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1. Tata's Compensation Claim against West Bengal

Introduction
Tata Motors Ltd has recently won a significant arbitration case against the West Bengal government. The dispute revolves around the compensation for capital investment losses in the Singur manufacturing plant where Tata had intended to build the iconic Nano car. This legal battle stems from a series of events that unfolded over the years, involving political conflicts, court interventions, and the eventual relocation of the plant. Here is a simplified breakdown of the story:

The Singur and Nano Project
In 2006, the Left Front government in West Bengal allotted nearly 1,000 acres of land in Singur to Tata Motors for the manufacturing of the Nano car, a project that was anticipated to bring about industrialization and employment to the region. However, the acquisition of the land faced resistance from local groups and political parties.

Mamata Banerjee's Opposition
Mamata Banerjee, then in the opposition, led a movement against the land acquisition and the industrial project, which gained widespread support. Her sustained agitation ultimately led to the withdrawal of the Nano project from West Bengal in 2008.

Tata's Relocation Decision

Due to the ongoing tension and deadlock, Tata Motors decided to move Nano production out of West Bengal and relocated the plant to Sanand, Gujarat, in October 2008.

Legal Battles and Political Shifts
Mamata Banerjee's subsequent rise to power in 2011 marked a turning point. Her government passed the Singur Land Rehabilitation and Development Bill, 2011, which led to further legal battles between Tata Motors and the West Bengal government. The matter eventually reached the Supreme Court, which ruled in favor of returning the land to its original owners.

The Arbitration Decision
Following the Supreme Court's ruling, Tata Motors pursued arbitration proceedings with the West Bengal Industrial Development Corporation Ltd (WBIDC). The recent arbitration tribunal's decision has favored Tata Motors, awarding them a substantial sum of Rs. 765.78 crore along with interest. Additionally, the company has been granted Rs. 1 crore towards the cost of the proceedings.

The arbitration award has brought the long-standing dispute between Tata Motors and the West Bengal government to a significant conclusion, marking a crucial milestone in the history of the Singur Nano project.

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

2. The Maratha Quota Controversy: Legal Battles and Ongoing Developments

Introduction
The issue of Maratha reservation has been a contentious matter in Maharashtra, sparking protests and legal battles. Here's an overview of the key developments and the state government's recent actions.

The 2019 Bombay High Court Ruling
In 2019, the Bombay High Court upheld the constitutional validity of Maratha reservation, initially proposed at 16% for education and government jobs. However, the court reduced the quota to 12% for education and 13% for government jobs, aligning with the recommendations of the Maharashtra State Backward Class Commission.

Basis for the Ruling
The High Court relied on extensive findings from the Maharashtra State Backward Class Commission, indicating social, economic, and educational backwardness among the Maratha community.

Supreme Court's Intervention
In May 2021, the Supreme Court's Constitution bench struck down the Maratha quota, citing a breach of the 50% reservation ceiling established in the 1992 Indra Sawhney (Mandal) judgment. The court argued that there were no extraordinary circumstances to exceed this limit and deemed Marathas as a "dominant forward class."

In November 2022, after the SC upheld the 10 per cent quota for Economically Weaker Sections, the Maharashtra government said that until the issue of Maratha reservation was resolved, economically weaker members of the community could benefit from the EWS quota.

In April this year, after the SC turned down its review plea, the state government said it would file a curative petition and form a new panel for a detailed survey of the 'backwardness' of the community.

Post-Supreme Court Ruling
In the state, following the 2001 State Reservation Act, the total reservation is 52 per cent. This included quotas for Scheduled Caster (13%), Scheduled Tribes (7%), Other Backward Classes (19%), Special Backward Class (2%), Vimukta Jati (3%), Nomadic Tribe B (2.5%), Nomadic Tribe C-Dhangar (3.5%) and Nomadic Tribe D-Vanjari (2%).

With the addition of the 12-13 per cent Maratha quota, the total reservation in the state had gone up to 64-65 per cent. The 10 % EWS quota is also effective in the state.

Ongoing Reservation Demands
Apart from the Marathas, other communities like Dhangar, Lingayats, and Muslims have also raised demands for reservation, adding complexity to the reservation landscape in Maharashtra.

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

3. India's Initiating a National Security Strategy

India has commenced the process of formulating a National Security Strategy, marking a significant development in the military and strategic community.

What is a National Security Strategy?
A National Security Strategy is a document that outlines a country's security objectives and the means to achieve them. It addresses traditional and non-traditional threats, introduces accountability for responsible agencies, and provides a holistic perspective on national security.

Contents of the Strategy

While the exact details of India's strategy remain unknown, it is expected to encompass a wide range of challenges and threats, including economic security, food and energy security, information warfare, critical infrastructure vulnerabilities, supply chain concerns, and environmental issues.

Countries with National Security Strategies

Most developed nations with advanced military and security infrastructure, such as the US, UK, and Russia have established National Security Strategies. China also has such a strategy in place, called the Comprehensive National Security.

India's Necessity for a National Security Strategy

India has long considered the need for a National Security Strategy due to the complexity of emerging threats, both traditional and non-traditional. Rising geopolitical tensions and uncertainties have increased the urgency for such a strategy, which is seen as essential for military direction and major reforms.

Previous Hesitations

In the past, India made three attempts to develop a national security strategy, but political hesitations, possibly stemming from concerns about accountability and defense management, hindered progress. However, the strategic community has emphasized the importance of having a well-defined strategy to guide military reforms effectively.

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

4. Non-BJP States Accuse Governors of Delaying Crucial Bills

Governors Accused of Unreasonable Delays

Several non-BJP ruled states have accused their Governors of causing unreasonable delays in passing crucial bills into law, leading to legislative gridlocks and administrative challenges.

Accusations and Allegations by Specific States

Tamil Nadu, Kerala, and Punjab have separately raised concerns about their Governors' alleged misuse of discretion, resulting in prolonged delays in approving vital bills. These delays have led to administrative hurdles and a standstill in key sectors such as public health, higher education, Lokayukta, and cooperative societies.

The Role of Governors in Passing Bills

Article 200 of the Constitution covers the options before the Governor when a Bill passed by both Houses of the Legislature is presented to him. The first proviso to the Article says the Governor could either declare his assent to the Bill or withhold the assent if it is not a Money Bill or reserve the law for the consideration of the President.

In case the Governor chooses to withhold assent, he should return the Bill "as soon as possible" with a message requesting the Legislative Assembly to reconsider the proposed law or any specified provisions or suggest amendments. The Assembly would reconsider and pass the Bill, and this time, the Governor should not withhold his assent. In short, the constitutional head of the State would bow to the considered decision of the elected representatives of the people.

Limited Discretion of Governors
The discretion of Governors was restricted through amendments made by the Constituent Assembly in 1949, emphasizing the importance of the Governor acting on the advice of the State Cabinet. The role of the Governor is seen as a representative of the State government rather than an independent decision-maker.

Understanding the Phrase "As Soon as Possible"
The first proviso of Article 200 says it should be "as soon as possible". The Constitution is silent on what exactly this phrase means. The Supreme Court has interpreted "as soon as possible" in the proviso to mean "as early as practicable without avoidable delay" in its 1972 judgment in Durga Pada Ghosh versus State of West Bengal. Justice (now retired) Rohinton F. Nariman, in his 2020 judgment in the Keisham Megha Chandra Singh case, said a 'reasonable time' would mean three months.

The States have urged the court to interpret the phrase in the proviso and fix a time limit by which Governors should assent or return a Bill. The 1988 Sarkaria Commission report on Centre-State relations had suggested consultation with the Governor while drafting the Bill and fixing a deadline for its disposal.

Push for Judicial Clarification and Review
Certain states, particularly Kerala, have urged the Supreme Court to reexamine a previous judgment regarding the absence of a time limit within which Governors should make decisions on bills. This call for review is based on the contemporary context of Governors potentially withholding bills indefinitely, leading to constitutional conflicts and administrative uncertainties.

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

5. Jharkhand Launches Land Title Drive under FRA

Overview of the Forests Rights Act

The Jharkhand government has initiated a special drive, Abua Bir Dishom Abhiyan, to grant land title certificates to individuals and communities under the Forests Rights Act (FRA). The FRA, enacted in 2006, bestows self-cultivation and habitation rights on Scheduled Tribes and Other Traditional Forest Dwellers through Individual Forest Rights (IFR) and Community Forest Rights (CFR). These rights encompass various aspects, including grazing, fishing, resource access, and customary rights.

Reasons for Initiating the Drive

The recent drive, launched after a nine-year gap, aims to address the shortcomings in the implementation of the FRA. Jharkhand has struggled to process a significant number of pending applications for IFR and CFR rights. The state's performance lags behind Chhattisgarh, which has processed and granted a much higher number of title claims.

Government's Approach

To expedite the process, the Jharkhand government is taking several measures. It is establishing a dedicated website and mobile application for stakeholders to track applications and verify geotagged land parcels. The Department of Scheduled Tribe, Scheduled Caste, Minority, and Backward Class Welfare has instructed Deputy Commissioners to form/reconstitute Forest Rights Committees (FRC) at the village, sub-divisional, and district levels. Additionally, special Gram Sabhas are being organized to facilitate the resolution of pending and rejected claims.

Addressing Challenges

While implementing the FRA, the government faces certain challenges, including changing the mindset of some forest officials who view forest dwellers as encroachers. The hierarchical structure in verifying and granting titles also poses difficulties, as the responsibility lies with district welfare officers, leading to bureaucratic hurdles.

Overall, the government is striving to streamline the FRA claims generation and titles distribution process to fulfill its electoral promises and address long-standing land rights issues.

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

6. Electoral Bonds and Electoral Trusts: Comparison

After a three-day hearing, the Supreme Court on November 3 reserved its judgment on the challenge to the central government's Electoral Bonds Scheme.

Before the controversial Electoral Bonds (EB) Scheme was introduced in 2018, there was something called an Electoral Trusts (ET) Scheme, which was introduced by the UPA government in 2013.

Both schemes were meant to facilitate donations to political parties by corporates and individuals. But while the EB scheme seeks to ensure anonymity for the donor, the electoral trusts under the previous scheme were required to submit to the Election Commission of India a report on contributions from individuals and companies, and their donations to parties every year.

What are electoral trusts?
Under the scheme notified by the UPA-2 government on January 31, 2013, any company registered under Section 25 of the Companies Act, 1956, can form an electoral trust.

Under Section 17CA of the Income-tax Act, 1961, any citizen of India, a company registered in India, or a firm or Hindu Undivided Family or association of persons living in India, can donate to an electoral trust.

The electoral trusts have to apply for renewal every three financial years. They must donate 95% of contributions received in a financial year to political parties registered under the Representation of the People Act, 1951. The contributors' PAN (in case of a resident) or passport number (in case of an NRI) is required at the time of making contributions.

Transparency under Trusts and Bonds
The electoral trusts route is transparent on contributors and beneficiaries. Where there is only one contributor and one beneficiary of a particular trust, the public can know for sure who is funding whom. For instance, in 2018-19, the Janhit Electoral Trust had just one contribution of Rs.2.5 crore from Vedanta, and the entire amount was donated to the BJP, as per the trust's annual contribution report.

However, if there are multiple contributors and recipients of donations, it cannot be specified which company is funding which party. So, Prudent Electoral Trust, which was known as Satya Electoral Trust before 2017, received contributions from a host of companies such as DLF, GMR, and Bharti Airtel, as well as several individuals, and donated to a range of national and regional parties. But it is difficult to pinpoint which donor gave to which party.

Electoral bonds, on the other hand, are exempt from disclosure requirements. Parties inform the ECI of the aggregate donations received through EBs, but give no details of the donors.

The government argues that this lack of transparency in donations through EBs is to maintain the privacy of donors.

Amount of Donations
Data from nine financial years (2013-14 to 2021-22) show that political funding through the two government schemes shot up after the introduction of EBs, with the bulk of donations coming through the newer scheme.

7. SC guidelines on Speedy disposal of cases against lawmakers

Introduction
The Supreme Court issued guidelines on Thursday (November 9) to monitor the speedy disposal of criminal cases against Members of Parliament (MPs) and Members of Legislative Assemblies (MLAs).

Among the guidelines issued to high courts across the country, the court called for the setting up of a "special bench" to monitor criminal cases against legislators as well as suo motu registration of such cases by HCs.

What is this case?
The directions were given by a CJI DY Chandrachud-led bench while acting on a plea filed by advocate Ashwini Kumar Upadhyay.

The plea filed in August 2016 sought speedy disposal of cases involving lawmakers. It also sought a lifetime ban on convicted politicians, including sitting legislators, from contesting elections rather than subjecting them to the six-year ban, as laid down under Section 8(3) of the Representation of People Act, 1951. Section 8 of the RP Act, 1951, mainly deals with the disqualification of lawmakers on conviction for certain offences.

What does the RP Act say?
The Representation of the People Act, 1951, provides for the conduct of elections to the houses of parliament and the legislatures of each state, the qualifications and disqualifications for membership of those houses, corrupt practices, and other offences taking place at or in connection with the elections.

Although there are several provisions that deal with disqualification under the RPA, Section 8 specifically deals with disqualification of legislators on conviction for certain offences like promoting enmity between two groups, bribery, and undue influence, along with hoarding, profiteering, or adulteration of food or drugs.

However, the provision that Upadhyay sought to replace with a "lifetime ban" in his plea was Section 8(3), which states, "A person convicted of any offence and sentenced to imprisonment for not less than two years shall be disqualified from the date of such conviction and shall continue to be disqualified for a further period of six years since his release." Essentially, this provision imposes a six-year ban on persons convicted of offences with a minimum two-year sentence.

While the top court in its ruling today addressed the first aspect of Upadhyay's plea seeking speedy disposal of cases against MPs and MLAs, it kept open the issue of replacing the 6-year ban with a lifetime one.

What did the court rule today?
The bench laid down guidelines for monitoring the early disposal of pending cases against lawmakers. These guidelines include:
1. Suo motu registration of cases by the chief justices of various high courts across the country
2. Quick disposal of pending criminal cases against legislators
3. Such cases can be heard by a CJ-led special bench or a bench designated by CJI
4. Such cases can also be listed at regular intervals, if necessary.
5. The special bench may also call upon the advocate general or prosecutor to assist the court.
6. Further, the court said that priority shall be given to cases against lawmakers that are punishable with death or life imprisonment. Besides this, cases punishable with 5 years imprisonment or more will also be prioritised.

7. Stating that it would be difficult to lay down uniform guidelines for trial courts across the country to dispose of such cases, the court left it to the high court to devise measures to effectively monitor such cases.

The court also ruled that HCs can issue similar orders and directions for effective disposal of such cases. The HCs can also call upon the Principal District and Sessions Judge to take on the responsibility of allocating "subject cases" to such courts.

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

8. Lok Sabha Ethics Committee Recommends Disqualification of Mahua Moitra

Introduction
The Lok Sabha Ethics Committee recently proposed the expulsion of Trinamool Congress MP Mahua Moitra from the Lower House, citing a "cash-for-query" allegation.

BJP MP Nishikant Dubey had approached Lok Sabha Speaker Om Birla against Moitra, accusing her of asking questions in Lok Sabha to target the Adani Group at the behest of businessman Darshan Hiranandani, in exchange for gifts.

Ethics Committee
The Ethics Committee of Rajya Sabha was established in 1997. This committee was established to oversee the moral and ethical conduct of the Members and to examine the cases referred to it with reference to ethical and other misconduct of Members. The Ethics Committee of Lok Sabha was established later on, in 2000, with the similar objective.

Committee's Decision and Opposition
Six members, including suspended Congress MP Praneet Kaur, voted in favor of the expulsion recommendation, while four Opposition MPs opposed it. Dissenting members labeled it a "fixed match," asserting that the complaint lacked evidence.

Future Steps and Parliamentary Vote
The report, set to be presented in the Winter Session starting on December 4, requires approval from the Lok Sabha for Moitra's expulsion. This marks the first time, since the committee's establishment in 2000, that it has suggested the expulsion of a Parliamentarian.

Criticism of the Decision

Some view the committee's recommendation as politically motivated and an attempt to stifle government critics. Critics argue that the process lacks transparency and principles, emphasizing the need for a fair and thorough investigation.

Questioning the Investigation
Opposition members point out that Moitra's online credentials were used from Dubai to access the Parliament portal, a routine practice handled by MPs' aides. They stress the importance of solid evidence before assuming any wrongdoing.

Inconsistencies in Parliamentary Oversight
Critics note the selective investigation and urge the committee to scrutinize how other MPs prepare and submit parliamentary questions. They argue that the focus on Moitra appears to be an act of intimidation, contrasting with the slow response to other serious complaints within the parliamentary system.

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

9. Overview of the Draft Broadcasting Services (Regulation) Bill, 2023

Introduction
The Information & Broadcasting Ministry recently unveiled the draft Broadcasting Services (Regulation) Bill, 2023, aiming to overhaul the regulatory framework of the broadcasting sector in India. This bill, comprising six chapters, 48 sections, and three Schedules, is designed to replace the Cable Television Networks (Regulation) Act of 1995 and existing policy guidelines.

Broadening Regulatory Scope
An essential aspect of the draft Bill is its expansion of regulatory provisions to encompass various broadcasting services, including OTT content, digital news, and current affairs. This move marks a departure from the previous focus on traditional cable television networks and aligns with the evolving landscape of broadcasting technologies.

Key Features of the Bill

Comprehensive Definitions: The Bill introduces comprehensive definitions for contemporary broadcasting terms, along with crucial technical terms defined within the statute for the first time.

Self-regulation Mechanisms: It establishes 'Content evaluation committees' for self-regulation and a 'Broadcast Advisory Council' to advise the central government on program and advertisement code violations.

Statutory Penalties: The Bill introduces statutory penalties, such as advisory, warning, censure, or monetary penalties, for operators and broadcasters. Serious offenses may incur imprisonment and/or fines, with penalties tailored to the financial capacity of the entity.

Inclusivity Measures: Emphasizing inclusivity, the Bill promotes accessibility for people with disabilities through subtitles, audio descriptors, and sign language. Additionally, it mandates the appointment of a "Disability Grievance officer."

Infrastructure Sharing: The Bill includes provisions for infrastructure sharing among broadcasting network operators and the carriage of platform services. It streamlines the 'Right of Way' section to address relocation and alterations more efficiently and establishes a structured dispute resolution mechanism.

Government's Call for Feedback
The Information & Broadcasting Ministry has invited stakeholders to provide feedback and comments on the draft Bill within 30 days from its release, fostering a collaborative approach in shaping the future regulatory landscape of India's broadcasting sector.

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

10. On bail, tracked by satellite: How GPS anklets work

Introduction
Earlier this month, a prisoner in Jammu and Kashmir was released on bail after he was tagged with a Global Positioning System (GPS) tracking device to monitor his movements. This is the first time in the country that a GPS tracker has been put to such use.

So, what is a GPS tracker, and how does it work?
A GPS tracker is a small, wearable device like the GPS collars that have long been used to monitor the movements of animals. The device provides the exact location of the wearer at all times, and allows law enforcement and security agencies to monitor his/her movement in real time.

The device is tamper-proof, and any attempt at tampering with it sets off an alarm. It can also not be removed by the wearer or any unauthorised person without damaging it. The tracker can be put on the ankle or arm of a person. Thus, there are GPS anklets and GPS bracelets.

Where is such a device available, and how much does it cost?

GPS devices are very common these days, and some people put them on pets. The movements of wild animals such as rogue elephants in Kerala or the cheetahs in Kuno are monitored using these devices. Many new automobiles are equipped with trackers to ensure they can be traced if stolen; owners can also have them installed separately. The quality and prices of the devices vary. It is possible to buy one online for around Rs 1,000.

What is the legal position on the use of this technology in this way?
The use of the GPS anklet to a prisoner on bail is sanctioned by a court. Human rights activists have, however, pointed to the absence of specific legal provisions allowing this. According to them, it is also "important to ask whether the security establishment has developed any standards and ethics in electronic monitoring".

For instance, In the UK, electronic monitoring may be under the Terrorism Prevention and Investigation Measures Act, 2011.

Backers of the use of GPS trackers argue they can make it a little easier to get bail under the stringent laws such as UAPA, and give police the confidence to not oppose bail. Rights activists, however, say tracking a human being is a violation of their fundamental right to privacy.

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

11. IAS coaching centres under scrutiny by the Central Consumer Protection Authority for false claims

Why in news?
On October 23, the Central Consumer Protection Authority (CCPA) said that it was probing 20 IAS coaching institutes for making misleading claims in their advertisements and for unfair trade practices. Four of the 20 institutions have been slapped with a penalty of ₹1 lakh.

What has the CCPA observed?
Elaborating on the broader mechanism at play, Chief Commissioner at CCPA Nidhi Khare told DD News that every time the results of any competitive exam, including the UPSC Civil Services, are announced, coaching institutes would go on an advertising spree. Names and pictures of the top rankers are used in these ads to indicate their enrolment at the institute. However, they do not disclose the nature of the enrolment, that is, the course they might have pursued in the institute.

UPSC CSE exams are conducted at three stages — prelims, mains and interview. CCPA has observed that most rank holders showcased in the advertisements only took mock

interviews from these institutes. In fact, coaching institutes have been found to provide mock interviews free of cost, since it serves their own interests. This information is not disclosed in the advertisements, which ideally must include the course they enrolled for. Thus, it would qualify as deliberate concealment of important information and can be categorised as a 'misleading advertisement' under Section 2(28) of the Consumer Protection Act, 2019.

What is the ecosystem like?
UPSC recommended a total of 933 candidates post its CSE examinations in 2022. However, as observed by the CCPA, the total selections claimed by the institutes together being probed exceeded the recommendations— the cumulative count was over 3,500. This could also be because of multiple enrolments among students.

At present, four institutes have been fined — Chahal Academy, IQRA IAS, Rau's IAS Study Circle and IAS Baba. While IAS Baba has received a stay on the notice from the Karnataka High Court, Rau's IAS has appealed against the order in the National Consumer Disputes Redressal Commission. Other coaching institutes currently being probed include Vajirao and Reddy Institute, KSG- Khan Study Group IAS, Apti Plus, Analog IAS, Shankar IAS, BYJU's IAS, Unacademy, Drishti IAS, Sriram's IAS, NEXT IAS, Yojana IAS, Plutus IAS, ALS IAS, Dhishti IAS and Vision IAS, among others.

During the probe, the institutes were given the opportunity to make their submissions against the allegations of exaggerated claims. Their submissions reveal some of the same concerns raised by the CCPA.

For example, Khan Study Group claimed that 682 of the 933 selected belonged to their institute. However, their submission indicated that 673 students took only mock interviews. Vajirao and Reddy also professed about 617 selections — all of whom took the interview guidance programme.

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

12. Search and Seizure Powers in context of journalists' digital devices

The Supreme Court's Call for Guidelines
The recent actions of seizing and searching journalists' digital devices have raised significant concerns about the potential threats to freedom of speech and press. The Supreme Court's directive to the Union government to establish guidelines to protect the interests of media professionals marks a crucial initial response.

Chilling Effect on Media and Whistle-blowers

The seizure of journalists' laptops and smartphones sends a chilling message to the media fraternity, compromising the confidentiality of sources and hindering the ability of news professionals to perform their duties.

The act of seizing digital devices also poses a threat to journalists' livelihoods, given the critical role information plays in journalism.

Guidelines to include certain protections
Guidelines must ensure that law enforcement agencies can't seize or search devices without a prior judicial warrant, specifying the information sought to prevent unlimited searches.

Also, Journalists should not be compelled to provide passcodes or biometric data that may compromise their own security or that of their sources.

Further, Guidelines must include protocols to safeguard seized devices and data, preventing leaks, tampering, or unauthorized sharing of information. Irrelevant data should be promptly deleted.

Moreover, Allowing the cloning of devices enables journalists to continue their work without being deprived of their data for an unspecified period.

Next, Maintaining a record of the device at the time of seizure ensures transparency and guards against the planting of incriminating material during the investigation.

Adapting Laws to Digital Realities
Beyond guidelines for media professionals, there is a pressing need to update laws governing search and seizure by law enforcement agencies to align with the challenges posed by digital advancements.

In summary, the establishment of clear guidelines, judicial oversight, and public involvement are crucial in ensuring a balance between law enforcement needs and the protection of fundamental rights in the context of search and seizure powers.

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

13. On the sub-categorisation within castes

Why in news?
In an election rally in Telangana, Prime Minister Narendra Modi promised to look into the sub-categorisation of Scheduled Castes (SCs) to identify and help the most backward among them — a move that has been read as an attempt by the Bharatiya

Janata Party (BJP) to woo the Madiga community. The Madigas are the most populous of all SC communities in the State but have claimed that their share of representation was being taken up by another SC community, the Malas.

Is sub-categorising legal?
In the last two decades, multiple States like Punjab, Bihar, and Tamil Nadu have tried to bring in reservation laws at the State level in a bid to sub-categorise SCs and decide on a separate quantum of reservation for these subcategories within the umbrella of Scheduled Castes. However, all plans are held up in courts as the Supreme Court forms its larger Constitution Bench to decide the matter.

The issue first reached the courts when the Andhra Pradesh government in 1996 formed a one-man Commission of Justice Ramachandra Raju, which recommended sub-categorisation of SCs in the State based on evidence that some communities were more backward and had less representation than others. When the State government tried to implement this recommendation, the matter went to the judiciary, eventually making its way to the Supreme Court, which in 2004, held that the State did not have the power to unilaterally sub-categorise communities in the list of SCs or Scheduled Tribes (STs). The Constitution has provided that these lists can only be made by Parliament and notified by the President.

However, while hearing a challenge to Punjab's attempt at doing the same, a five-judge Bench headed by Justice Arun Mishra had held in a 2020 judgment, that deciding on the quantum of benefits in the lists of SCs/STs already notified would not amount to "tinkering" with it and that States could do it. Given the contradiction, the 2020 judgment has also been referred to the larger Bench.

How close have governments come?
Even as the question of whether SC sub-categorisation can be done is pending with the Supreme Court, the 2004 judgment had pushed the Union government to explore legal options for the same. It initiated dialogue with the Law Ministry and in 2005, the Attorney-General of India (AGI) had opined that it was possible to sub-categorise SCs. The AGI, at the time, had said that any such classification could be allowed only if there was "unimpeachable evidence to indicate a necessity" for it. The AGI had added that a constitutional amendment could be brought in to facilitate this. Based on this, the Union government formed a National Commission to look into the question of sub-categorising SCs in Andhra Pradesh and the then Cabinet recommended an amendment to Article 341 of the Constitution of India to allow for it. But both the National Commission for Scheduled Castes (NCSC) and the National Commission for Scheduled Tribes (NCST) had opined that a constitutional amendment was not necessary. They said that Article 16(4) of the Constitution already provided for States to create special laws for any backward classes it felt was under-represented.

14. Mandatory reporting provision under POCSO

Why in news?

Recently, the Himachal Pradesh High Court has held that Failure to report sexual crimes against minors is a bailable offence.

What the judge ruled

A single-judge bench of Justice Rakesh Kainthla allowed pre-arrest bail to a hotel manager accused of failing to report an offence committed against a minor, as mandated by Section 21 of the Protection of Children from Sexual Offences (POCSO) Act. He said that since the Act is silent on whether the offence is bailable or not, the nature of the offence must "be determined with reference to the Code of Criminal Procedure."

The classification of offences under the CrPC "clearly" states that offences punishable with imprisonment of less than three years are bailable and non-cognizable. Section 21 of the POCSO Act prescribes imprisonment of 6 months to a year — thus making it a bailable offence.

The case

In the present case, the main accused raped and recorded a video of a minor schoolgirl in a hotel in September last year. He was booked by the police under Sections 376 (Rape) and 506 (Criminal Intimidation) of the Indian Penal Code, as well as under Sections 6 and 21 of the POCSO Act, which punish aggravated penetrative sexual assault and failure to report sexual crimes against children.

Moreover, the FIR also named the manager of the hotel in which the offence was committed, owing to the mandatory reporting provision under the POCSO Act.

POCSO and mandatory reporting

Section 19 of the POCSO states that anyone having "apprehension" that an offence under POCSO is likely to be committed, or knowledge that such an offence has been committed, "shall" provide such information to the Special Juvenile Police Unit (SJPU) or the police. The term "any person" also includes a child who may report an offence. This reporting provision becomes binding due to Section 21 of the POCSO Act, which prescribes punishment for failing to report the commission of an offence under Section 19. Imprisonment of six months to one year, or a fine, or both is prescribed under Section 21.

It must be noted, however, that children cannot be held liable for failing to report the commission of a sexual offence. Similarly, children making false complaints or giving false information are also exempt from punishment under Section 22 of the Act.

What the has SC ruled
In a series of decisions, the Supreme Court has held that failure to report such cases amounts to a serious crime.

In 2013, a two-judge bench of the SC ruled that "the non-reporting of the crime by anybody, after having come to know that a minor child below the age of 18 years was subjected to any sexual assault, is a serious crime."

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

15. HC has struck down Haryana's private sector quota

Why in news?
The Punjab and Haryana High Court recently quashed a law passed by the Haryana government in 2020 that provided 75% reservation in private jobs to residents of the state.

What was this law?
The Haryana law reserved 75% of jobs in the private sector that offered a monthly salary of less than Rs 30,000 (originally Rs 50,000) for residents of Haryana.

Earlier, in November 2019, the Andhra Pradesh Assembly had passed The Andhra Pradesh Employment of Local Candidates in the Industries/Factories Bill, 2019, reserving three-fourths of jobs for local candidates within three years of the commencement of the Act. The law was challenged in the Andhra Pradesh High Court, which observed that "it may be unconstitutional". However, the challenge is yet to be heard on merits.

Who challenged the law and on what grounds?
The Faridabad Industries Association and other Haryana-based associations went to court. The petitioners argued that private sector jobs are purely based on skills and an analytical bent of mind, and employees have a fundamental right to work in any part of India.

The Haryana government argued that it had the power to create such reservations under Article 16(4) of the Constitution, which says that the right to equality in public employment does not prevent the State from "making any provision for the reservation of appointments or posts in favour of any backward class of citizens which,

in the opinion of the State, is not adequately represented in the services under the State".

What else was there in the Haryana law?
According to the law, a candidate "domiciled in State of Haryana", called a "local candidate", could avail of the reservation after registering themselves on a designated online portal. Employers were required to make recruitments only through this portal.

Employers could apply for an exemption under the Act, but that entailed a long procedure and required government-appointed officers to believe that the employer's exemption request held merit.

What did the High Court rule?
The court noted that Section 6 — which required employers to submit quarterly reports with details of local candidates employed and appointed — and Section 8 — under which authorised officers could call for documents or verification to ensure the law was being implemented — of the Act amounted to "Inspector Raj", and that private employers were being put under the State's anvil on whom to employ.

The court ruled that the state's action amounted to exercising "absolute control over a private employer," which is "forbidden for public employment." The restrictions were "gross to the extent that a person's right to carry on occupation, trade, or business" under Article 19(1)(g) of the Constitution was being impaired, the court said.

Also, the court said, the state "cannot as such discriminate against the individuals on account of the fact that they do not belong to a certain State".

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

16. What does the WHO report state on Measles and how has the Union Health Ministry responded?

Introduction
A new report from the World Health Organization and the U.S. Centers for Disease Control and Prevention (CDC) said measles cases in 2022 have increased by 18%, and deaths by 43% globally, compared to 2021. This, the report states, takes the estimated number of measles cases to nine million and deaths to 1,36,000, mostly among children. The Union Health Ministry has refuted a part of the report which said that globally 22 million children did not get their first measles shot in 2022 and that half of them live in 10 countries including India, where an estimated 1.1 million infants did not get the first dose of the vaccine. India's Universal Immunisation Programme is one

of the largest public health programmes in the world targeting close to 2.67 crore newborns and 2.9 crore pregnant women annually.

What is the Union Health Ministry saying?
The Health Ministry maintains that just over 21,000 Indian children did not get the shot and said that the WHO data is based on an estimated number. It added that 21,310 children missed their first dose in 2022-23; and that initiatives have been undertaken by the Centre in coordination with the States to ensure that all children receive all missed/due doses of the measles vaccine.

What is measles?
Measles is a contagious disease caused by a virus, which spreads through the air when an infected person coughs or sneezes. Measles starts with a cough, runny nose, red eyes, and fever. Then a rash of tiny, red spots break out. It starts at the head and spreads to the rest of the body. According to the WHO, measles vaccination averted 56 million deaths between 2000 and 2021.

Impact of COVID-19 on the vaccination programme
Measles can be prevented with the MMR vaccine. The vaccine protects against three diseases — measles, mumps and rubella. Two doses of MMR vaccine are about 97% effective at preventing measles; one dose is about 93% effective. This viral disease affecting mainly children causes significant morbidity and mortality. In an unimmunised population, the disease can rapidly break into an epidemic.

Three doses are recommended at 9 months, 15 months and one dose through 4 to 6 years. Due to interruption of routine vaccination during and post-COVID pandemic, India did see several outbreaks of measles in different parts of the country.

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

17. Less representation given to women in Judiciary

Introduction
Justice Fathima Beevi, the first Indian woman to become a Supreme Court judge, died on Thursday, at the age of 96 in Kollam, Kerala. With her appointment to the SC in 1989, Justice Beevi became the first Muslim woman judge of the Supreme Court, as well as the first woman Supreme Court Justice in Asia.

In a 2016 interview with The Week, she was asked whether the Indian judiciary was patriarchal. Her answer: "Absolutely. No doubt about that."

So, how many women justices has the Supreme Court had?

Currently, only three of the 34 incumbent Supreme Court justices — Justices Hima Kohli, Bela Trivedi, and BV Nagarathna — are women. Their appointment in 2021 created history by pushing the number of women in the top court to four — the highest ever in history. Justice Nagarathna is also projected to become the first-ever woman Chief Justice of India in 2027, although her tenure will only be 36 days. Her appointment will come nearly 80 years after Independence.

Apart from this, there have been a total of 11 women judges in the history of India's apex court — only ten more since Beevi "opened doors" in 1989. This means that of a total of total of 268 judges in the apex court's history, only 11 — or roughly 4 per cent — have been women.

Is the situation in High Courts any better?
As of March 21 this year, India had 25 high courts with a total sanctioned strength of 1,114 judges. Of these, however, only 785 are working while the remaining 329 posts remain vacant. Of this 785, only 107 judges — or 13 per cent — are women. Currently, only of the country's 25 HCs have a woman chief justice.

What is the situation for the lower judiciary?
A 2018 study by the Vidhi Centre for Legal Policy found that while representation of women in the lower judiciary is relatively higher at roughly 27 per cent, women hit a glass ceiling in higher appointments — as district judges , and subsequently at the high court level.

The report found that only in three of the smallest states — Goa, Meghalaya, and Sikkim, with a collective total of a mere 103 judges — did the percentage of women judges cross 60 per cent. Barring Telangana and Puducherry, the percentage of women judges remained below 40 per cent for all other states, regardless of geography, cultural considerations, or other differences.

Though there is no reservation for women in the higher judiciary, several states have provided quotas for women in the lower judiciary, including Andhra Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Karnataka, Odisha, Rajasthan, Tamil Nadu, Telangana, and Uttarakhand. These states provide between 30 and 35 per cent reservation for recruitment done through direct appointment.

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

18. Cabinet approves Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan

Introduction

The Union Cabinet chaired by the Prime Minister, Shri Narendra Modi has approved Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan (PM JANMAN) with total outlay of Rs.24,104 crore (Central Share: Rs.15,336 crore and State Share: Rs.8,768 crore) to focus on 11 critical interventions through 9 line Ministries.

Purpose
As announced in the Budget Speech 2023-24, "to improve socio-economic conditions of the Particularly Vulnerable Tribal Groups (PVTGs), Pradhan Mantri PVTG Development Mission will be launched. This will saturate PVTG households and habitations with basic facilities such as safe housing, clean drinking water and sanitation, improved access to education, health and nutrition, road and telecom connectivity, and sustainable livelihood opportunities. An amount of Rs.15,000 crore will be made available to implement the Mission in the next three years under the Development Action Plan for the Scheduled Tribes (DAPST)."

PVTGs
India has ST population of 10.45 crore as per 2011 census, out of which 75 communities located in 18 States and the Union Territory of Andaman and Nicobar Islands have been categorized as Particularly Vulnerable Tribal Groups (PVTGs). These PVTGs continue to face vulnerability in social, economic and educational fields.

The PM-JANMAN (comprising Central Sector and Centrally Sponsored Schemes) to focus on 11 critical interventions through 9 Ministries including Ministry of Tribal Affairs which are as follows:

S.No. Activity
1   Provision of pucca houses
2   Connecting roads
3a   Piped Water Supply/
3b   Community water supply
4   Mobile Medical Units with medicine cost
5a   Construction of hostels
5b   Vocational education & skilling
6   Construction of Anganwadi Centers
7   Construction of Multipurpose Centers (MPC)
8a   Last mile connectivity
8b   Provision of 0.3 KW solar off-grid system
9   Solar lighting in streets
10   Setting up of Van Dhan Vikas Kendras
11   Installation of mobile towers

Other than the interventions mentioned above, the following intervention of other Ministries will be part of Mission:

i. Ministry of Ayush will set up Ayush Wellness Centre as per existing norms and Ayush facilities will be extended to PVTG habitations through Mobile Medical Units.

ii. Ministry of Skill Development and Entrepreneurship will facilitate skill and vocational training in PVTG habitations, Multipurpose centres and hostels as per the suitable skills of these communities.

Relevance: GS Prelims & Mains Paper II; Governance
Source: PIB

Bilateral Relations and International Organizations

1.'Prisoner's dilemma' in international relations

Why in news?

Addressing Goa Maritime Conclave, Defence Minister Rajnath Singh referred to the concept of "Prisoner's Dilemma" to underscore the need for countries to collaborate with each other instead of working at cross purposes.

What is Prisoner's Dilemma?

Prisoner's Dilemma refers to one of the most popular "games" in Game Theory, which is itself a branch of science that helps understand how people/entities behave under different circumstances. By simulating a game, Game Theory also shows how to achieve the best outcome.

For instance, it may appear straight-forward that a person or a country must always do what appears to provide them with the best pay-off. However, real life is complex and filled with uncertainty. Moreover, the final outcome depends on the actions of other people/countries as well. To be sure, the final outcome could change if the other party/parties act in conflict.

For instance, if in a bid to secure one's borders, a country starts hoarding more and more arms then it may — far from achieving that goal— start an arms race with the other country. Prisoner's Dilemma is a game that brings out this paradox clearly.

Suppose two people — A and B — are brought in for questioning about a crime. However, the evidence with the police is circumstantial and the best that they can hope to achieve is to put both A and B in jail for a year each. Unless, of course, they get more credible evidence. One way to do this is to get the prisoners to rat out each other.

So the police officer puts both A and B in separate rooms and provides both of them with a simple choice: If one prisoner says the other is involved in the crime, he can go scot-free while the other will be given a 15-year jail term.

Of course, if neither prisoner confesses, they both will only get one year's jail time. What if both confess? In that case, their jail times will be 10 years each. The pay-offs for each prisoner in this "game" can be summarised in the matrix below:

Simply put, the prisoner's dilemma is whether to confess or stay silent.

What should the prisoners do, then?

On the face of it, staying silent appears like the right course of action. If both prisoners stay silent, they get away with the best pay-off — that is, just serving one year in prison. But can either of them be sure that while they stay silent, the other will not rat them out? The fact is that if either of the prisoners stays silent, they run the risk of facing the maximum prison time (15 years).

However, if both confess, they condemn each other to 10 years of jail time. If one cannot be sure of the other prisoner's behaviour, then — and this is the paradox — confessing is the way forward.

The best outcome, of course, lies in co-operation. If both prisoners co-operate, they can achieve the best outcome and get away with just a year in prison.

Applications
This dilemma (and its answers) has many real life applications both in international law as well as in business.

For instance, should two companies selling the same product — say ice creams — keep undercutting each other by reducing the price in order to corner the market share? Could repeated use of this strategy lead them to reduce prices to such a level that it becomes economically unviable to stay in business? Would it not be better for them to agree on a floor price so that they can both earn healthy enough profits?

Similarly, should countries set some ground rules in geopolitics to ensure they don't enter an arms race that will eventually prove ruinous for their own economies and people?

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

2. Inauguration of Akhaura-Agartala Rail Link: A Historic Reconnectivity

The Reopening of Rail Connectivity
After a gap of nearly seventy-five years, Bangladesh and northeast India have re-established rail connectivity through Tripura. This groundbreaking event signifies a significant step towards connecting Tripura to Kolkata through Bangladesh.

Transforming Travel and Trade
The current railway route to Agartala requires trains to traverse a longer path via Guwahati and Jalpaiguri stations. The new rail link is poised to dramatically reduce both travel time and distance, benefiting not only Tripura but also southern Assam and Mizoram, creating more efficient trade routes. The enhanced connectivity is expected to foster increased India-Bangladesh trade, encompassing agriculture products, tea,

sugar, construction materials, iron and steel, consumer goods, and promoting stronger people-to-people ties.
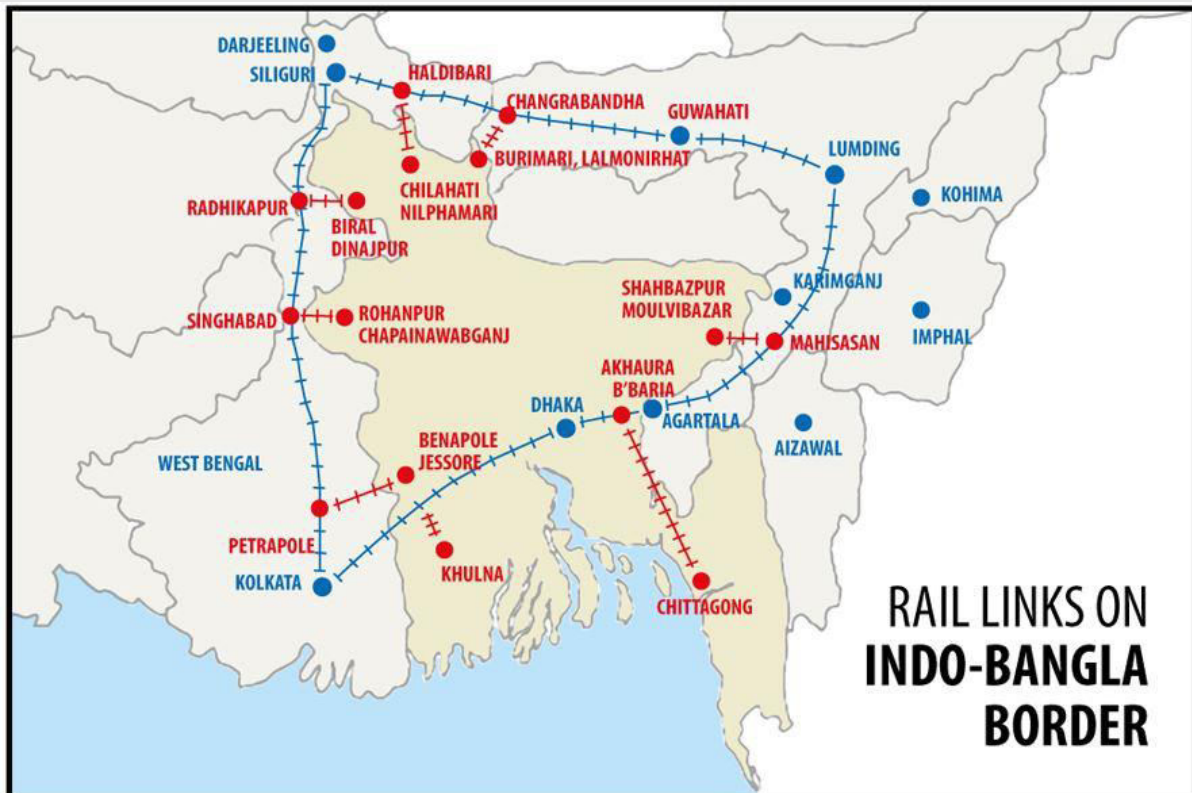
Project Details and Grant Support

The Akhaura-Agartala Cross-Border Rail Link spans a total of 12.24 kilometers, with a 6.78-kilometer dual gauge line in Bangladesh and 5.46 kilometers in Tripura. It's worth noting that Akhaura junction, located in Bangladesh's Brahmanbaria district, has historical significance due to its commercial and cultural ties with India's northeastern region dating back to the colonial era. One of the primary drivers for the original construction of the junction in the late 19th century was the demand from Assam's tea industry, which sought a connection to the Chittagong port.

Historical Significance and Revival

The revival of the Akhaura-Agartala rail link project gained momentum in 2010, with Prime Minister Manmohan Singh and Sheikh Hasina signing an agreement to rebuild this critical connection during Hasina's visit to New Delhi. This initiative marks an important milestone in regional connectivity and trade facilitation.

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

3. Inauguration of rail link connecting Northeast India with Bangladesh

Introduction

Prime Minister Narendra Modi and his Bangladesh counterpart Sheikh Hasina virtually inaugurated a rail link connecting Northeast India with Bangladesh. The Agartala-Akhaura project will cut down the travel time between Agartala and Kolkata too, from 31 hours to 10 hours.

The project is expected to boost tourism, trade, and people-to-people exchanges between the two countries.

What is the project?

In the 12.24-km Agartala-Akhaura railway line, 5.46 kilometres lie on the Indian side in Tripura, and 6.78 km in the Akhaura upa-zilla in Brahmanbaria district of Bangladesh. The train will start from Agartala and move to Nischintapur, on the Indian-Bangladesh border, where the immigration checks will be held. The first station on the Bangladesh side will be Gangasagar.

NEW SECTION INAUGURATED

12.24-km Length of Agartala-Akhaura rail rail link

₹1255.1 cr Total Cost of the Project

Who executed the Project?

The Indian Railway Construction International Limited (IRCON), a Public Sector Undertaking (PSU) under the Indian Railways, did the work on the Indian side, and Texmaco, a private Indian firm, implemented the work on the Bangladesh side.

Why is the project important to Tripura?

For land-locked Tripura, any connectivity project is of great practical significance. Due to the Agartala-Akhaura railway project, the distance between Agartala and Kolkata will be effectively reduced from 1600 km to 500 km.

However, connectivity with Bangladesh also holds emotional significance. Tripura shares an 856-km international border with Bangladesh, the second highest after West Bengal. The North Eastern state is surrounded by the country on all three sides except Assam on the fourth. During the 1971 Indo-Pakistan war and the creation of

Bangladesh, Tripura, a state which then had only 14 lakh people, sheltered nearly 15 lakh East Pakistani refugees. It ran at least 8 major muktijoddha (liberation warrior) training camps. With the new connectivity project, people on both sides can now hope for closer and smoother ties.

What other trains run between India and Bangladesh?
The latest train service is part of an ongoing effort to boost connectivity between India and Bangladesh over the past few years. Three trains, the Bandhan Express, the Maitree Express and the Mitali Express, run between West Bengal and Bangladesh.

The Bandhan Express reboots an old rail link between Kolkata and Khulna, the third-largest city of Bangladesh. Until the 1965 war between India and Pakistan, this route was served by the Barisal Express. The governments of PM Modi and Sheikh Hasina restarted the service in 2017. The Bandhan uses the Petrapole-Benapole border crossing.

The Maitree Express between Kolkata and Dhaka Cantonment started in April 2008. The Mitali Express, announced by PM Modi during his visit to Dhaka in March 2021, connects Siliguri in North Bengal with the Bangladesh capital.
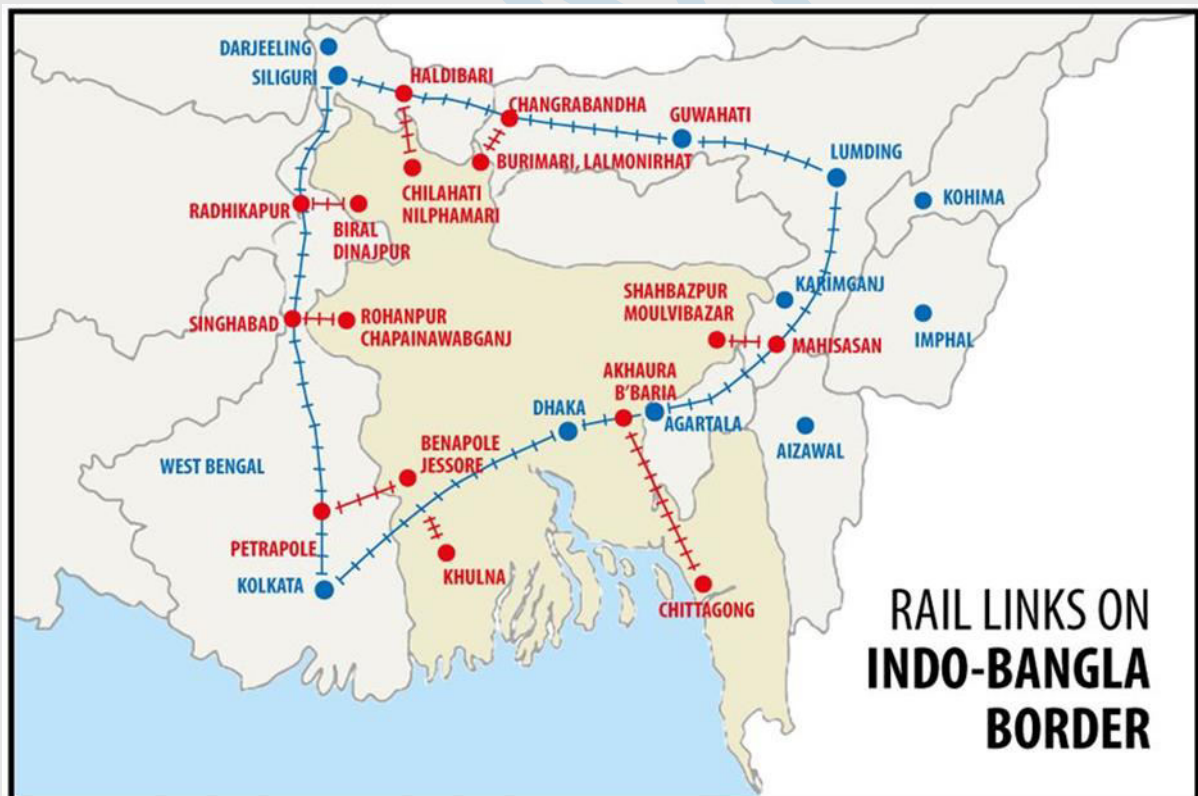
RAIL LINKS ON **INDO-BANGLA BORDER**

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

Why the Deportation Order?

The Pakistani government has ordered the deportation of undocumented migrants, with a primary focus on Afghan refugees. Over 4 million Afghans reside in Pakistan, and an estimated 1.7 million of them lack proper documentation. The deadline for departure was October 31, after which arrest and expulsion awaited those who remained. Even before the deadline, authorities began apprehending undocumented individuals and, in some cases, demolishing homes to enforce the order.

Reasons Behind Deportation

The Pakistani government has decided to proceed with the deportations despite objections from the United Nations, rights organizations, and Western embassies. The returning Afghans face an uncertain future due to the dire conditions in Afghanistan, including a collapsed economy, earthquakes, food insecurity, and human rights abuses under the Taliban regime. Women and girls returning may be denied education and job opportunities.

Historical Background

Many of these Afghan migrants fled their homeland during the Soviet war in the 1970s and have limited ties to or prospects in Afghanistan. Some were even born in Pakistan. Document acquisition has proven challenging due to bureaucratic processes.
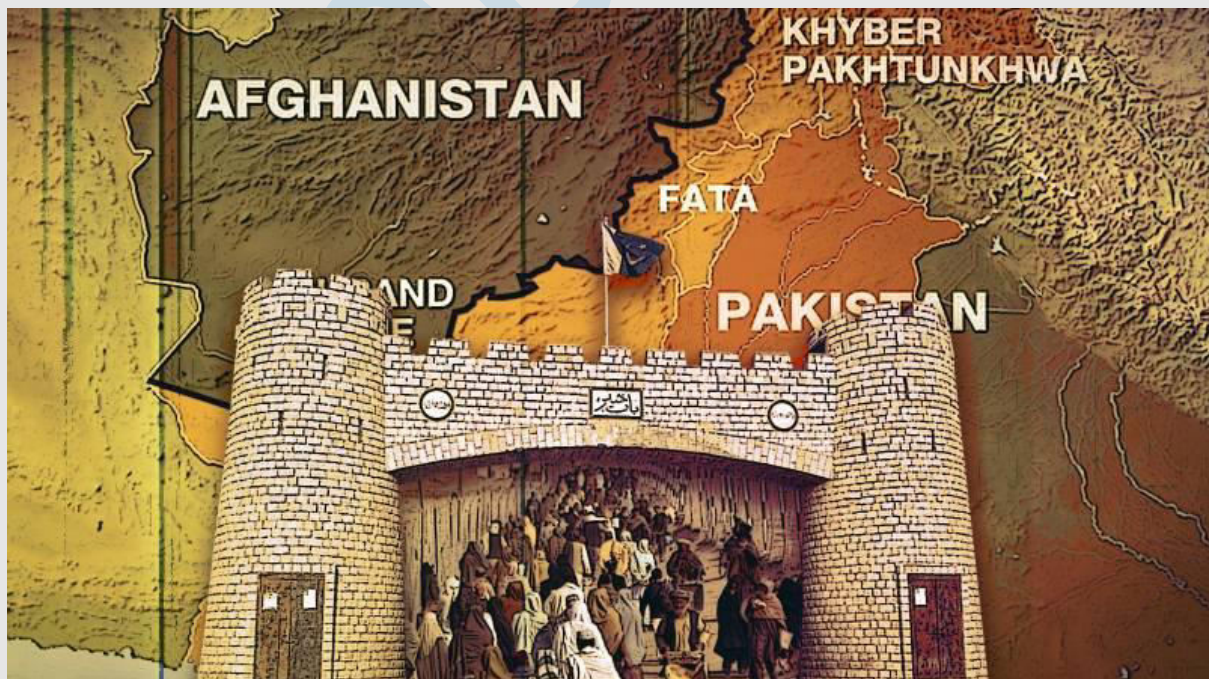
Pakistan's Perspective

Pakistan argues that it must safeguard its economic interests and national security. The country faces economic difficulties and considers undocumented migrants, who do not pay taxes, as a burden on its limited resources. Furthermore, Pakistani authorities accuse Afghan migrants of involvement in various criminal activities, including terrorism, street crimes, and drug trafficking.

Deportation Timing
Several factors contribute to the timing of this decision. Pakistan's economy is struggling, and it has faced terror attacks by Tehreek-e-Taliban Pakistan. Additionally, Pakistan currently operates under a caretaker government ahead of the upcoming General Elections in February, which insulates it from potential political or electoral consequences of the deportations.

Taliban's Response
The Taliban has criticized the deportations and requested more time to prepare for the returnees. Authorities in Afghanistan are establishing temporary camps for those returning, providing food, shelter, healthcare, and SIM cards. The Taliban has also committed to assisting returnees in finding employment. However, the timing of the deportations, amidst an earthquake and approaching winter, presents challenges for Afghanistan's fragile situation.

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

5. UNESCO's Recognition of Kozhikode as a 'City of Literature'

Introduction
Kozhikode, a city in Kerala, has been designated as a 'City of Literature' by UNESCO's Creative Cities Network (UCCN). Gwalior from Madhya Pradesh was also among the 55 new cities to join the network. These cities have been handpicked to represent seven creative fields — crafts and folk arts, design, film, gastronomy, literature, media arts, and music. Kozhikode was included in the category of literature and Gwalior in the category of music.

In this article, we'll explore what the UCCN is, the Indian cities included in it, and the implications of such recognition.

The UNESCO Creative Cities Network (UCCN)
The UCCN was established in 2004 with the goal of fostering collaboration among cities that prioritize creativity as a key element for sustainable urban development. It comprises 350 cities across more than a hundred countries. The network aims to harness the creative, social, and economic potential of cultural industries to support UNESCO's objectives of cultural diversity, resilience to challenges like climate change,

inequality, and urbanization, and the promotion of creativity in urban planning and problem-solving.

Indian Cities in the Network
In addition to Kozhikode and Gwalior, several other Indian cities are part of the UCCN:
-Varanasi (music)
- Srinagar (crafts and folk arts)
- Chennai (music)

Kozhikode's Literary Heritage
Kozhikode, situated in North Kerala, boasts a rich literary and cultural heritage. The city is home to numerous influential figures in Kerala's literary and cultural scene, with various media houses, publishing houses, and libraries contributing to its literary tradition. Notable authors such as S.K. Pottekkatt, Vaikom Muhammad Basheer, and M.T. Vasudevan Nair have made significant contributions to Kozhikode's literary legacy. The city has also nurtured talents in film and theatre over the past few decades.

Objectives of UCCN
Membership in the UCCN allows cities to acknowledge the importance of creativity in urban development, fostering partnerships between the public and private sectors and civil society. It aims to establish centers of creativity and innovation while providing opportunities for cultural professionals and creators. These cities work toward achieving the United Nations' sustainable development agenda.

Areas of Action
The UCCN's objectives are realized through actions taken at both the city and international levels. Cities engage in professional and artistic exchanges, research, and evaluations to share experiences and best practices in creativity and cultural innovation.

Annual Conference
One of the highlights of the UCCN is its annual conference, which gathers mayors and stakeholders from member cities worldwide. This conference facilitates the exchange of practical information on policies and activities implemented by creative cities and encourages collaboration between cities on various initiatives. The last conference took place in Istanbul, with the next one scheduled for July 2024 in Braga, Portugal.

Membership Requirements
Every four years, member cities must submit a Membership Monitoring Report, demonstrating their commitment to realizing the UCCN's mission. These reports outline action plans for the subsequent four years, detailing achievements, lessons learned, and the impact of their designation as creative cities.

6. Yemeni Houthi Attack on Israel: Implications and Background

Who Are the Houthis?

The Houthis are a Yemeni clan belonging to the Zaidi Shia sect, and their movement, officially known as Ansar Allah, emerged in the 1990s in opposition to the Yemeni government at the time. They control territory in Yemen's west and northwest, including the capital, Sana'a. They are backed by Iran and are part of the "Axis of Resistance," which opposes Israel and Western powers. This group includes Hezbollah and Hamas, and they are currently in conflict with the internationally recognized Yemeni government supported by Saudi Arabia and the UAE.

Why Have the Houthis Attacked Israel?

The Houthi attack on Israel is part of a broader pattern of attacks by groups within the Axis of Resistance against Israel and the United States, Israel's ally. The Iranian-backed militias in Iraq and Hezbollah have also been involved in confrontations with US and Israeli forces. The Houthis have a long-standing anti-Israel and anti-Western stance. They blame Israel for instability in the Middle East and have expressed their intention to continue attacks until what they perceive as Israeli aggression ceases.

Concerns and Implications

While the Houthi attacks on Israel may not pose a direct military threat due to the geographical distance, they have the potential to escalate the conflict in the Middle

East. The danger lies in the possibility that these attacks could lead to a broader war in the region, particularly involving Saudi Arabia, which is in a delicate position. The flight path of drones or missiles launched from Yemen crosses over western Saudi Arabia. Saudi Arabia, while hesitant to be seen as taking sides, could be pushed to escalate the situation, potentially leading to a wider Middle East conflict.

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

7. Understanding U.S.-Israel Relations

Introduction
This text discusses the historical and current state of relations between the United States and Israel. It highlights the strong and long-standing bond between the two countries, as well as the factors that contribute to this relationship.

Origins of U.S.-Israel Ties
The U.S. has supported the idea of a Jewish homeland in Palestine dating back to the early 20th century. The Balfour Declaration, U.S. congressional resolutions, and swift recognition of Israel in 1948 underscore the early alignment of interests. While there were tensions in the early years, such as during the Suez Crisis and concerns about Israel's nuclear program, the 1967 Six-Day War marked a shift towards closer U.S.-Israel relations due to common Cold War interests.

In this war, two of the Arab countries Israel defeated — Egypt and Syria — were Soviet allies. From then on, the U.S. started seeing Israel as a stable ally who can check the expansion of Soviet influence in West Asia.

Current Status of U.S.-Israel Ties
Today, the U.S. and Israel maintain a robust alliance. The U.S. provides significant financial, military, and political support to Israel. Israel is a major recipient of U.S. aid and benefits from a deep defense partnership, which includes joint research and development. The U.S. has consistently used its veto power in the UN Security Council to protect Israel from critical resolutions. U.S. military support for Israel has been evident in various conflicts, including the 1973 Yom Kippur War and Israel's 1982 invasion of Lebanon.

Tensions in the Relationship
While there have been occasional disagreements and personality clashes between U.S. Presidents and Israeli Prime Ministers, these have not led to a breakdown in their relationship. Notable instances of tension include President Carter's push for peace with Egypt, President George W. Bush's calls for restraint in the West Bank, and

President Obama's differences with Prime Minister Netanyahu over the Iran nuclear deal.

Why the U.S. Supports Israel
Several factors contribute to the enduring U.S. support for Israel. Israel's strategic value in a volatile region has made it appealing to the U.S., both during the Cold War and in the post-Cold War era. Additionally, the influence of American public opinion, electoral politics, and the powerful Israel lobby, along with strong ties in the military-industrial complex, have solidified the institutional consensus in the U.S. about its relationship with Israel, regardless of the political party in power.

In summary, the U.S.-Israel relationship is a complex and enduring one, rooted in historical ties and influenced by various geopolitical and domestic factors.

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

8. Watermelon - a symbol of the Palestine cause

In the many posts showing support for Palestine on social media, a popular symbol is the watermelon. Pictures and emojis of the sliced fruit, as well as artwork featuring it, are often used to express solidarity with the people of Palestine.

Why a watermelon?

A watermelon when sliced shows the colours of the Palestinian flag — red, green, black, and white. As carrying and displaying the Palestinian flag has often been barred by Israeli authorities, a watermelon is used to symbolise it instead. Moreover, many claim that posts with overt Palestinian symbols are restricted by the US-headquartered bigger platforms, and hence, the sliced watermelon comes in useful here too.

The watermelon is also widely cultivated in Palestine, from the West Bank to Gaza, and features prominently in Palestinian cuisine.

9. BDS movement - led by Palestinian groups against Israel

Why in news?

Amid the ongoing Israel-Hamas war, Boycott, Divestment and Sanctions (BDS) movement has urged the boycott of some of the biggest and most visible multinational companies, including McDonald's, Puma, Google, Disney, and Amazon.
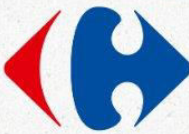
So what is the BDS Movement?

The movement was launched in 2005 by more than 170 Palestinian groups to garner international support for Palestinian people's rights. On its website, it describes itself as an "inclusive, anti-racist human rights movement that is opposed on principle to all forms of discrimination, including anti-semitism and Islamophobia."

It draws inspiration from the South African anti-apartheid movement. BDS urges "nonviolent pressure on Israel until it complies with international law" to meet three demands on Israel:

"1. Ending its occupation and colonization of all Arab lands and dismantling the Wall. Here, "the Wall" refers to the structure separating Israeli and Palestinian settlements in the West Bank.

2. Recognizing the fundamental rights of the Arab-Palestinian citizens of Israel to full equality.

3. Respecting, protecting and promoting the rights of Palestinian refugees to return to their homes and properties as stipulated in UN Resolution 194."

How does BDS aim to achieve these goals?
BDS says boycotts involve withdrawing support from Israel's government, the sporting, cultural and academic institutions associated with it, and "from all Israeli and international companies engaged in violations of Palestinian human rights."

For example, it says "Puma sponsors the Israel Football Association, which includes teams in Israel's illegal settlements on occupied Palestinian land," urging the company's boycott.

On these lines, the divestment campaigns "urge banks, local councils, churches, pension funds and universities to withdraw investments" from Israel. Sanctions campaigns "pressure governments to fulfil their legal obligations to end Israeli apartheid", and for suspending Israel's membership in international forums such as UN bodies and FIFA.

Strategically, it aims to focus on a "smaller number of carefully selected companies and products for maximum impact". "Many of the prohibitively long lists going viral on social media do the exact opposite of this strategic and impactful approach," it says, adding that these lists could risk being ineffective.

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

10. Why have Houthis seized an India-bound ship, how this is linked to the Gaza war

Introduction
The Yemen rebel group of Houthis seized an Israel-linked ship bound for India on November 19, raising fears of another dimension being added to the ongoing Gaza conflict. Houthi fighters descended on the ship from helicopters and took all 25 crew members hostage. Israel has claimed the ship is British-owned and Japanese-operated.

Why was the ship hijacked?
The ship, Galaxy Leader, was heading from Turkey towards Pipavav in Gujarat, and had no cargo on board. Its crew members are from Bulgaria, Romania, Ukraine, Mexico, and the Philippines.

Hijacking of the cargo ship Galaxy Leader

The hijacking is in line with the Houthis' earlier statement, where they had said they would attack Israel-linked ships in the Red Sea and the crucial Bab al-Mandeb, a narrow strait that connects the Red Sea to the Gulf of Aden, if Israel continued its bloodshed in Palestine.

How has Israel reacted, and why is Japan involved?
Israel has said it does not own or operate the ship, nor is any crew member from Israel. The Galaxy Leader was operated by the Japanese firm Nippon Yusen. Japanese officials have condemned the hijack, and said they are negotiating with the Houthis while also seeking help from Saudi Arabia, Oman and Iran for the release of the ship and the crew.

Who are the Houthis, and why are they involved at all?
The Houthis are a rebel group locked in a civil war with the Yemen government for almost a decade. They are in power in northern Yemen, including the official capital Sanaa. The official government now operates out of Aden.

The group is named after the Houthi tribe. The Houthis are Zaydi Shias backed by Iran, while the Yemen government has the support of Iran's biggest rival Saudi Arabia and the West.

Houthis' support for "brothers and sisters in Palestine" stems from a staunch opposition to Israel and the West. As a fighting force, they are significant, with tens of thousands of fighters and a huge arsenal of ballistic missiles and armed drones. While the Houthi stronghold in Yemen is too far from Israel for their rockets and fighters to pose a direct threat, they have been firing missiles towards the "enemy country".

The main danger from the Houthis' activity is that their involvement can widen the conflict, potentially drawing in Iran. Also, if Israel wants to attack Houthi territory in retaliation, its rockets will have to go over Saudi Arabia, possibly forcing the powerful Muslim country to wade into the conflict. Seizing of vessels in the sea can also involve many other countries with stakes in the maritime trade in the region.

11. Humanitarian pause in Gaza: How it is not the same as a ceasefire

Why in news?
Qatar, on November 22, announced the success of mediation efforts between Israel and Hamas, resulting in an agreement for a humanitarian pause. Facilitated by Qatar, Egypt and the United States, the pause will last for four days, subject to extension, with the starting time to be announced shortly.

While expected to provide much needed respite to war-torn Gaza, this is not the same as a ceasefire that human rights groups and activists around the world have been clamouring for.

A brief break in hostilities…
The United Nations defines a "humanitarian pause" as a "temporary cessation of hostilities purely for humanitarian purposes". Such pauses are usually limited to a

defined period, and to a specific area where the humanitarian activities are to be carried out.

... versus a more comprehensive cessation

A ceasefire, on the other hand, goes much further. The UN defines it as a "suspension of fighting agreed upon by the parties to a conflict, typically as part of a political process", with the goal being to "allow parties to engage in dialogue, including the possibility of reaching a permanent political settlement".

Simply put, unlike a humanitarian pause, which is fairly limited in its scope, a ceasefire is a longer-term arrangement to stop fighting in order to arrive at a political/diplomatic solution. In context of the ongoing conflict in Palestine, the two thus have completely different meanings as well as motivations behind them.

"A small bandage on an open wound"

The humanitarian pause will simply provide some relief amidst the relentless hostilities, hopefully help civilians in distress, while at the same time allowing Israel to continue its military assault. For many people, this is simply not enough and in fact prolongs the ongoing suffering.

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

12. Ben Gurion Canal — an alternative to the Suez Canal

Ben Gurion Canal Project

The Ben Gurion Canal Project, named after Israel's founding father David Ben-Gurion (1886-1973), remains one of the most ambitious infrastructure projects ever planned on paper.

The idea is to cut a canal through the Israeli-controlled Negev Desert from the tip of the Gulf of Aqaba — the eastern arm of the Red Sea that juts into Israel's southern tip and south-western Jordan — to the Eastern Mediterranean coast, thus creating an alternative to the Egyptian-controlled Suez Canal.

Ben Gurion Canal Project, which was first envisioned in the 1960s would, if it were to be actually completed, transform global maritime dynamics by taking away Egypt's monopoly over the shortest route between Europe and Asia.

Suez Canal
When it opened in 1869, the Suez Canal revolutionised global maritime trade. By connecting the Mediterranean and Red Seas through the Isthmus of Suez, it ensured that ships travelling between Europe and Asia would not have to travel all the way around the continent of Africa. The canal cut the distance between London and Bombay (now Mumbai) by a more than 41 per cent.
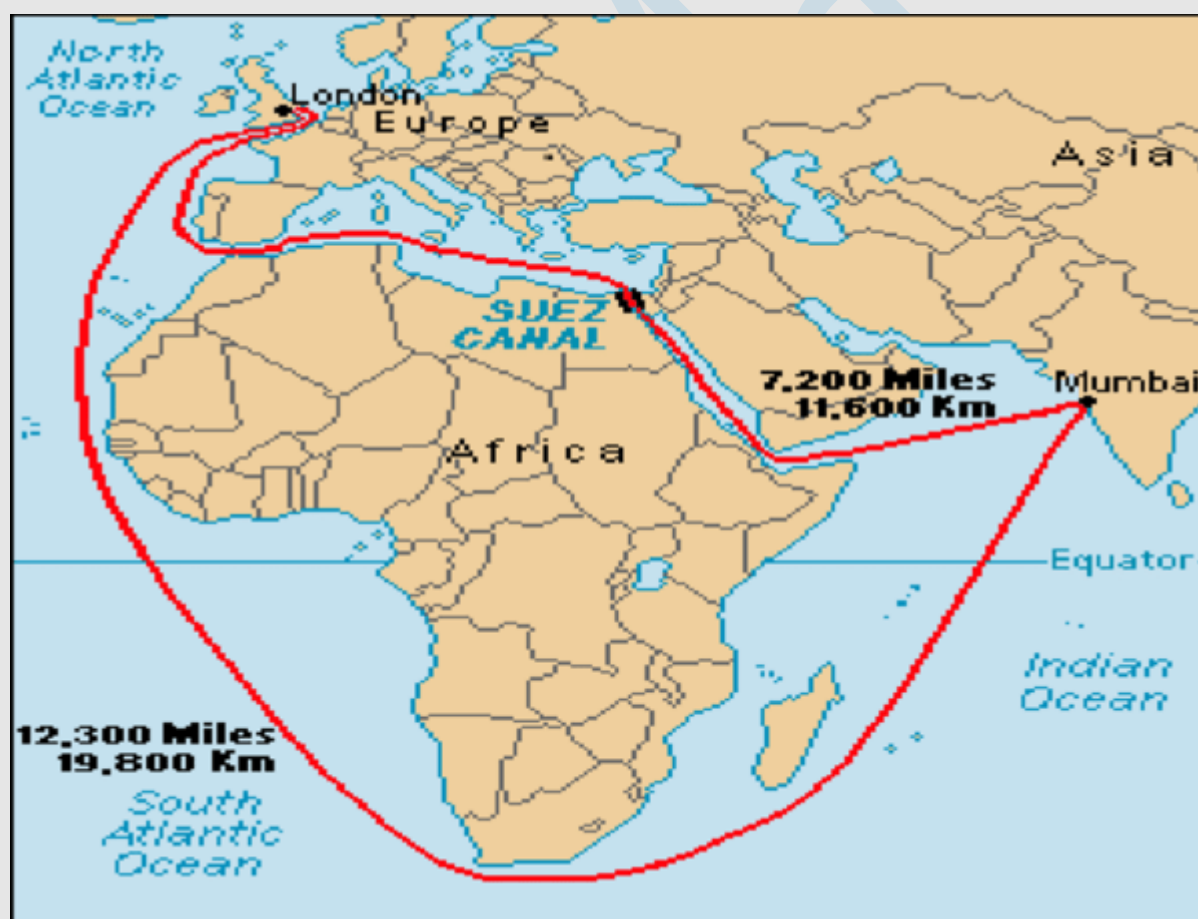
The Suez Canal shortened the distance between London and Bombay by well over 4,000 nautical miles (1 nm = 1.852 km)

In the 2022-23 fiscal year, around 26,000 vessels crossed the Suez Canal, accounting for approximately 13 per cent of global shipping.

Issues with Suez Canal

First, the 193 km-long, 205 m-wide, and 24 m-deep Suez Canal is the world's biggest shipping bottleneck. Despite being widened and deepened over the years, it remains perennially congested, with long queues at either end. In March 2021, the mammoth cargo ship Ever Given got stuck in the canal, blocking passage for more than a week. It was estimated that the resulting "traffic jam" held up an estimated $ 9.6 billion of goods every day.

Also, Egypt's control over the waterway has been a source of conflict for almost 70 years now. In 1956, after President Gamal Abdel Nasser (1918-70) decided to nationalise the canal, war broke out, with the UK, France, and Israel attacking Egypt in order to regain control.

The Suez Crisis ended in a military victory for the aggressors but an overwhelming political victory for Egypt, which kept control over the canal, which was shut for more than six months due to the conflict.

The Suez Canal was also the focal point of both the 1967 and 1973 Arab-Israeli wars, and was shut from 1967-75.

Importance of Suez Canal for Egypt

The canal is, of course, critical to Egypt's economy. It collects all the toll revenue generated, in addition to the benefits it brings to its local economy. In the 2022-23 fiscal year, Egypt's Suez Canal Authority saw toll revenues reach a record $ 9.4 billion — accounting for nearly 2 per cent of Egypt's GDP of $ 476.8 billion.

What has stopped Israel from constructing the canal?

First and foremost, such a project would be extremely complex and almost prohibitively expensive. The estimated cost of such a project may be as high as the $ 100 billion, much more than what it might take to widen the Suez Canal and solve its traffic problem.

Costs aside, the planned route of the Ben Gurion Canal is over 100 km longer than the Suez Canal, primarily due to limitations of the terrain and topography. Even if built, many ships might still favour the older, shorter route.

Most importantly, however, a canal which will potentially transport billions of dollars worth of freight daily cannot run in land under constant military threat, from Hamas rockets or Israeli attacks.

It has been speculated that one of the reasons behind Israel's desire to eliminate Hamas from the Gaza Strip and completely control the Palestinian enclave is to give

itself the chance to better explore a dramatic economic opportunity that has been talked about for several decades, but for which peace and political stability in the region is an essential prerequisite.

13. Bhutan's King Visits India Amid Accelerated Border Talks with China

The king of Bhutan, Jigme Khesar Namgyel Wangchuck, arrived in New Delhi on November 5 for a significant visit. This visit coincides with Bhutan's ongoing border negotiations with China, which has raised concerns in India.

Bhutan's Diplomatic Declarations in Beijing

During the 25th round of bilateral border talks in Beijing, Bhutan's Foreign Minister Tandi Dorji made surprising declarations, expressing Bhutan's sincere desire to resolve the border dispute with China and establish diplomatic relations with China at the earliest opportunity.

Background of Border Dispute and Talks

The border talks between Bhutan and China have a complex history, with the 25th round occurring after a seven-year hiatus following the Doklam standoff in 2017. If on account of boundary talks, China gets control of Doklam Plateau and adjoining areas, then it will reach just next to Siliguri corridor. This corridor is the only point of connection between Mainland India and Eight North eastern States.

India's Strategic Concerns

India's primary concern relates to China potentially pressuring Bhutan into ceding control over the Doklam plateau, in exchange for incentives from China. The speed of progress in border talks and the location of recent negotiations are highlighted.

14. The Ongoing Crisis in the Democratic Republic of Congo

Conflict Origin

The conflict in the Democratic Republic of Congo (DRC) traces back to the 1990s, sparked by the aftermath of the Rwandan genocide in 1994. Ethnic tensions and violence have plagued the eastern DRC ever since, leading to numerous rebel groups and instability.
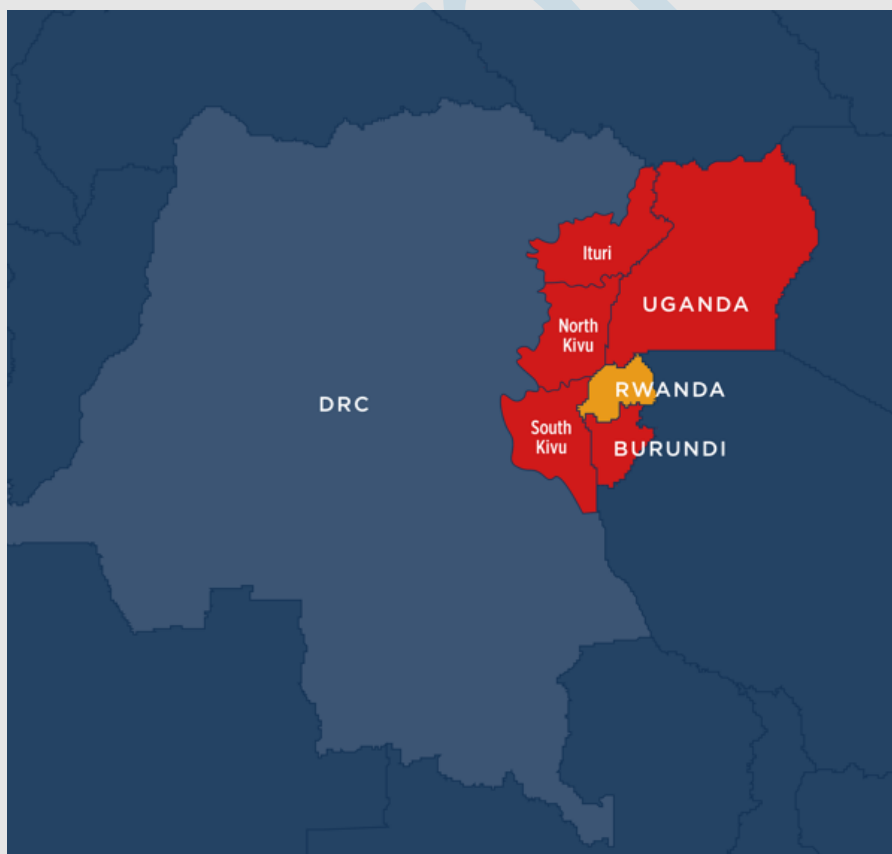
Current Conflict and Major Groups

The DRC faces insurgency by multiple rebel groups, with over 120 such groups operating in the eastern provinces of North Kivu, South Kivu and Ituri. The Mouvement du 23 Mars (M23) rebel group is a significant player, alongside others.

Escalating Tensions with Neighbors

Tensions between the DRC and neighboring Rwanda have been on the rise, with both countries accusing each other of supporting different rebel groups. The resurfacing of M23 in 2021 worsened the security situation in eastern DRC, leading to frequent attacks and territorial control by the rebels.

Causes of Displacement

Displacement in the DRC is primarily driven by ethnic intolerance, insurgency, political uncertainty, and a lack of inclusive governance. The presence of ethnic militias, regional tensions, and a weak international response have further exacerbated the humanitarian crisis in the region.

Relevance: GS Prelims; International Relations
Source: The Hindu

15. India holds '2+2' Ministerial dialogue with the US

Introduction

Indian Defence Minister Rajnath Singh and External Affairs Minister S Jaishankar met their counterparts from the US government, Defence Secretary Lloyd Austin and Secretary of State Antony Blinken respectively, for the fifth 2+2 Ministerial Dialogue held in New Delhi on November 11.

The 2+2 meetings have been held annually with the US leaders since 2018.

What are 2+2 meetings and what is the rationale behind them?

The 2+2 meetings signify the participation of two high-level representatives, Ministers holding Foreign and Defence portfolios, from each of the two countries who aim to enhance the scope of dialogue between them.

Having such a mechanism enables the partners to better understand and appreciate each other's strategic concerns and sensitivities taking into account political factors on both sides, in order to build a stronger, more integrated strategic relationship in a rapidly changing global environment.

Who are India's 2+2 partners?

The US is India's oldest and most important 2+2 talks partner.

The first 2+2 dialogue between the two countries was held during the Trump Administration in New Delhi in September 2018.

It was also seen as a replacement for the Strategic and Commercial Dialogue, held between the foreign and commerce ministers of the two countries during the previous Obama administration.

Additionally, India has held 2+2 meetings with ministers from Australia, Japan, the United Kingdom and Russia.

The 2+2 dialogue with Japan began in 2019. Thereafter, such dialogue was adopted in 2021 with Russia. The same year, 2+2 dialogue with Australia also began. In October 2023, the first such meeting with the UK took place. It is to be noted that India has 2+2 dialogue with all the members of Quad namely US, Japan and Australia.

Defence and strategic agreements under 2+2

Over the years, the strategic bilateral relationship with its partners, including the dialogues held in the 2+2 format, has produced tangible and far-reaching results for India.

India and the US have signed a troika of "foundational pacts" for deep military cooperation, beginning with the Logistics Exchange Memorandum of Agreement (LEMOA) in 2016, followed by the Communications Compatibility and Security Agreement (COMCASA) after the first 2+2 dialogue in 2018, and then the Basic Exchange and Cooperation Agreement (BECA) in 2020.

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

16. Xi-Biden to meet at APEC amid US-China tensions

Introduction

The Asia-Pacific Economic Cooperation (APEC) grouping is meeting in San Francisco in the United States for the Leaders' Week which began on November 11 and will conclude with the Economic Leaders' Retreat on November 17. US President Joe Biden and China's President Xi Jinping will have their on the sidelines of the APEC summit.

India is not a member; however, India's Union Minister for Commerce and Industry, Piyush Goyal, is attending the forum.

What is APEC and when was it founded?

APEC is a regional economic forum that was established in 1989. Its stated aim was to "leverage the growing interdependence of the Asia-Pacific and create greater

prosperity for the people of the region through regional economic integration". Notably, many East Asian countries had recorded increasing growth rates in the '80s and the decade preceding the formation of the forum.

The 21 members of APEC are termed "economies" (rather than countries or member states) because trade and economic issues are the focus of the grouping. Because of use of term economies, Taiwan and Hong Kong attend APEC meetings as distinct entities, even though China says they are parts of China and not independent entities. The APEC economies are Australia, Brunei, New Zealand, Papua New Guinea, Hong Kong (as part of China), the Philippines, Indonesia, Malaysia, Vietnam, Singapore, Thailand, Chinese Taipei (Taiwan), China, Japan, South Korea, Russia, Canada, the United States, Mexico, Peru, and Chile – as located geographically around the Pacific Ocean.

What role has it played over the years?
The grouping has always championed free trade, the lowering of trade tariffs, and economic liberalisation. According to the US State Department, "During its first five years of operation, APEC established its core objectives. In the 1991 Seoul Declaration, APEC member economies proclaimed the creation of a liberalized free trade area around the Pacific Rim as the principle objective of the organization."

India's Position
India has expressed interest in joining APEC, and made a formal request in 1991 – the year in which the Union government ushered in economic reforms for liberalisation and globalisation. In 2016, then Union Minister for Commerce and Industry Nirmala Sitharaman told Parliament that the request to join was based on India's geographical location, the potential size of the economy, and degree of trade interaction with the Asia-Pacific.

The response noted that APEC has had an informal moratorium on expanding membership for many years now. This is despite the fact that the US-India Joint Strategic Vision for the Asia-Pacific and Indian Ocean Region issued in 2015 states that "The United States welcomes India's interest in joining the Asia Pacific Economic Cooperation forum, as the Indian economy is a dynamic part of the Asian economy."

17. Escalation of Conflict in Myanmar

Introduction
A recent coordinated offensive by Myanmar's ethnic rebels against the junta has intensified the ongoing conflict, raising concerns about the junta's ability to maintain control.

Ethnic Rebels Gain Ground
The Three Brotherhood Alliance, a coalition of ethnic minority armed groups, claims territorial gains along Myanmar's border with China, with junta forces reportedly surrendering. Clashes have also erupted in Rakhine State and Chin State, bordering India.

Junta's Response and Civilian Casualties
Faced with battlefield setbacks, the junta has resorted to air strikes, resulting in heavy civilian casualties. The military-appointed President, Myint Swe, acknowledges the challenges, emphasizing the need for careful control of the rebel offensive. Despite the junta's use of violence to establish order since the 2021 coup, Myanmar faces ongoing instability.

Shift in Political Dynamics
The pro-democracy movement, once led peacefully by Aung San Suu Kyi, has shifted its approach, forming an underground government and aligning with ethnic rebels. This unexpected outcome poses new challenges for the Junta, Military regime in Myanmar.

Call for Regional Intervention
With over 4,000 civilians killed and 20,000 jailed, along with 1.7 million displaced, there is a pressing need for regional intervention. The rebels, led by a new generation of leaders, call for talks and demand a federal democratic system with autonomy for ethnic minority regions.

State | Nay Pyi Taw
Region | Ethnic Armed Organizations Regions
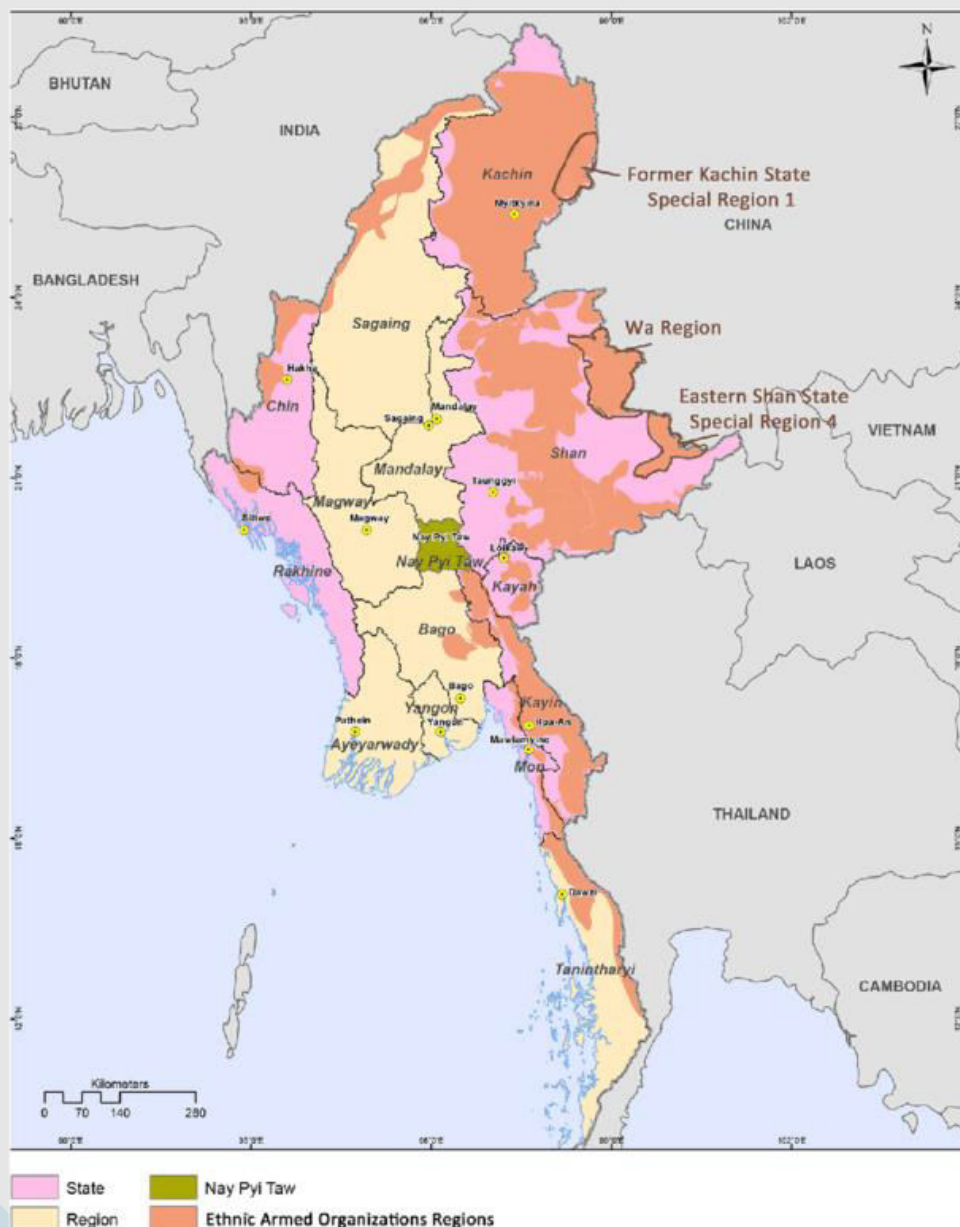
Urgency for Ceasefire and Dialogue

As violence continues, especially in areas bordering India and China, there are potential regional repercussions. Major players, including ASEAN, should play a proactive role in achieving a ceasefire, paving the way for meaningful dialogue to restore democracy and freedoms in Myanmar.

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

18. Why Myanmar Nationals Are Seeking Refuge in Mizoram

Civil War Spillover: Myanmar's Internal Strife

Following a civil war outbreak in Myanmar, over 1,500 Myanmar nationals sought refuge in Mizoram's Champhai district. The conflict involved clashes between the Myanmar Army {also called military junta (or the Tatmadaw)} and pro-democracy militias in the western Chin State, bordering Mizoram.

Coup Fallout

In February 2021, a new junta, the State Administration Council (SAC) dominated by the Myanmar armed forces, organised a military coup that ousted the civilian National League for Democracy-government and detained its leader Aung San Suu Kyi among many other legislators and party officials. The junta said it captured power because of irregularities in the November 2020 elections, even though international observers called the elections fair. The coup led to the collapse of the democratic phase that opened up after the 2008 Constitution. This Constitution allowed for reserving 25% of the Parliament of Myanmar for serving military officers, and control over home, border affairs and defence by the military, thereby limiting civilian powers.

Ongoing Civil War

After the February 2021 coup, there were nationwide protests and civil disobedience campaigns, leading to what was called the "Spring Revolution". Members of the deposed NLD and other elected ethnic lawmakers formed a new political body called the Committee Representing Pyidaungsu Hluttaw (or National Parliament in Burmese), which along with other civil society actors, ethnic party representatives and others later formed the National Unity Consultative Council (NUCC) — a dialogue platform seeking to unite pro-democratic forces.

The junta responded by violently cracking down on the largely peaceful movement leading to the NUG announcing the creation of People's Defense Forces (PDF), and in September 2021, explicitly gave the call for the PDF and other rebels to attack the junta, launching a civil war.

What has been the ethnic organisations' response to the coup?

The ethnic armed actors, despite coming under severe attack over the years from the Tatmadaw, have managed to establish autonomous enclaves in their areas. With the Tatmadaw unable to defeat them entirely, it signed ceasefires with groups that allowed them to retain arms and some autonomy in minority areas, a situation that persists even today.

Impact on India

The junta's first punitive action against ethnic armed organisations was targeted at those in Chin State in October 2021, an initiative that failed but resulted in several refugees fleeing to Mizoram and Manipur in India. While New Delhi passed strictures not to open camps or provide assistance, the Mizoram government defied the Union government's order to deport the refugees and allowed them to take shelter. The Mizo

people regard those from the Chin community as ethnic brethren. The influx of refugees in Manipur has heightened the ethnic conflict between the Kuki-Zo community and the majority Meiteis in the State.

How has China reacted?
Myanmar's closest ally, China, has leverage over some of the northern ethnic armed forces that are now engaged against the junta. While Beijing has publicly called for a cessation in hostilities, experts say that the Chinese are willing to tolerate the actions as the rebels have evinced interest in reining in illicit activities such as "telecom scam centres" in the Kokang zone. For instance, a rebel group announced that it is planning to attack the Laukkai township in Kokang which is controlled by junta-affiliated militias and is also host to many cybercrime compounds. These illicit centres have trapped thousands of Chinese nationals besides many from Southeast Asia, forcing them to carry out internet fraud, theft and cybercrime activities targeting Chinese citizens and others.

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

19. ICC Suspension of Sri Lanka Cricket: Reasons and Background

Grounds for Suspension: Government Interference
On November 10, the International Cricket Council (ICC) suspended Sri Lanka Cricket (SLC), citing "serious breach of obligations" related to the autonomous management of its affairs. The primary concern was the interference of the Sri Lankan government in the governance, regulation, and administration of cricket in the country.

Immediate Trigger: Post-World Cup Fallout
Following Sri Lanka's disappointing ninth-place finish in the 2023 World Cup, the Sports Minister, Roshan Ranasinghe, removed the SLC board and appointed an interim committee led by former captain Arjuna Ranatunga.

ICC Rules on Government Interference
According to ICC Memorandum & Articles of Association, each member must manage its affairs autonomously, without government interference. While politicians can hold office, decision-making authority should rest with an executive body determined through free and democratic elections.

Past Instances of ICC Action
SLC is the second full ICC member suspended for government interference, following Zimbabwe in 2019.

Deprivation of Rights During Suspension

During suspension, a member loses all rights, including the receipt of surplus ICC revenues, participation in sanctioned events, and attendance at meetings. Previous instances, such as Zimbabwe's de-recognition, led to a shutdown of cricketing activities and frozen funds.

Escrow Mechanism and Future Cricketing Schedule
In 2014-15, ICC placed funds due to Sri Lanka in escrow during partial sanctions. The future of Sri Lanka's suspension and potential reinstatement will be decided after the ICC board meeting in Ahmedabad following the Men's Cricket World Cup. No cricket matches are scheduled for Sri Lanka for at least a month.

Potential Resolutions and Future Course of Action
Sri Lanka's Sports Minister stated that the government would approach the ICC's dispute resolution committee. If unsuccessful, the ministry may turn to the Court of Arbitration for Sport in Lausanne, Switzerland.

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

20. Why has the China-Pakistan corridor stalled?

Why in news?
Seeking funds to the tune of $65 billion via infrastructure investment, Pakistan's caretaker Prime Minister Anwaarul Haq Kakar, on October 20, completed a five-day trip to Beijing. He was also attempting to allay China's demands regarding the China-Pakistan Economic Corridor (CPEC), the infrastructure project spearheaded by Beijing from 2015 that had reached an impasse due to disagreements over the Gwadar port in Balochistan.

What is the CPEC?
The CPEC — one of the One Belt, One Road's (OBOR) largest investments — was formally launched in 2015. Signing over 50 projects worth $45 billion, China set up the 'Silk Road Fund' to invest in CPEC projects planned till 2030. The main project was to establish a corridor connecting Pakistan's Gwadar port in Balochistan to China's Kashgar in the south-western Xinjiang region. The Silk Road Fund, which manages the investment, is being financed by a consortium of Chinese banks. The projects themselves are undertaken by various Chinese firms in collaboration with Pakistani companies. Apart from this corridor, a number of power projects and several special economic zones are to be developed under the CPEC.

When did trouble start?
The CPEC had teething troubles in 2016 as several projects ground to a halt over confusion on funding, contractor selection, delay in bidding process, differences over

tax exemption, and obtaining of no-objection certificates. For example, the Gwadar port faced multiple issues, starting with water supply. The 11.2 billion rupees project to supply, treat and distribute water to the port by connecting the Swad and Shadikaur dams was delayed as the port authorities were unclear if the project's funding was via a grant, an interest-free loan or a commercial loan from China. Other projects like the 600 MW Gwadar coal-fired power plant and the Gwadar Smart Port City Master Plan too ran into issues over uncertainty about funding.

Major Projects of China-Pakistan Economic Corridor
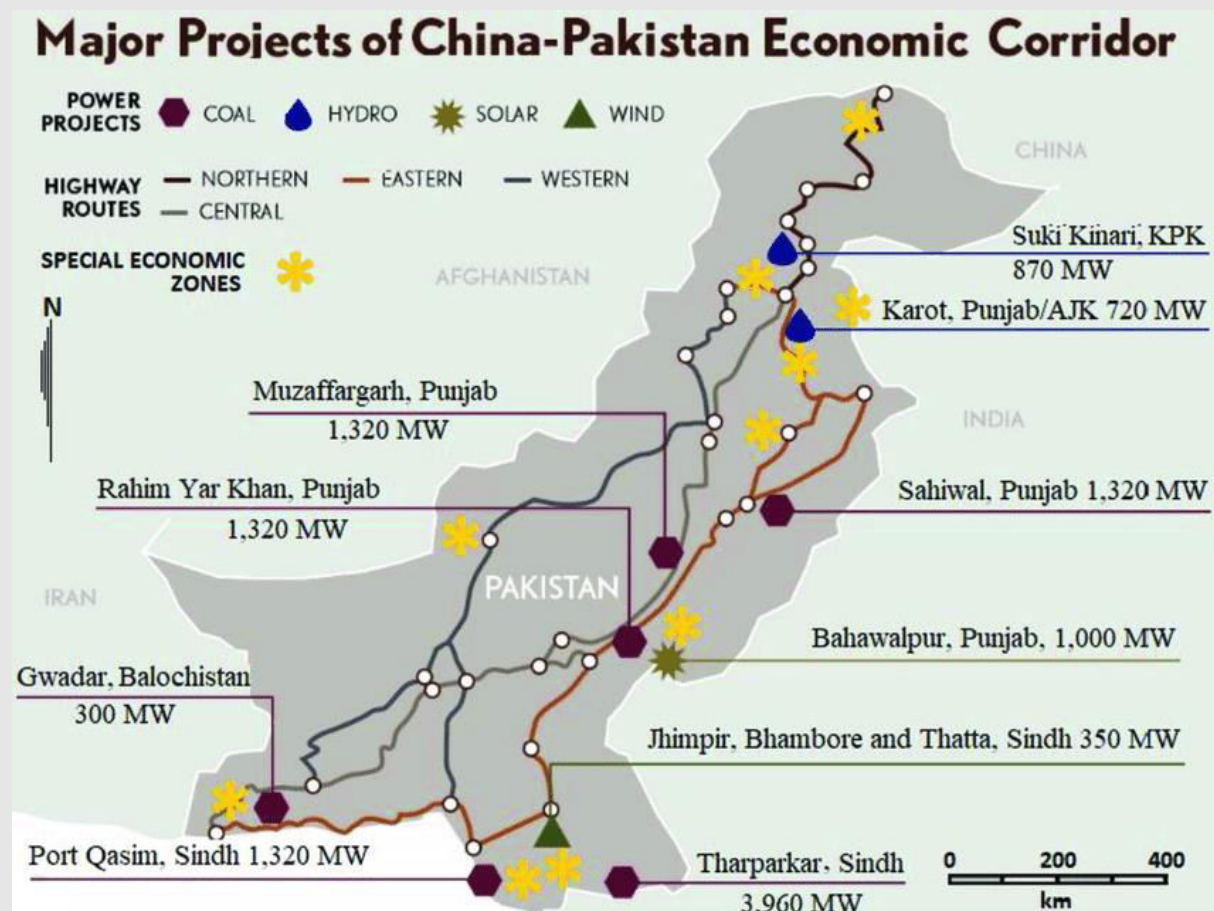
These projects are financed by commercial Chinese loans and are insured by the China Export and Credit Insurance Corporation (Sinosure) against non-payment, guaranteed by the Pakistan government. Sinosure levies a 7% debt servicing fee, a yearly varying interest, and financing fee, making the entire project a huge economic burden on the debt-ridden nation. Several experts have argued that the high costs incurred in construction will diminish any gains from the increased power production.

How have locals reacted to the project?
The biggest thorn in CPEC's side is the intense protest by locals in Balochistan against the Gwadar port city project. Fearing loss of local livelihoods such as fishing, and resisting the use of unskilled Chinese labour instead of Pakistani locals, Baloch residents have refused to sell land to the Chinese for building the port. Moreover, the Gwadar port has been leased to the China Overseas Ports Holding Company which

means that Beijing reaps 91% of the profits while Islamabad gains only 9%. This has led to a rise in anti-China sentiments among Baloch locals.

Complicating issues further, the Pakistani government has resorted to grabbing lands from locals, forcing them to resettle elsewhere. This has led to a rise in insurgency in Balochistan. These militant groups have carried out several attacks on Pakistani Army officials providing protection to Chinese workers.

What is the rift between China and Pakistan?
China stopped funding three road projects — the 210-km Dera Ismail Khan-Zhob Road worth 81 billion rupees, the 110-km Khuzdar-Basima Road worth 19.7 billion rupees, and the 136-km Karakoram Highway worth 8.5 billion rupees — over suspicions of corruption. China also complicated the Gwadar port issue by insisting on Yuan as a legal tender in the region. In a retaliatory move, in May 2018, the Pakistan National Assembly's Standing Committee ordered an inquiry into the China Overseas Ports Holding Company (Pakistan) claiming that it had been operating without valid security clearance. The port construction, already slow due to local resistance, virtually stalled. In 2022, China refused to further expand cooperation with Pakistan in the areas of energy, water management, and climate change under CPEC.

What next?
With the recent visit to Beijing, Islamabad is attempting to restart funding for its key projects. While Mr. Kakar and Chinese President Xi Jinping reviewed the progress of other projects, the development of the Gwadar port itself remains unresolved.

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

21. Javier Milei's Electoral Victory in Argentina

Introduction
Javier Milei, a 53-year-old political outsider, secures the presidency in Argentina with 56% of the vote. Milei, known for his unconventional political style, entered politics five years ago after gaining fame as a television personality. Milei's political journey began in 2021 when he was elected to the National Congress for the Libertad Avanza (Freedom Advances) party.

The election is seen as a "protest vote" fueled by voter anger against Argentina's political establishment and a desire for a new political era.

Economic Challenges Driving Voter Choice

Argentina faces severe economic challenges, including nearly 150% inflation, a plummeting peso (falling currency), rising poverty, and depleted government coffers, leading to dissatisfaction with the previous government.

Madman's Economic Shock Therapy

Milei, dubbed "El Loco" (The Madman), promises "economic shock therapy," advocating for measures such as abolishing the central bank, slashing government spending, and dollarizing the economy to bring short-term stability but relinquishing control over monetary policy.

Voters chose Milei's radical approach over the perceived continuation of catastrophic economic conditions, reflecting a desire for a potential bright future despite the associated downside risks.

Relevance: GS Prelims; International Issues
Source: The Indian Express

22. Javier Milei's Rise and Radical Economic Policy

Introduction

Javier Milei's recent victory as the President-elect of Argentina marks a significant departure from conventional politics. His advocacy for libertarian and anarcho-capitalist ideologies, emphasizing minimal government intervention, has sparked interest and debate. One of his radical proposals is 'dollarisation' as a solution to the country's economic challenges.

Understanding Libertarianism and Anarcho-capitalism

Libertarianism is a political philosophy that gives primacy to individual liberty over everything else. A libertarian believes that individuals have certain God-given rights — such as the right to life and liberty, freedom of speech, right to property, freedom of

worship, moral autonomy etc. — and seeks to define the powers of a government in this context.

Anarcho-capitalism seems to take the libertarian view to what would appear like an extreme. According to Britannica Encyclopaedia, anarcho-capitalism is a political philosophy that advocates the voluntary exchange of goods and services in a society broadly regulated by the market rather than by the state.

The term anarcho-capitalism was coined by Murray Rothbard, a leading figure in the American libertarian movement from the 1950s until his death in 1995. Rothbard envisioned a 'contractual society' in which the production and exchange of all goods and services, including those usually assigned to the state (such as law enforcement, education, and environmental protection) would be conducted through voluntary agreements (contracts) between individuals.

Simply put, imagine a society where even law & order as well as justice delivery is privatised. In such a society, the government has no monopoly on police like it has at present. Almost every sector of the economy is run on free market principles with the belief that people, as consumers, will choose the best option among the available ones and that demand for better quality goods and services (say policing) will incentivise entrepreneurs to come up with the most efficient solutions.

Milei's Policy Proposal: Dollarisation
Milei's unique policy approach suggests disbanding Argentina's currency and central bank, adopting the US dollar as the official currency. This move aims to address the country's high inflation and stagnant economic growth.

Argentina's Economic Woes
A year ago, Argentina faced issues like soaring inflation, fluctuating GDP growth, and stagnating per capita incomes. These challenges stemmed from excessive government spending, leading to a loss in the value of the domestic currency.

Milei's Solution: Dollarisation Explained
Milei proposes two key actions: severe cuts in government spending and the shift to the US dollar as the official currency. Dollarisation aims to bring price stability, enhance predictability in trade, and eliminate the government's ability to fuel inflation through irresponsible spending.

Potential Challenges and Divided Opinions
Experts remain divided on Milei's proposal. Critics question its feasibility, citing political inexperience and a weak mandate. Others argue that dollarisation may not prevent fiscal excesses and could limit the government's ability to respond to economic crises.

Advocates' Perspective and Economic Analysis

Supporters of Milei's libertarian beliefs argue that dollarisation protects purchasing power and cite examples from fully dollarized countries like Panama, Ecuador, and El Salvador. Economic analysis suggests that Argentina has the necessary resources for dollarisation, provided it addresses its existing financial liabilities.

Conclusion: A Paradigm Shift in Argentine Politics

Javier Milei's ascent to the presidency reflects a widespread discontent with traditional policies. While the success of dollarisation remains uncertain, the proposal challenges established norms and opens new avenues for economic discourse in Argentina.

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

23. Parthenon Sculptures - at the centre of the row between Britain and Greece

Introduction

WA diplomatic row sparked between Greece and the UK after British Prime Minister Rishi Sunak cancelled a meeting with his Greek counterpart Kyriakos Mitsotakis over the status of the Parthenon Sculptures housed at the British Museum.

It prompted Athens to accuse London of trying to avoid discussing the contested sculptures, also known as the Elgin Marbles. Over the years, Greece has repeatedly asked for the sculptures' permanent return to Athens, but Britain and the British Museum have refused to do so.
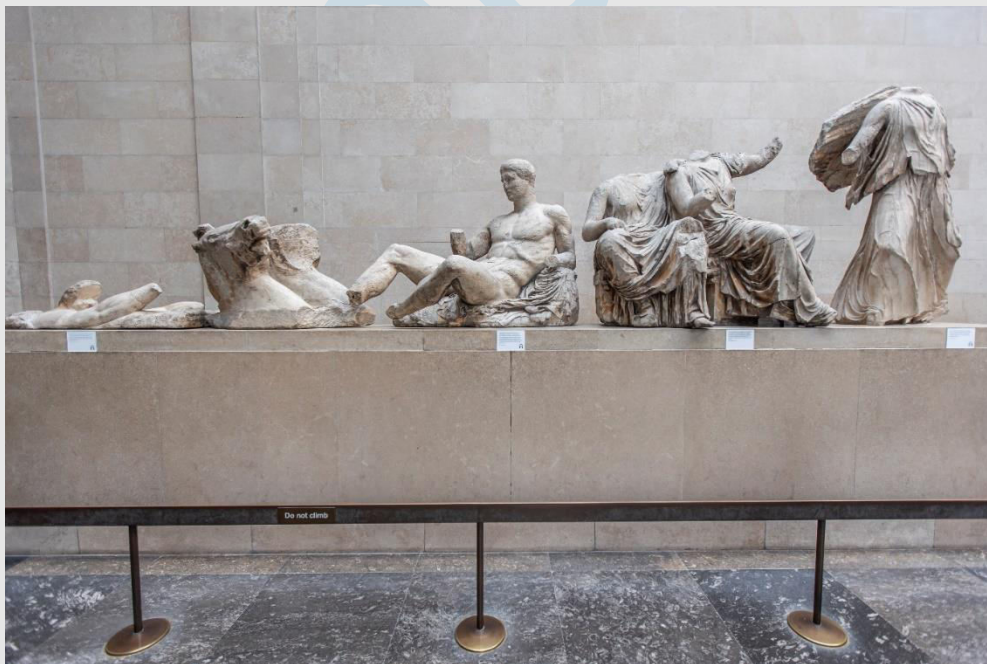
What are the Parthenon Sculptures?

The Parthenon Sculptures at the British Museum are more than 30 ancient stone sculptures from Greece that are more than 2,000 years old. Most of them originally adorned the walls and grounds of the Parthenon temple on the rocky Acropolis hill in Athens. Completed in 432 BC, the temple is dedicated to the goddess Athena and is seen as the crowning glory of Athens' Golden Age.

While one notable sculpture, which is 75 metres long, depicts a procession for the birthday of Athena, others show gods, heroes or mythical creatures.

How did the sculptures reach Britain?
They were removed from the Parthenon in the early 19th century by Thomas Bruce, the 7th Earl of Elgin and then-British ambassador to the Ottoman Empire. The marbles were taken to Britain and purchased by the British Museum in 1816.

Were the sculptures stolen?
While Athen accused Lord Elgin of theft, he insisted he had permission to remove the marbles from the Ottoman Empire, which used to control Athen at the time. The original letter giving him permission, however, has been lost and its text remains disputed.

Athens has been demanding the return of the sculptures since it became independent in the early 1830s. The campaign gained momentum in the 1980s after Greek Oscar-nominated actress Melina Mercouri launched a movement for their return when she was culture minister between 1981 and 1989.

How did Britain respond?
The British Museum, the caretaker of the sculptures, claims that they were acquired by Elgin under a legal contract with the Ottoman Empire and has rejected the demands of their return.

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

Economics

1. Direct listing on foreign exchanges for Indian companies

Why in news?
The government recently permitted certain Indian companies to directly list on select foreign stock exchanges, which will allow these companies to access global capital and boost capital outflows.

The permission has been given to Indian companies by way of amendment to the companies act. The amendment empowered the central government to allow certain classes of public companies to list prescribed classes of securities in foreign jurisdictions. This essentially means certain classes of domestic public companies can be listed on prescribed foreign stock exchanges.

How will direct foreign listing benefit Indian companies?
With the new provision, domestic companies can tap foreign markets to raise funds. This allows Indian companies another medium of raising capital. It will also add to India's foreign exchange kitty.

Further steps required
Experts said this week's MCA announcement is a first step for direct listing on foreign jurisdictions but more details, especially where and how they will be listed, are required.

In terms of clarity, what is needed immediately is to understand (a) which classes of public companies can use this route, (b) what are the classes of securities (such as equity, preference, etc) which can be listed, (c) which are the foreign jurisdictions and permitted stock exchanges where such companies can list and so on.

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

2. The Potential of Goat Milk in Gujarat

The Agriculture Minister's Proposal
The Agriculture Minister of Gujarat, Raghavji Patel, has asked for a proposal on the possibility of branding and marketing the milk of goats, which is currently sold only informally.

Goat Milk Production in Gujarat

A survey by the Gujarat animal husbandry directorate estimated the state's goat population at 50.55 lakh in 2021-22, and the goat milk production at 3.39 lakh tonnes (329 lakh litres; 1 litre is equal to 1.03 kg of milk). This was around 2% of the state's total milk production.

How can procurement by Amul help goat and sheep herders?
With no formal mechanism to sell their produce, pastoralists often prepare mava, an ingredient for many sweets, from goat milk, or sell the milk to tea stalls and hotels for around Rs 21 per litre. In some cases, goat milk is mixed with other milk and sold.

Does this mean it is possible to turn the goat into a primarily milch animal?
Given the quantity of milk that a goat produces daily, they may not be viable as milch-only animals. Goats have always been reared for both milk and meat — goat wool is coarse, and has no takers. Separate branding and marketing of goat milk can increase the earnings of pastoralists, but even then some goats will end up in slaughterhouses to keep the herd viable.

What benefits does goat milk have?
Mahatma Gandhi preferred goat milk, and claimed that since goats eat plants, herbs, shrubs, and grass, their milk has health benefits.

The fat content of goat milk is around 3%, which is similar to breast milk, and it has comparatively low solids-not-fat (SNF) content, and is hence easy for humans to digest. Doctors prescribe goat milk for neonates if the mother is not able to breastfeed. This is also the reason that lactose intolerant persons can consume goat milk without much difficulty.

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

3. Secrecy and no tax — reason why Indians look at Cyprus

What is Cyprus Confidential?
Cyprus Confidential is a global offshore investigation of 3.6 million documents in English and Greek, which lays bare a paper trail of companies incorporated in the tax haven of Cyprus by the rich and powerful from around the world.

The investigation, carried out in partnership with the International Consortium of Investigative Journalists (ICIJ), involves more than 270 journalists from more than 60 media houses in 55 countries and territories.

The data trove comprises documents from six offshore service providers in Cyprus. Besides information on Indian investors who became Cypriot nationals under the

country's Golden Passport scheme, it also has documents relating to entities set up by leading business houses to take advantage of the liberal tax regime in the island country in the Eastern Mediterranean.

What does the India investigation show?
The investigation attempts to lift the veil of secrecy for government and regulatory agencies. The documents reveal how entities with offshore residency were controlled from India, and instructions for financial transactions in these entities are given by individuals in India.

Can Indian companies set up offshore entities in Cyprus?
It is not illegal to set up an offshore company in Cyprus. India has double-taxation avoidance agreements (DTAAs) with several countries, including Cyprus, which offer low tax rates. Companies use their tax residency certificates in such countries to enjoy tax benefits that are available legally. These jurisdictions are generally characterised by lax regulatory oversight and airtight secrecy laws.

What tax benefits does Cyprus offer?
Offshore companies and offshore branches managed and controlled from Cyprus are taxed at 4.25 per cent, and offshore branches managed and controlled from abroad and offshore partnerships are totally exempt from tax.

No capital gains tax is payable on the sale or transfer of shares in an offshore entity, and no estate duty is payable on the inheritance of shares in an offshore company. There is no import duty on the purchase of cars, office or household equipment for foreign employees. It also assures anonymity of the beneficial owners of offshore entities.

How does the India-Cyprus DTAA work?

It allows Cyprus — which has a low tax regime — to be used as a jurisdiction for tax planning. Many foreign investors set up their investment firms in Cyprus to invest in India to benefit from the DTAA.

Cyprus is now an alternative to Mauritius for setting up an offshore entity for investment in India. As dividends paid out from India will be subject to withholding tax, no taxation will arise in Cyprus as this will be adjusted or credited against the 4.25 per cent tax in Cyprus.

Withholding tax is an effective way to ensure tax compliance by non-residents who may be subject to different tax regulations than residents. It is applicable in case of payments done to non-resident individuals. It is the payee's responsibility to deduct tax when depositing the payment in the account of the NRI.

The payee deposits the deducted withholding tax with the government, and the tax rate is decided as prescribed in the Income-tax Act, 1961, or Double Taxation Avoidance (DTA) Agreement, whichever is lower.

What are Offshore Trusts?
As per Cyprus International Trust Law, offshore trusts are trusts whose property and income are outside Cyprus, and even the settlor and beneficiaries are not permanent residents of Cyprus.

If the trustee is a Cypriot, the offshore trust is exempt from estate duty, and does not have to pay any tax on the income and gains. The trust need not be registered with any government or other authority, and confidentiality is enshrined in the new law.
In other words, the trust allows businesspersons to avoid tax that would have otherwise been paid by the settlor had she/ he remitted the income arising from overseas operations, to the country of residence.

Offshore branches of companies not having management and control of their business in Cyprus are granted complete exemption from income tax in Cyprus in respect of their profits derived from sources outside Cyprus, whereas if the management and control is in Cyprus they are subject to a tax of 4.25 per cent. For offshore branches, there is no withholding tax on repatriation of profits.

Relevance: GS Prelims; Economics
Source: The Indian express & The Hindu

4. Rising Vegetable Oil imports of India

Introduction

India's edible oil imports have risen almost 1.5 times and more than doubled in rupee value terms during the last 10 years. From a 10-year perspective, India's edible oil imports have increased from 11.6 mt (valued at Rs 60,750 crore) in 2013-14 to 16.5 mt (Rs 138,424 crore) in 2022-23. During the previous 10 years between 2004-05 and 2013-14, imports had shot up even more, from 5 mt to 11.6 mt.

Dipping self-sufficiency

In 2022-23, India's edible oil production from domestically grown oilseeds and alternative sources such as cottonseed, rice bran and maize/corn amounted to around 10.3 mt. Adding imports of 16.5 mt took the total availability to 26.8 mt, with the share of domestic production in this at only 38.6%. Compare this to 2004-05, when domestic output, at 7 mt, exceeded imports of 5 mt and translated into a self-sufficiency ratio of close to 60%.

TABLE 1

INDIA'S EDIBLE OIL IMPORTS

Oil Year (Nov-Oct)	Quantity (million tonnes)	Value in (₹cr)	Value in US$ billion
2013-14	11.62	60,750	9.95
2014-15	14.42	62,862	9.65
2015-16	14.57	69,780	10.4
2016-17	15.08	75,125	11.55
2017-18	14.51	66,942	9.3
2018-19	14.91	62,933	9
2019-20	13.18	71,625	9.95
2020-21	13.13	117,225	15.6
2021-22	14.03	156,800	19.6
2022-23	16.47	138,424	16.65

TABLE 2

EDIBLE OIL PRODUCTION

	2013-14	2022-23
Mustard*	22.72	39.8
Soyabean	14.03	18.53
Cottonseed**	14.74	12.44
Rice Bran	9.3	11
Groundnut@	6.75	9.91
Copra/Coconut	4.55	3.9
Palm	1.1	3.5
Maize Germ	0.5	1.5
Sesame	1.13	1.06
Sunflower@@	2.43	1.03
Others	0.77	0.68
TOTAL	**78.02**	**103.35**

Table 2 shows *Edible oil production from domestic sources* (lakh tonnes)
*Includes oil from rapeseed cake and toria; **Includes cottonseed cake oil; @Includes groundnut cake oil; @@Includes sunflowerseed cake oil. Source: The Solvent Extractors' Association of India.

CHART

VEGETABLE OILS INFLATION: DOMESTIC vs. GLOBAL

Source: Domestic inflation based on Consumer Price Index for 'Oils and Fats' and Global inflation based on FAO's 'Vegetable Oils' price index.

Profile of domestic oils

Table 2 shows that the two biggest contributors to India's edible oil production now are mustard and soyabean. At No. 3 and No. 4 are cottonseed and rice bran.

Among conventional oilseeds, only mustard has retained its sheen. While groundnut oil production has also grown, roughly half of its kernels are today either directly used for table consumption or exported. That leaves not much for crushing and oil extraction. It makes groundnut more of a dry fruit and less of an oilseed. The other oils — coconut, sesame, sunflower and safflower — have all registered declines in domestic output.

Imports

The 16.5 mt of edible oil imports in 2022-23 included palm (9.8 mt; from Indonesia, Malaysia and Thailand), soyabean (3.7 mt; from Argentina and Brazil) and sunflower (3

mt; from Russia, Ukraine and Argentina). The bulk of imports comprise crude oils. Like crude petroleum, these are shipped in tankers and processed in giant refineries. Refining involves de-gumming (removing gums, waxes and other impurities), neutralisation (removing free fatty acids), bleaching (removing colour) and de-odourisation (removing volatile compounds).

Vulnerability to imports

A major side effect of high import dependence is the vulnerability of both producers and consumers to international price fluctuations. Edible oil inflation is India has broadly moved in tandem with global inflation. However, the extent of volatility — be it increases or decreases — is more in the latter's case (see chart).

What needs to be done?

Stepping up edible oil output from domestic sources will go some way in insulating Indian farmers and households from excess global price volatility. But that would require openness to technology — including GM hybrids in mustard and soyabean amenable to herbicide application — and the government providing some kind of price support to oilseed growers, whether through procurement or tariff policy.

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

5. Investor Risk Reduction Access platform

Introduction

The Investor Risk Reduction Access (IRRA) platform has been jointly developed by India's major stock exchanges, including BSE and NSE, to address the risks faced by investors during technical glitches. This article explores the purpose and functionality of the IRRA platform and how it benefits investors.

Purpose of the IRRA Platform

The IRRA platform serves as a 'safety net' for investors, providing them with a means to navigate disruptions caused by technical glitches at the trading member's end. It allows investors to close open positions and cancel pending orders in the event of unforeseen outages.

Development and Launch

Developed collaboratively by BSE, NSE, NCDEX, MCX, and MSE, the IRRA platform was officially launched by Madhabi Puri Buch, Chairperson of the Securities and Exchange Board of India (SEBI). Its primary goal is to mitigate risks for investors participating in the market.

Why Was It Needed?

The increasing reliance on technology in the securities market has led to a rise in technical glitches, impacting trading services and resulting in investor complaints. The IRRA platform addresses the challenge of non-availability of avenues for investors to close their positions during market disruptions.

Functionality of the IRRA Platform
The IRRA platform is designed to allow investors to square off/close open positions and cancel pending orders. It does not facilitate the initiation of new positions but focuses on risk reduction during disruptions.

Activation of the IRRA Platform
The platform can be invoked by trading members facing technical glitches, and even stock exchanges can initiate it based on certain parameters. Investors gain access through a secure login system using their Unique Client Code (UCC) or PAN number, receiving a one-time password (OTP) for authorization.

Investor Benefits
Once authorized, investors can view and cancel pending orders across all segments and stock exchanges, close open positions, and cancel pending orders. The platform, however, is not available for algo trading and institutional clients.

Conclusion
The IRRA platform is a crucial tool in mitigating risks for investors during technical glitches, offering a safety net to ensure the smooth functioning of the securities market. Investors can access the platform through a secure and straightforward process, enhancing their ability to manage positions during disruptions.

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

6. Why is Bihar demanding the Special Category Status?

Introduction
On November 22, the Chief Minister Nitish Kumar-led Cabinet passed a resolution seeking the grant of special category status (SCS) to Bihar. The demand comes in the backdrop of the findings from the "Bihar Caste-based Survey, 2022", which revealed that nearly one-third of Bihar's population continues to live in poverty.

What is a special category status?
It is a classification granted by the Centre to assist the development of States that face geographical or socio-economic disadvantages. The SCS was introduced in 1969 on the recommendation of the fifth Finance Commission (FC). Five factors such as (i) hilly and difficult terrain (ii) low population density and/or sizeable share of tribal

population (iii) strategic location along international borders (iv) economic and infrastructural backwardness and (v) non-viable nature of state finances, are considered before granting SCS.

In 1969, three States — Jammu & Kashmir, Assam and Nagaland — were granted the SCS. Subsequently, eight more States including Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Sikkim, Tripura, Himachal Pradesh, and Uttarakhand were given the SCS by the erstwhile National Development Council.

What are the benefits attached?
In the SCS States, the Centre-State funding of centrally sponsored schemes is divided in the ratio of 90:10, far more favourable than the 60:40 or 80:20 splits for the general category States. Besides, there are several other incentives available to the SCS States in the form of concession in customs and excise duties, income tax rates and corporate tax rates to attract investments to set up new industries etc.

Why is Bihar demanding the SCS?
The demand for SCS for Bihar has been made by various political parties of the State time and again. The poverty and backwardness of the State are argued to be because of the lack of natural resources, continuous supply of water for irrigation, regular floods in the northern region and severe droughts in the southern part of the State. Simultaneously, the bifurcation of the State led to the shifting of industries to Jharkhand and created a dearth of employment and investment opportunities. With a per-capita GDP of around ₹54,000, Bihar has consistently been one of the poorest States.

Do other States also want SCS?
Since its bifurcation in 2014, Andhra Pradesh has asked for a grant of SCS on the grounds of revenue loss due to Hyderabad going to Telangana. Additionally, Odisha has also been requesting for the SCS, highlighting its vulnerability to natural calamities such as cyclones and a large tribal population (nearly 22%). However, the Central government citing the 14th FC report, which made a recommendation to the Centre that no State be accorded the SCS, has repeatedly denied their demands.

Is Bihar's demand justified?
Although Bihar meets most of the criteria for the grant of SCS, it does not fulfil the requirement of hilly terrain and geographically difficult areas, which is considered to be the primary reason for difficulty in infrastructural development. In 2013, the Raghuram Rajan Committee set up by the Centre, placed Bihar in the "least developed category" and suggested a new methodology based on a 'multi-dimensional index' for devolving funds instead of a SCS, which can be revisited to address the State's backwardness.

Environment

Introduction
According to a study, the rapid melting of West Antarctica's ice sheet is now inevitable. This rapid melting is driven by warm ocean waters, regardless of carbon emissions reductions.

The loss of the West Antarctic ice sheet would raise global mean sea levels by 5.3 meters (17.4 feet), posing a significant threat to coastal cities worldwide.

The study, 'Unavoidable future increase in West Antarctic ice-shelf melting over the twenty-first century,' was published in the journal Nature.

Worsening Ice Sheet Melting
Even under optimistic global warming scenarios, West Antarctica's ice sheet will continue to melt at an accelerated pace, with warming occurring three times faster than in the 20th century.
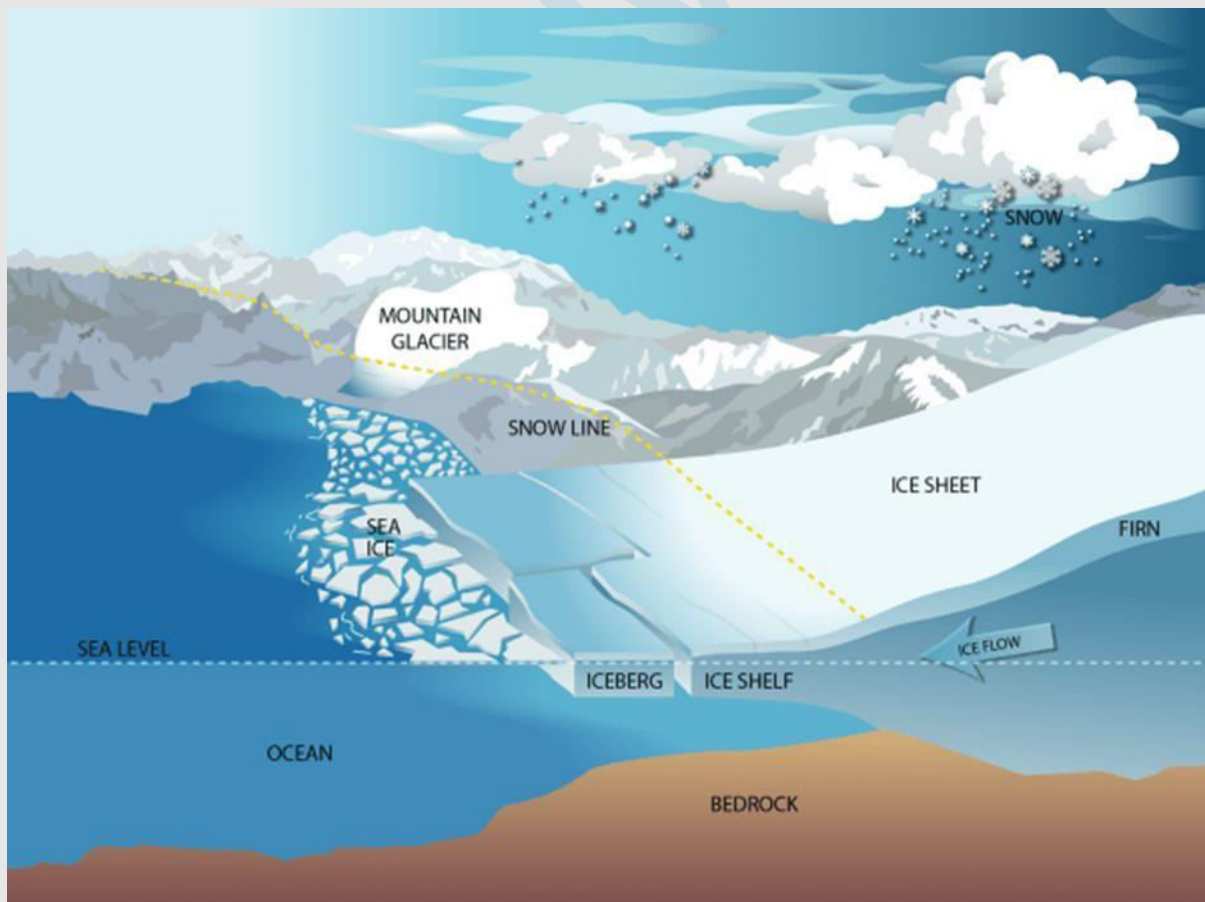
Figure 1 Illustration of ice features, including ice sheet

What is an Ice Sheet?

An ice sheet is essentially a mass of glacial ice that covers more than 50,000 square kilometres of land — roughly large enough to blanket Uttarakhand in ice. There are two major ice sheets in the world today: Greenland ice sheet and Antarctica ice sheet. Together, they contain about two-thirds of all the freshwater on Earth.

This means that over time, when ice sheets gain mass, they contribute to a fall in global mean sea level, and when they lose mass, they contribute to a rise in global mean sea level.

How is the West Antarctic ice sheet melting?

There are various processes through which ice sheets melt. One of them is when warm ocean waters melt ice shelves — the edges of an ice sheet which floats on the ocean. Ice shelves stabilise the land-based glaciers just behind them. If an ice shelf thins or disappears, these glaciers tend to speed up, discharging more ice into the ocean and causing sea level rise.

For decades, the West Antarctica's ice shelves have been depleting, glaciers have been flowing faster towards the ocean and the ice sheet has been shrinking. This process is particularly strong in Amundsen Sea in West Antarctica.

Source: climate.nasa.gov
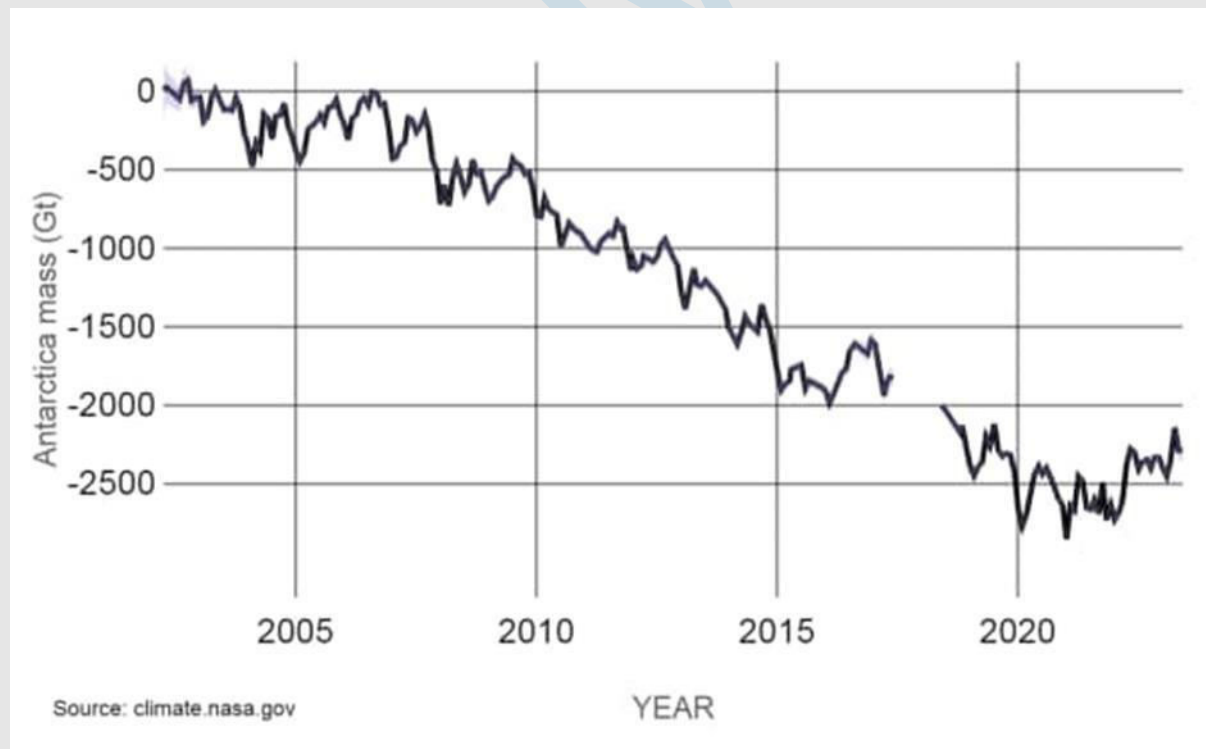
Figure 2 Antarctica ice mass variation since 2002. Credit: NASA

Hope Amidst Challenges

Despite grim findings, the study underscores the need to continue efforts to mitigate climate change impacts, as the West Antarctic ice sheet is just one contributor to sea level rise, one of the many impacts of climate change.

2. Delhi Odd-Even Scheme and Its Impact on Vehicular Pollution

Reducing Peak Pollution Levels
The Delhi odd-even scheme aims to reduce vehicular pollution levels, particularly during periods of severe air quality. The scheme allows cars with only odd or only even number plates to travel on a particular day.

Exemptions for Two-Wheelers and Taxis
The odd-even scheme is not a comprehensive solution to the pollution problem, as it exempts two-wheelers and taxis from the restrictions, which contribute significantly to emissions.

Two Aspects of Transport Emissions
Vehicular pollution comprises two components: exhaust emissions from the tailpipe and particulate matter generated from tire and brake wear. The exhaust emissions include PM2.5, soot, organics, nitrogen oxides, carbon monoxide, and poly-aromatic hydrocarbons.

Transport as the Primary Pollutant Source

Transport is the leading contributor to pollutants when air quality remains 'severe.' Vehicles are a major source of pollution, and addressing them is essential during emergency actions.

Difficulty in Estimating Pollution Reduction
Experts find it challenging to estimate the exact impact of the odd-even scheme, as it is influenced by various factors, including emissions from outside Delhi and the presence of exemptions.

Mixed Results from Previous Implementation
A study on the 2016 odd-even scheme showed limited success in mitigating air pollution. It revealed modest reductions in PM2.5 concentrations, with varying outcomes in different parts of Delhi.

Comprehensive Approach to Pollution Control
The odd-even scheme is just one of several emergency measures to address pollution. Its primary purpose is to prevent additional pollutant loading when other factors like weather conditions hinder pollutant dispersion.

In summary, the Delhi odd-even scheme is a measure aimed at reducing vehicular pollution, but its effectiveness is limited due to exemptions and the need for a comprehensive approach to address air pollution. It is one of several emergency actions taken in response to severe air quality conditions.

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

3. Understanding Common Air Pollutants and Their Health Impact

Rising Pollution Levels in North India
Rising pollution levels in north India have led to focus returning on the Air Quality Index (AQI) score, a measure of air pollution. Delhi, for instance, recorded an AQI score of more than 400 on November 6. This puts the air in the 'severe' category, with anything beyond 100 considered to be a state of at least moderate pollution on the index.

The Role of AQI
The AQI transforms complex air quality data of various pollutants into a single number for ease of understanding. The pollutants include PM 10, PM 2.5, Nitrogen Dioxide, Ozone, Carbon, etc.

What is PM 10 and PM 2.5?

These are extremely fine particulate matter (PM) particles, with the digits accompanying them referring to their diameter. So, PM 10 and PM 2.5 are smaller than 10 and 2.5 microns in their diameter, respectively. One micron is about a thousandth of a millimetre and this tiny size has a role to play in how they impact human health. The finer the particles are, the more difficult it gets to protect oneself from them

Due to their size, the PM 2.5 particles can easily bypass the nose and throat and can enter the circulatory system. The particles can also lead to chronic diseases such as asthma, heart attack, bronchitis, and other respiratory problems. These Particles are released from factories, vehicular pollution, construction activities and road dust. Such particles are not dispersed and stay suspended in the air that we breathe.
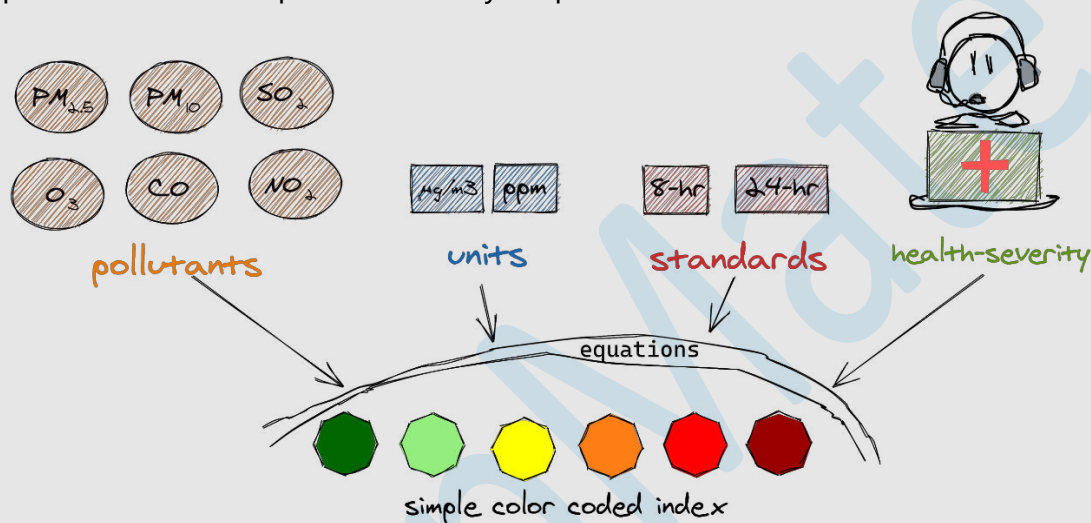
Nitrogen Dioxide (NO₂)
Nitrogen dioxide (NO_2) gets in the air from the burning of fuel, with sources including emissions from vehicles and power plants.

The exposure to high levels of NO_2 can aggravate respiratory diseases like asthma, and lead to other problems such as coughing or difficulty in breathing.

Ozone (O₃)
Ozone is a gas that is present in the upper layers of the atmosphere, protecting human health from the impact of the Sun's UV rays. However, surface-level ozone is among the most significant air pollutants. It is formed by the reaction of atmospheric pollutants in the presence of sunlight.

According to a 2017 study, increased surface ozone levels are likely to increase the risk of hospital admissions for Chronic Obstructive Pulmonary Diseases (COPD) and the number of cardiovascular and respiratory deaths.

Sulphur Dioxide (SO₂)

The largest source of SO_2 in the atmosphere is the burning of fossil fuels by power plants and other industrial facilities. Additional sources are industrial processes and natural sources such as volcanoes.

As with other gases, SO_2 exposure is harmful to the cardiovascular system and can lead to the development of respiratory illnesses. SO_2 can also react with other compounds to form particulate matter. At high concentrations, SO_x gaseous can harm trees and plants by damaging foliage and decreasing growth.

Ammonia (NH_3)
Increase in fertilizer use coupled with large contributions from livestock waste have resulted in the world's highest concentrations of atmospheric ammonia.

While gaseous ammonia is a natural part of Earth's nitrogen cycle, excess ammonia is harmful to plants and reduces air and water quality. Ammonia gas reacts with nitric and sulfuric acids to form nitrate-containing particles. Those particles contribute to aerosol pollution that is damaging to human health. Ammonia gas can also fall back to Earth and enter lakes, streams and oceans, where it contributes to harmful algal blooms.

Lead (Pb)
Lead is a naturally occurring toxic metal found in the Earth's crust. But in increased quantities, exposure to it becomes extremely dangerous to health. Important sources of environmental contamination come from mining, smelting, manufacturing and even recycling activities.

Young children are particularly vulnerable to lead poisoning because they absorb four to five times as much ingested lead as adults from a given source. Children who survive severe lead poisoning may be left with permanent intellectual disability and behavioural disorders.

Carbon Monoxide (CO)
A toxic, colorless, and odorless gas, carbon monoxide (CO) is given off when fuel containing carbon, such as wood, coal, and petrol, is burned.

If CO levels are high enough, a person may become unconscious and die. Long-term exposure has been linked with an increased risk of heart disease.

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

4. India's Energy Conservation Building Code, 2017

Why in news?
Paris-based International Energy Agency (IEA), in its World Energy Outlook 2023, report has highlighted that India's Energy Conservation Building Code (ECBC), 2017 for commercial buildings sets it apart from other developing economies where "energy efficiency in buildings stands out as a laggard".

What is ECBC?
The ECBC was first released by the Ministry of Power's Bureau of Energy Efficiency (BEE) in 2007, followed by an update in 2017. ECBC sets minimum energy standards for commercial buildings, with the objective of enabling energy savings of between 25 and 50 per cent in compliant buildings. The code is applicable to commercial buildings like hospitals, hotels, schools, shopping complexes, and multiplexes which have a connected load of 100 kW or more, or contract demand of 120 kVA or more.

It primarily looks at six components of building design including envelope (walls, roofs, windows), lighting systems, HVAC systems, and electrical power system, and the requirements under each of these components are split between mandatory and prescriptive. ECBC is for both new buildings and retrofitting existing buildings. Compliant buildings are assigned one of three tags in ascending order of efficiency, namely ECBC, ECBC Plus, and Super ECBC.

Compared to ECBC, 2007, the updated 2017 code has additional priorities of renewable energy integration, ease of compliance, inclusion of passive building design strategies, and flexibility for the designers.

While ECBC acts as a national standard, states across India have the flexibility to modify the code depending on unique regional needs. To enforce the code, states have to draft rules and notify them as state laws.

Implementation in States
Although 23 out of 28 states have notified ECBC rules, only 15 states have notified rules based on the latest ECBC, 2017. These include states like Uttar Pradesh, Punjab, Karnataka, Andhra Pradesh, Telangana, and Kerala.

Five states — Gujarat, Maharashtra, J&K, Ladakh, and Manipur — are yet to notify ECBC rules. By delaying the notification of ECBC rules, these states stand to lose out from the benefits of ensuring energy efficiency in commercial buildings.

State Energy Efficiency Index
Bureau of Energy efficiency (BEE) published the State Energy Efficiency Index (SEEI) in 2022, which rated states on various parameters of energy efficiency. As per the index, Karnataka was the top state in SEEI's ratings for energy efficiency in buildings receiving 22.5 points out of a total of 25. It was followed by Telangana, Haryana, Andhra Pradesh,

and Punjab as the top five large states with the best scores. Bihar was given the lowest score of 0.5 points. With Bihar, states like Odisha, West Bengal, Tamil Nadu, and Jharkhand were the five worst rated states for energy efficiency in buildings.

5. Supreme Court's Nationwide Ban on certain cracker ingredients

Introduction
The Supreme Court has extended its ban on certain firecracker ingredients to cover the entire country, not just the National Capital Region (NCR). This decision was made during a recent court hearing.

Firecracker Regulations
In October 2018, the apex court had banned the production and sale of all crackers except 'green crackers' and those with reduced emissions (improved crackers). It also banned the manufacture and sale of 'joined crackers' (long rows of crackers joined together), prohibited the use of barium salts in fireworks and said their noise levels should be within permissible limits. The court reiterated this in its October 29, 2021 order.

In 2020, the National Green Tribunal had banned the sale and use of all kinds of firecrackers in NCR, and said that green crackers would be permitted only in cities and towns where air quality was moderate or poor.

What is a firecracker made of?
Firecrackers typically consist of four primary ingredients — oxidiser, fuel, colouring agents, and binder. An oxidiser is required for the cracker to catch fire, the fuel sustains the fire, colouring agents give it the colours and sparkles, while the binder holds this mixture in place till the cracker has spent itself.

COLOURS OF HAZARD

Chemical compounds used as colourants in fireworks, and their impact on health

BLAZING REDS	Lithium compounds	Toxic, irritating fumes when burnt
GLITTERING GREENS	Barium nitrate	Can irritate respiratory tract, have possible radioactive fallout
BRILLIANT WHITES	Aluminium	Contact dermatitis, bioaccumulation
BLUES	Copper compounds	Cancer risk, bioaccumulation
GLITTER EFFECTS	Antimony sulphide	Toxic smoke, possible carcinogen

Chemicals like barium are colouring agents, and were banned because of their harmful impact on human health, such as irritation in the respiratory tract, skin allergies, breathing difficulties, and even cancer.

The white colour in a cracker is emitted through aluminium, magnesium and titanium, while the orange colour is carbon or iron. Similarly, yellow agents are sodium compounds while blue and red are copper compounds and strontium carbonates. The green agent is barium mono chloride salts or barium nitrate or barium chlorate.

Green Crackers
As compared to conventional crackers, Green crackers on burning produce at least 30% less Particulate Matter (PM) and gaseous emissions (minimum 20% reduction in PM and 10% reduction in gaseous emissions such as sulphur dioxide, nitrous oxide and others). Green crackers need not necessarily be crackers with completely new constituents. The conventional crackers can also be made green by making some changes in the existing chemical composition.

Accordingly, green crackers can be categorised into two groups:
1. **Improved fireworks or firecrackers:** The conventional crackers can be upgraded to green crackers by using lesser amounts of raw materials, reduction in the shell size (Covering in which combustible material of a cracker is kept), elimination of ash usage (ash is used as a drying agent to absorb moisture from crackers) or by addition of dust suppressants. By making these upgradations, the resultant crackers are required to attain the desired level particulate matter and gaseous emission reductions.

For instance, the 'green' version of the 'flower pot', one of the most popular fireworks, has a mixture of water and lime that is chemically stored in the cracker. When lit, the burning triggers release of moisture which wets the dust-and-smoke particles.

2. **New formulation fireworks or firecrackers:** These crackers are developed by using new formulations. The new formulations are also required to attain particulate matter and emission reductions.

Development of these crackers
The National Environmental Engineering Research Institute (NEERI), a part of the Council of Scientific and Industrial Research (CSIR), is the primary body which was assigned responsibility for the development of green crackers. NEERI-CSIR worked with labs for the development of green crackers. After development of green crackers, the process to manufacture such crackers was passed on to the existing traditional cracker manufacturers.

Names of Green Crackers
Popular green crackers are Safe Water Releaser (SWAS), Safe Thermite Cracker (STAR) and Safe Minimal Aluminium (SAFAL). SWAS crackers release water vapour along with air in certain cases. The water vapour acts as a dust suppressant and dilutes the gaseous emissions.

SWAS and STAR crackers specifically eliminate the usage of the harmful chemicals such as barium nitrate, sulphur and nitrous oxides. SAFAL crackers minimise the usage of aluminium by replacing it with magnesium and magnesium-based compounds (Aluminum is used only as a flash powder for initiation). This leads to a reduction in particulate matter by 35 to 40%.

All these crackers have sound intensity similar to that of conventional crackers in the range of 105-110 dBA. Thus, the green crackers, even though are less polluting, do not compromise on the sound levels.

Further, the green crackers are also cost effective as they cost 20 to 30% less than the conventional crackers.

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

6. Project Cheetah: A Year in Review

After a year of launching Project Cheetah, India's ambitious plan to introduce African cats into the country's wild in Kuno in the State of Madhya Pradesh, the project claims success in four areas. However, a closer look reveals some challenges and compromises.

Survival in the Wild

While the project claims a 50% survival rate for introduced cheetahs, the real test is in the wild, not in captivity. The cheetahs from Namibia and South Africa were supposed to spend specific durations in enclosures before release, but questions arise about their actual time spent in the wild.

Ideal situation vs what happened in Kuno

MONTHS THE CATS SHOULD HAVE SPENT IN WILD IN INDIA

	Namibian		South African	
	Male	Female	Male	Female
Numbers	3	5	7	5
Months ideally in the wild	10	9	6	5
'Cheetah months' ideally in wild	30	45	42	25

Source: Project Cheetah Annual Report

Total 'cheetah months' that should ideally have been spent in wild **142**

MONTHS ACTUALLY SPENT IN WILD IN INDIA

Namibian		South African	
Cheetah	Months in the Wild	Cheetah	Months in the Wild
Pawan	1.75	Gamini	2
Asha	4.37	Agni	1.25
Gaurav	4	Vayu	1.3
Shaurya	4	Nirva	2.5
Dhatri*	2	Veera	1.1
Jwala#, Nabha# and Sasha*# not released in the wild		Dheera	0.75
		Pravash	0.5
		Pavak	0.5
		Suraj*	0.75
TOTAL	16.12	Uday*, Daksha* and Tejas* not released in the wild	
		TOTAL	10.65

26.77
Total months spent by all cheetahs in the wild

Dead adult, #Unfit for the wild

Establishment of Home Ranges
Only three cheetahs have spent more than three consecutive months in the wild, and even they have been confined since July. The establishment of "home ranges" in Kuno seems unlikely, raising concerns about the project's success in this aspect.

A home range is the area in which an animal lives and moves on a periodic basis. It is related to the concept of an animal's territory which is the area that is actively defended.

Reproduction in the Wild
The goal, as per the Action Plan, was: "Cheetah successfully reproduce in the wild". However, Siyaya aka Jwala, the Namibian female that gave birth to four cubs in Kuno, was captive raised herself. She was unfit for the wild and her cubs were born inside a boma (enclosure).

Impact on Local Livelihoods
The project has indeed generated a number of jobs and contracts for the local communities, and the price of land has appreciated significantly around Kuno. No human-cheetah conflict has been reported in the area.

Compromises and Mistakes

Died in Captive breeding: Three of the eight Namibian cheetahs — Sasha, which was the project's first casualty, and Jwala and Savannah alias Nabha, who were never released outside the bomas in Kuno — were captive-raised, reportedly as "research subjects". They were offered to India to meet the "hard deadline" for the import.

Reproduction attempt: In Kuno, captive breeding was attempted by putting the sexes together in hunting bomas. However, due to extremely low genetic variation within the species, a cheetah female is very selective in seeking out most distantly related males. That is why giving males access to a female not in heat can lead to violence.

The project got lucky with Jwala in March. But the gamble failed when two South African males killed the female Phinda alias Daksha in May.

Dehydration: The monitoring teams failed to intervene in time when three cubs succumbed to acute dehydration in May.

Maggot infestation: Maggot infestation in multiple animals — which would have affected their gait — also went unnoticed until the festering wounds under their radio collars killed two in July.

Seasonal variation: The project experts had failed to factor in seasonal variation while sourcing animals from the southern hemisphere. The animals grew winter coats during the Indian monsoon, leading to prolonged wetness and infection.

Kuno's carrying capacity
The Cheetah Action Plan estimated "high probability of long-term cheetah persistence" within populations that exceed 50 individuals. Cheetal is the cheetah's prime prey in Kuno.

After the project was revived in 2020, the Cheetah Action Plan assessed Kuno's cheetal density at 38 per sq km which could sustain 21 cheetahs, while a larger landscape of 3,200 sq km could support 36. A single population of 50 cheetahs was no longer deemed feasible.

Paradigm shift ahead
Since Kuno cannot support a genetically self-sustaining population, the project's only option is a meta-population scattered over central and western India. But unlike leopards, which dominate this landscape, cheetahs cannot travel the distances between these pocket populations on their own.

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

7. How rains in Delhi helped improve its air quality

Following a few days of high levels of air pollution in Delhi, light showers of rain on November 9 and 10 led to clearer skies and better air quality.

Rain reduces PM
Some constituent pollutants measured by the AQI – such as Ozone, Sulphur dioxide and other pollutants – are not as easily washed away. PM 2.5 and PM 10 can, however, be washed out to a significant extent if it rains for a long period of time. Therefore, prolonged rain can help reduce air pollution in a limited sense, with its impact focused on particulate matter.

What is the process?
An earlier article from the Massachusetts Institute of Technology (MIT) explained: "As a raindrop falls through the atmosphere, it can attract tens to hundreds of tiny aerosol particles to its surface before hitting the ground. The process by which droplets and aerosols attract is coagulation, a natural phenomenon that can act to clear the air of pollutants like soot, sulfates, and organic particles."

What exactly are PM 2.5 and PM 10?
These are extremely fine particulate matter (PM) particles, with the digits accompanying them referring to their diameter. So, PM 10 and PM 2.5 are smaller than 10 and 2.5 microns in their diameter, respectively. One micron is about a thousandth of a millimetre.

The source of these pollutants is vehicular pollution, emissions from factories, construction activities and road dust. Such particles are not dispersed and stay suspended in the air that we breathe.

How much reduction was visible?
PM 2.5 levels sharply rose to 310 on November 5. Following rains, it declined to 174. PM 10 levels also similarly declined – ranging between 400-480 in early November and then dropping to 291.

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

8. Understanding Stubble Management with Baler Machines

Introduction to Baler Machines
In the face of increasing concerns about farm fires and stubble burning, the demand for effective stubble management solutions has risen in Punjab. Baler machines,

designed to facilitate ex situ (off-site) stubble management, have gained prominence in addressing this agricultural challenge.

Figure 1 Baler Machine in operation

Baler Machines: A Decade-Long Solution
Baler machines, operational for over a decade, play a crucial role in managing crop residue. Presently, approximately 2,000 balers are in operation in Punjab, with 1,268 of them benefiting from substantial subsidies ranging from 50-80% under the Centre's Crop Residue Management (CRM) scheme.

The Stubble Challenge
After harvesting paddy crops, stubble remains on the fields, posing a challenge for farmers who traditionally resort to burning it, contributing to significant air pollution. Environmentally friendly methods like in situ management using machines such as super seeders come with their own set of challenges, pushing farmers towards ex situ management methods.

Baler Machines in Action
Baler machines efficiently compress agricultural residue into compact bales, making them manageable and easy to transport. The process involves cutting the crop residue with a tractor-mounted cutter, arranging the stubble with a rake, and then using a tractor-mounted baler machine to compress the stubble into bales, which are subsequently transported to factories or dumping sites.

Benefits of Baler Machines

In fields where balers are utilized, farmers can promptly plough the field and sow the next crop, minimizing downtime. Most balers in Punjab produce cylindrical or rectangular bales weighing 25-30 kg, although larger machines are also available.

Challenges and Current Scenario

While baler machines prove effective, the current count of 2,000 units in Punjab falls short of meeting the demand. A single baler costs around Rs 14.5 lakh without subsidies. With approximately 32 lakh hectares of rice fields in Punjab, only a fraction can be covered by the existing balers. Despite government efforts, including subsidies, the sales of balers faced initial challenges, with a notable increase in the last three years.

In summary, while baler machines present a promising solution to stubble management, addressing the gap in their availability and ensuring widespread adoption remain critical for sustainable agricultural practices in Punjab.

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

9. US-China Climate Deal Overview

Introduction

The United States and China recently announced a groundbreaking climate deal, signaling a commitment to increase clean energy, reduce fossil fuel dependency, and address global warming. This development holds significant implications, especially in the context of the upcoming COP28, a crucial UN climate conference.

Key Players and Greenhouse Gas Impact

As the two largest historical and current climate polluters, the US and China jointly contribute to 38% of global greenhouse gas emissions. Presidents Joe Biden and Xi Jinping's agreement is seen as a pivotal step in shaping international climate action.

Pre-COP28 Dynamics and Historical Precedent

With representatives from almost 200 countries convening in Dubai for COP28 in two weeks, the US-China deal injects a sense of ambition into the global climate talks. Drawing parallels with the lead-up to COP21 in 2015, where a similar agreement influenced the language of the Paris Agreement, the current deal could set a template for negotiations.

Criticisms and Concerns

Despite the positive momentum, not all experts are optimistic. Critics argue that this year's conference, held in the UAE, a major oil producer, might be undermined by nonbinding commitments influenced by fossil fuel interests.

Details of the US-China Climate Deal

The agreement outlines ambitious targets, such as tripling global renewable energy capacity by 2030 and reducing reliance on coal, oil, and gas. However, some critics highlight the lack of specific enforcement mechanisms and express concerns about the ambiguous language surrounding fossil fuel displacement.

Methane Commitment and Remaining Challenges

A notable aspect of the deal is China's willingness to address methane emissions, a significant contributor to global warming. Despite this positive step, critics argue that the agreement falls short by not addressing the immediate need to phase out coal use and reduce oil and gas emissions.

Room for Improvement and Criticisms

While the US-China climate deal signifies a resumption of collaborative efforts between major polluters, criticisms persist. Some environmental researchers argue that the agreement lacks clear commitments to phase out coal and oil, essential steps in averting catastrophic climate change.

In conclusion, while the US-China deal provides momentum for COP28, it also raises questions about the urgency and effectiveness of global efforts to combat climate change.

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

10. Status of climate finance as per OECD report

Why in news?

A new report, published by the Organisation for Economic Cooperation and Development (OECD), showed that economically developed countries fell short of their promise to jointly mobilise $100 billion a year towards climate mitigation and adaptation needs of developing countries in 2021 — one year past the 2020 deadline. The report said that developed countries mobilised $89.6 billion in 2021 and that finances for adaptation fell by 14% in 2021 compared to 2020.

Why is the OECD report important?

The OECD is largely a group of rich countries including the U.S., the U.K., Germany, France, Switzerland, Canada, and others. The report, as such, offers a peek into their idea of climate finance ahead of the COP28 climate talks in the United Arab Emirates (UAE) next week, where the topic is expected to be a key bone of contention.

How is climate finance accounted for?

The OECD report showed that of the $73.1 billion mobilised in 2021 by the public sector via bilateral and multilateral channels, $49.6 billion was provided as loans. While the report doesn't classify them in terms of the rates at which they're provided, data available elsewhere sheds light on the extent to which rich countries rely on loans at commercial rates to fulfil their climate finance obligations. For example, an assessment by the American non-profit research group Climate Policy Initiative of global climate finance flows between 2011 and 2020 found that 61% of climate finance was provided as loans, of which only 12% was at concessional interest rates.

So, when the OECD report states that two-thirds of public climate financing was provided as loans, it means the conditions attached to such financing could further exacerbate debt stress in poorer countries. This is also a critique of the OECD report as it considers loans at face value, not the grant equivalent, when arriving at total climate finance figures. This means that while poorer countries shell out money towards repayment and interest, the loan is still counted as climate finance provided by the developed world.

What is additionality?
Another issue in the OECD report pertains to additionality. The UNFCCC states that developed countries "shall provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations under the convention". This means that developed countries cannot cut overseas development assistance (ODA) in order to finance climate needs because that would effectively rob Peter to pay Paul. In real-world terms, it would mean cutting off support for healthcare to reallocate that money to, say, install solar panels.

The "new and additional finance" also means that developed countries cannot double-count. For example, a renewable energy project could contribute to both emission reductions and overall development in a region. However, as per the UN Convention, donor countries cannot categorise such funding as both ODA and climate finance because it wouldn't fulfil the "new and additional" criterion. Yet they do. A few years ago, European Union officials admitted to double-counting development aid as climate finance.

What counts as climate finance?
At present, there is no commonly agreed definition of 'climate finance' because developed countries have endeavoured to keep it vague. The ambiguity works in favour of richer countries because it leaves the door open to arbitrarily classify any funding, including ODA and high-cost loans, as climate finance and escape the scrutiny that a clearer definition might bring. Therefore, while developed countries can claim they have provided billions in climate finance, the actual flows need to be checked to know whether they went into climate mitigation and adaptation in developing countries or something else.

How much financial assistance do developing countries need?

The latest OECD report claims, based on preliminary and as-yet-unverified data, that the $100 billion goal was likely met in 2022. But the data is neither finalised nor published, and the advisable take-away is scepticism. It is also important to note that the figure of $100 billion came out of thin air at the COP15 talks and isn't based on an assessment of how much climate investment developing countries actually need.

The OECD report added that by 2025, developing countries are estimated to require around $1 trillion a year in climate investments, rising to roughly $2.4 trillion each year between 2026 and 2030. The $100 billion goal pales in comparison, dwarfed further by the fact that it remains unmet.

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

11. COP, carbon market, loss and damage: A glossary of climate terms

Introduction
With the COP28 summit just around the corner, terms like the Paris Agreement, Kyoto Protocol, loss and damage, and NDCs are making headlines.

Here is a guide to key terms in the climate change conversation.

COP
COP is an international climate meeting organised annually by the United Nations (UN). COP is short for Conference of the Parties. 'Parties' is a reference to (now) 198 countries that have joined the international treaty called the UN Framework Convention on Climate Change (UNFCCC). 'Parties' to the treaty have pledged to take voluntary actions to prevent "dangerous anthropogenic [human-caused] interference with the climate system."

Kyoto Protocol
The Kyoto Protocol was an international treaty that placed obligations on the set of rich and industrialised countries to cut their greenhouse gas emissions by assigned amounts. It was adopted in Kyoto, Japan, in 1997, and came into effect in 2005. The treaty formally expired in 2020 and was replaced by the Paris Agreement as the main international treaty for coordinating global action against climate change.

Paris Agreement
Adopted in 2015 at COP21 in Paris, the agreement is aimed to limit rising global average temperature. It's considered a landmark deal as it legally binds (now) 195 nations, for the first time ever, to combat climate change and adapt to its effects.

1.5 degree limit

Under the Paris Agreement, the world governments have agreed to keep average global temperature "well below" 2 degree Celsius this century compared to pre-industrial levels. They have also pledged to pursue efforts to limit the rise to 1.5 degree Celsius — an important threshold, crossing which would unleash far more severe climate change impacts, including more frequent and severe droughts, heatwaves and rainfall.

Glasgow Pact

Reached at the COP26 summit in Scotland's Glasgow, the pact called for phase down of coal and phase out of fossil fuel. This was the first time that a UN climate agreement explicitly mentioned coal. The pact also marked the resolution of the deadlock over carbon markets.

Carbon markets

Such markets are essentially trading systems in which carbon credits are sold and bought. They allow countries, or industries, to earn carbon credits for the greenhouse gas emission reductions they make in excess of their targets. These carbon credits can be traded to the highest bidder in exchange for money. The buyers of carbon credits can show the emission reductions as their own and use them to meet their reduction targets.

One tradable carbon credit is equal to one tonne of carbon dioxide or the equivalent amount of a different greenhouse gas reduced, sequestered or avoided. Once a credit is used to reduce, sequester, or avoid emissions, it becomes an offset and can no longer be tradable.

Greenhouse gases

The gases that trap heat in the atmosphere are known as greenhouse gases (GHGs). They allow sunlight to pass through the atmosphere, but obstruct the heat the sunlight brings from leaving. The main source of GHGs is the burning of fossil fuels like coal, diesel, gasoline or petrol, kerosene and natural gas. Carbon dioxide, methane, and nitrous oxide are among the most prominent GHGs.

Net zero

Also referred to as carbon-neutrality, net zero doesn't mean that a country would reduce its emissions to zero. Rather, it is a state in which a country's emissions entering the environment are equal to the greenhouse gases being removed from the atmosphere. The removal can be done by creating more carbon sinks such as forests or by implementing futuristic technologies such as carbon dioxide removal (CDR).

In 2018, the Intergovernmental Panel on Climate Change (IPCC) marked 2050 as the deadline by which the world must reach net zero if it wants to limit global warming to 1.5 degree Celsius.

Carbon capture and storage (CCS)
CCS is basically a process that captures carbon dioxide and traps it beneath the earth. It's usually used at fossil fuel plants and factories, where it prevents the gas from escaping into the atmosphere. Notably, CCS is different from carbon dioxide removal (CDR), which involves sucking out carbon from the atmosphere.

Carbon capture, utilisation and storage (CCUS)
CCUS goes a step further than CCS and uses the captured carbon in the production of goods such as alcohols, biofuels, plastics or concrete.

Geo-engineering
It is the deliberate large-scale intervention in the Earth's natural systems to tackle climate change. There are numerous proposed geo-engineering techniques, including CDR. Their effectiveness and potential side effects, however, remain widely debated.

IPCC
The IPCC is the United Nations body for assessing the science related to climate change. It was set up in 1988 by the World Meteorological Organisation (WMO) and the UN Environment Programme (UNEP). IPCC's main activity is to prepare Assessment Reports, special reports, and methodology reports assessing the state of knowledge of climate change.

Nationally Determined Contributions (NDCs)
The Paris Agreement requires each country to prepare an outline for their efforts to reduce national emissions and adapt to the impacts of climate change. These commitments are known as NDCs. They are submitted every five years, and successive NDCs are supposed to be more ambitious than previous ones.

National Adaptation Plans (NAPs)
The NAP helps countries develop plans to respond to climate change's present and future impacts. They are aimed to reduce vulnerability to the severe effects of climate change and strengthen adaptive capacity and resilience. NAPs also play an essential role in updating and improving the adaptation elements of the NDCs.

Global stocktake
It refers to a five-year review in which countries assess where they are in the fight against climate change, and what needs to be done in the next five years to make this fight more effective and potent. COP28, which will take place from November 30 in Dubai, will witness the presentation of the findings of the first stocktake exercise.

Triple Renewable Energy

In 2021, the International Energy Agency (IEA) published its 'Roadmap to Net Zero by 2050' report, which said that if the world needs to meet the net zero goal, it has to commit to tripling global renewable capacity by 2030. If met, this single step could avoid carbon dioxide emissions by seven billion tonnes between now and 2030, the agency said. This would be equal to eliminating all the current carbon dioxide emissions from China's power sector.

Just transition

The term describes a shift to a low-carbon or net-zero economy without jeopardising the rights of workers and the needs of communities, which could be affected due major changes to industries like fossil fuels.

Common but differentiated responsibilities (CBDR)

It is a principle of international law which states that different countries have different capabilities and responsibilities to address cross-border environmental problems such as climate change. One example of the CBDR principle is the 1989 Montreal Protocol, an international treaty designed to protect the ozone layer. It gave a 10-year grace period for 'developing countries' to implement the control measures.

Loss and damage

There is no agreed definition of 'loss and damage' in the international climate negotiations, according to the United Nations Development Programme (UNDP). In broad terms, it refers to the unavoidable social and financial impacts caused by extreme weather events.

Last year, at COP27, developing countries managed to get a loss and damage fund established. It is meant to provide financial help to countries struck by climate disasters. It is, however, empty right now.

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

Science & Technology

1. Understanding Apple's 'State-Sponsored Attackers' Alert

Introduction
Apple has been sending notifications to users, including opposition leaders, warning them about potential state-sponsored attackers trying to compromise their iPhones. This article explains the purpose of these alerts and how users should respond.

Alerts from Apple
Several prominent opposition leaders and journalists have reported receiving alerts from Apple regarding state-sponsored attackers attempting to compromise their iPhones. These alerts provide guidance on protecting their devices, including activating 'Lockdown Mode.'

Apple's Notification Strategy
Apple has been issuing these notifications since late 2021 whenever it detects activity resembling a state-sponsored attack. These notifications have been sent to individuals in 150 countries.

State-Sponsored Attackers
Apple clarified that it does not attribute these threat notifications to specific state-sponsored attackers. Such attackers are well-funded and sophisticated, focusing on specific targets based on identity or activities.

Purpose of Threat Notifications
Apple's threat notifications aim to help users who may have been targeted by state-sponsored attackers. The company uses a system to detect suspicious activity, triggering email and iMessage notifications to affected users.

User Recommendations
When an attack is detected, Apple provides users with recommendations to enhance their device security and privacy. These suggestions include updating software, setting passcodes, enabling two-factor authentication, using strong passwords, downloading apps only from the App Store, and avoiding unknown links or attachments.

Lockdown Mode
Apple suggests users activate Lockdown Mode, which enhances security by restricting certain functions. It prevents attackers from accessing personal information. Lockdown Mode is available on specific devices running recent software versions and can be enabled in device settings.

2. Exploring India's Deep Ocean Mission: A Gaganyaan for the Seas

Introduction
The Deep Ocean Mission (DOM) is India's ambitious endeavor to explore and harness the depths of the ocean, akin to a "Gaganyaan Mission to explore moon." DOM, approved by the Union Cabinet in 2021, is a comprehensive program with six pillars that aim to push the boundaries of underwater exploration and sustainable resource utilization.

DOM: A Multifaceted Mission
The Ministry of Earth Sciences (MoES) is playing a central role in the implementation of DOM. The mission is allocated nearly ₹4,077 crore over a five-year period, emphasizing phased development. Its six pillars encompass:

Development of Deep-Sea Mining Technologies and Submersible: This pillar involves the creation of an indigenous submersible that can carry a three-member crew to a depth of 6,000 meters in the ocean. The submersible will be equipped with a suite of scientific sensors, tools and an integrated system for mining polymetallic nodules from the central Indian Ocean.

Ocean Climate Change Advisory Services: A critical component of DOM, this pillar focuses on ocean observations and models to understand and predict future climate changes.

Technological Innovations for Deep-Sea Biodiversity: This aspect of the mission involves the exploration and conservation of deep-sea biodiversity through innovative technologies.

Deep-Ocean Survey and Exploration: DOM is aimed at identifying potential sites of multi-metal hydrothermal sulfides mineralization along the Indian Ocean mid-oceanic ridges.

Energy and Freshwater from the Ocean: The mission looks at harnessing energy and freshwater resources from the ocean to meet India's growing needs.

Advanced Marine Station for Ocean Biology: The establishment of an advanced marine station to nurture talent and drive opportunities in ocean biology and blue biotechnology.

The United Nations has declared 2021-2030 as the "Decade of Ocean Science," and Prime Minister Narendra Modi has emphasized the importance of harnessing the ocean's potential for India's growth, aligning with the "New India 2030" objectives.

DOM in the Context of Blue Economy
DOM is one of nine missions under the Prime Minister's Science, Technology, and Innovation Advisory Council (PMSTIAC). It is crucial for supporting India's blue economy and blue manufacturing sectors.

Progress in Deep-Sea Mining and Submersible Development
The National Institute of Ocean Technology (NIOT), an autonomous institute under MoES, is spearheading the development of indigenous technologies for deep-sea mining and a crewed submersible. As a part of DOM, India's flagship deep ocean mission, 'Samudrayaan', was initiated in 2021 by the Minister of Earth Sciences.

As part of 'Samudrayaan', India is developing 'Matsya6000,' a deep-ocean submersible designed for a crew of three. It boasts an operational endurance of 12 hours, extendable to 96 hours in emergencies. The submersible's design is now complete, and testing and experimentation will commence at a depth of 500 meters in the coming year, with a goal to reach the full 6,000-meter depth capability in two to three years.

Additionally, work is underway on an integrated system to mine precious polymetallic nodules from the central Indian Ocean bed, including metals like copper, manganese, nickel, and cobalt.

Strategic Depth Selection

India's decision to target a depth of 6,000 meters for DOM is strategically significant. It aligns with the exploration of valuable resources such as polymetallic nodules and polymetallic sulphides. The International Seabed Authority (ISA) has allocated a significant area to India in the central Indian Ocean for resource extraction. These resources, located at depths between 3,000 and 5,500 meters, make the 6,000-meter capability essential for effective resource extraction.

Challenges of Deep-Ocean Exploration

Exploring the depths of the oceans poses unique challenges compared to space exploration. The primary distinction lies in the high-pressure environment of the deep oceans. While space is a near-perfect vacuum, the deep oceans exert extreme pressure on equipment and materials. Operating under such conditions requires meticulously designed, pressure-resistant equipment.

Furthermore, landing on the ocean bed, with its soft and muddy surface, is a complex task. Extracting materials from these depths demands substantial power and energy. Unlike space, where electromagnetic wave propagation aids remote operations, the absence of such propagation in the deep oceans makes remotely operated vehicles less effective.

The challenges are further compounded by factors like temperature variations, corrosion, and limited visibility due to the absence of natural light beyond a few tens of meters beneath the surface.

Matsya6000: India's Flagship Submersible

The Matsya6000 submersible is India's flagship deep-ocean human submersible designed for a 6,000-meter dive. It accommodates a crew of three and is equipped with scientific tools for observations, sample collection, video recording, and experimentation.

Matsya6000 combines the best features of remote-operated vehicles (ROVs) and autonomous remote vehicles (AUVs). Its spherical chamber is constructed from a titanium alloy, engineered to withstand extreme pressures of up to 6,000 bar.

With this technology, India joins a select group of nations that have achieved successful deep-ocean crewed missions, emphasizing the country's commitment to indigenous technology development. The U.S.A., Russia, China, France, and Japan have already achieved successful deep-ocean crewed missions.

3. AI Summit: A Global Pact on AI Risks

Introduction

The world's first Artificial Intelligence (AI) Safety Summit held at Bletchley Park, UK, brought together 28 major countries, including the United States, China, Japan, the United Kingdom, France, and India, along with the European Union. The summit aimed to address the challenges posed by "frontier AI" and resulted in a significant declaration on AI risks and global collaboration.

Bletchley Park Declaration

The summit's participants defined "frontier AI" as highly capable foundation generative AI models with the potential for dangerous capabilities, posing serious risks to public safety. The Bletchley Park Declaration emphasized the need for international cooperation to address risks related to frontier AI, including intentional misuse, control issues, cybersecurity, biotechnology, and disinformation risks.

Global Collaboration

The declaration was endorsed by additional countries, including Brazil, Ireland, Kenya, Saudi Arabia, Nigeria, and the United Arab Emirates. To promote international collaboration on frontier AI safety, South Korea will host a virtual AI summit in the next six months, and France will organize an in-person summit within a year.

U.S. Presidential Action

The declaration came shortly after US President Joe Biden issued an executive order aimed at safeguarding against AI threats and implementing oversight over AI safety benchmarks. The order requires AI companies to share the results of tests of their newer products with the federal government before making the new capabilities available to consumers. The safety tests undertaken by developers, known as "red teaming", are aimed at ensuring that new products do not pose a threat to users or the public at large. Following the order, the federal government is empowered to force a developer to tweak or abandon a product or initiative.

Diverse Regulatory Approaches

Various countries have taken different approaches to AI regulation. The European Union proposed a new AI Act, classifying AI based on use-case scenarios. The UK adopts a "light-touch" approach to foster innovation, while the US falls in between, aiming to define an AI regulation rulebook. China has also introduced its own AI regulatory measures.

Tech Leaders' Concerns
Tech leaders, including Elon Musk, Steve Wozniak, and others, called for a six-month pause in AI development, expressing concerns about AI's rapid growth. Musk emphasized AI's potential threat and existential risks to humanity.

India's Evolving Stance
India has been actively considering AI regulation, shifting from not pursuing legal intervention to formulating regulations based on a "risk-based, user-harm" approach. Initiatives such as forming a domestic statutory authority and collaborating with international agencies reflect this evolving stance.

Conclusion
The AI Safety Summit's Bletchley Park Declaration signals a global commitment to addressing the risks associated with frontier AI. International collaboration and diverse regulatory approaches are shaping the future of AI governance, while concerns from tech leaders emphasize the need for responsible development.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: The Indian Express

4. India's own CAR-T cell therapy

Introduction
The Central Drugs Standard Control Organisation (CDSCO) this month granted market authorisation for NexCAR19, India's first indigenously-developed CAR-T cell therapy, to ImmunoACT, a company incubated by IIT Bombay. This paves the way for the commercial launch of this therapy in India, where it is expected to be available to cancer patients at a tenth of the cost abroad.

What is CAR-T cell therapy, and how do CAR-T cells find and destroy cancer cells?
CAR-T is a revolutionary therapy that modifies immune cells, specifically T-cells, by turning them into potent cancer fighters known as CAR-T cells. T-cells are special cells (white blood cells that find and fight illness and infection) whose primary function is cytotoxic, meaning it can kill other cells. In CAR-T therapy, we genetically modify them into cancer-fighting cells. These supercharged cells are then put back into the body, and they go after cancer cells — especially in blood cancers like leukaemia and lymphomas.

TREATMENT FOR SPECIFIC B-CELL CANCERS

NexCAR19 is a prescription drug for B-cell lymphomas, lymphoblastic leukaemias when other treatments have been unsuccessful

PATIENT'S WHITE blood cells are extracted by a machine through a process called leukapheresis and genetically modified, equipping them with the tools to identify and destroy the cancer cells.

NEXCAR19 IS manufactured to an optimal dose for the patient, and typically administered as a single intravenous infusion. Prior to this, the patient is put through chemotherapy to prime the body for the therapy.

HOW NEXCAR19 WORKS

T-cells are naturally made by the body as an advanced defence against viruses and cancer cells. As T-cells mature, they develop specific connectors (receptors) to target key signals on cancer cells.

Scientists have identified certain proteins that are abnormally expressed on the surfaces of specific types of cancer cells. Specially designed receptors can find and bind to these cells.

However, cancers can limit the inbuilt extent and efficiency with which T-cells are able to seek and fight them. This results in an increase in cancer burden.

A safe shell of a virus is used to genetically engineer T-cells so they express Chimeric Antigen Receptors — connectors that target a protein called CD19 on B-cell cancer.

Source: ImmunoACT

How effective and different is this from other cancer treatments like, say, chemotherapy?

While chemotherapy and immunotherapy may add a few months or years to a cancer patient's life, cell-and-gene therapy is designed to cure and provide lifelong benefit. It makes treatment easier with a one-time therapy [unlike several sessions of chemotherapy] that can be truly transformative [for a patient]. It's a lifeline for non-responsive cancer patients.

Is NexCAR19 a type of CAR-T therapy?

NexCar19 is a type of CAR-T and gene therapy developed indigenously in India by ImmunoACT, which is a company incubated at IIT Bombay. Our therapy is designed to target cancer cells that carry the CD19 protein. This protein acts like a flag on cancer cells, which allows CAR-T cells to recognise and attach themselves to the cancer cells and start the process of elimination.

Even some developed nations don't have their own CAR-T therapies; they import them from the United States or Europe. India is now one of the first developing countries to have its indigenous CAR-T and gene therapy platform.

Who can get the NexCAR19 therapy?
The therapy is for people with B-cell lymphomas who didn't respond to standard treatments like chemotherapy, leading to relapse or recurrence of the cancer.

The patient's journey starts with a doctor's prescription at the clinic, followed by donation of blood by the patient at a transfusion centre. The blood goes to the lab, where the T-cells are genetically modified. In a week to 10 days, these cells return to the clinic for patient reinfusion. Essentially, patients only need to give a blood sample at their clinic, and come back in 7-10 days for reinfusion.

Recovery typically occurs within two weeks after one cycle of the treatment. In our data, approximately 70% of patients respond to the treatment, with variations between leukaemia and lymphoma cases. About 50% of these responsive patients achieve a complete response.

How much will this treatment cost?
Currently, we are looking at a price range of Rs 30-40 lakh for CAR-T therapy, which we intend to hold. Even at this cost, it may not be accessible to everyone. Our ultimate goal is to bring the cost down to Rs 10-20 lakh. As technology matures and manufacturing processes improve, we anticipate that the cost will decrease. We're committed to making this therapy accessible to as many people as possible.

Will the treatment be covered by insurance?
When a therapy is approved by regulatory agencies like CDSCO or DCGI, it typically should be covered by national insurance schemes and private insurance companies. However, since this is an expensive treatment, the extent of coverage and accessibility to insurance may vary.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: The Indian Express

5. Why has the govt. issued a directive on deepfakes?

Introduction
On 8 November, the Indian government instructed "social media intermediaries" to remove morphed videos or deepfakes from their platforms within 24 hours of a complaint being filed, in accordance with a requirement outlined in the IT Rules 2021. The instructions came as deepfake videos of actors Rashmika Mandanna and Katrina Kaif surfaced online within the span of one week.

What are deepfakes?

Deepfakes have been around since 2017 and refer to videos, audios or images created using a form of artificial intelligence called deep learning. The term became popular when a Reddit contributor used publicly available AI-driven software to impose the faces of celebrities onto the bodies of people in pornographic videos.

Fast forward to 2023, deepfake tech, with the help of AI tools, allows semi and unskilled individuals to create fake content with morphed audio-visual clips and images.

How does deepfake technology work?

The technology involves modifying or creating images and videos using a machine learning technique called generative adversarial network (GAN). The AI-driven software detects and learns the subjects' movements and facial expressions from the source material and then duplicates these in another video or image. To ensure that the deepfake created is as close to real as possible, creators use a large database of source images. This is why more deepfake videos are created of public figures, celebrities and politicians.

The dataset is then used by one software to create a fake video, while a second software is used to detect signs of forgery in it. Through the collaborative work of the two software, the fake video is rendered until the second software package can no longer detect the forgery. This is known as "unsupervised learning", when machine-language models teach themselves. The method makes it difficult for other software to identify deepfakes.

What do laws in India say about deepfakes?

India's IT Rules, 2021 require that all content reported to be fake or produced using deep fake be taken down by intermediary platforms within 36 hours.

The Indian IT ministry has also issued notices to social media platforms stating that impersonating online was illegal under Section 66D of the Information Technology Act of 2000. The IT Rules, 2021, also prohibit hosting any content that impersonates another person and requires social media firms to take down artificially morphed images when alerted.

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

6. World's biggest bank, China's ICBC, hit by ransomware

Introduction

The US arm of the Industrial and Commercial Bank of China (ICBC) was hit by a ransomware attack. Immediately after discovering the hack, ICBC isolated impacted systems to contain the incident.

What is ICBC?
ICBC, a Chinese state-owned commercial bank, is China's — and the world's — largest lender in terms of assets (over $ 6 trillion), and one of the most profitable companies in the world, according to Forbes. It is also the 3rd largest bank in the world (behind JPMorgan Chase and Bank of America) by market capitalization, at $ 194.57 billion, according to a Fobes article from August.

What are ransomware attacks?
Ransomware is a type of malicious software (commonly referred to as malware) that either blocks access to, or threatens to publish sensitive data until the victim pays a ransom fee to the attacker. It is a type of a cyber attack that has become increasingly popular among bad actors in recent years.

What is Lockbit 3.0?
A ransomware called Lockbit 3.0 was behind the attack. LockBit 3.0 was created by Lockbit, a group which effectively sells its malware bad actors on the dark web. Lockbit 3.0 is the most popular strain of ransomware. The group previously claimed responsibility for ransomware attacks on Boeing last month. It is said to have Russian origins, though this has never been confirmed.

Relevance: GS Prelims; S&T
Source: The Indian express

7. First vaccine for chikungunya

Introduction
On November 9, the world's first vaccine for chikungunya was approved by the Food and Drug Administration (FDA) in the U.S. The vaccine has been developed by European vaccine manufacturer Valneva and will be available under the brand Ixchiq. It was approved using the Accelerated Approval pathway, which allows the FDA to clear certain products for serious or life-threatening conditions based on evidence of a product's effectiveness that is likely to provide clinical benefit.

What is chikungunya?
Chikungunya, is characterised by severe joint pain and impaired mobility, and comes with fever. It is a viral infection (CHIKV) transmitted primarily by the Aedes aegypti and Aedes albopictus mosquitoes and has been described as "an emerging global health threat."

The joint pain is often debilitating and varies in duration; it can last for a few days, but also be prolonged over months. Other symptoms include joint swelling, muscle pain, headache, nausea, fatigue and rash. While severe symptoms and deaths from chikungunya are rare and usually related to other coexisting health problems, it is believed that the numbers are generally underestimated, because chikungunya is often misdiagnosed as dengue or zika, as symptoms can seem similar.

Prevention
As of now, there is no cure, only symptomatic relief, with analgesics to help with the pain, antipyretics for the fever, rest, and adequate fluids.

Prevention includes mosquito control activities, primarily falling under public health outreach and routine civic maintenance. Individuals are also advised to use medicated mosquito nets and ensure that there is no water stagnation in any containers at home, in order to prevent the breeding of mosquitoes.

Spread
The WHO fact sheet says Chikungunya is prevalent in Africa, Asia, and the Americas; but sporadic outbreaks have been reported in other regions. Since 2004, outbreaks of CHIKV have become more frequent and widespread, partly due to viral adaptations allowing the virus to be spread more easily by the Aedes albopictus mosquitoes.

About Vaccine
Ixchiq is administered as a single dose by injection into the muscle. It contains a live, weakened version of the chikungunya virus and may cause symptoms in the vaccine recipient similar to those experienced by people who have the disease.

Relevance: GS Prelims; S&T
Source: The Hindu

8. What is tantalum, the rare metal found in Sutlej?

Introduction
A team of researchers from the Indian Institute of Technology (IIT), Ropar has found the presence of tantalum, a rare metal, in the Sutlej River sand in Punjab. According to experts, the presence of tantalum is significant not only for Punjab but also India as the metal is widely used in electronics and semiconductors.

What is tantalum?

Tantalum is a rare metal with the atomic number 73 — the number of protons found in one atom of the element. It's grey, heavy, very hard, and one of the most corrosion-resistant metals in use today. It possesses high corrosion resistance because when exposed to air, it forms an oxide layer that is extremely difficult to remove, even when it interacts with strong and hot acid environments.

When pure, tantalum is ductile, meaning it can be stretched, pulled, or drawn into a thin wire or thread without breaking. Moreover, it "is almost completely immune to chemical attack at temperatures below 150°C, and is attacked only by hydrofluoric acid.

Notably, tantalum also has an extremely high melting point, exceeded only by tungsten and rhenium.

What are the uses of tantalum?

Tantalum is most prominently used in the electronic sector. The capacitors made from tantalum are capable of storing more electricity in smaller sizes without much leakage than any other type of capacitor. This makes them ideal for use in portable electronic devices such as smartphones, laptops, and digital cameras.

As tantalum has a high melting point, it is frequently used as a substitute for platinum, which is more expensive. The rare metal is also used to make components for chemical plants, nuclear power plants, aeroplanes and missiles. Tantalum does not react with bodily fluids and is used to make surgical equipment and implants, like artificial joints.

A composite consisting of tantalum carbide (TaC) and graphite is one of the hardest materials known and is used on the cutting edges of high-speed machine tools.

9. How a NASA experiment will study 'air glow' to understand Space weather

Introduction

With an exponential rise in satellite-based services used for navigation and communications, obtaining forecasts and data on the health of Space weather is of supreme importance.

But what factors drive Space weather? National Aeronautics and Space Administration (NASA) is set to launch the Atmospheric Waves Experiment (AWE) to study one of the important drivers of Space weather – the Earth's weather.

First, what exactly is Space weather and why is it important?

Just like there is weather on the Earth, the environment around the Earth and the other planets remains constantly under the influence of the Sun and its behaviours – solar flares and emissions, along with the kinds of prevailing matter in the Space surroundings.

During certain days, when the weather over Earth turns rough or extreme, Space weather, too, can suffer extreme events. These have a direct impact on vital installations on Earth, like satellite-based communication, radio communication, and Space-based aircraft orbits or stations – affecting the smooth operations of the navigation and Global Positioning Systems (GPS) and power grids.

Apart from influences from the Sun-bound emissions, Space weather also comes under the impact of terrestrial weather.

What is a gravity wave?

The simplest way to explain a gravity wave is by considering the example of ripples formed when a pebble is thrown into the calm waters of a pond. Close to where the pebble touches the water surface, the waves are concentric and tightly packed whereas they become less defined at a far point from the pebble.

Similarly, in the atmosphere, there are a wide variety of waves, travelling both horizontally and vertically. Atmospheric Gravity Waves (AGW) are one such kind of vertical wave. They are mostly generated when there is an extreme weather event or a sudden disturbance leading to a vertical displacement of stable air.

There is limited data about these waves provided by satellites. But we need a better understanding of the vertical motion of waves, the altitude and causes for their

development – all of which are vital to better our understanding of these waves and their impacts on the overall weather, climate along with Space weather.

A stable atmosphere plays an important role in the generation of gravity waves, that is, when the atmosphere is stable, the temperature difference between the rising air and the atmosphere produces a force that pushes this air to its original position. The air will continuously rise and sink, thus creating a wave-like pattern.

AGW is a wave that moves through a stable layer of the atmosphere, wherein the upward-moving region is the most favourable for the formation of cloud patterns or streaks. AGWs continue all the way to Space, where they contribute to the Space weather.

Figure 2The cloud wave patterns formed due to atmospheric gravity waves.

What is the Atmospheric Waves Experiment (AWE)?
AWE is a first-of-its-kind NASA experimental attempt aimed at studying the interactions between terrestrial and Space weather.

Planned under NASA's Heliophysics Explorers Program, the $42 million mission will study the links between how waves in the lower layers of the atmosphere impact the upper atmosphere, and thus, Space weather.

AWE will be launched and mounted on the exterior of the Earth-orbiting International Space Station (ISS). From the vantage point, it will look down at the Earth and record the colourful light bands, commonly known as airglow. India's edible oil imports have risen almost 1.5 times and more than doubled in rupee value terms during the last 10 years. From a 10-year perspective, India's edible oil imports have increased from 11.6 mt (valued at Rs 60,750 crore) in 2013-14 to 16.5 mt (Rs 138,424 crore) in 2022-23.

During the previous 10 years between 2004-05 and 2013-14, imports had shot up even more, from 5 mt to 11.6 mt.

Figure 3 Airglow in the image from the International Space Station (ISS)

AWE will measure the airglow at mesopause (about 85 to 87 km above the Earth's surface), where the atmospheric temperatures dip to minus 100 degrees Celsius. At this altitude, it is possible to capture the faint airglow in the infrared bandwidth, which appears the brightest enabling easy detection.

AWE will be able to resolve waves at finer horizontal scales than what satellites can usually see at those altitudes, which is part of what makes the mission unique.

What will NASA's AWE do?
AWE will perform focused mapping of the colourful airglows in the Earth's atmosphere.

Onboard AWE is an Advanced Mesospheric Temperature Mapper (ATMT), an instrument that will scan or map the mesopause (a region between the mesosphere and thermosphere). Using the four identical telescopes comprising an imaging radiometer, scientists hope to obtain the brightness of light at specific wavelengths.

This information can then be converted into a temperature map, which could reveal the airglow movement and ultimately, give clues on their role in the upper atmosphere and Space weather.

Relevance: GS Prelims; S & T
Source: The Indian Express

10. 25 years of the International Space Station

Introduction
It passes over our heads 16 times every 24 hours at an altitude of a mere 430 kilometers (267 miles). It's possible to spot it from the ground and track where it is in the sky at any minute of the day.

There have been numerous scientific discoveries on the ISS that have had a direct impact on our everyday lives on Earth (more on that below). It is one of the world's most successful locations for international diplomacy, peace and collaboration, even in times of war. It's literally been a safe space for 25 years.

When did the International Space Station launch?
The first segment of the ISS — the Zarya Control Module — was Russian and launched November 20, 1998. Zarya supplied fuel storage and battery power, and served as a docking zone for other space vehicles arriving at the ISS. One month later, on December 4, 1998, the US launched the Unity Node 1 module. Together, the two modules were the start of a functioning space laboratory. Over the course of 42 assembly flights, the ISS became what it is today. Since then, the ISS has been continuously inhabited.

How big is the ISS?
The ISS is split into various spaces for living and working. It has six sleeping quarters, two bathrooms, a gym, and a 360-degree view bay window.
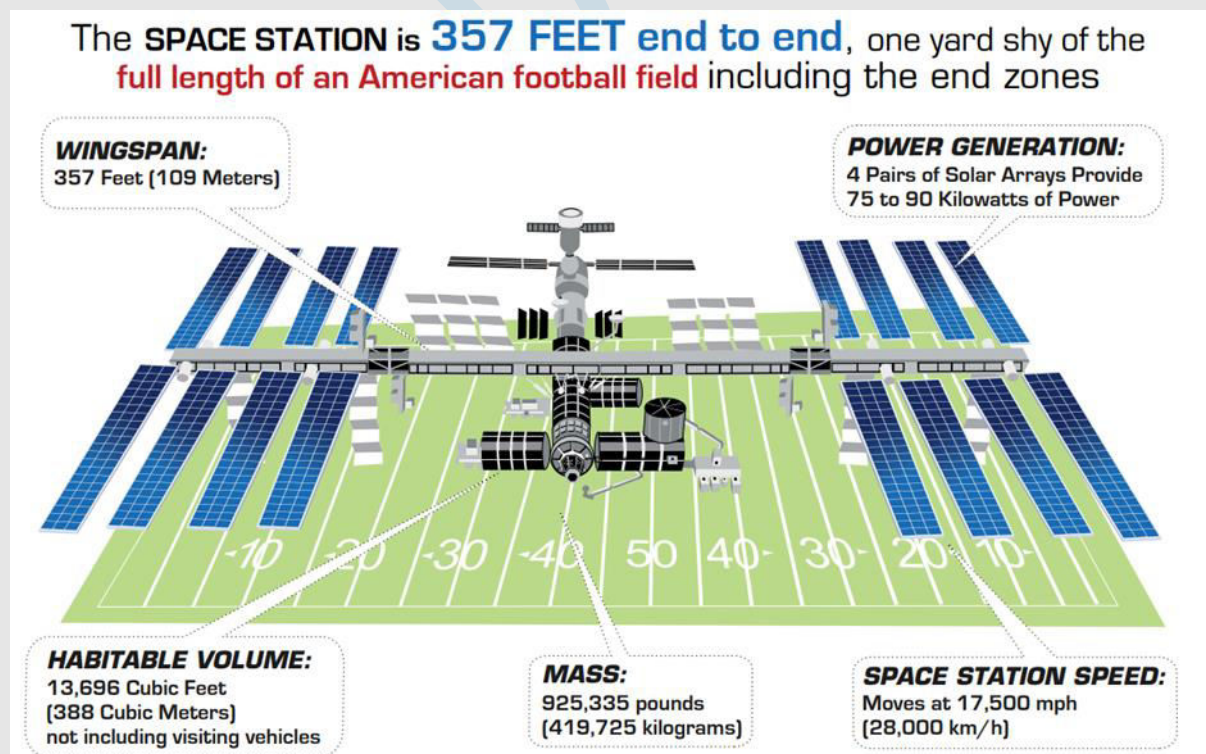
It measures 109 meters (357 feet) end-to-end, "one yard shy," states NASA, of a full-length American football field. Or, if swimming is your thing, the ISS is more than twice

the length of an Olympic swimming pool. And if you're into rockets, the ISS is shorter than SpaceX's Starship by 12 meters.

Its solar array wingspan is also 109 m. To compare: The largest commercial aircraft, the Airbus A380, has a wingspan of 79.8 meters. And about 13 kilometers of electrical wires run through the space station.

Figure 4Bedroom inside International Space Station

What is the ISS's average speed?
As mentioned above, the ISS orbits Earth numerous times in one day — every 90 minutes to be precise — at a speed of 8 kilometers (5 miles) per second.

What do astronauts do onboard the ISS?
When they're not conducting scientific experiments (ones that can't be done on Earth), ISS astronauts go on regular spacewalks to add new components to the station, such as robotic arms, or run maintenance. There have been times when astronauts have had to inspect or fix holes that were created by space debris.
The astronauts are also on a strict health regimen. They have to mitigate the loss of muscle and bone mass, which is caused by microgravity in space. That includes working out on specially designed machines, including treadmills, for at least two hours a day.

But as researchers focus more and more on humans living in space, for example on the moon or Mars, the astronauts' daily exercise is also used to improve our scientific understanding of the effects of space on our bodies. What would happen if humans lived in microgravity for years on end? Would our bodies still be strong enough, or too weak to return to Earth?

What scientific discoveries on the ISS have benefited life on Earth?
Astronauts have conducted hundreds of scientific experiments on the ISS. Sometimes they experiment on themselves, monitoring their general health, nutrition or the effects of solar radiation. And sometimes they conduct experiments for scientists on Earth. These experiments have led to numerous scientific breakthroughs.

From Alzheimer's and Parkinson's disease to cancer, asthma and heart disease — it's all been studied in space. Scientists say some medical experiments are best done in space because cells behave in microgravity more like they do inside the human body, but it's difficult to recreate such conditions on Earth.

There have been discoveries to benefit drug development, new water purification systems, methods to mitigate muscle and bone atrophy and those that have led innovations in food production.

How long will the ISS be operational?
Plans for the future operation of the ISS were thrown into uncertainty with the start of Russia's invasion of Ukraine in early 2022. Both the European Space Agency and national bodies withdrew from international collaborations with Russia, and Russia said it was leaving the ISS to build its own space station.

It's not just the war, though — old and new spacefaring nations want to make an independent mark on space. They include Japan, China, India, the United Arab Emirates and others.

The US and Europe have said they remain committed to the International Space Station through 2030. But plans are afoot for a post-ISS world, as well: NASA is almost entirely focused on its Artemis program and plans to populate the moon. And ESA is working toward a new space station, which it is calling Starlab.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: The Indian Express

11. Casgevy : Gene Therapy to treat Sickle cell disease and anaemia

Introduction
The UK drug regulator last week approved a gene therapy for the cure of sickle cell disease and thalassaemia, seen as a landmark breakthrough by many. This is the first licensed therapy in the world based on the gene editing technology Crispr-Cas9 that earned its innovators a Nobel Prize in 2020.

Called Casgevy, the therapy edits the faulty gene that leads to these blood disorders, potentially curing the person for life. So far, the only permanent treatment has been a bone marrow transplant, for which a closely matched donor is needed.

How does the therapy work?
Both sickle cell disease and thalassaemia are caused by errors in the gene for haemoglobin, a protein in the red blood cells that carry oxygen to organs and tissues.

The therapy uses the patient's own blood stem cells, which are precisely edited using Crispr-Cas9. A gene called BCL11A, which is crucial for switching from foetal to adult haemoglobin, is targeted by the therapy.

Foetal haemoglobin, which is naturally present in everyone at birth, does not carry the same abnormalities as adult haemoglobin. The therapy uses the body's own mechanisms to start producing more of this foetal haemoglobin, alleviating the symptoms of the two conditions.

What are sickle cell disease?

The genetic error in sickle cell disease leads to red blood cells assuming a crescent shape. Unlike the disc shaped normal cells, the sickle-like cells cannot move around easily in the vessels, resulting in blocked blood flow. This can lead to episodes of severe pain, life-threatening infections, anaemia, or a stroke.
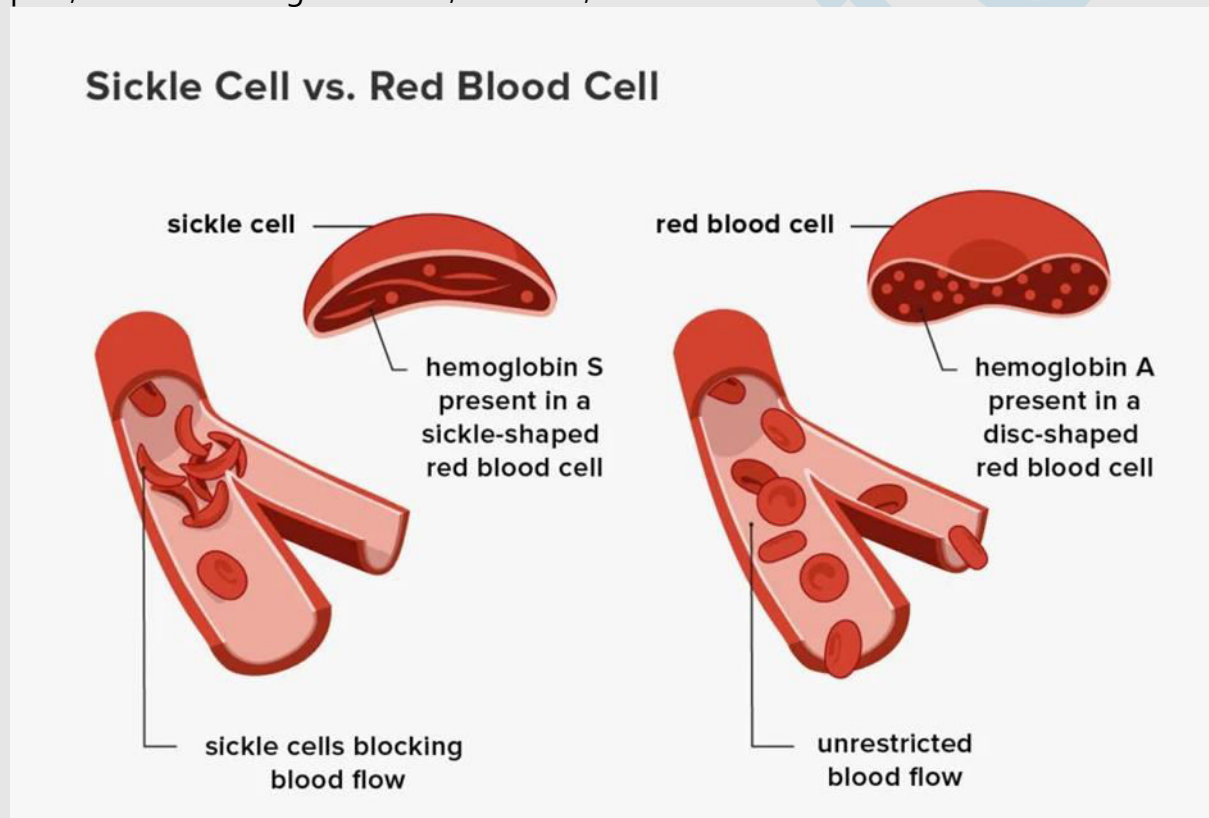
An estimated 30,000-40,000 children in India are born with the disorder every year.

The symptoms manifest in people who inherit a pair of damaged genes from both parents. Those who carry only one copy of the gene from one parent can lead a normal life. This is the same as thalassaemia, in which people who inherit a pair of genes from both parents experience symptoms like severe anaemia.

What is Thalassaemia?

Thalassaemia leads to low levels of haemoglobin, leading to fatigue, shortness of breath, and irregular heartbeats. People with the condition need blood transfusions throughout their life. The transfusions also lead to accumulation of excess iron in the body, for which they need chelation.

India also has the largest number of children with thalassaemia major in the world — about 1-1.5 lakh.

How is the therapy prepared and given?

Casgevy is a one-time treatment for which the doctor has to first collect blood stem cells from the bone marrow using a process called apheresis — used to filter out the blood for different components. The cells are then sent to the manufacturing site where it takes about six months for them to be edited and tested.

Before a transplant with the edited cells, the doctor gives a conditioning medicine for a few days to clear the bone marrow of other cells that will be replaced by the modified cells.

The patient has to stay in hospital for at least a month so that the edited cells take up residence in the bone marrow and start making red blood cells with normal haemoglobin.

What are the challenges of this treatment?

Although the price of the therapy hasn't been announced, it is likely to be very high. Estimates suggest it could be as much as $2 million per patient, which is in line with other gene therapies. Cost is one of the biggest limitations of newer gene therapies, along with the absence of local manufacturing facilities, which means that the harvested blood stem cells have to be sent across countries.

Relevance: GS Prelims; Science & Technology
Source: The Indian Express & The Hindu

12. Turmoil at OpenAI: Unraveling the Boardroom Drama

Introduction

The recent upheaval at OpenAI involving the ousting and subsequent reinstatement of CEO Sam Altman has raised questions about the view points behind growth of Artificial intelligence.

OpenAI's Mission and Structure

OpenAI, founded in 2015 as a non-profit organization, aimed to advance artificial intelligence research for the benefit of humanity. However, financial challenges arose, leading to the creation of a for-profit wing in 2019 under Altman's leadership. This for-

profit venture, responsible for consumer AI technology like ChatGPT, operated alongside the non-profit arm, causing internal tensions.

Financial Struggles and For-Profit Ventures
Facing financial constraints, OpenAI's move towards monetizable AI technology resulted in conflicts between its non-profit roots and the necessity for substantial financial investment. The launch of ChatGPT in November 2022 further intensified these conflicts.

Microsoft's Role and Investment
Microsoft's significant investment in OpenAI, totaling up to $13 billion, played a pivotal role in the company's growth. However, the board's attempt to oust Altman took Microsoft by surprise, prompting CEO Satya Nadella to express support for Altman's reinstatement.

Employee Loyalty and Microsoft's Ultimatum
OpenAI employees, alarmed by the sudden changes, threatened to leave if Altman and other key figures were not reinstated. Microsoft, keen on retaining talent and its partnership with OpenAI, announced plans to hire Altman and others to run an AI research center within Microsoft if they were not brought back.

Internal Board Divisions and Reconstitution
Internal divisions within the board, with co-founder Illya Sutskever expressing regret for his role in the turmoil, contributed to the board's decision to reinstate Altman as CEO. The reconstitution of the board followed, with most coup instigators resigning, signaling a shift in OpenAI's leadership.

The Influence of 'Effective Altruism'
While it may seem like a place led solely by money and technology, Silicon Valley also has its philosophies, a key one being 'effective altruism'. Simply put, effective altruism looks at ways in which any intervention, monetary or technical, can be most effective. The practitioners of this philosophy among the Silicon Valley elite have an obsession with the possible negative impacts of AI and reducing the risk associated with it. OpenAI's charter itself speaks of safely building an AGI, or Artificial General Intelligence, an AI capable of reasoning like humans unlike the generative AIs that we have that only create based on what it has 'learned'.

Effective Altruists tend to push back against the 'techno optimists' and 'accelerationists', who believe that the benefits of technology outweigh the bad and that all technological developments need to be accelerated as it is the way forward for mankind. The effective altruism proponents on OpenAI's board seem to have been spooked by the rapid commercialisation of the company and feared that it was

deviating from its original purpose, playing into the hands of accelerationists. They may have been trying to recapture the narrative but bungled up the effort.

13. The OpenAI Leadership Turmoil: Sam Altman's Firing and Return

Introduction
The recent upheaval at OpenAI, involving the firing and subsequent return of CEO Sam Altman, sheds light on broader issues within the company and the challenges associated with the rapid deployment of artificial intelligence (AI).

Chronology of Events
The sequence of events began with Altman's dismissal by OpenAI's board over alleged communication issues. Greg Brockman, the president and co-founder, was stripped of his board seat and he then resigned in solidarity with Altman.

About three days later, Microsoft announced that it had hired both Altman and Brockman to lead a "new advanced AI research team". The news sparked an uproar among the employees of OpenAI. The news sparked an uproar among the employees of OpenAI.

Almost all 800 employees signed an open letter demanding Altman's reinstatement and the resignation of board members involved in his dismissal. The protest successfully led to Altman's return, accompanied by a reshuffling of the board.

Reasons Behind Altman's Dismissal
Board Disagreements: While the official statement from OpenAI was vague, reports suggest growing disagreements between Altman and other board members. Concerns were raised about Altman prioritizing business growth over addressing potential risks associated with the company's technology.

Safety Concerns: Some board members expressed concerns about the dangers to society posed by OpenAI's technology. They felt that Altman was not adequately addressing these risks, especially after a recent breakthrough that enhanced the AI models' problem-solving capabilities.

Conflict Over Research Paper: Tensions escalated when Altman clashed with a board member Helen Toner over her research paper comparing safety approaches between OpenAI and a rival company. Altman's disagreement with the paper, coupled with an attempt to oust Toner, contributed to the internal discord.

Repercussions and Board Restructuring

Board Reshuffling: Following the employee protest, Altman's return led to the removal of some board members. Introduction of New members in their place hints at potential shifts in OpenAI's priorities.

Commercialization Focus: The reshaped board may signal a shift toward maximizing the commercial potential of AI, with a focus on rapid technology commercialization. Microsoft's influence on the board could lead to changes in the company's direction.

Future Technological Development: OpenAI's renewed focus on advancing GPT-5, its powerful AI model, suggests an accelerated pace of technological evolution. This could intensify competition in the generative AI market, raising concerns about understanding and regulating the potential societal impacts of these technologies.

In conclusion, the OpenAI saga reflects the challenges and tensions associated with the evolving landscape of AI development and deployment. The company's future trajectory, influenced by a reshaped board, will likely impact the broader AI industry and trigger discussions around responsible AI practices and regulations.

Relevance: GS Prelims & Mains Paper III; Science & Technology
Source: The Indian Express

14. Mysterious pneumonia outbreak in China

Introduction
Evoking feelings of déjà vu among people across the world, China is seeing a spike in respiratory illnesses as it enters its first full winter season after lifting Covid-19 restrictions last December.

Here is what we know about the situation so far.

1. So, what exactly is happening?
There has been a spike in reported incidents of respiratory illnesses in China. First reported by China's National Health Commission on November 13, the illnesses have caused a surge in hospitalisations, with many hospitals warning of long waits. The situation came into the spotlight this week when the WHO asked China for more information, citing a report by the Program for Monitoring Emerging Diseases (ProMED) on clusters of undiagnosed pneumonia in children.

2. Where is this spike occurring?
Infections have proliferated across China's north-eastern regions, with Beijing and Liaoning, 800 km apart, being two major hubs.

3. Who have been most affected by the outbreak?

Cases among children are especially high, with children making up a large proportion of those hospitalised. Schools in Beijing are reporting high levels of absenteeism, even dismissing entire classes for at least a week if some students are ill.

Some experts have noted that the high incidence in children is actually a positive, indicating that older individuals have some immunity to the pathogens running rampant. This would most likely mean that existing vaccines are likely to help protect individuals from disease. However, apart from children, the elderly and pregnant women may also be vulnerable.

4. Is this the outbreak of a new disease, like Covid-19 a few years back?

No, not as far as we know yet. Chinese authorities have attributed the increase in incidence of respiratory illnesses to the circulation of known pathogens such as influenza, mycoplasma pneumoniae, respiratory syncytial virus (RSV), and SARS-CoV-2 (the virus that causes COVID-19). So far, no new illness has been identified, although the World Health Organization has asked China for more disease data.

According to WHO, mycoplasma pneumoniae, a common bacterial infection which typically affects younger children, is likely to be what is affecting most of the patients under 18.

5. Why this outbreak now?

Chinese authorities, and many health experts elsewhere, have attributed the outbreak to the lifting of Covid-19 restrictions, similar to "lockdown exit waves" seen in other countries. China may be repaying an "immunity debt" after their strict and lengthy lockdown, which must have drastically reduced the circulation of respiratory bugs and hence decreased immunity to endemic bugs.

Moreover, the onset of winter is a likely culprit as well. Chinese authorities have said that temperatures will further plummet this weekend onwards.

Relevance: GS Prelims; Science & Technology
Source: The Indian Express

15. Deep Space Optical Communications (DSOC) experiment

Introduction

NASA's Psyche spacecraft, currently over 16 million kilometres away in space, successfully fired a laser signal at Earth on November 14.
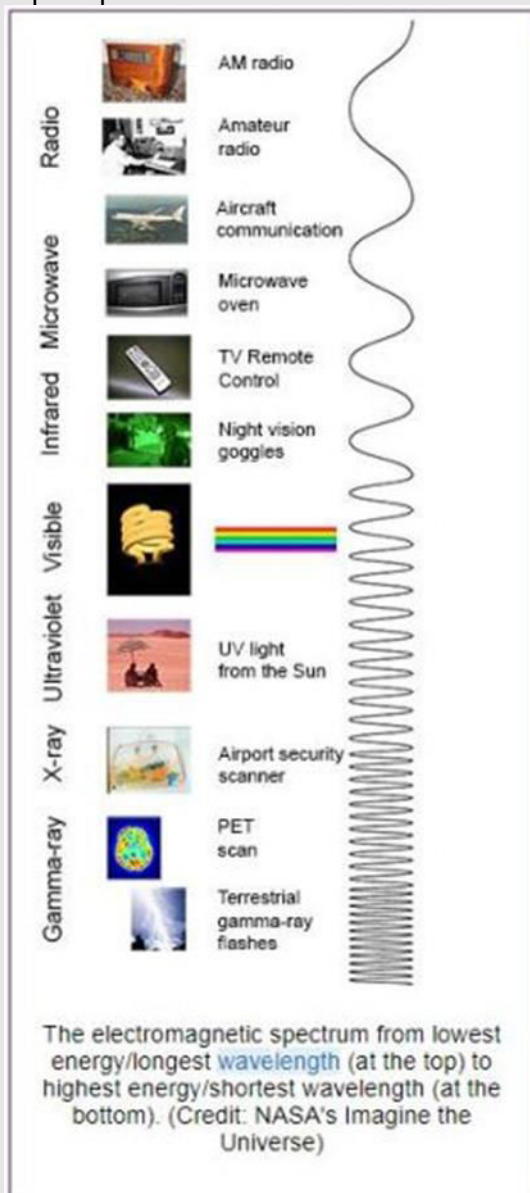
The spacecraft is on its way to a unique metal-rich asteroid, orbiting the Sun between Mars and Jupiter. Scientists believe this asteroid is the nickel-iron core of an early

planet, studying which could provide unique insights into the impenetrable iron core of our own planet.

Simultaneously, it will also carry out another mission that might hold the key to future space exploration. What is this mission, and what does it have to do with 'space lasers'

Space communication's data rate problem

Communicating with spacecraft far away from Earth poses many challenges, of which the problem of data rates might be the most critical. Simply put: how does a spacecraft transmit vast amounts of data over extremely long distances, all while itself moving at rapid speeds?

The electromagnetic spectrum from lowest energy/longest wavelength (at the top) to highest energy/shortest wavelength (at the bottom). (Credit: NASA's Imagine the Universe)

Like wireless communications on Earth, spacecraft encode data on various bands of electromagnetic frequencies. Currently, most space communication is carried out using radio waves — having the highest wave lengths but lowest frequencies in the electromagnetic spectrum.

However, higher bandwidths (range of frequencies) carry more data per second. Thus, scientists would ideally like to transmit data at the highest bandwidths possible to increase the rates of data transfer. But this throws up its own set of challenges.

Radio waves are more widely used for communication than other electromagnetic waves primarily because of their desirable propagation properties, stemming from their large wavelength. What this means is that they have the ability to pass through the atmosphere regardless of weather, pass through foliage and most building materials, as well as bend around obstructions. Shorter wavelengths tend to scatter when in contact with any interference.

NASA's revolutionary new technology

This is where NASA's Deep Space Optical Communications (DSOC) experiment comes in — pioneering the use of near-infrared laser signals for communication with spacecraft. Much like fibre optics replacing old telephone lines on Earth, NASA says that DSOC will allow data rates at least 10 times

higher than state-of-the-art radio telecommunications systems of comparable size and power, enabling higher resolution images, larger volumes of science data, and even streaming video.

The Psyche spacecraft is the first to carry a DSOC transceiver, and will be testing high-bandwidth optical communications to Earth during the first two years of the spacecraft's journey to the main asteroid belt. The tech demo achieved "first light" in the early hours of November 14 after this transceiver locked onto a powerful uplink laser beacon transmitted from the Optical Communications Telescope Laboratory at the NASA's Table Mountain Facility near Wrightwood, California.

Preparing for the future of space travel
In 2013, NASA's Lunar Laser Communications Demonstration tested record-breaking uplink and downlink data rates between Earth and the Moon using similar technology. DSOC, however, is taking optical communications into deep space, paving the way for high-bandwidth communications far beyond the Moon and over a 1,000 times farther than any optical communications test to date.

Why does this matter? With humanity's ambitions to travel in space, far beyond the Moon, improving communications technology is crucial.

Relevance: GS Prelims & Mains Paper III; S & T
Source: The Indian Express

Geography

1. Earthquake swarms a sign of impending volcano

Introduction

A state of emergency has been declared in Iceland, after a swarm of 800 earthquakes rocked the island country's southwestern Reykjanes peninsula in under 14 hours on November 10. Earthquake swarms are earthquake sequences without a discernible main-shock.

Around 1,400 earthquakes were measured in the previous 24 hours, and over 24,000 have been recorded in the peninsula since late October. The most powerful of these quakes had a magnitude of 5.2, and hit about 40 km from Reykjavík, Iceland's capital.

Just what is happening in Iceland?

Iceland is located on the Mid-Atlantic Ridge, technically the longest mountain range in the world, but on the floor of the Atlantic Ocean. The ridge separates the Eurasian and North American tectonic plates — making it a hotbed of seismic activity.

How can earthquake swarms be portents for volcanic activity?

Deep under the Earth's surface, intense heat melts rocks to form magma, a thick flowing substance lighter than solid rock. This drives it upwards and most of it gets trapped in magma chambers deep underground. Over time, this viscous liquid cools and solidifies once again. However, a tiny fraction erupts through vents and fissures on the surface, causing volcanic eruptions.

Now, the movement of magma close to Earth's surface exerts force on the surrounding rock, which often causes earthquake swarms. Now, the underground movement of magma does not necessarily lead to an eruption. But closer it gets to the surface, more likely an eruption is, and more frequent symptomatic earthquake swarms get.

After the ongoing spell of seismic activity began, Scientists said that it was "the response of the crust to the stress changes induced by continued magmatic inflow at depth beneath the Fagradalsfjall volcanic system."

When and where is an eruption likely to take place?

Fagradalsfjall lies about 40 km to the southwest of Reykjavík and is the "world's newest baby volcano." It had been dormant for eight centuries before erupting in 2021, 2022 and 2023. While it is impossible to pinpoint the exact location of an eruption, it is likely to be around this area.
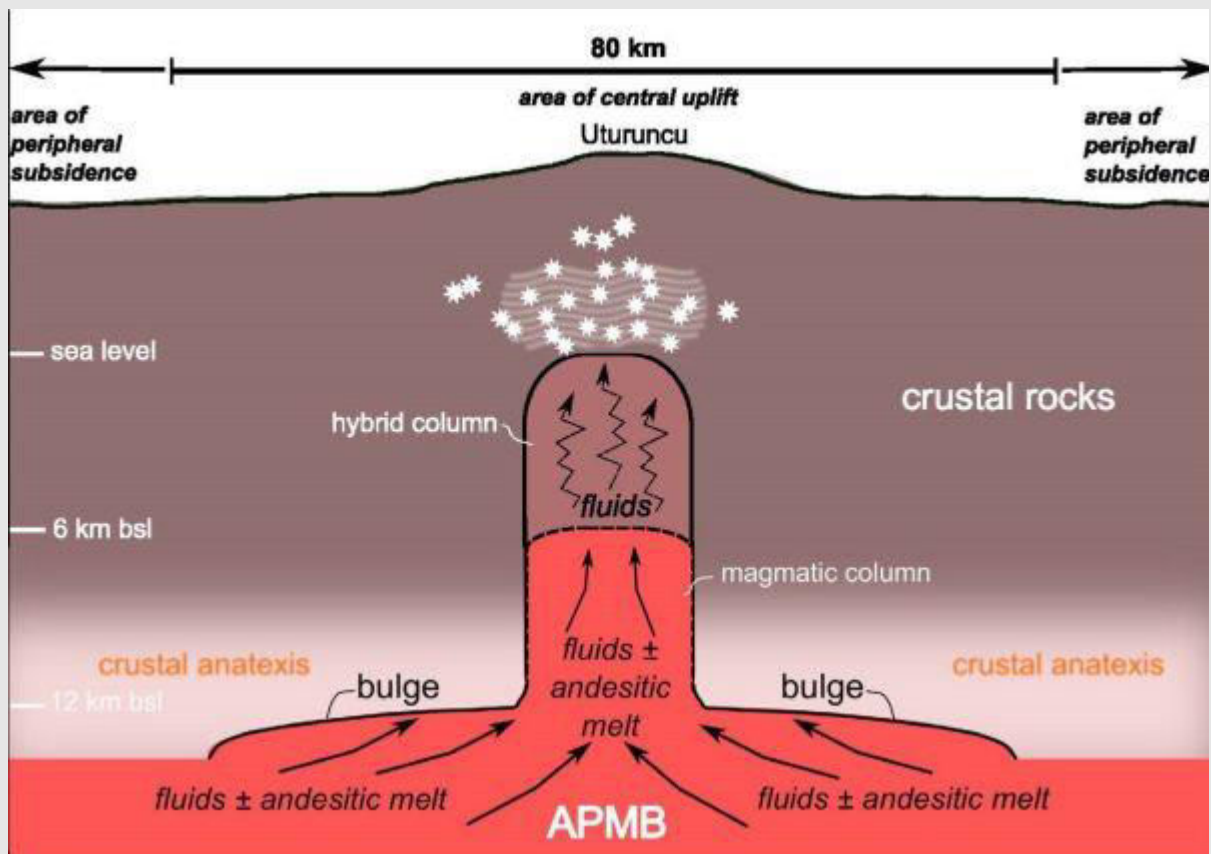
Figure 5 Movement of magma underground shows up as deformation on surface. This is often accompanied by earthquake swarms. This figure shows the extent of the deformation and subsidence on the surface surrounding the Uturuncu volcano in Bolivia.

How many active volcanos does Iceland currently have?

Iceland is home to some of the most active volcanoes in the world. Currently, it boasts of 33 active volcanoes which have erupted over 180 times in the past 1,000 years. According to United States Geological Service, active volcanos are those which have "erupted within the Holocene (the current geologic epoch, which began at the end of the most recent ice age about 11,650 years ago)," or which have "the potential to erupt again in the future."

One of Iceland's most famous volcanoes is Eyjafjallajökull. In 2010, this volcano erupted and caused a massive ash cloud to spread across Europe. The ash cloud disrupted air travel for weeks and caused billions of dollars in damage.

Relevance: GS Prelims & Mains Paper I; Geography
Source: The Indian Express

2. Mount Etna and other Active volcanoes

How long has Mount Etna been an active volcano?

Mount Etna is Europe's most active volcano and one of the largest in the world. Its recorded volcanic activity dates back to 1500 B.C. Since then, it has erupted more than 200 times.

The current eruptions at Etna have led to flight cancellations at nearby Catania airport. The use of cars and motorbikes has also been banned for 48 hours due to high amounts of ash on the roads. Ash can be slippery and increases the risk of accidents.

PACIFIC RING OF FIRE
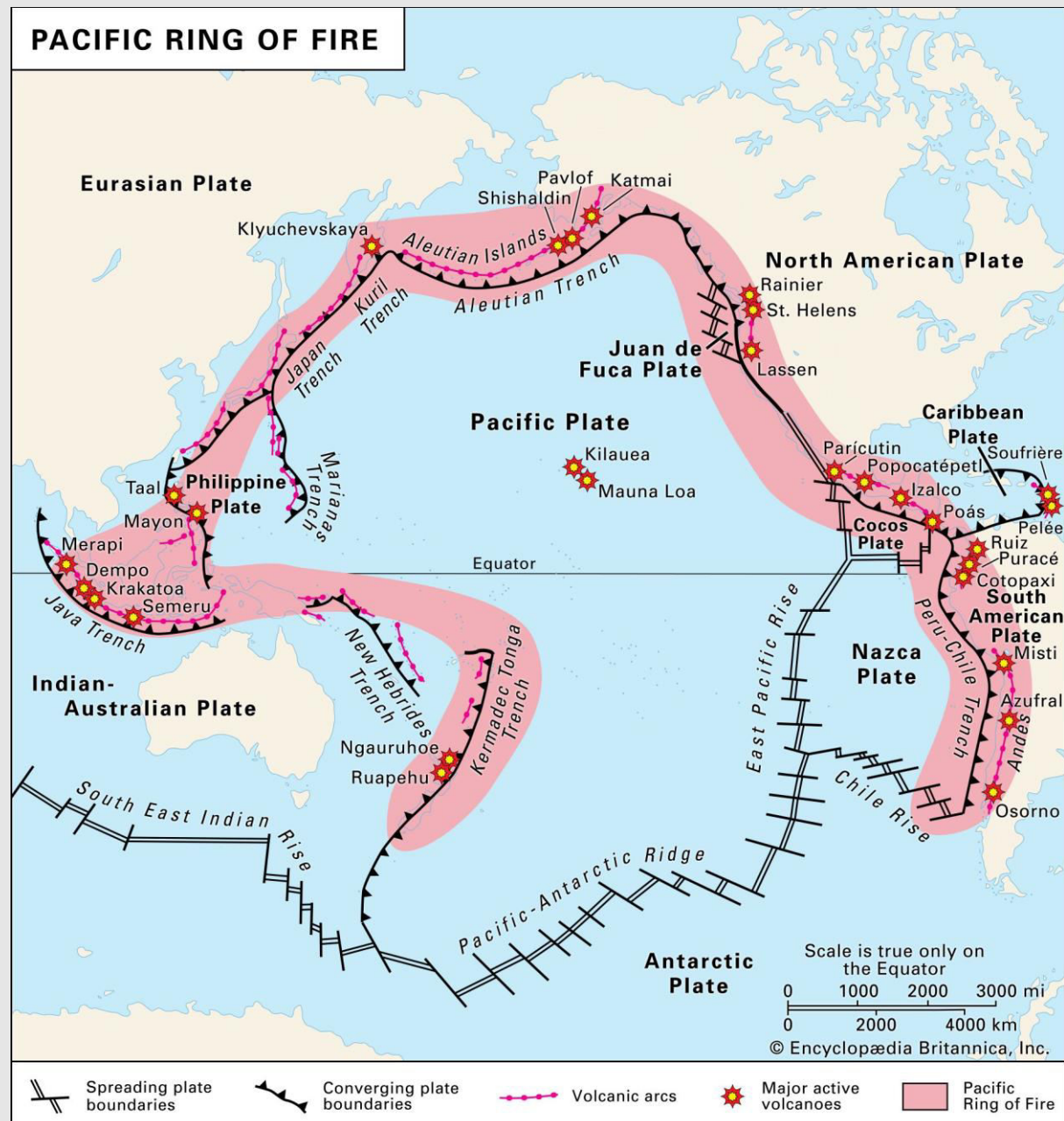
Other volcanoes erupt for much longer than Etna
One of the most famous long-term eruptions was Kilauea volcano on Hawaii. Its spewing spree in 1983 continued — almost nonstop — for 35 years until 2018, only to start again in 2021. The eruption is still ongoing.

Dukono in Indonesia started erupting in August 1933 and is still continuing. Santa Maria in Guatemala began erupting in June 1922 and continues to this day.

And Yasur in Vanuatu first rumbled to life in about 1270 (± 110 years) and as of June 9, 2023, was still erupting.

Volcanoes particularly active in Pacific Ring of Fire
Some of the most active volcanoes are located in the Pacific Ring of Fire, which includes New Zealand, Southeast Asia, Japan and the western coast of the Americas. About 90% of all earthquakes worldwide strike within this region.

Can scientists predict volcanic eruptions?
Scientists are capable of predicting volcanic eruptions hours, or sometimes several days, in advance. This isn't the case with earthquakes, which are much harder to predict.

Scientists use seismographic data from earthquakes and other tremors, because those can be a precursor to volcanic eruptions.

They monitor the ground for signs of deformation, which may be caused by the movement of magma. They also take readings of volcanic gas emissions, and changes in gravity and magnetic fields.

Relevance: GS Prelims & Mains Paper I; Geography
Source: The Indian express

Indian Society

1. WHO's report on TB in India

Introduction

Although several positive strides have been made by India towards the goal of eliminating tuberculosis by 2025, five years ahead of the global target, it continues to have the highest incidence of the bacterial infection. India accounts for 27 per cent of the total TB cases in the world, according to the recently released Global TB Report 2023 by the World Health Organisation.

The report noted two positive trends for India. One, there was an increase in reporting of TB cases, crossing even the pre-pandemic high with 24.2 lakh cases in 2022. Two, the coverage of treatment for the infection increased to 80%. The most important data point for India, however, was mortality due to TB.

What does the 2023 report say about mortality in India?

A sudden drop in mortality due to TB was noted in the 2023 report. This was owing to the WHO report accepting India's Sample Registration System dataset as the basis for the calculations instead of the Global Burden of Disease report.

With the change in dataset, India's TB mortality dropped from 4.94 lakhs in 2021 to 3.31 lakhs in 2022. This resulted in a reduction in India's contribution towards global mortality from 36 per cent in the previous years to 26 per cent in 2022.

India presented newer evidence, the in-country mathematical modelling for estimating burden, and data from the government's Ni-Kshay portal that captures data for the entire duration between a person being diagnosed with TB and completing their treatment. NI-KSHAY-(Ni=End, Kshay=TB) is the web enabled patient management system for TB control under the National Tuberculosis Elimination Programme (NTEP).

How many people get TB in India?

Nearly 2.82 lakh people got TB in India in 2022, meaning one person gets TB every 11 seconds in India, according to the report. India's contribution to the global burden is 27%, which is down one percentage point from the previous year's 28%.

What is more important is that there has been an increase in reporting of TB cases. The estimated number of cases in a country is based on a mathematical model, and there is a gap between that and the number of people who actually get diagnosed and put on treatment in a country.

What does the report say about coverage of TB treatment in India?

The report acknowledged an increase in coverage of TB treatment in India, increasing by 19 per cent over the previous year. In fact, India was among only four countries among the 30 high-burden countries in the world that were able to achieve more than 80 per cent treatment coverage.

What is India's TB elimination target?

India has set a target of 2025 for eliminating TB in the country. The national strategic plan 2017-2025 sets the target of no more than 44 new TB cases per lakh population by 2025. The 2023 report pegs this number at 199 cases per lakh. Achieving this target is a big task as the plan had envisaged an incidence of only 77 cases per lakh population by 2023.

The programme also aims to reduce the mortality to 3 deaths per lakh population by 2025. Even with the WHO accepting the lowered estimates for India, this stands at 23 per lakh population.

	Pre-pandemic (TB Report 2020)	Previous TB Report 2022	Present TB Report 2023
Estimated TB cases	26.4 lakh	29.6 lakh	28.2 lakh
Percentage of global burden	26%	28%	27%
Mortality	4.36 lakh	4.94 lakh	3.31 lakh
Percentage of global deaths	36%	36%	26%
Drug-Resistant TB	1.16 lakh	1.19 lakh	1.10 lakh
Percentage of global drug-resistant TB	27%	26%	27%

Relevance: GS Prelims & Mains Paper I; Social Issues
Source: The Indian express

2. Four Convicted in Soumya Vishwanathan Murder Case Receive Life Sentences

Overview

After 15 years, a Delhi court sentenced four men to life imprisonment for the murder of journalist Soumya Vishwanathan, along with charges under the Maharashtra Control of Organised Crime Act (MCOCA). The fifth convict received a three-year jail term.

Timeline of Events
September 30, 2008: Soumya Vishwanathan, a 25-year-old journalist, was killed while heading home. Robbers in a WagonR chased and shot her at Nelson Mandela Marg, causing her car to collide with the footpath. She succumbed to her injuries.

Initial Investigation: The incident was reported at Vasant Kunj police station, but no breakthroughs were made in the first six months due to a lack of CCTV cameras and witnesses unable to identify the assailants.

March 23, 2009: Three men—Ravi Kapoor, Amit Shukla, and Baljeet Malik—were arrested in connection with another robbery-murder case, revealing their involvement in Soumya's murder during interrogation.

Evidence: Police matched the bullet found in Soumya's car to the weapon recovered from the arrested men and located the WagonR used in the crime.

Serial Offenders: The accused were found to be serial offenders targeting taxi drivers or lone women, leading to the introduction of MCOCA charges in 2011.

MCOCA Complexity
The case faced complications as MCOCA charges required proving the involvement of the men in an organised crime gang. After years of trial, in October of the current year, the court found Ravi Kapoor, Amit Shukla, Baljeet Malik, and Ajay Kumar guilty of murder and committing organised crime under the MCOCA. Ajay Sethi was convicted for receiving stolen property and conspiring to abet, aid in, or knowingly facilitate organised crime under the MCOCA.

Relevance: GS Prelims & Mains Paper I; Social Issues
Source: The Indian Express and The Hindu

3. Bengaluru Hosts Kambala Races: A Traditional Spectacle

Event Overview

During the weekend of November 25 and 26, Bengaluru hosted Kambala races. This traditional racing event, held at City Palace Grounds, has faced legal scrutiny in the past but continues to draw large crowds.

Kambala: A Coastal Karnataka Tradition
Kambala is a folk sport practiced in coastal Karnataka, particularly in areas where Tulu speakers form a majority. Traditionally held in slushy paddy fields post-harvest, Kambala has evolved into a series of weekly events organized by the Kambala Samithi from November to April.

Participation in Bengaluru Kambala
Initially, 228 teams registered across the four categories, with 160 pairs eventually participating. To encourage wider participation, organizers offered incentives, including a cash prize of Rs 1.5 lakh and gold for the first prize winner.

Pan-Karnataka Appeal
While Kambala's popularity is concentrated in coastal Karnataka, the organizers believe that portrayals in films, such as the 2022 movie 'Kantara,' have contributed to a broader appeal for the event across the state.

Supreme Court Ban and Reversal
Kambala, along with Jallikattu and bullock-cart racing, faced a ban in 2014 due to allegations of animal abuse, including tying buffalo noses with ropes and continuous whipping. The ban was lifted in 2016, with the Environment Ministry granting exceptions for traditional events, recognizing cultural practices, and imposing conditions to ensure animal welfare.

Legal Amendments and Upheld Changes

State governments, including Karnataka, Tamil Nadu, and Maharashtra, amended the Prevention of Cruelty to Animals Act, securing exemptions for events like Kambala. Despite legal challenges, a constitutional bench upheld these amendments in May, allowing the continuation of these traditional events.

Caste Discrimination Allegations
Historically, Kambala has faced accusations of caste discrimination, particularly against the Koraga community. Members of this community were treated as 'untouchable,' and critics argue that dominant caste groups still control the sport, leading to unequal participation and roles during the event.

Relevance: GS Prelims & Mains Paper I; Social Issues
Source: The Indian Express

Miscellaneous

1. Takeaways from GoI's report on road accidents

Introduction

The Ministry of Road Transport and Highways released their annual report on October 31 titled 'Road Accidents in India – 2022'.

As per the report, a total of 4,61,312 road accidents have been reported by States and Union Territories (UTs) during the calendar year 2022, which claimed 1,68,491 lives and caused injuries to 4,43,366 persons. This marks an increase of 11.9% in accidents, 9.4% in fatalities, and 15.3% in injuries compared to the previous year.

Here are key takeaways from the report.

1. **Over-speeding is the biggest killer**

In 2022, over speeding accounted for 72.3 percent of the total road accidents. Driving on the wrong side was the second highest cause of the total road accidents in 2022, accounting for 4.9 per cent of all accidents.
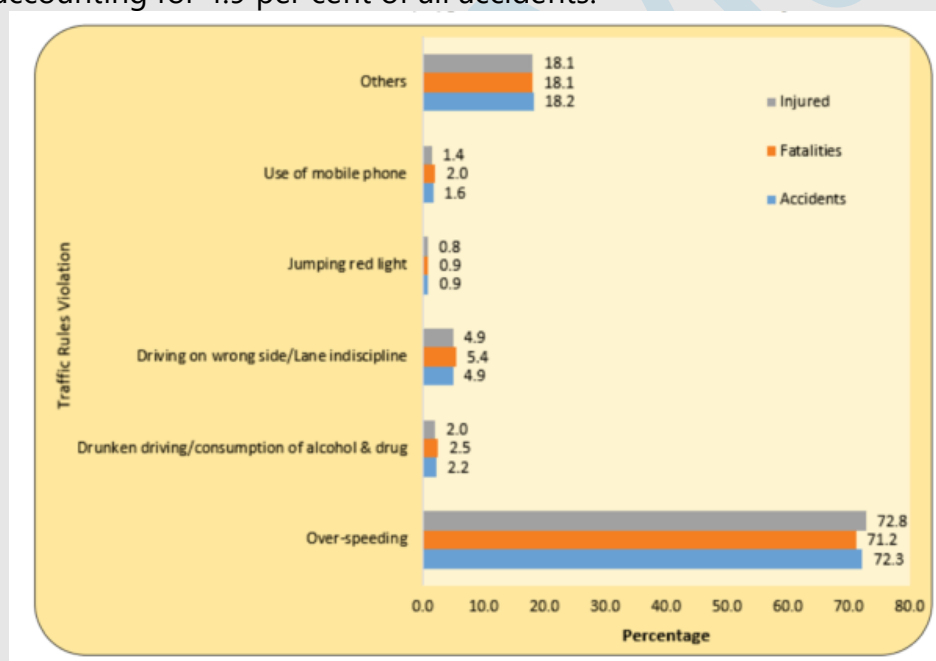
2. **Most accidents occurred on straight roads**

As per the data, 67 per cent of all accidents occurred on straight roads. This is over four times the total number of accidents that took place on curved roads, roads with potholes, and roads having a steep gradient, combined (13.8 per cent).

Road features chart:

Road features	Injured	Fatalities	Accidents
Others	12.3	10.9	12.5
Ongoing road works/ Under construction	1.8	2.4	2.0
Steep grade	0.9	1.2	1.0
Potholes	0.8	1.1	1.0
Culvert	1.4	2.1	1.6
Bridge	2.9	3.7	3.1
Curved road	12.6	12.2	11.8
Straight road	67.1	66.4	67.0

(Percentage)

■ Injured   ■ Fatalities   ■ Accidents
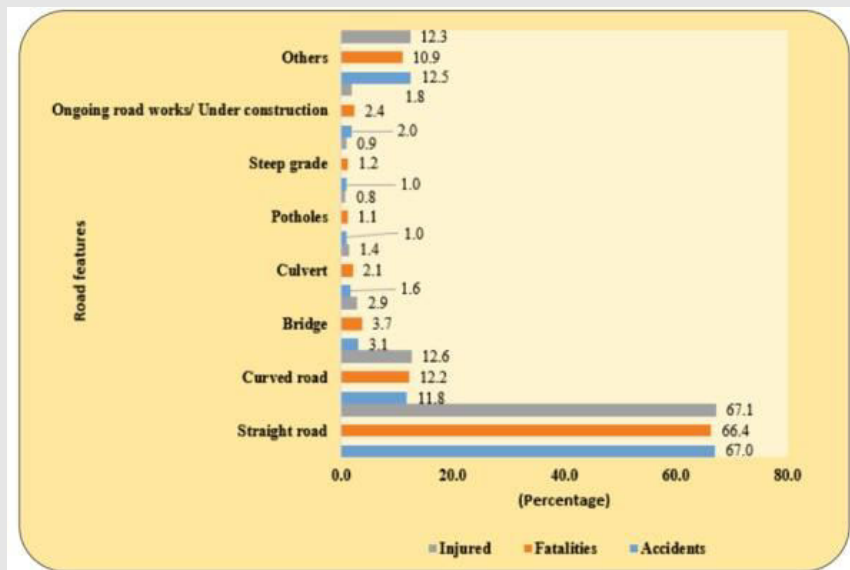
3. **Highest fatality rate in Sikkim, lowest in Ladakh, Daman & Diu**

Fatality rate is used to explain road accidents relative to vehicular population in a given location. It is measured by the number of road accident fatalities per 10,000 vehicles. Sikkim reported the highest fatality rate, standing at 17. UTs Ladakh and Daman & Diu had the lowest fatality rate at 0. The all-India rate stood at 5.2.
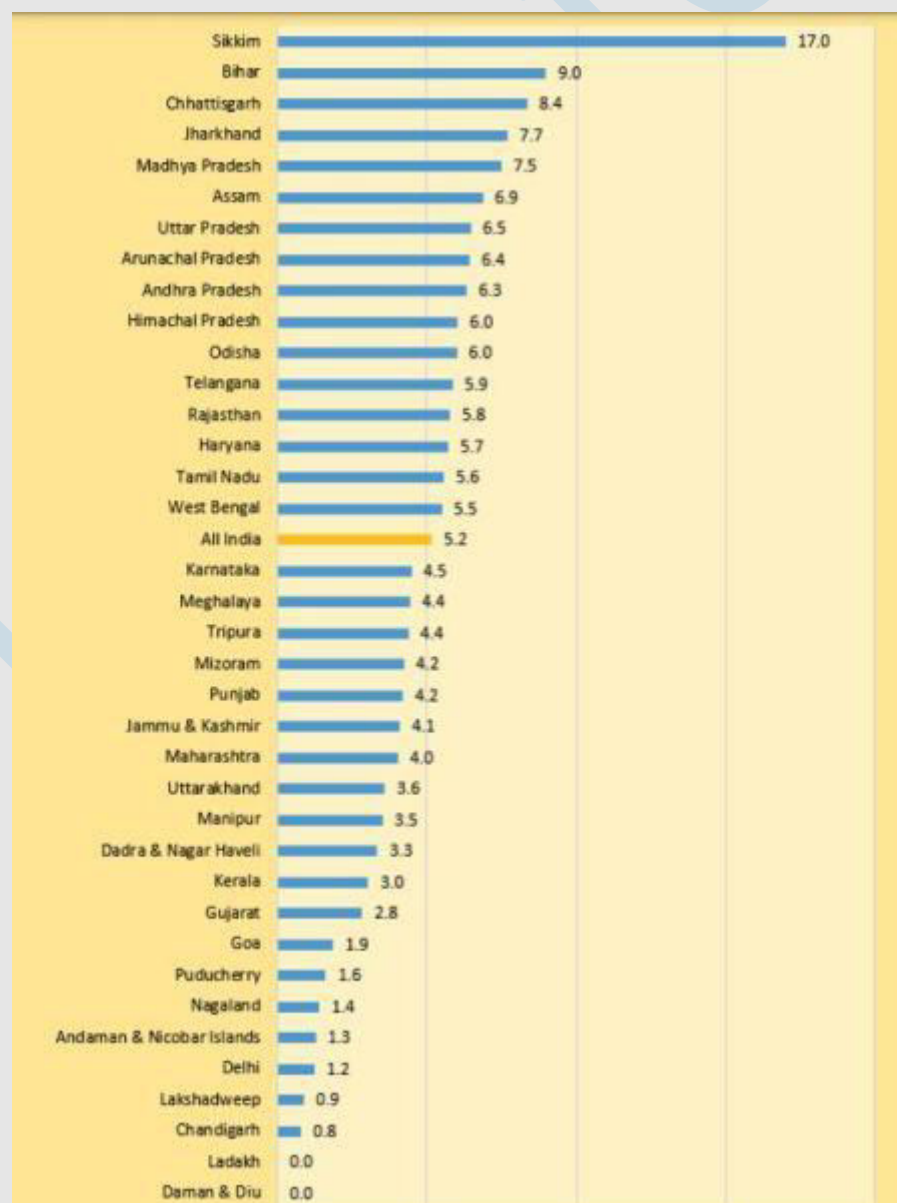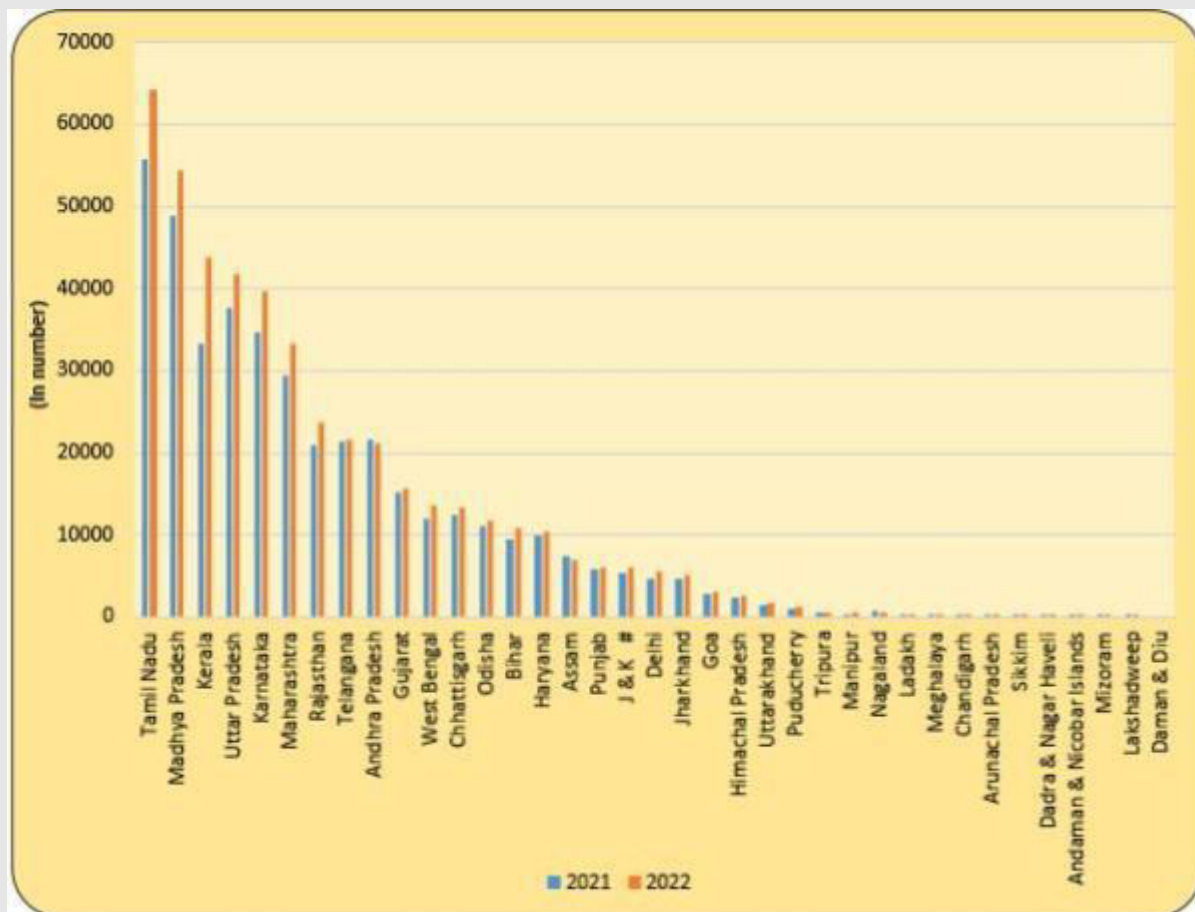

State/UT	Fatality rate
Sikkim	17.0
Bihar	9.0
Chhattisgarh	8.4
Jharkhand	7.7
Madhya Pradesh	7.5
Assam	6.9
Uttar Pradesh	6.5
Arunachal Pradesh	6.4
Andhra Pradesh	6.3
Himachal Pradesh	6.0
Odisha	6.0
Telangana	5.9
Rajasthan	5.8
Haryana	5.7
Tamil Nadu	5.6
West Bengal	5.5
All India	5.2
Karnataka	4.5
Meghalaya	4.4
Tripura	4.4
Mizoram	4.2
Punjab	4.2
Jammu & Kashmir	4.1
Maharashtra	4.0
Uttarakhand	3.6
Manipur	3.5
Dadra & Nagar Haveli	3.3
Kerala	3.0
Gujarat	2.8
Goa	1.9
Puducherry	1.6
Nagaland	1.4
Andaman & Nicobar Islands	1.3
Delhi	1.2
Lakshadweep	0.9
Chandigarh	0.8
Ladakh	0.0
Daman & Diu	0.0

4. **Tamil Nadu reported highest number of accidents**

Tamil Nadu reported 64,105 total accidents, 15.1 per cent up from the previous year. This accounted for over 13 per cent of total accidents reported in India. At the next spot was Madhya Pradesh, which reported 54,432 accidents.

2. Elvish Yadav case: Snake venom as a recreational drug

Why in news?

Reality television show Bigg Boss OTT winner and YouTuber Elvish Yadav was booked recently by the Gautam Buddh Nagar police in a case pertaining to the sale of snake venom at rave parties in the National Capital Region.

According to the police, they recovered 20 ml of snake venom, five cobras, a python, 2 two-headed snakes, and a rat snake from the accused.

Snake venom is often used as a recreational drug. Its smuggling is a multi-million dollar illicit industry. In November 2022, the Border Security Force (BSF) in West Bengal's

Dakshin Dinajpur district seized a jar containing 2.14 kg of snake venom, which was valued at Rs 17 crore in the international market.

How is snake venom consumed?
In the reported cases of snake venom use in India, snakes were deliberately made to bite on the consumer's feet or tongue. Snakes like cobras and Indian kraits were most commonly used for this purpose.

How does snake venom affect the human body?
According to the study, which chronicled a case study of a 33-year-old male consumer with a history of substance abuse, "The snake bite was associated with jerky movements of the body, blurring of vision, and unresponsiveness, i.e. 'blackout' as per the patient for 1 h (hour). However, after waking up he experienced a heightened arousal and sense of well-being, which lasted for 3–4 weeks." Once the effect of the bite wore off, the man began to experience irritation and lethargy and craved drugs.

In the reported cases, consumers described the experience of a snake bite to be associated with "happiness, grandiosity, and excessive sleepiness". Consumers didn't report any withdrawal symptoms, however, in some cases, they became more tolerant and started to indulge "in more frequent snake bite trips."

Why does snake venom give a high?
It may have to do with the neurotoxin nature of snake venom that causes analgesia, or the inability to feel pain. Forms of a neurotoxin found in cobra venom, particularly, bind on nicotinic acetylcholine receptors (nAChRs) that are widely distributed in the human brain area and are involved in the euphoric or rewarding experience. Moreover, once the venom enters human blood, it releases active metabolites like serotonin that have "different psychotropic effects such as hypnotic and sedative".

Why is using snake venom as a recreational drug dangerous?
According to a study, the reported cases didn't witness any fatality as the consumers took too little venom. However, it isn't well known what quality of venom can be fatal for humans. Therefore, experts suggest that recreational use of snake venom can lead to not only addiction but also death.

Relevance: GS Prelims
Source: The Indian Express & The Hindu

3. Advocate-on-Record system in the Supreme Court

Why in news?

The Supreme Court recently pulled up an Advocate-on-Record (AoR) for filing a frivolous case and dismissed the public interest litigation. The Court censured the lawyer that an AoR cannot merely be a "signing authority."

The SC bench also called for a "comprehensive plan" for reforming and improving the AoR system of the top court, which will be drawn up in collaboration with the Bar.
But who is an AoR and why does the Supreme Court have a special category of advocates?

Who is an AoR?
Only an AoR can file cases before the Supreme Court. An AoR might engage other lawyers including senior counsels to argue before the Court but the AoR is essentially the link between the litigant and the highest court of the country.

After fulfilling an eligibility criterion and clearing a rather tough examination, an advocate is qualified to be an AoR.

Simply put, AORs are a pool of elite Delhi-based lawyers whose legal practice is mostly before the SC. They can appear before other courts too. The idea behind this practice is that a lawyer with special qualifications, picked by the Supreme Court itself, is equipped to appear for a litigant because it is a court of the last opportunity for the litigant.

How does one become an AoR?
The Supreme Court Rules, 2013 prescribe eligibility criteria for an AoR.
While an advocate has to clear an examination set by the Court itself, the advocate has to meet specific criteria to be eligible to appear for the exam. The advocate must train with a court approved AoR for at least one year to take up the exam. She must also have at least four years of practice before starting the training itself.

An advocate needs to score at least 60% i.e. a minimum of 240 marks out of 400 with at least 50% in each subject in a three-hour exam. The subjects include Practice and Procedure, Drafting, Professional Ethics and Leading Cases. An AoR must have an office in Delhi within a 16-kilometre radius of the SC.

What are the rules governing the AoR system?
According to Section 30 of the Advocates Act, any lawyer enrolled with the Bar Council is entitled to practice law before any Court or tribunal in the country. However, the provision also categorically states that "nothing in the provision shall be deemed to affect the power of the Supreme Court to make rules under Article 145 of the Constitution."

Under Article 145 of the Constitution, the Supreme Court is empowered to make rules and regulate its own procedure for hearing cases.

Based on System of Barristers and Solicitors

The AoR system is broadly based on the British practice of barristers and solicitors. While barristers wear the black gown and wig and argue cases, solicitors take up cases from clients. In the Federal Court, the colonial predecessor of the Supreme Court, "agents" would take up cases while barristers would argue. In High Courts, the arguing counsels were referred to as pleaders. Senior advocates in India are designated by the Court and wear a distinct gown. Like barristers, they cannot solicit clients and are only briefed by other lawyers, say for example, an AoR.

In England	Barristers	Solicitors
What do they do?	argue cases in front of a judge, prepare arguments for the court	initial preparation, litigations settled out of court, draw up wills, give advice, investigate, prepare documents
Where do they work?	in a courtroom	in an office
Who pays them?	are employed by solicitors	clients
Do they have the right of audience?	yes, even in the highest courts	only in lower courts
Additional information	judges are usually chosen from the most senior barristers	

Relevance: GS Prelims
Source: The Indian Express

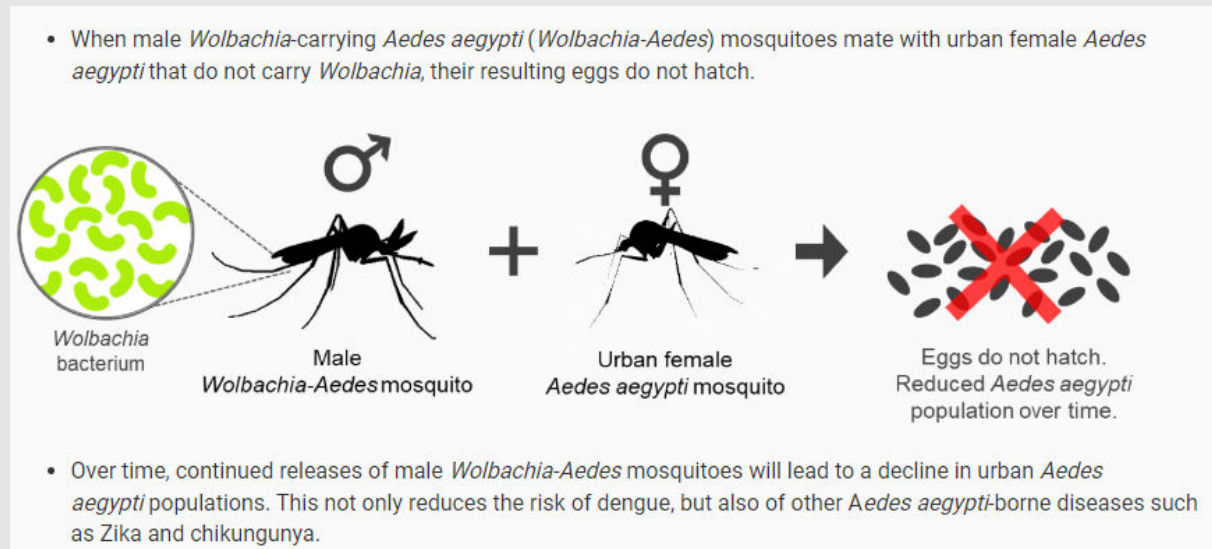## 4. Wolbachia: Possible weapon against against mosquito-borne diseases

What is Wolbachia?

Wolbachia is a genus of bacteria that has evolved complex relationships with the many insects that can host it. It is named for the American pathologist Simeon Burt Wolbach, who identified it along with Marshall Hertig in 1924.

Male and female mosquito infection

In 1971, researchers discovered that when male Culex mosquitoes infected by Wolbachia bacteria fertilised healthy eggs from a female, the eggs died. The bacteria modified the male's sperm cells in a way that only the bacteria could reverse this modification. So if the female mosquito was uninfected, her egg cells would be

damaged. But if the female was infected by Wolbachia, the eggs would be viable if the male was uninfected or infected by the same strain of Wolbachia. This means infected female mosquitoes gain a reproductive advantage over time as the amount of Wolbachia in the population increases.

- When male *Wolbachia*-carrying *Aedes aegypti* (*Wolbachia-Aedes*) mosquitoes mate with urban female *Aedes aegypti* that do not carry *Wolbachia*, their resulting eggs do not hatch.

Wolbachia bacterium

Male *Wolbachia-Aedes* mosquito

Urban female *Aedes aegypti* mosquito

Eggs do not hatch. Reduced *Aedes aegypti* population over time.

- Over time, continued releases of male *Wolbachia-Aedes* mosquitoes will lead to a decline in urban *Aedes aegypti* populations. This not only reduces the risk of dengue, but also of other A*edes aegypti*-borne diseases such as Zika and chikungunya.

Possible use
Wolbachia can also reduce the rate at which chikungunya and yellow fever viruses multiply in infected mosquitoes. Scientists have also found that some Wolbachia species can strongly protect some mosquito species against the malaria parasite. So they are currently studying a way to have the right strain of Wolbachia rapidly spread in a particular mosquito population, in the right environmental conditions, such that the bacteria can suppress malaria transmission. If this is achieved, it will be a significant weapon in our millennia-long fight against mosquito-borne diseases.

Relevance: GS Prelims
Source: The Hindu

5. What is timed out rule in Cricket?

Sri Lanka's Angelo Mathews was timed out in a first for international cricket during the World Cup clash against Bangladesh in Delhi on November 6.

The player was unhappy with the strap on his helmet, and not ready to face his first delivery after coming in at No 6 for Sri Lanka during the match.

What is the timed out rule?
According to the men's cricket World Cup 2023 playing conditions, "After the fall of a wicket or the retirement of a batter, the incoming batter must, unless Time has been

called, be ready to receive the ball or for the other batter to be ready to receive the next ball within 2 minutes of the dismissal or retirement."

If the batsman fails to do so, he will be considered out.

Does the bowler get the credit for the wicket?
No, the bowler doesn't get credit, according to the playing conditions.

Relevance: GS Prelims
Source: The Indian Express

6. Hollywood Strike Ends: Key Details of the Deal

After nearly four months of striking, Hollywood writers and actors have reached a tentative deal with film studios and streaming giants, bringing an end to one of the longest strikes in history.

Why the Prolonged Strike?
The strike, initiated in May 2023 by the Writers Guild of America (WGA) and the Screen Actors Guild-American Federation of Television and Radio Artists (SAG-AFTRA), addressed concerns related to outdated regulations in the entertainment industry. Shifting from traditional TV and theatres to streaming platforms triggered the need for updated worker protections.

Demands and Achievements
Workers demanded compensation amid evolving work practices, including increased minimum pay, residuals for streaming, and contributions to health and pension plans. The achieved deal, valued at over one billion dollars, includes substantial compensation increases, protections against AI threats, a streaming participation bonus, and advancements in pension and health benefits.

Deal Approval Process
While the deal is tentative, full details will emerge after SAG-AFTRA National Board review. A potential for the strike to continue exists if WGA leadership votes against lifting the restraining order, or if union members reject the deal in a ratification vote.

Concerns Over Worker Provisions
While celebrated, concerns arise over increased minimum pay and pro-worker provisions. Streaming platforms like Netflix and Disney may face pressure from investors, potentially affecting hiring and production. Worker criticism focuses on executive bonuses and questions about the claimed need for cost-cutting.

Impact on Hollywood Productions

The strike halted major projects like 'Deadpool 3' and a 'Gladiator' sequel. With the strike's end, these projects, along with others, are expected to resume production. Shows like 'Abbott Elementary' and 'The White Lotus' may also quickly return, following the earlier tentative deal reached by the Writers' Guild in September.

Next Steps in Deal Approval
The SAG-AFTRA National Board will review the deal, and upon its release, the full guild membership will vote on it before it comes into effect.

In summary, the end of the Hollywood strike brings relief, but ongoing concerns and the deal's approval process remain focal points in the industry's evolving landscape.
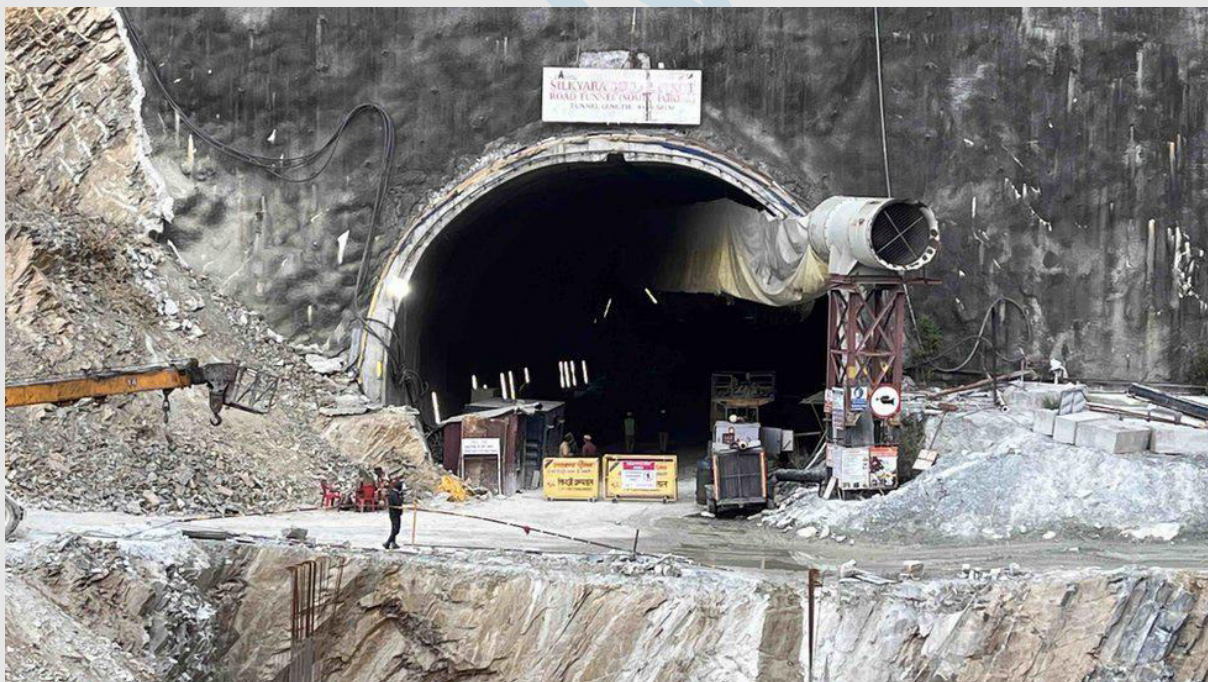
Relevance: GS Prelims
Source: The Indian Express & The Hindu

7. Uttarakhand tunnel collapse

Introduction
An under-construction tunnel on the Yamunotri National Highway in Uttarakhand's Uttarkashi district collapsed, trapping 40 workers inside.

What could have caused a part of the tunnel to cave in?
The failure (the section that has collapsed) is located around 200-300 metres from the mouth of the tunnel. It could have happened due to a loose patch (of rock), which wasn't visible during the construction. The patch might have consisted of fractured or fragile rock, that is, rock with a lot of joints that may have made it weak.

Another reason could be the seepage of water through a loose patch. Water erodes loose rock particles over time, creating a void on the top of the tunnel, which can't be seen. However, these are only general principles, and we must wait for the results of a comprehensive investigation in this case.

What are the ways in which tunnels are excavated in rock?
There are essentially two ways: the drill and blast method (DBM), and by using tunnel-boring machines (TBMs).

DBM involves drilling holes into the rock and loading them with explosives. When the explosives are detonated, the rock breaks apart.

Building a tunnel with a TBM is more expensive than DBM, but much safer. TBMs bore the rock from the front (using a rotating head) while supporting the excavating tunnel behind the machine by installing precast concrete segments.

In India, imported TBMs are used. Each of these machines can cost up to Rs 200 crore.

Does the method of excavation depend on the type of terrain?
A TBM can't be used to drill through very tall mountains. Creating a void through a 1,000-2,000-metre-high mountain by using a TBM leads to rock burst — when a part of the rock suddenly falls due to high stress.

TBMs are ideal when the rock cover is up to 400 metres tall. Underground tunnels for the Delhi Metro were dug using a TBM at shallow depth. On the other hand, in places like Himalays, including Jammu & Kashmir and Uttarakhand, DBM is usually used.

Is the Himalayan region too fragile to tunnel through?
Geologically speaking, the Himalayas are still young (they were formed between 40 million and 50 million years ago) and they are still growing due to the collision between the Indian tectonic plate and the Eurasian tectonic plate.

There are some patches where the rock is indeed too fragile for a tunnel. But at other places, the rock is very good.

What is the key aspect of building a tunnel?
The first and foremost thing is to thoroughly investigate the rock through which a tunnel is proposed to be made. This is done by sending seismic refraction waves through the rock to check which patches are fragile or solid.

In India, engineers dig a borehole into the rock to extract a core sample, and send it for petrographic analysis (microscopic examination to determine the mineral content,

grain size, texture and other features that have a bearing on the mechanical behaviour of the sample).

Such investigations help determine if the rock can take the load of the overburden when a tunnel is created. If the rock layer and its strength are good, it takes the entire load of the overburden by redistribution of the stresses, and it remains stable.

8. Uttarakhand tunnel rescue: What is an auger machine, what went wrong, and what's next?

Introduction
The operation to save 41 men trapped in the Uttarkashi tunnel witnessed a setback on Saturday when the auger joint of the drilling machine broke inside the rescue pipes and blocked the passage.

What is a horizontal auger machine?
A horizontal auger machine, often called a horizontal boring machine or directional drill, is a specialised tool to create horizontal bores or underground tunnels without disturbing the surface. It typically consists of a rotating helical screw blade called an auger, attached to a central shaft or drill, which penetrates the material by rotating. These machines are commonly employed in construction, utility installations such as laying pipes or cables, and infrastructure projects.

For the machine to work, it is positioned at the starting point of the bore, usually on the surface. It consists of a drill head with an auger or a drill string attached to it. The auger at the front of the machine rotates and cuts through the soil, rock, or other materials underground. Hydraulic or mechanical systems power this rotation.

As the auger advances, it removes the material from the tunnel, and it is usually flushed out by a drilling fluid or mud pumped through the drill string. This fluid serves to lubricate the drilling process, cool the cutting head, and carry excavated material back to the surface. The machine also has a steering system that allows operators to control the direction and angle of the bore.

Horizontal auger machines often use advanced guidance systems, such as GPS and electronic tracking, to ensure accuracy in direction and depth while drilling underground. Once the machine has bored the desired length, the auger is retrieved, and the tunnel is ready.

Auger Boring
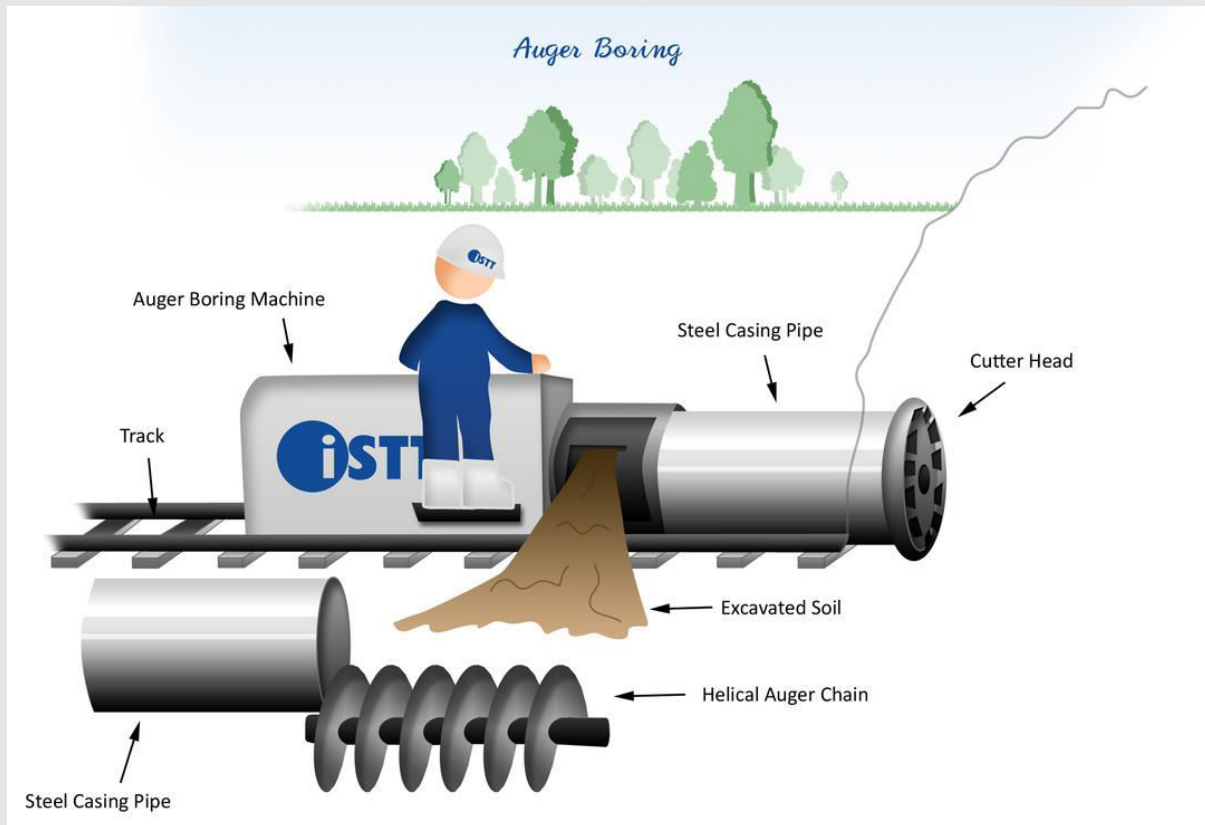
Why was it used in this case?
In the Silkyara-Barkot tunnel rescue operation, the initial plan to remove the debris blocking the tunnel exit using heavy excavators did not work.

It was later decided that an auger machine could be a good option because if used properly, it can create a passage through the debris with minimum disturbance to the surface. To keep that passage intact, the rescuers are pushing 900 mm and 800 mm wide mild steel pipes along with the auger blade. Once the passage is complete, the auger blade could be pulled back from inside the pipes.

In the current operation, the rescuers are using the American Auger 60-12000, a large and powerful horizontal directional drilling (HDD) machine manufactured by American Augers, a company specialising in trenchless underground construction equipment. The numbers "60-1200" refer to its drilling diameter capabilities. The machine can drill holes ranging from 5 feet to 10 feet in diameter.

What is the new hurdle?
In order to use the auger machine, the central shaft or drill stays outside, and the auger blade is attached to it to penetrate through the debris. In this case, the auger blade is passing through the mild steel pipes used to keep the passage intact.

After some hurdles faced in the last few days, the machine was reassembled and all augers were reinserted by 2.30 pm on Friday. Pushing for the 10th pipe started at 4.25 pm and the auger was already in by over 45 metres. According to a worker at Trenchless Engineer Services, the company that provided the machine, auger blades come in different lengths – 8, 6 and 3 metres. To reach a length of over 45 metres, several blades were attached to each other, using joints.

On Friday, a new obstruction was observed. When similar situations were faced earlier, the machine and the auger blades were pulled out so that someone could enter the pipes and check the obstruction manually.

The same thing was planned in this case. Rescuers started pulling back the machine to clear the pipes for manual inspection. But it appears that the tip of the blade was still stuck in the obstruction, and after pulling back around 15 metres, an auger joint broke. Around 32 metres of the auger blade is left inside the pipes, blocking them.

What needs to be done now?
Because there is no way to pull the broken auger blade, rescuers need to enter the 800 mm wide pipes, and cut the 32 metres long auger blade piece by piece to clear the path.

The rescuers have also called for a plasma cutter from Hyderabad, and it is expected to reach the tunnel site. A plasma cutter is a tool used for cutting various types of electrically conductive materials, such as steel, aluminium, stainless steel, copper, and other metals. It works by creating a high-velocity jet of ionised gas, known as plasma, to melt and cut through the material.

According to the authorities, using the plasma cutters will increase the speed of cutting the machine. Currently, they have been able to cut the stuck auger just around 1.5 metres in an hour. With the plasma cutter, they can cut it around 4 metres in an hour. Once the broken auger blade is removed, new auger blades will be used in its place.

Relevance: GS Prelims & Mains Paper III; Disaster Management
Source: The Indian Express & The Hindu

## 9. Rat-hole mining used to evacuate workers in Uttarakhand

Introduction
Earlier, the auger joint of the machine drilling through the debris to release 41 workers trapped in the collapsed Silkyara-Barkot tunnel broke down. Rescuers spent two days cutting through the blade stuck inside the rescue pipes and removing it piece by piece.

However, with large metal pieces hindering the machine drilling and breaking the auger, the rescuers drilled through the remaining few meters using the practice of rat-hole mining.

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.
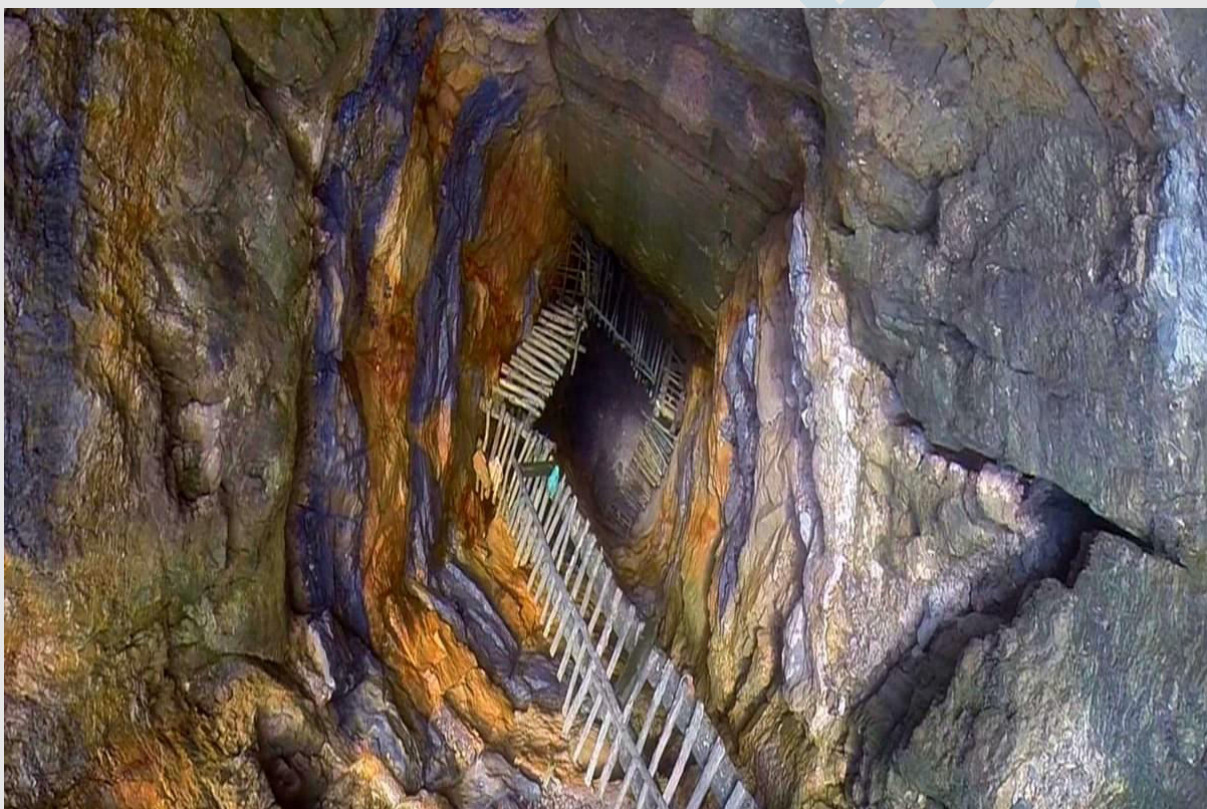
Environmental and safety concerns
Rat hole mining poses significant safety and environmental hazards. The mines are typically unregulated, lacking safety measures such as proper ventilation, structural support, or safety gear for the workers. Additionally, the mining process can cause land degradation, 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 & Mains Paper III; Disaster Management
Source: The Hindu

10. Gujarat gets 'Ghol' as state fish

Introduction

Ghol fish — considered a fisherman's lottery — was declared the state fish of Gujarat.

Why was the ghol chosen?

The Gujarat government chose the ghol because of its economic value and its uniqueness. The fish is usually found in the Indo-Pacific region that stretches from the Persian Gulf to the Pacific Ocean. The declaration will enable Gujarat to be a part of its conservation efforts.

What is the commercial importance of this fish species?

Being an expensive fish, the local consumption of this variety is not widely heard of. But the fish has a huge market in China and other countries. The fish is actually a lottery for fishermen who manage to net it. The fish is considered a delicacy in many countries. In others, it is used for medicinal purposes.

A kilogram of Ghol fetches between Rs5,000 to Rs15,000 in Gujarat. However, it is the dried air bladder of the fish that is the costliest, and can fetch amounts as high as Rs25,000 a kilogram in the export market.

11. Vir Das wins Emmy Award

Why in news?
Comedian Vir Das won an International Emmy Award for his Netflix show Vir Das: Landing. He shared the award with the British series Derry Girls season 3. Das is the first Indian to win in the comedy category.

Meanwhile, producer, filmmaker, and co-founder of Balaji Telefilms Ekta Kapoor won this year's Directorate Award, which is given to individuals or organisations for outstanding contributions to international television.

However, the International Emmy Awards are different from the Primetime Emmy Awards — one of the most talked about award events and commonly referred to as "the Emmys". Here is a look at different kinds of Emmy Awards, who gives them, and the history of the awards.

First, what are the Emmy Awards?

The Emmy Awards are the most renowned accolades given to television and emerging media performances. Unlike Oscars and Golden Globe awards, they aren't given for films.

When were the Emmy Awards launched?
The Emmy Awards were conceived in 1948 and the first ceremony took place on January 25, 1949. A total of six awards were presented, such as the Most Outstanding Television Personality and Most Popular Television Program.

What are the different kinds of Emmy Awards?
Apart from the International Emmy Awards and the Primetime Emmy Awards, the Emmys are also given in the following categories: daytime, sports, news and documentary, technology and engineering, and regional, according to a report by Vox.

While Primetime Emmy Awards honour television shows produced only in America and aired during primetime, International Emmy Awards are for international shows. Daytime Emmy Awards are given to American shows aired during late-morning and afternoon. Regional Emmy Awards are for regional television markets, including state-to-state programming, local news and locally produced shows.

Who gives the Emmy awards?
These awards are given by three sister organisations based in the US. First is the Television Academy, which administers the Primetime Emmy Awards. Second is the National Academy of Television Arts & Sciences, which oversees daytime, sports, news and documentary categories. Third is the International Academy of Television Arts & Sciences, which is responsible for International Emmys.

Each organisation maintains its own membership of television professionals who vote and decide who will get the award.

Relevance: GS Prelims
Source: The Indian Express & The Hindu

12. 'Moye moye' song meaning

Why in news?
If you've found yourself humming "moye moye" without a reason in the last few days, you can rest assured that you're not the only one. The sound has gone viral on the short video platforms Instagram Reels and YouTube Shorts, particularly among Indians and Bangladeshis.

What does 'moye moye' or 'moje more' mean?

The sound comes from the chorus of Serbian singer Teya Dora's 2023 song 'Džanum' (a repetition of the words "moje more"). In Serbian, the term 'moje more' means 'my nightmares'. Dora's nearly 3-minute long song is a portrayal of a person at their lowest emotionally, with lyrics that aim at conveying despair and misery. That the chorus consists of her repeating "my nightmares" is enough to understand the thrust of the song.

13. Michael Douglas honored with Satyajit Ray Lifetime Achievement Award for Excellence in Cinema

Introduction
Renowned Hollywood actor and producer Michael Douglas was honoured with the prestigious Satyajit Ray Lifetime Achievement Award for Excellence in Cinema at the 54th International Film Festival of India (IFFI) in Goa.

The award is an illustrious recognition of Michael Douglas, who has captivated audiences worldwide with over five decades of exceptional talent and unwavering commitment to his craft.

About Satyajit Ray Lifetime Achievement Award
The IFFI Satyajit Ray Lifetime Achievement Award (formerly IFFI Lifetime Achievement Award) is an international honor instituted by the International Film Festival of India. The recipient is honored for their "outstanding contribution to the growth and development of World cinema.

The award was first instituted in the year 1999 from the 30th IFFI. During the 52nd edition in 2021, on the occasion of the birth centenary of Satyajit Ray, the Directorate of Film Festivals in recognition of the auteur's legacy, "The IFFI Lifetime Achievement award" was rechristened to "IFFI - Satyajit Ray Lifetime Achievement Award". An auteur is an artist with a distinctive approach, usually a film director whose filmmaking control is so unbounded and personal that the director is likened to the "author" of the film, thus manifesting the director's unique style or thematic focus.

About Satyajit Ray
Satyajit Ray (2 May 1921 – 23 April 1992) was an Indian director, screenwriter, documentary filmmaker, author, essayist, lyricist, magazine editor, illustrator, calligrapher, and composer.

Ray is not only widely considered one of the greatest and most influential Indian directors of all time but has been often described as "one of the world's greatest

directors". He is celebrated for works including The Apu Trilogy (1955–1959), The Music Room (1958), The Big City (1963) and Charulata (1964) and the Goopy–Bagha trilogy.

1. How many of the following consequences can be understood in real life by using Prisoner's dilemma?
1. Nations entering into Arms race
2. Competing businesses reducing price of their goods
3. A prisoner escaping from jail
(a) Only one
(b) Only two
(c) All three
(d) None

2. Consider the following statements about Akhaura-Agartala Rail Link:
1. Akhaura falls in the territory of Myanmar.
2. The rail link has been existing in colonial times, and has now been re-established.
3. The rail link will facilitate connectivity of Tripura to Arunachal Pradesh.
Select the correct answer using the code given below:
(a) 2 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

3. 'Matsya6000' recently in news is a
(a) Government scheme to aid development of inlandwater fisheries
(b) Industry initiative to foster development of Blue economy
(c) Deep-ocean submersible designed for a crew of three
(d) Proposed artificial island in Indian Ocean.

4. Recently, the world's first Artificial Intelligence (AI) Safety Summit was concluded at
(a) Bletchley Park, UK
(b) Geneva, Switzerland
(c) Amsterdam, Netherlands
(d) Washington DC, USA

5. How many of the following train services act as link between India and bangladesh?
1. Bandhan Express
2. Maitree Express
3. Mitali Express
(a) Only One
(b) Only Two
(c) All Three
(d) None

6. Which of the following statements is incorrect about Advocate-on-Record (AoR)?
(a) Only an AoR can file cases before the Supreme Court.
(b) An advocate is required to qualify an exam conducted by Supreme Court itself to become an AoR.
(c) An AoR must have an office in Delhi within a 16-kilometre radius of the SC.
(d) An AoR can be considered equivalent to Barrister in Britain.

7. 'Wolbachia' often seen in news, is in context of
(a) Anti-virus which can provide full proof security to computer network
(b) A news species invented in lab by humans
(c) It is a genus of bacteria and can survive in many hosts
(d) It is a rare virus which has been discovered after millions of years.

8. 'Watermelon' image is used on social media to showcase support for
(a) LGBT Cause
(b) Environment Cause
(c) Sports Cause
(d) Palestine Cause

9. How many of the following pollutants are part of Air Quality Index (AQI)?
1. Sulphur Dioxide
2. Ammonia
3. Ozone
4. Nitrogen dioxide
(a) Only One
(b) Only Two
(c) Only Three
(d) All four

10. Consider the following pairs of chemical colouring agents and the colours produced by them in fireworks:
1. Red - Lithium Compounds
2. Green - Barium Nitrate
3. White - Aluminium
4. Blue - Copper Compounds
How many of the above pairs are correctly matched?
(a) Only One
(b) Only Two
(c) Only Three
(d) All Four

11. Consider the following statements about Project Cheetah:
1. Project Cheetah has completed one year.

2. Cheetah female prefer to breed with genetically close male.
3. Maggot infection under radio collars has been one of the causes of the death of Cheetahs.
4. The Cheetahs have been brought from Namibia and South Africa
How many of the above pairs are correctly matched?
(a) Only One
(b) Only Two
(c) Only Three
(d) All Four

12.The Representation of People Act 1951 disqualifies a legislator on being convicted of any offence and sentenced to imprisonment for not less than two years for a period of
(a) 6 Years from the date of Sentence
(b) 6 Years from the date of Arrest
(c) 6 Years from the date of release
(d) 6 Years from the end of tenure in Legislature

13. The Ben Gurion Canal Project is proposed to pass through which of the following countries
(a) Thailand
(b) Israel
(c) Saudi Arabia
(d) Colombia

14. Ni-Kshay portal captures the data of
(a) Unemployed Youth
(b) Children out of School
(c) Life Style disease Patients
(d) TB Patients

15. Which of the following economies is not member of Asia-Pacific Economic Cooperation?
(a) India
(b) Taiwan
(c) China
(d) Hong Kong

16. Consider the following Pairs of countries and active volcanoes in them:
1. Kilauea volcano : Hawaii, USA
2. Dukono : Guatemala
3. Santa Maria : Indonesia
How many of the above Pairs are incorrectly matched?

(a) Only One
(b) Only Two
(c) All Three
(d) None

17. Cyprus Confidential, recently seen in news, is a
(a) Investigative Body
(b) Legal Consultation Firm
(c) Offshore Trust
(d) Citizenship Scheme

18. Three Brotherhood Alliance, recently seen in news, is a coalition of ethnic minority armed groups in
(a) Palestine
(b) Iran
(c) Yemen
(d) Myanmar

19. What is the present status of extending reservation benefits to sub-categories with Scheduled Castes?
(a) Reservation to sub-categories with Scheduled Castes is allowed under Constitution
(b) Reservation to sub-categories with Scheduled Castes is specifically disallowed under Constitution
(c) Reservation to sub-categories with Scheduled Castes is prohibited by Supreme Court.
(d) Reservation to sub-categories with Scheduled Castes is under review of Supreme Court.

20. Which of the following projects are part of China-Pakistan economic Corridor?
1. Coal Projects
2. Solar and Wind Projects
3. Special Economic Zones
Select the correct answer using the code given below:
(a) 3 only
(b) 1 and 2 only
(c) 1 and 3 only
(d) 1, 2 and 3

21. How many of the following statements is correct about Edible oil production in India?
1. The import of edible oils is more than their domestic production.
2. The production of Edible oil from Mustard is more than its production from Rice Bran.

3. Most of the imports are of Crude edible oil in India.
Select the correct answer using the code given below:
(a) Only One
(b) Only Two
(c) All Three
(d) None

22. Atmospheric Waves Experiment (AWE), a space project by NASA, is launched to study
(a) Impact of Solar phenomenon on Earth
(b) Impact of Earth on outer space
(c) Impact of Outer space on Earth's environment
(d) Impact of Solar Phenomenon on Outer Space

23. Which of the following has been recently declared as State fish of Gujarat?
(a) Ghol
(b) Rohu
(c) Mackerel
(d) Pink Perch

24. As per the agreement, developed countries are required to pay the developing countries towards climate mitigation and adaptation an amount of
(a) $ 10 billion every year
(b) $ 100 billion every year
(c) $ 100 billion for lifetime
(d) $ 1000 billion every year

25. Casgevy, recently seen in news, is a
(a) Spacecraft being built to explore deep space
(b) Telescope to look inside the earth
(c) Robot capable of replicating human language learning ability
(d) Gene therapy to treat blood disorders

26. Which of the following is the most correct statement in context of Effective Altruism with respect to AI?
(a) Effective Altruism philosophy seeks to maximise benefits of AI, ignoring the risks associated with it.
(b) Effective Altruism philosophy focuses on profitability from the AI technology.
(c) Effective Altruism looks at ways in which AI intervention can be most effective.
(d) Effective Altruism looks at the alternative of AI, considering the risks associated with it.

27. Which of the following statements is correct about space communication?

(a) Most space communication is carried out using infrared waves
(b) Most space communication is carried out using radio waves
(c) Infrared waves have highest wave lengths but lowest frequencies in the electromagnetic spectrum
(d) Radio waves lowest wave lengths and lowest frequencies in the electromagnetic spectrum

28. Which of the following is the correct chronology of climate agreements?
(a) Kyoto Proyocol - Paris Agreement - Glasgow Pact
(b) Paris Agreement - Glasgow Pact - Kyoto Proyocol
(c) Glasgow Pact - Kyoto Proyocol - Paris Agreement
(d) Glasgow Pact - Paris Agreement - Kyoto Proyocol

29. Which state of India is known for the traditional folk sport of 'Kambala'?
(a) Andhra Pradesh
(b) Telangana
(c) Tamil Naidu
(d) Karnataka

30. The famous Partheon Sculptures originally belonged to which of the following countries?
(a) Italy
(b) Turkey
(c) Serbia
(d) Greece

Answer Key

1.(b)	2.(a)	3.(c)	4.(a)	5.(c)
6.(d)	7.(c)	8.(d)	9.(d)	10.(d)
11.(c)	12.(c)	13.(b)	14.(d)	15.(a)
16.(b)	17.(a)	18.(d)	19.(d)	20.(d)
21.(c)	22.(b)	23.(a)	24.(b)	25.(d)
26. (c)	27. (b)	28. (a)	29. (d)	30. (d)

Explanations

1. (b) The prisoner's dilemma is a game theory thought experiment that involves two rational agents, each of whom can cooperate for mutual benefit or betray their partner ("defect") for individual reward.

Statement 3 is incorrect because it involves only one actor.

Thus, Only two statements (Statements 1 and 2) are correct.

2. (a) Statement 1 is incorrect: Akhaura is in the territory of Bangladesh.

Statement 3 is incorrect: The rail link will facilitate connectivity of Tripura to Arunachal Pradesh.

Statement 2 is correct.

3. (c) India is developing 'Matsya6000,' a deep-ocean submersible designed for a crew of three. It boasts an operational endurance of 12 hours, extendable to 96 hours in emergencies.

4. (a) The world's first Artificial Intelligence (AI) Safety Summit held at Bletchley Park, UK, brought together 28 major countries, including the United States, China, Japan, the United Kingdom, France, and India, along with the European Union.

5. (c) Three trains, the Bandhan Express, the Maitree Express and the Mitali Express, run between West Bengal and Bangladesh.

6. (d) An AoR is equivalent to Solicitor in Britain.

The AoR system is broadly based on the British practice of barristers and solicitors. While barristers wear the black gown and wig and argue cases, solicitors take up cases from clients. In the Federal Court, the colonial predecessor of the Supreme Court, "agents" would take up cases while barristers would argue. Presently, Senior advocates in India are designated by the Court and wear a distinct gown. Like barristers, they cannot solicit clients and are only briefed by other lawyers, say for example, an AoR.

7. (c) Wolbachia is a genus of bacteria that has evolved complex relationships with the many insects that can host it. It is named for the American pathologist Simeon Burt Wolbach, who identified it along with Marshall Hertig in 1924.

8. (d) In the many posts showing support for Palestine on social media, a popular symbol is the watermelon. Pictures and emojis of the sliced fruit, as well as artwork featuring it, are often used to express solidarity with the people of Palestine.

9. (d) All the four pollutants are part of AQI.

10. (d) All the four pairs are correctly matched.

11. (c) Statement 3 is incorrect. A cheetah female is very selective in seeking out most distantly related males.

Remaining Three Statements are correct.

12. (c) As per Section 8(3), "A person convicted of any offence and sentenced to imprisonment for not less than two years shall be disqualified from the date of such conviction and shall continue to be disqualified for a further period of six years since his release."

13. (b) The Ben Gurion Canal Project, named after Israel's founding father David Ben-Gurion (1886-1973), remains one of the most ambitious infrastructure projects ever planned on paper.

14. (d) NI-KSHAY-(Ni=End, Kshay=TB) is the web enabled patient management system for TB control under the National Tuberculosis Elimination Programme (NTEP).

15. (a) The APEC economies are Australia, Brunei, New Zealand, Papua New Guinea, Hong Kong (as part of China), the Philippines, Indonesia, Malaysia, Vietnam, Singapore, Thailand, Chinese Taipei (Taiwan), China, Japan, South Korea, Russia, Canada, the United States, Mexico, Peru, and Chile – as located geographically around the Pacific Ocean.

India is not a member of APEC.

16. (b) Pair 1 is correctly matched.
Dukono in Indonesia started erupting in August 1933 and is still continuing. Santa Maria in Guatemala began erupting in June 1922 and continues to this day. Thus, Pairs 2 and 3 are incorrectly matched.
Thus, Only Two Pairs are incorrectly matched.

17. (a) Cyprus Confidential is a global offshore investigation of 3.6 million documents in English and Greek, which lays bare a paper trail of companies incorporated in the tax haven of Cyprus by the rich and powerful from around the world.

18. (d) The Three Brotherhood Alliance, a coalition of ethnic minority armed groups, is in Myanmar.

19. (d) Multiple States like Punjab, Bihar, and Tamil Nadu have tried to bring in reservation laws at the State level in a bid to sub-categorise SCs and decide on a separate quantum of reservation for these subcategories within the umbrella of Scheduled Castes. However, all plans are held up in courts as the Supreme Court forms its larger Constitution Bench to decide the matter.

20. (d) CPEC includes Coal, Hydro, Solar and Wind Projects. It also includes Special Economic Zones.

Thus, 1, 2 and 3 are correct.

21.(c) All the statments are correct.

22. (b) National Aeronautics and Space Administration (NASA) is set to launch the Atmospheric Waves Experiment (AWE) to study one of the important drivers of Space weather – the Earth's weather.

23. (a) Ghol fish — considered a fisherman's lottery — was declared the state fish of Gujarat.

24. (b) Economically developed countries need to jointly mobilise $100 billion a year towards climate mitigation and adaptation needs of developing countries. This was agreed under Paris agreement on climate chnage in year 2015.

25. (d) Called Casgevy, the therapy edits the faulty gene that leads to these blood disorders, potentially curing the person for life.

26. (c) Effective altruism looks at ways in which any intervention, monetary or technical, can be most effective.

27. (b) Like wireless communications on Earth, spacecraft encode data on various bands of electromagnetic frequencies. Currently, most space communication is carried out using radio waves — having the highest wave lengths but lowest frequencies in the electromagnetic spectrum.

28. (a) Kyoto Protocol (1997) - Paris Agreement (2015) and Glasgow Pact (2021)

29. (d) Kambala is a folk sport practiced in coastal Karnataka, particularly in areas where Tulu speakers form a majority.

30. (d) The Parthenon Sculptures at the British Museum are more than 30 ancient stone sculptures from Greece that are more than 2,000 years old. Most of them originally adorned the walls and grounds of the Parthenon temple on the rocky Acropolis hill in Athens. Completed in 432 BC, the temple is dedicated to the goddess Athena and is seen as the crowning glory of Athens' Golden Age.