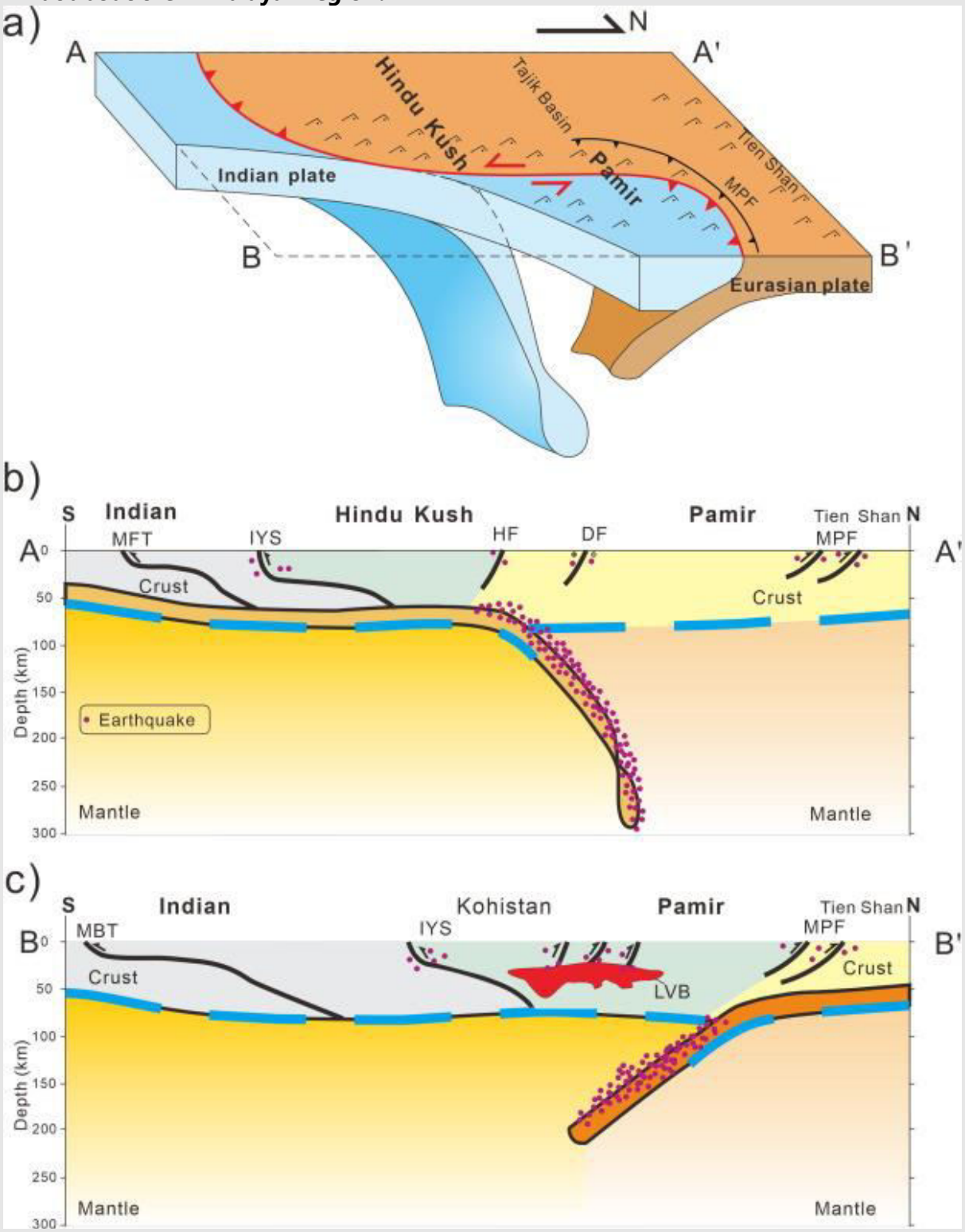
The USGS website notes, "The tectonic plates are always slowly moving, but they get stuck at their edges due to friction. When the stress on the edge overcomes the friction, there is an earthquake that releases energy in waves that travel through the earth's crust and cause the shaking that we feel."

In 2023, for instance, a major earthquake in Turkey happened due to interactions between the African, Eurasian, and Arabian plates. The Arabian plate is known to be pushing northward, leading to a slight westward movement for the Anatolian plate, where Turkey is located.

Plates move because of the processes happening deep underneath the Earth's surface. For one, temperature and pressure rise as one goes deeper, resulting in convection currents of varying intensity circulating throughout the mantle.



What about the Himalayan region?



The Himalayan Mountain range began forming around 40 to 50 million years ago when the Eurasian and Indian plates first began pushing into each other. As both plates were of a similar density, their point of collision resulted in the uplifting of land.

Over time, the continued stretching of the Eurasian plate led to its subsidence, that is, it slipped underneath the Indian plate. This process continues today. According to the USGS, "Seismicity in the Himalaya dominantly results from the continental collision of the India and Eurasia plates, which are converging at a relative rate of 40-50 mm/yr."

At least five earthquakes of magnitude greater than 7 have struck the Hindu Kush region since 1950. This region has a peculiar tectonic formation. While the Indian plate is getting under the Himalayas, a phenomenon that is occurring all along the Himalayan range, the Eurasian plate is getting subducted under the Pamir mountains. In addition, there are several other fault lines. This is the convergence point for several seismic forces.

Threat of future earthquake

The western Himalayas are one of the most dangerous seismic zones in the world. Scientists have long said that the larger region spanning 2,500 km from the Hindu Kush to Arunachal Pradesh is due for a big quake, of magnitude over 8. A huge amount of energy is stored along the faultlines due to the continuous interaction of tectonic plates — which can be released only in the form of a massive quake.

A 2017 study ('Implications for elastic energy storage in the Himalaya from the Gorkha 2015 earthquake and other incomplete ruptures of the Main Himalayan Thrust') published in Quaternary International found that only two Himalayan earthquakes in the past 500 years have ruptured to the surface.

Its lead author Roger Bilham told National Geographic, "What that means is, there's a whole bunch of regions that I call 'reservoirs of elastic energy' that are sitting there waiting to go". Given the unpredictability of earthquakes, the potential damage from such an event could be significant.

Relevance: GS Prelims & Mains Paper III; Disaster Management
Source: Indian Express

5. The Mystery of the Indus Script: Over 100 Failed Attempts

Introduction to the Indus Script

Tamil Nadu Chief Minister M.K. Stalin has announced a $1 million prize for deciphering the enigmatic script of the Indus Valley Civilisation. This script has puzzled experts for over a century since Sir John Marshall's discovery of the Bronze Age culture that thrived between 3300 and 1300 BCE. Despite over 100 documented attempts by archaeologists, linguists, and historians, the script remains undeciphered.

New Study Suggests Connections to Tamil Nadu

Stalin's announcement follows a study by Tamil Nadu's Department of Archaeology, which identified parallels between more than 90% of graffiti marks found on pot shards in Tamil Nadu and the Indus script. The study analyzed 15,000 pot shards from Tamil Nadu and 4,000 Indus Valley artifacts, identifying 42 base signs, 544 variants, and 1,521 composite forms.

Features of the Indus Script

The Indus Valley Civilisation (2600–1900 BCE) was a sophisticated urban culture spanning 800,000 sq km across present-day Pakistan and parts of India.

• Inscriptions and Symbols: Seals and terracotta tablets from Indus sites feature human, animal motifs, and symbols believed to represent a script. However, scholars disagree on the number of symbols, with estimates ranging from 62 (S.R. Rao) to 676 (Bryan K. Wells).

• Scholarly Disagreements: Key debates revolve around the script's structure, its linguistic roots, and the possibility of it representing a full language.

Debates Over the Language

Efforts to link the Indus script to Sanskrit, often part of a nationalist narrative, have been controversial.

• Rao's Sanskrit Theory: Archaeologist S.R. Rao argued that the script was a precursor to Sanskrit, challenging the Indo-Aryan migration theory.
• Parpola's Dravidian Hypothesis: Finnish Indologist Asko Parpola, however, concluded that the script had Dravidian roots. He proposed that the Indus script was a logosyllabic system, where symbols like the fish sign represented homophones (e.g., "fish" and "star" in Dravidian languages).

Is It a Script at All?

In the early 2000s, some scholars questioned whether the Indus script was a language-based system.
• Non-Linguistic Symbols Hypothesis: A 2004 paper by Steve Farmer and colleagues argued that the symbols represented nonlinguistic political or religious markers.
• Criticism and Counterarguments: This claim was criticized, with Parpola and others pointing out that short inscriptions are not unique to the Indus script (e.g., Egyptian hieroglyphs).
• Alternative Views: Recent studies suggest the symbols might have served as a hallmarking or commercial system rather than a script for recording language.

The Importance of Deciphering the Script

While the script might primarily provide commercial information, its decipherment could offer valuable insights into the Harappan economy and society.
• Commercial Records: Similar to how deciphering Linear B revealed ancient Greek palace records, the Indus script could shed light on trade, taxation, and governance in the civilisation.

Conclusion
The Indus script remains one of archaeology's greatest unsolved mysteries. Whether a language-based script or a system of symbols, its decoding could transform our understanding of the Indus Valley Civilisation and its cultural and economic practices.

Relevance: GS Prelims & Mains Paper I; Culture
Source: Indian Express

6. Tragic Incident and Retaliation by Maoists

Introduction

On January 6, 2025, suspected Maoists carried out a devastating attack in Bijapur, Chhattisgarh, killing nine individuals, including eight District Reserve Guards (DRG) and a driver. This comes as a significant blow to security forces, marking the first major Maoist retaliation in over 18 months. The attack occurred during the return journey from an operation in the Abujhmad region, where five Maoists were killed in an earlier encounter.

SOPs for Safety in Maoist Zones
Security forces operating in Maoist-dominated areas follow specific Standard Operating Procedures (SOPs) to minimize risks:
1. Avoiding Vehicle Use: Preference for cross-country foot or bike movements.
2. Unpredictable Movements: Avoid returning via the same route.

3. Road Safety Measures: Deployment of trackers and Road Opening Parties (ROP) ahead of convoys.
4. Secrecy and Alertness: Maintaining operational secrecy and vigilance.
5. Use of Civilian Vehicles: To reduce visibility and risk.
6. Intelligence Support: Reliance on local and technical intelligence, including UAVs.

Historical Errors and Their Consequences
Repeated lapses in SOP adherence have led to ambushes and high casualties:
• 2010 Chintalnar Massacre: A convoy returning via the same route faced a 300-strong Maoist ambush, resulting in 76 deaths.
• 2013 Jhiram Ghati Attack: Failure to conduct a road opening exercise led to 27 deaths, including top political leaders.
• 2017 Bheji Attack: An ROP team was ambushed, killing 13 personnel.
• 2018 Sukma Attack: Ignoring warnings of Maoist presence, a convoy was attacked with a powerful IED, killing nine CRPF personnel.
• 2023 Dantewada Ambush: Signs of an empty village and absent locals were overlooked, leading to a deadly IED attack.

Limitations of Mine-Protected Vehicles (MPVs)
MPVs, designed for urban warfare, offer limited protection against Maoists' powerful IEDs, often using 20-70 kg of explosives. High-energy blasts can still cause fatalities due to concussions or structural failures of MPVs.

Maoists' Preparation and Tactics
Maoists leverage:
• Local Networks: Utilizing villagers for intelligence and logistical support.
• IED Deployment: Rigging roads with IEDs buried months in advance or placed swiftly.
• Meticulous Planning: Effective use of intelligence to target security forces.

Abujhmad: The Unyielding Maoist Stronghold
Covering 4,000 sq km in Bastar, Abujhmad remains a core Maoist stronghold due to:
• Challenging Terrain: Dense forests and hills.
• Administrative Vacuum: Lack of roads and state presence in 90% of the area.
• Strategic Location: A transit corridor linking Maoist bases across states.
This region serves as both a safe haven and a base for Maoist operations, underscoring the complexities of addressing insurgency in Central India.

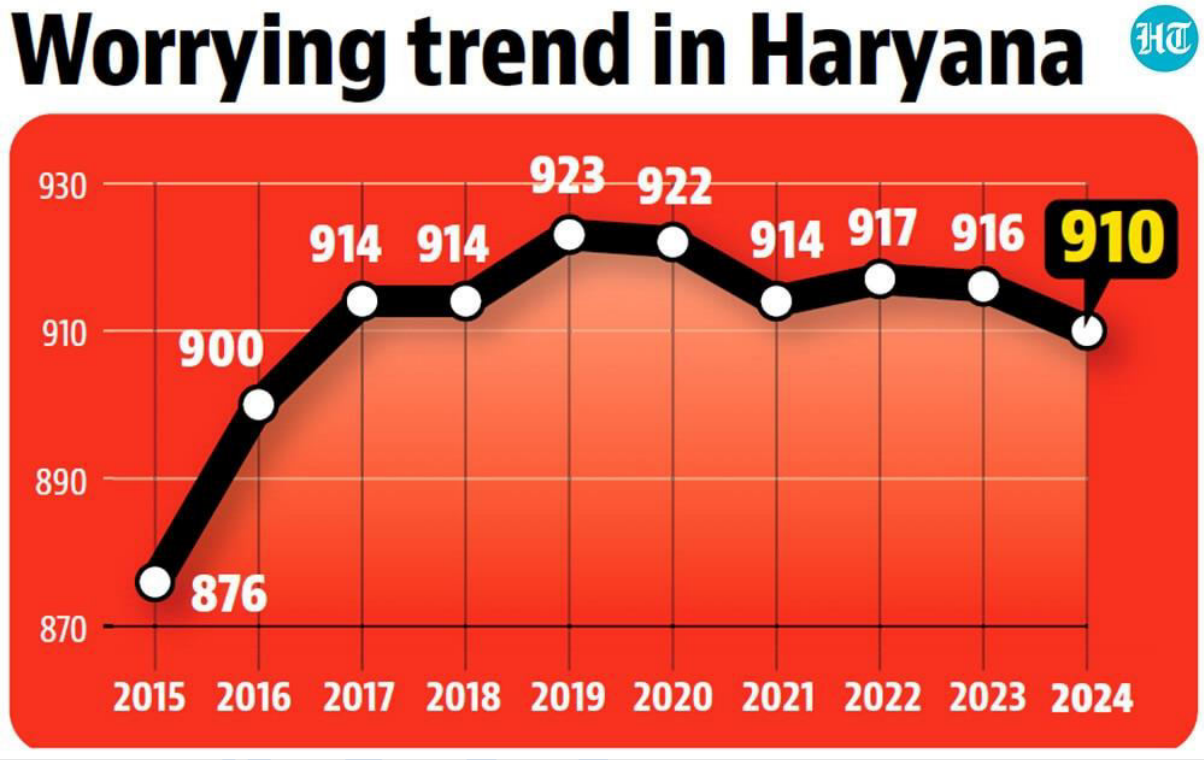
Relevance: GS Prelims & Mains Paper III; Internal Security
Source: Indian Express

7. Why the sex ratio in Haryana dropped to an eight-year low in 2024

Introduction

After peaking at 923 in 2019, the sex ratio at birth in Haryana dropped to 910 in 2024, an eight-year low. The numbers have worried activists and members of the civil society in Haryana, although authorities have termed the latest figures as a "slight fluctuation".

The sex ratio is the measure of the number of females per 1,000 males in a given population. It serves as a crucial yardstick to measure gender equality, and directly mirrors the status and well-being of women in a society. According to the National Health and Family Survey-5 (NFHS-5), which was published in 2021, the overall sex ratio at birth in India was 929.



A setback for Haryana

Of the 516,402 children born in Haryana in 2024, 270,354 (52.35%) were boys, while 246,048 (47.64%) were girls, giving a sex ratio of 910 girls per 1,000 boys born. For a state which over the past decade has made significant improvements in this metric, this is a setback.

In 2014, the sex ratio in Haryana was just 871. This triggered a massive nationwide outcry, and set off a concerted effort by civil society organisations, the state government, and the Centre to improve the situation. In January 2015, Prime Minister Narendra Modi launched his signature 'Beti Bachao, Beti Padhao' campaign at Panipat.

The efforts of the government and the civil society bore fruit, with the sex ratio at birth in Haryana climbing steadily after 2014. It touched 900 in 2016, and peaked at 923 in 2019. Since then, however, the sex ratio has once again seen a downward trajectory overall, with the biggest dip coming in 2024 when it fell from 916 (in 2023) to 910.

The setback comes at a time when women from the state are excelling in sports, including at international platforms, as well as in academics.

Loosening enforcement

The gains made between 2014 and 2019 came due to the strict enforcement of the Pre-Conception and Pre-Natal Diagnostic Techniques Act, 1994 (PNDT Act) coupled with an intense awareness campaign. This was aimed to curb pre-natal sex selection and female foeticide, which were rampant in Haryana, while simultaneously changing social attitudes which saw families prefer boys, and look at a girl child as a burden.

Activists say more needs to be done to change attitudes, and in recent years, enforcement of laws aimed towards curbing female foeticide has loosened.

According to social activist Sunil Jaglan, the founder of the 'Selfie With Daughter' campaign, the rich and influential continue to avail sex determination services, and sex selective abortions, which have gotten more expensive. This is especially the case in areas bordering the neighbouring states of UP, Delhi, Punjab, and Rajasthan. Haryana government figures reveal that nearly a third of the more than 1,200 FIRs lodged under the provisions of the PNDT Act in the last ten years were registered after the inter-state raids.

Jaglan also pointed to a new phenomenon in the state, of having "only [one] boy". "The concept of 'only boy' was not a popular phenomenon until now, but a section of the families have started opting for it due to the decreasing land holdings," Jaglan said.

Shakuntala Jakhar, the Haryana state president of the All India Democratic Women Association (AIDWA) said that many families are choosing to have only one boy due to increasing inflation, which makes nurturing multiple children expensive. She said that the focus has to be on working towards changing attitudes. She said that the government and the society at large must discourage expensive marriages, to curb the dowry system which makes families look at girl children as a burden.

Government's perspective

State authorities, however, term the latest dip as a "slight fluctuation", and point to the fact that the state's sex ratio has improved significantly over the last 10 years.

"The state's gender ratio improved from 871 in 2014 to 916 in 2023," Chief Minister Nayab Singh Saini told the media. "Haryana is now recognised as a state that empowers daughters rather than one that suppresses them, marking a true tribute to Mata Savitribai Phule," he said. State officials emphasised that more than 4,000 people have been arrested, including doctors, quacks, and touts, in 1,200-plus cases filed under the PNDT Act. They said that the government has worked relentlessly to ensure that the girl child is not seen as a burden, including providing a one-time sum of Rs 21,000 at the birth of a baby girl, and opening bank accounts for girls through the Sukanya Samriddhi Scheme. They also spoke about work that has gone into reducing dropout rates of girls and increasing secondary education enrolment — all factors

which are known to in the long term positively impact sex ratio, and the status of women in general.

The officials said that the skewed sex ratio in Haryana is linked to the mindset of people, and that the government is making efforts to change the same.

Relevance: GS Prelims & Mains Paper I; Indian Society
Source: Indian Express

8. President Murmu's invite for this year's Republic Day reception set to honour crafts from South

A Unique Celebration of Craftsmanship
To mark 75 years since the formation of the Republic of India, President Droupadi Murmu has introduced a unique twist to the customary "At Home" reception held at Rashtrapati Bhavan on Republic Day. This year, invitees will receive not just the traditional embossed invitation card featuring the Lion Capital of Ashoka but also a specially curated box showcasing the rich crafts of southern India.

Highlighting Southern States

The box celebrates the artistry of Tamil Nadu, Kerala, Karnataka, Telangana, and Andhra Pradesh. Each craft item reflects the region's cultural heritage and aligns with the themes of sustainability and India's 5,000-year civilizational history. The initiative was conceptualized by President Murmu and executed with support from the National Institute of Design (NID), leveraging its campuses in Ahmedabad and Bengaluru.

What's Inside the Box?

The invitation box is a work of art itself, made from bamboo weave and adorned with Kalamkari paintings by Nimmalakunta artisans. The box includes:

- Ikat-Pochampalli Cover: A reusable cover showcasing Telangana's weaving tradition.
- Ganjifa Art Fridge Magnet: Inspired by Mysore's traditional playing cards.
- Kanjeevaram Silk Pouch: A nod to Tamil Nadu's famous silk craftsmanship.
- Etikoppaka Dolls: Wooden toys representing Andhra Pradesh's cultural heritage.
- Screwpine Leaf Bookmark: Handwoven by artisans from Kerala.

Crafted with Care

The curation and crafting process involved NID's Bengaluru campus, with artisans from all five States contributing to this vibrant tribute. Ashok Mondal, Director of NID Ahmedabad, emphasized that the project embodies the "One District One Product" scheme and features items with GI (Geographical Indicator) tags.

This thoughtful initiative adds a meaningful touch to the Republic Day celebrations, celebrating the diversity and heritage of India's southern States.

Relevance: GS Prelims; Miscellaneous
Source: The Hindu

9. Kumbh Mela, explained: Its mythology, history, astrology, and why millions flock to it

Maha Kumbh Mela Mythology, History, Astrology

It is cold in Prayagraj, foggy with a chance of rain. Yet, tens of thousands are expected to arrive in the city, to camp on the banks of the Ganga. They will stay in tents and bathe in the river, the most devout taking a dip at dawn while stars are still twinkling.

Prayagraj is hosting the Maha Kumbh this time, or the Poorna Kumbh, held every 12 years. Many myths are prevalent around the Kumbh Mela, many theories about its exact origin. Some believe the festival finds mention in the Vedas and Puranas. Some say it is far more recent, going back barely two centuries. What is known for certain is that today, it is one of the largest gatherings of devotees witnessed anywhere on earth.

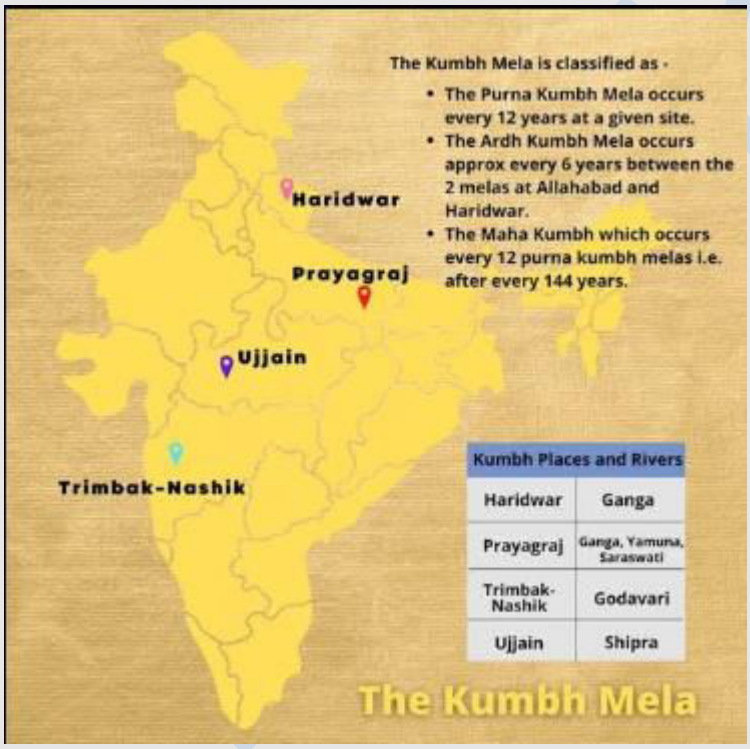
What is the Kumbh Mela, and why is it held in four cities periodically? What is Ardh Kumbh and Maha Kumbh? What is the origin of this festival, and why do millions attend it?

The answers, as in many questions about Hinduism, lie in a mixture of myths, history, and the enduring faith of an ancient people, trusting as much in the munificence of invisible deities as in tangible life-givers like rivers.

The mythological origins of the Kumbh Mela

The Sanskrit word kumbh means pitcher, or pot. The story goes that when Devas (gods) and Asuras (loosely translated as demons) churned the ocean, Dhanvantri emerged carrying a pitcher of amrita, or the elixir of immortality. To make sure the Asuras don't get it, Indra's son, Jayant, ran off with the pot. The Sun, his son Shani, Brihaspati (the planet Jupiter), and the Moon went along to protect him and the pot.

As Jayant ran, the amrita spilt at four spots: Haridwar, Prayagraj, Ujjain, and Nashik-Trimbakeshwar. He ran for 12 days, and as one day of the Devas is equal to one year of humans, Kumbh Mela is celebrated at these locations every 12 years, based on the relative positions of the Sun, the Moon, and Jupiter.



Prayagraj and Haridwar also hold the Ardh-Kumbh (ardh means half), every six years. The festival held after 12 years is called the Poorna Kumbh, or the Maha Kumbh.

All four places are located on the banks of rivers — Haridwar has the Ganga, Prayagraj is the sangam or meeting point of Ganga, Yamuna and the mythical Saraswati, Ujjain has the Kshipra, and Nashik-Trimbakeshwar the Godavari.

It is believed that taking a dip in these rivers during Kumbh, amid the specific alignment of the heavenly bodies, washes away one's sins and accrues punya (spiritual merit).

Kumbh Melas are also the venue where Sadhus and other holy men gather — the sadhu akhadaas attracting a lot of curiosity — and regular people can meet them and learn from them.

How is the site of a Kumbh Mela decided?
This depends on astrological calculations. Another reason for the 12-year gap in Kumbh Melas is explained by the fact that Jupiter takes 12 years to complete on revolution around the Sun. According to the Kumbh Mela website, when Jupiter is in Aquarius or Kumbh rashi (whose symbol is the water bearer), and Sun and Moon in Aries and Sagittarius respectively, Kumbh is held at Haridwar.

When the Jupiter is in Taurus, and the Sun and Moon are in Capricorn or Makar (thus, Makar Sankranti is also in this period) the Kumbh is held at Prayag.

When Jupiter is in Leo or Simha, and the Sun and Moon in Cancer, the Kumbh is held at Nashik and Trimbakeshwar, which is why they are also called the Simhastha Kumbh.

Debate over Kumbh Mela's history
Many cite the Skanda Purana as proof of the Kumbh Mela's antiquity. Yet others mention the Chinese pilgrim Xuanzang (Hiuen Tsang) describing a fair in Prayag in the seventh century.

Professor Girija Shankar Shastri, head of Banaras Hindu University's (BHU) Department of Jyotish, said, "No scripture can be definitively said to contain a reference to the Kumbh Mela as we know it today. While the Samudra Manthan is described in many books, the spilling of amrita at four places is not. The Skanda Purana is widely cited to explain the origins of the Kumbh Mela, but those references have not survived in the extant versions of the Purana."

What pilgrims do at Kumbh
While some come for only one ritual dip in the river to wash away sins, many, termed kalpwasi, stay at the riverbank, to take a break from the daily fight of earning material resources and earn spiritual credit instead. Many give daan, or donations of various kinds, here.

With any large crowd comes the chance of commerce, and the Mela has also served as a market crucial to local communities. Historically, there are records of Venetian coins and European toys being spotted at the Mela markets.

The various sadhu akhadaas set up camp. They go for baths, called shahi snan, in elaborate processions. In the past, tussle over which sadhu akhadaa is important enough to bathe first has led to bloody battles, so now, an order is generally pre-decided.

Relevance: GS Prelims; Miscellaneous
Source: Indian Express

10. Rat-hole mining: why the practice continues in spite of its hazards

Introduction

An oral question from the Supreme Court to the Union government continues to remain unanswered even as rescue workers recover bodies of workers who died trapped in a flood rat-hole coal mine at Dima Hasao district in Assam. On January 11, 2019, the top court had asked whether rat-hole mines could possibly operate in the northeast hills without the "connivance" of officials. "Lives are lost due to illegal mining. What about the officials who allowed this to happen?" the court had asked the government.

What is rat-hole mining?

Rat-hole mining, of two types, is so named as it involves digging tunnels 3-4 feet deep, barely allowing workers to crawl in and out. They have to squat while extracting coal with pickaxes. The side-cutting type of mining is usually done on hill slopes by following a coal seam — dark brown or black-banded coal deposited within layers of rock— visible from the outside. The second type called box-cutting entails digging a circular or squarish pit at least 5 sq. metre in width up to a depth of 400 feet. Miners who drop down in makeshift cranes or using rope-and-bamboo ladders dig horizontally after finding the coal seam. The tunnels are dug in every direction from the edge of the pit, resembling the tentacles of an octopus. Some workers from Assam lost their lives in the coal mines of Meghalaya, dug using this crude method, before and after the National Green Tribunal (NGT) banned it in April 2014.

Why is such mining banned?

The government has little control over the land in Meghalaya, a Sixth Schedule State where the Coal Mines Nationalisation Act of 1973 does not apply. The landowners are thus also the owners of the minerals beneath. Coal mining boomed after Meghalaya attained statehood in January 1972. However, the terrain and expenses involved discouraged mine owners from employing advanced drilling machines. So, labourers mainly from Assam, Nepal, and adjoining Bangladesh risked the hazards of rat-hole mining — asphyxiation because of poor ventilation, collapse of mines due to lack of structural support, and flooding — to earn thrice or four times as much as working in farms or construction sites.

Apart from issues of safety and health, unregulated mining led to land degradation, deforestation, and water with high concentrations of sulphates, iron, and toxic heavy metals, low dissolved oxygen, and high biochemical oxygen demand. At least two rivers, Lukha and Myntdu, became too acidic to sustain aquatic life. These factors led to the NGT banning rat-hole mining in Meghalaya in 2014 while observing: "...there is umpteen number of cases where, by virtue of rat-hole mining, during the rainy season, water flooded into the mining areas resulting in the death of many..." Illegal mining and transportation of coal, as mentioned in the interim reports of a one-man committee appointed by the High Court of Meghalaya, has continued despite the ban and the loss of lives. At least 17 miners were drowned in an illegal mine in the East Jaintia Hills district's Ksan in December 2018 after water gushed in from a river.

What led to the NGT ban?

Environmentalists and human rights activists began flagging the hazards of rat-hole mining in Meghalaya two decades ago. The campaign intensified after Impulse, a Meghalaya-based NGO, began addressing the issue of human trafficking and child labour in such mines.

Three reports prepared by the NGO, first with the Nepal-based Esther Benjamin Trust in May 2010, the second with Aide et Action in December 2010, and the last with Human Rights Now in July 2011, estimated that about 70,000 children mostly from Bangladesh and Nepal were employed in these mines because they were the right size to work in them. The State's Department of Mining and Geology refuted the claim but, under pressure from the National Human Rights Commission, admitted in June 2013 that 222 children were employed in rat-hole mines, specifically in the East Jaintia Hills district. The NGT ban came a year later.

What is the way forward?

Unlike in Chhattisgarh and Jharkhand, coal seams in Meghalaya are very thin. This, miners say, makes rat-hole mining more economically viable than opencast mining.

The State has an estimated reserve of 576.48 million tonnes of low-ash, high-sulphur coal belonging to the Eocene age (33-56 million years ago). The stakes for a section of locals have been so high that the State government has been under pressure to facilitate the resumption of mining legally.

In May 2023, Meghalaya Chief Minister Conrad K. Sangma said the Coal Ministry approved mining leases for four of the 17 prospective licence applicants. This would lead to the

commencement of 'scientific' mining ensuring minimal environmental impact through sustainable and legally compliant extraction procedures. Anti-mining activists, who are assaulted by miners off and on, said that 'scientific' would eventually be a fancy tag in a State where profit has driven coal mining.

Relevance: GS Prelims & Mains Paper III; Disaster Management
Source: The Hindu

11. Mahakumbh First Amrit Snan explained: What is it, why is it held on Makar Sankranti

Mahakumbh 2025 First Shahi Snan

January 14 was the first amrit snan or shahi snan at the Mahakumbh underway in Prayagraj. While the Kumbh Mela started on January 13, January 14 was the first of the ritual baths, in which sadhu akhadaas take the first dip after an elaborate procession to the river.

Shri Panchayati Akhara Mahanirvani and Shri Shambhu Panchayati Atal Akhara were the first ones to take the amrit snan, PTI reported. Thirteen akhadaas are participating in the Maha Kumbh.

After the sadhus, or holy men, thousands of devotees took the dip in the sangam (confluence of Ganga, Yamuna and the mythical Saraswati) at Prayagraj.

What is amrit snan?
The Kumbh Mela is held after every 12 years at Prayagraj, Haridwar, Nashik-Trimbakeshwar, and Ujjain, at the banks of the sangam, the Ganga, the Godavari, and the Kshipra rivers

respectively. It is believed that bathing in these rivers during the Kumbh washes away one's sins.

However, some dates during the Kumbh period are specially auspicious, depending on the alignment of planets, the Sun, and the Moon. The Kumbh Mela is attended by hundreds of sadhus, as part of their akhadaas or groups. Since this is a religious occasion, the sadhus are the "royalty" here, and thus they take the first dip. This ritual dip has traditionally been called the shahi snan or the royal bath. However, from this year, the bath is being called amrit snan. This is being seen as more in keeping with Hindu religious beliefs, as it is believed that Kumbh is celebrated at the four places where amrit, or the nectar of immortality, spilled after Samdura Manthan, or the churning of the ocean.

What is Makar Sankranti?
January 14 is Makar Sankranti, the day that the Sun moves into the Makar raashi or the zodiac Capricorn.

Whenever the Sun moves from one raashi to another, it is called a Sankranti, but Makar Sankranti is special. This is because this marks the movement of the Sun from the south to the north, heralding that the worst of winter is over and warmer, sunnier days lie ahead.

Makar Sankranti is also a harvest festival, similar to many celebrated in other parts of the country around this time. Taking a bath in a river on Makar Sankranti is believed to accrue spiritual merit, and if it coincides with the Kumbh, the benefits multiply manifold, it is believed.

What are the other important bathing dates in the Kumbh this time?
After Makar Sankranti on January 14 is Mauni Amavasya on January 29 and Vasant Panchami on February 3. Shiv Ratri, which falls on February 26, the last day of the Kumbh Mela, is also significant.

Relevance: GS Prelims; Miscellaneous
Source: Indian Express

12. India-Bangladesh Border Fencing Dispute

Recent Developments
• India Summons Bangladeshi Envoy: On January 13, New Delhi summoned Bangladesh's Acting High Commissioner, Nural Islam, regarding "security measures" at the border, including fencing activities.
• Bangladesh's Concerns: Dhaka expressed "deep concern" over recent actions by India's Border Security Force (BSF), alleging violations of a bilateral agreement.

Incidents at Malda and Mekhliganj

• Malda: Construction of a single-row fence (SRF) in Kaliachak No. 3 block prompted objections from Border Guards Bangladesh (BGB). Despite the intervention, BSF continued with the project.
• Mekhliganj: Villagers, supported by the BSF, attempted to fence the Bangladeshi enclave of Dahagram-Angarpota, citing the need to prevent cattle intrusion. BGB opposed the fencing.

Border Fencing Guidelines
• 1975 Agreement: Prohibits the construction of defensive structures within 150 yards of the zero line.
• India's Interpretation: India does not classify wire fencing as a defensive structure, unlike Bangladesh and Pakistan.
• Practical Challenges: Geographic constraints, such as villages and rivers near the border, necessitate fencing closer to the boundary in some areas.

Reasons for Bangladesh's Objections
1. Violation of 1975 Guidelines: Fencing within the restricted zone is perceived as a breach.
2. Impact on Residents: Fencing disrupts daily life for people living along the border.
3. Surveillance Concerns: Bangladesh objects to "smart fencing" with CCTV and electronic monitoring, fearing it enables India to monitor Bangladeshi territory.

India's Justifications
• Curbing Crimes: BSF argues fencing is crucial to prevent trans-border crimes, including cattle smuggling.
• Negotiation Efforts: India coordinates with Bangladesh in specific cases where exceptions to the 1975 guidelines are necessary.

Conclusion
The India-Bangladesh border, shaped by historical complexities, remains a contentious issue. While India views fencing as essential for security and crime prevention, Bangladesh raises concerns about sovereignty and resident inconvenience, requiring continued dialogue to address the disagreements.

Status of fencing
According to India's Ministry of Home Affairs data, along the India-Bangladesh border, covering all eastern states including West Bengal, 3,141 kilometers have been fenced out of a total of 4,156 km.

In 2023, during the hearing of petitions challenging Section 6A of the Citizenship Act related to grant of Indian citizenship to illegal immigrants in Assam, the Centre had told the Supreme Court that the India-Bangladesh border fencing project had been hindered due to non-cooperation from West Bengal and pending land acquisition in the state. West Bengal shares a 2,216.7 km border with Bangladesh, on which 81.5 per cent fencing had been done as of 2023 at the time of the Supreme Court hearing.

There are small patches of unfenced land, which are pending due to objections from villagers, the terrain, or ongoing negotiations with Bangladesh. More than 900 km of the entire border along the five eastern states, including West Bengal, is riverine. Fencing is not possible on water, so these parts are guarded by BSF's water wing.

Relevance: GS Prelims & Mains Paper III; Internal Security
Source: The Hindu

13. INS Nilgiri, INS Surat and INS Vaghsheer commissioned: Three cheers for Indian Navy

Introduction
Three frontline combatants — INS Nilgiri, lead ship of the Project 17A stealth frigate class, INS Surat, fourth and final ship of the Project 15B stealth destroyer class, and INS Vaghsheer, sixth and final submarine of the Scorpene-class project — were commissioned in the Indian Navy at the Naval Dockyard in Mumbai.

INS Nilgiri
The Nilgiri-class stealth frigate, built under the codename Project 17A, is a follow-on vessel of the Shivalik class or Project 17 frigates that are currently in service.

INS Nilgiri is the first of seven frigates in Project 17A being built by Mazagon Dock Shipbuilders Limited (MDL), Mumbai, and Garden Reach Shipbuilders and Engineers (GRSE), Kolkata. This class of ships has an "integrated construction" philosophy, which involves extensive pre-outfitting at the block stages to reduce overall building periods.

The multi-mission frigates are capable of operating in a "blue water" environment — in the deep seas far from the coast — and deal with both conventional and non-conventional threats.

With their versatile weapons and capabilities, these ships can play a crucial role in anti-surface, anti-air, and anti-submarine warfare.

The ships are fitted with a supersonic surface-to-surface missile system, a Medium Range Surface-to-Air Missiles (MRSAM) system, a 76 millimetre upgraded gun, and a combination of rapid-fire close-in weapon systems.

The keel of INS Nilgiri was laid on December 28, 2017, and the ship was launched into water on September 28, 2019. It sailed out for maiden sea trials in August last year, and underwent a comprehensive schedule of trials in harbour and at sea, leading up to its delivery to the Navy on December 20 last year.

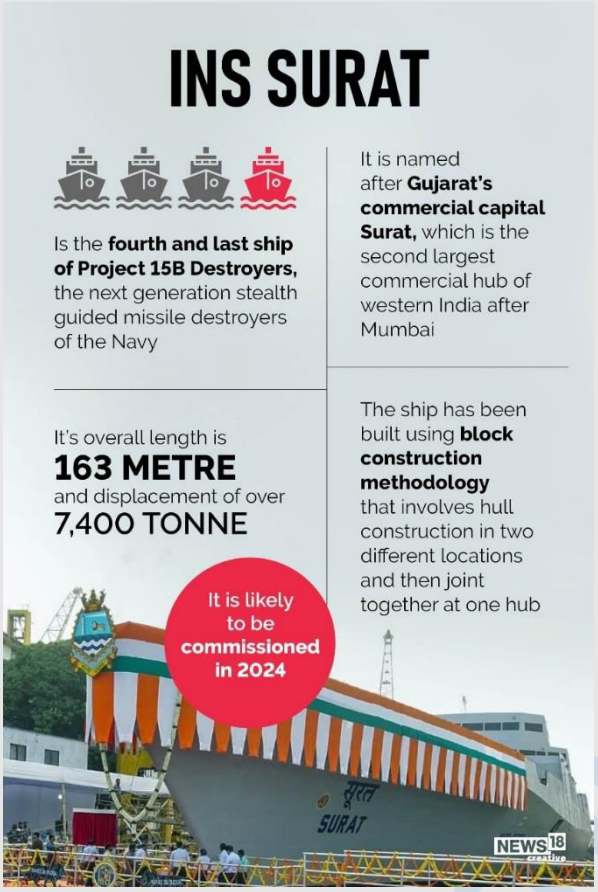
The other six ships of this class — Himgiri, Taragiri, Udaygiri, Dunagiri, and Vindhyagiri — are at various stages of construction at MDL, Mumbai, and GRSE, Kolkata.

INS Surat

The fourth and final stealth guided missile destroyer under Project 15B follows INS Visakhapatnam, INS Mormugao, and INS Imphal, which were commissioned over the past three years.

INS Surat is the Indian Navy's first AI (artificial intelligence) enabled warship, which will utilise indigenously developed AI solutions to enhance its operational efficiency manifold.

Over the past decade, guided missile destroyers of the Kolkata class built under the project codenamed 15A — INS Kolkata, INS Kochi, and INS Chennai — have been commissioned into the Navy.



To build an advanced variant of the Kolkata class, a contract for the construction of four more guided missile destroyers under the project codenamed 15B was signed in January 2011.

Designed by the Warship Design Bureau, the Indian Navy's in-house warship design unit, and built by MDL, the four ships under Project 15B are named after major cities in the four corners of the country.

Destroyers are a category of warships that have high speed and manoeuvrability, greater strike capability, and longer endurance, because of which they are a key asset in various types of naval operations, mainly offensive.

With their modern sensors and communication facilities, these ships are a key asset in "network-centric" warfare, in which information technology and computer networking tools are used to form networks of various force elements that are in play in conflict scenarios.

A guided missile destroyer with a displacement of 7,400 tonnes and overall length of 164 metres, INS Surat is a potent and versatile platform equipped with state-of-the-art weapons and sensors, including surface-to-air missiles, anti-ship missiles, and torpedoes.

Powered by a Combined Gas and Gas (COGAG) propulsion set comprising four gas turbines, it has achieved speeds in excess of 30 knots (56 km/h) during sea trials.

INS Vaghsheer

INS Vaghsheer is the sixth and final submarine of the modern stealthy Kalvari class built under Project 75.

The design of the Kalvari class of submarines is based on the Scorpene class designed and developed by the French defence major Naval Group (formerly DCNS), and the Spanish state-owned entity Navantia.

They have diesel electric transmission systems, and are primarily "attack" or "hunter-killer" submarines — which means they are designed to target and sink adversary naval vessels.

According to officials, this is one of the world's most silent and versatile diesel-electric class of submarines. It is designed to undertake a wide range of missions, including anti-surface

warfare, anti-submarine warfare, intelligence gathering, area surveillance, and special operations.

The submarines are armed with wire-guided torpedoes, anti-ship missiles, and advanced sonar systems, and feature modular construction that allows for future upgrades such as the integration of Air Independent Propulsion (AIP) technology.

The AIP systems, which significantly enhance the submerged endurance of a diesel electric submarine, are expected to be installed on this class of submarines from 2026 onward.

The submarines in the current Kalvari class take their names from now-decommissioned classes of submarines named Kalvari — including Kalvari, Khanderi, Karanj — and the Vela class, which included Vela, Vagir, Vagshir. The erstwhile Kalvari and Vela classes were one of the earliest submarines of the Indian Navy after Independence, which belonged to the Soviet-origin Foxtrot class of vessels.

Vaghsheer is named after a type of sandfish found in the Indian Ocean.

Three vessels together

Prime Minister Narendra Modi, who presided over the commissioning ceremony, said that for the first time, a destroyer, a frigate, and a submarine were joining the Indian Navy together. "It is a matter of pride that all the three frontline platforms are made in India," he said.

A Navy veteran said: "If we consider the journeys of these three categories of ships, the time taken from the drawing board design to the commissioning is anywhere between 10 and 15 years. Which means that work on the ships that were commissioned today started that long ago."

The Navy veteran said the addition of these three vessels was "a step towards achieving the force level required for the Navy to be a formidable deterrent against any regional threats, and to bolster India's strategic maritime influence in the Indian Ocean Region and beyond".

In his speech at the commissioning ceremony, the PM said: "India has emerged as the first responder in the Indian Ocean Region."

The Indian Navy has in recent times saved hundreds of lives and secured national and international cargo worth thousands of crores, increasing global trust in India, the Indian Navy, and the Coast Guard, the Prime Minister said.

The PM emphasised the dual importance of commissioning of the three ships from both the military and economic perspective.

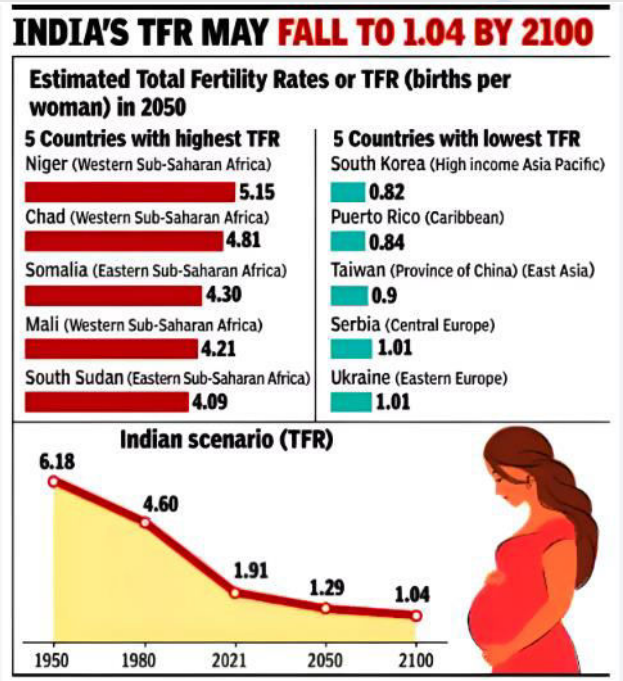
Relevance: GS Prelims; Internal Security
Source: The Indian Express

14. Why are fertility levels declining in India?

Introduction

A comprehensive demographic analysis of global fertility in 204 countries and territories from 1950-2021 has found that fertility is declining globally and that future fertility rates will continue to decline worldwide, remaining low even under successful implementations of pro-natal policies.

What has it noted about India?



The Global Burden of Diseases, Injuries, and Risk Factors Study (GBD) 2021, noted that India has moved from a fertility rate of 6.18 in the 1950s to a Total Fertility Rate (TFR) of 1.9 in 2021. This, it pointed out, was below the replacement fertility level of 2.1 (which is the average number of children a woman should have to replace herself and her generation, for population stability). The GBD study projected that the TFR could fall further to 1.04 — barely one child per woman — by 2100.

The steep fall in fertility levels has triggered concerns about the political and socio-economic fallout, especially in the southern States, which fear the loss of parliamentary seats post the delimitation exercise in 2026.

Why is fertility falling?

Even though the country has had one of the oldest birth control/family planning programmes, increased female literacy, workforce participation of women, women's empowerment and improved aspirations could have contributed more to the steady drop in fertility rates over the decades than the faithful adoption of family planning initiatives.

The decline in fertility rate has also a lot to do with changing societal attitudes towards marriage and reproduction, with women increasingly exercising their choice. They often prefer to marry late or not at all, often choosing career and financial independence over motherhood. Rising rates of infertility in both men and women and abortions are important factors which could be contributing to this decline in fertility though no absolute data is available. With an increasing number of young men and women opting to go abroad for higher studies and jobs and choosing to settle down and raise their families there, migration is another key factor that could be in play when one considers the decline in fertility levels.

What are the implications?

Declining fertility rates have resulted in a rapid demographic transition in many southern States. The consequences of this — an ageing population, a declining young workforce and increased demands on healthcare and social security measures for the care of an increasing population of the elderly — are being acutely felt in States such as Kerala. Migration of youngsters in search of better prospects is also an issue.

What is happening in the southern States?

There is concern over the irreversible fertility decline across the country, but more so in the southern States, where fertility rates had dropped below the replacement levels much earlier than the rest of India.

Kerala led the demographic transition in the South, achieving the replacement level fertility rate in 1988, with the other four States achieving this by mid-2000. Along with education and women's empowerment and development in the social and health sectors, which were the hallmark of Kerala's high human development index, the State has also seen low economic investments and growth. Educated youth are leaving the State; the proportion of the aged population is expected to surpass that of children (23% in 2036). Changed attitudes towards marriage and motherhood are beginning to reflect in the health of women, leading to an increasing proportion of older mothers and pregnancy-related morbidities.

Kerala's high labour wages and high quality of life index are attracting internal migration from other States to supplant a shrinking workforce. The State Planning Board reckons that by 2030, the proportion of migrant labour could be close to 60 lakh, about one-sixth of the State's population.

What is the way forward?

Fertility decline is almost always irreversible and the graph, once it starts going down, may never bounce back. Countries like South Korea, which tried to stem the demographic crisis by pumping in millions have failed and the fertility rate plunged from 0.78 in 2022 to 0.73 in 2023. Demographers suggest that socio-economic policies that propel the growth of the economy, improve job prospects for the youth and tap the potential of a growing population of senior citizens, can help in reducing the impact of a long spell of low, sub-replacement level fertility rates on countries.

Relevance: GS Prelims & Mains Paper I; Society

Source: The Hindu

15. What is Stargate, Trump's $500-billion bid for global leadership in AI?

Introduction

Trump's 500 billion AI Infrastructure Project | Stargate Explained: Soon after being sworn in as the US President, Donald Trump made a huge announcement that could shape the future of AI. Accompanied by OpenAI CEO Sam Altman, SoftBank CEO Masayoshi Son and Oracle CEO Larry Ellison, Trump at a White House event announced that $500 billion would be invested to build AI infrastructure in the US under project Stargate, which will offer over 100,000 Americans jobs immediately.

Trump has dubbed it the largest AI infrastructure project in history. He said there is global competition for AI leadership, but Stargate is setting the standard.

What is Stargate?

Stargate is a $500 billion initiative aimed at creating an AI infrastructure in the US over the next four years. Trump said $100 million will be invested right away. This is an ambitious project that aims to propel the US into global leadership in AI advancements.

"This monumental undertaking is a strong vote of confidence in America's future and leadership under this administration. This project ensures that the United States will remain the global leader in AI and technology, rather than letting competitors like China gain the edge," Trump said while announcing the project.

Further, he said that in order to facilitate the project, his administration will offer support through emergency declarations, and expediting energy production to meet infrastructure needs.

Stargate would include construction of massive data centers and campuses across the US.

Key people of Stargate

Japanese investment firm SoftBank, OpenAI, Oracle, and investor MGX are the key stakeholders of the project. While SoftBank will manage the financial aspect of the project, OpenAI will steer the operations. Masayoshi Son will be the chairman of the project, which will also have Microsoft, NVIDIA, Oracle, OpenAI and Arm as the technology partners. The

construction of the physical centres has already started in Texas, and there are plans to expand to other locations in the US.

Son had pledged $50 billion in US investments after Trump's last victory too, in 2016.

Stargate will make use of long-standing partnerships, such as the one OpenAI has with NVIDIA and Microsoft, including the use of Microsoft's Azure AI to train models and deliver AI products. The computing systems will be operated in close collaboration between Oracle, NVIDIA and OpenAI. The project also aims to accelerate the development of Artificial General Intelligence (AGI), a significant step in AI advancement.

Relevance: GS Prelims; Miscellaneous
Source: Indian Express

16. Jalgaon Train Tragedy Triggered by False Fire Alarm

Overview of the Incident

The tragic train accident in Jalgaon district of Maharashtra resulted in the loss of 12 lives. Maharashtra Deputy Chief Minister Ajit Pawar stated that the accident was caused by a false fire alarm raised by a tea vendor on the Pushpak Express.

Sequence of Events

• Passengers traveling from Lucknow to Mumbai aboard the Pushpak Express panicked after hearing a false alarm about a fire.

• The emergency chain was pulled, causing the train to halt. Pssengers on Pushpak Express, travelling from Lucknow to Mumbai, jumped off the train after an emergency chain-pulling incident owing to rumour of fire.
• Due to the curvature of the tracks (nearly two degrees), visibility was reduced, limiting the reaction time for the approaching train. The approaching train collided with the passengers of Pushpak Express.
• Despite the coming Bengaluru Express train pilots' best efforts, the accident could not be avoided.

Casualty and Injuries
• The official death toll stands at 12 after initial miscalculations.
• Among the deceased:
O Seven were from Nepal.
O The rest were from Uttar Pradesh.

Clarifications and Statements
Collector Ayush Prasad dismissed rumors of any fire or smoke. He considers that there are chances of criminal conspiracy. The authorities continue to investigate the incident from both technical and criminal perspectives, while efforts are being made to support the victims' families and injured passengers.

Relevance: GS Prelims & Mains Paper III; Disaster Management
Source: The Hindu

17. What is paraquat poisoning, by which Greeshma killed her boyfriend Sharon Raj?

Sharon Raj Murder Case
A 24-year old woman was awarded the death sentence by a Thiruvananthapuram court which found her guilty of poisoning her boyfriend in 2022 with a chemical herbicide called paraquat.

What is paraquat?
Paraquat, also known as paraquat dichloride or methyl viologen, is one of the world's most-used herbicides. A toxic chemical, paraquat is primarily used to control the growth of weeds and desiccate crops like cotton before harvest.

The WHO classifies paraquat as Category 2 (moderately hazardous and moderately irritating) chemical. Its sale is banned in over 70 countries, including China and the European Union, due to its potent toxicity. However, it is widely used in the US and in India.

According to the US Environment Protection Agency (EPA), "one small accidental sip can be fatal" to humans.

How does paraquat poisoning occur?

While ingestion is the most common route of exposure, the chemical may also be transferred and absorbed through prolonged skin contact. Its inhalation can also cause respiratory issues.

According to the US Centers for Disease Control, paraquat causes direct damage when it comes into contact with the lining of the mouth, stomach, or intestines. It spreads rapidly through the body and causes adverse reactions to occur in the lungs, liver and kidneys. The CDC noted that cells select how they allow paraquat to enter, through "active transport," a process that moves molecules in and out of the cell.

What are the symptoms of paraquat poisoning?

According to the CDC, the extent of paraquat poisoning depends on the amount, means and length of exposure to the chemical. This gets compounded further by any pre-existing medical condition the victim had. If ingested in a small amount, a person would display signs of damage to the heart, kidneys, liver and lungs over several days or weeks. However, this timeline is reduced if the person was exposed to or ingested a large amount of paraquat.

What are some restrictions that have been placed on the use of paraquat?

In the US, paraquat sales are restricted only to commercially licensed users, with a ban on personal use or in residential areas.

In India, its use is governed by the Central Insecticides Board and Registration Committee (CIBRC), under the Ministry of Agriculture & Farmers Welfare. The Insecticides Act of 1968 authorises the manufacture, sale, storage, transport, and distribution of insecticides, including herbicides like paraquat.

A 2021 notification issued by the Agriculture Ministry restricts paraquat's use to the following crops: wheat, rice, tea, coffee, potato, grapes, maize, rubber and apple. Its spraying is also allowed in some waterways like ponds and canals to combat weeds.

Despite this, its use is largely unregulated. A 2015 paper titled "Conditions of Paraquat Use in India" noted that while the CIBRC only allows spraying paraquat as a herbicide, many farmers also disperse it by hand. These farmers do not use any personal protective equipment like gloves while mixing or dispersing paraquat with fertilisers, sand or salt. The paper also noted the need to train farmers on its safe use, as they tended to ignore the instructions on the label.

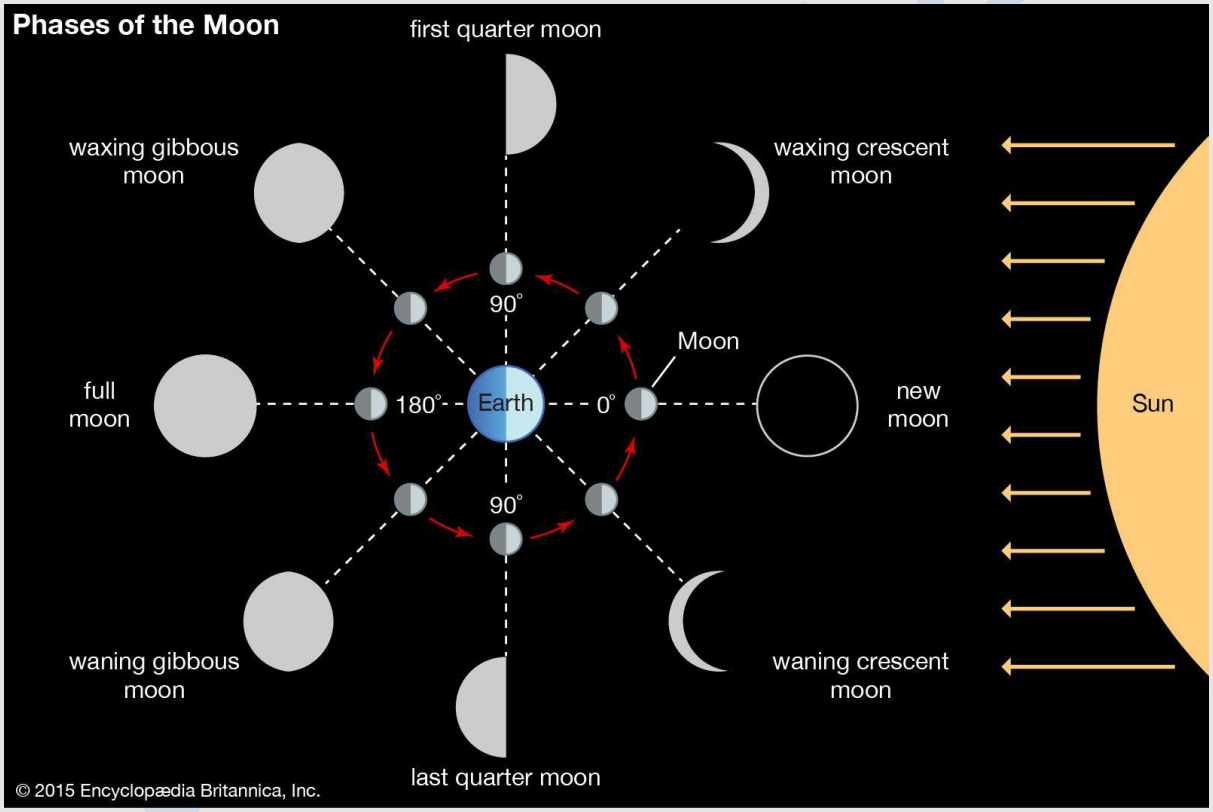
Relevance: GS Prelims; Miscellaneous
Source: The Hindu

18. Mahakumbh stampede: Why there was a bigger crowd than usual at Prayagraj

Prayagraj MahaKumbh Mela Stampede News

A stampede at the Mahakumbh Mela underway in Prayagraj has led to deaths and injuries, although the number of casualties is so far unclear.

The stampede took place in the early hours of January 29, a day unusually large crowds were flocking to the riverbank for the ritual dip. This was because January 29 is Mauni Amavasya, one of the days considered very auspicious for taking a bath at the Kumbh Mela. PTI had reported that 10 crore pilgrims were expected to make their way to the Maha Kumbh in just a day on January 29.



What is Mauni Amavasya?

Mauni Amavasya is the new moon night of the krishna paksha (the waning moon fortnight) of the Hindu month of Magh. On this day, both the Sun and Moon are in the same raashi of Makar (Capricorn), which makes it astrologically significant. Maun means silence, and on Mauni Amavasya, it is believed that observing silence, at least till before one takes a bath, is beneficial. According to Hindu religious beliefs, taking a ritual bath in a river on Mauni Amavasya washes away one's sins. Triveni in Prayagraj (the confluence of Ganga, Yamuna, and the mythical Saraswati) is considered a sacred spot. Taking a dip in the Triveni on a Mauni Amavasya during Kumbh Mela is, thus, of added spiritual significance.

About why silence is observed on this day-The new moon is a day of big happenings in the world of nature. The high tide and low tide are more pronounced, the moon is between the earth and the sun. On such a day, when nature is so dynamic, Hindu sages have advised stillness and silence for humans.

What are the special 'snan' days at the Kumbh?

In the ongoing Kumbh, Makar Sankranti was the first amrit snan (earlier called shahi snan) day, and Mauni Amavasya the second. The third is Vasant Panchami on February 3. Shiv Ratri, which falls on February 26, the last day of the Kumbh Mela, is also significant.

On these days, the saadhus who gather at the Kumbh take the first ritual dip as part of the amrit snan, followed by other devotees. It is the specific planetary alignments of a day that make it specially auspicious.

Relevance: GS Prelims
Source: Indian Express