

# GS ANALYST

## MONTHLY CURRENT AFFAIRS MAGAZINE

- ✓ Coverage of Monthly topics for GS Paper 1, 2, 3 & 4
- ✓ Key Concepts & Prelims Specific Topics
- ✓ Questions for Answer Writing Practice

### PRELIMS

- Assessing 'Legality' in Bilkis Bano Case
- Withdrawal of Personal Data Protection Bill
- The Energy Conservation (Amendment) Bill 2022
- Coastal security in India
- Delhi Police's use of Facial Recognition Technology
- Alpha Fold: AI-based tool for predicting protein structures .... and many more

### MAINS

- Pandurang Khankhoje
- Hagia Sophia: The story of a World Heritage Site
- National Flag designer Pingali Venkayya birth centenary
- Kerala's own Internet network & service: KFON
- Swachh Sagar, Surakshit Sagar Campaign
- Ladakh launches E- vehicle plan .... and many more

### KEY CONCEPTS

- August Offer
- Blue Economy
- Geo-spatial Technology
- Atomics
- Electromagnetism
- Endemic Diseases
- Heritage Sites
- Difference between constitution and Law .... and many more

## CONTEMPORARY ISSUE BASED ESSAY



**THE USES OF SPACE TECHNOLOGY  
IN DEVELOPMENT CANNOT BE  
OVEREMPHASIZED, DESPITE  
ITS HIGH COST**

## — **Disclaimer** —

The current affairs articles are segregated from prelims and mains perspective, such separation is maintained in terms of structure of articles. Mains articles have more focus on analysis and prelims articles have more focus on facts.

However, this doesn't mean that Mains articles don't cover facts and PT articles can't have analysis. You are suggested to read all of them for all stages of examination.

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# **SECTION: A**

## **(MAINS)**

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**CURRENT AFFAIRS**

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# ASSESSING 'LEGALITY' IN BILKIS BANO CASE

## CONTEXT:

Eleven men, convicted of life imprisonment for gang-raping Bilkis Bano and murdering her family members during the 2002 Gujarat riots, walked out of Godhra sub-jail after a panel approved their application for remission.

## ● ANALYSIS

### Determining the 'legality' of the grant of remission to the convicts

- Is the Gujarat Government the "appropriate government" as per Section 432(7) of the CrPC to grant remission?
  - ▶ The Supreme Court, in **Radheshyam Bhagwandas Shah v. the State of Gujarat**, held that the "appropriate government" was the one where the offence took place.
- Is the Centre's concurrence necessary in cases of remissions?
  - ▶ **Section 435** of CrPC states that in a case where an investigation is carried out under any Central Act by a central agency (such as CBI in the present case), no order of remission can be passed by the State Government unless concurrence has been produced by the Central Government. Section 435 makes consultation with the **centre mandatory**.

#### The Bilkis Bano Case

- The accused in the case were arrested in 2004 and the trial began in Ahmedabad. Later, the apex court transferred the case to Mumbai.
- On 21 January 2008, the Special CBI Court sentenced 11 accused to life imprisonment on the charges of **conspiring to rape a pregnant woman, murder**, and unlawful assembly under the Indian Penal Code.

### What are the other areas of concern?

- **Overruled the Supreme Court:** One of the convicts had obtained an order from the Supreme Court in May 2022, **under which Gujarat, the State in which the crime occurred**, was held to be the appropriate government to consider his premature release.
- **Violating Remission norms:** Under the 2014 norms, a person convicted for gang rape and murder cannot be released prematurely.
  - ▶ As the life sentence normally means that a convict has to spend the natural life in prison.
  - ▶ The Code of Criminal Procedure (CrPC) permits premature release in the form of **remission**

or **commutation**, but it should be based on a **legal and constitutional scheme**, and not on one's discretion.

The Powers of remission, commutation, and Pardon in the hands of the state government are applicable only to **Convicted persons** and not in **trial cases**.

**Remission:** It implies **reducing the period of a sentence** without **changing its character**. Indian laws provide pardoning power sourcing from **statutory** and **constitutional** authorities.

### Provisions for Remission

Constitutional Provisions	<ul style="list-style-type: none"> <li>• <b>Article 72</b> of the Constitution empowers the President to grant remission.</li> <li>• <b>Article 161</b> vests similar power with the Governor.</li> </ul>
Legal Provisions	<ul style="list-style-type: none"> <li>• <b>Section 432</b> of CrPC empowers the 'appropriate government' to suspend or remit the sentence of a prisoner.</li> <li>• <b>Section 433A</b> of CrPC which deals with the <b>power to commute sentences</b>, however, states that a prisoner shall not be released before 14 years of undergoing sentence in the case of <b>two kinds</b> of life convicts:               <ul style="list-style-type: none"> <li>▶ Those found guilty of an offence punishable with death.</li> <li>▶ Those whose death sentences were commuted to life imprisonment under Section 433.</li> </ul> </li> <li>• <b>Section 435</b> states that in certain cases, the States have to act in consultation with the Central government.</li> </ul>



	<ul style="list-style-type: none"> <li>These include cases investigated by the <b>Delhi Special Police Establishment</b>, or by any agency that has investigated an offence under a Central Act other than the CrPC.</li> </ul>
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### Implications:

- **On the Victim related to the case:** The victim (in this case) **Bilkis Bano**, has not only suffered the assault of rape but also the loss of her child. Her safety and well-being may get compromised due to the release of the convicts.
- **On Convicts:** The 11 people who got released by the Government may transfer a wrong message to

society and can create further hatred against the minority communities.

- **On society at large:** Society will affect the most by the incident, as the rights and sex-based violence in the country may be provoked further.

### Associated Challenges:

- Political interest linked to the convict's remission is a prominent provision in the political dynamics of the country.
- Many times, nepotism is found as one of the key reasons for remission and other grants in India.
- Flexible consultation provisions
- Ineligible for premature release
- Inconsistencies in remission policies

## PRACTICE QUESTION

1. What is the remission of the sentence? Discuss the constitutional provisions regarding Remission.
2. Do you think remission of sentences for grave criminal acts is a travesty to the Principle of Natural Justice? Justify your answer

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# DIGITAL CURRENCIES IN GOVERNANCE: THE BALANCE BETWEEN PRIVACY AND TRANSPARENCY

## CONTEXT:

The adoption of digital currencies has increased challenges in terms of the need to balance accountability, privacy, and transparency.

- Recent developments have heightened global awareness of the opportunities, challenges, and risks posed by new forms of digital currency.

### Digital Currencies in Governance:

- The Indian government is trying to explore the idea of a national digital currency, and its integration within the governance.
- If digital currencies owned by central banks are authorised, then the **central banks will be able to watch over and control every transaction.**
- The introduction of **central bank digital currency (CBDC)** is expected to bring transparency to the industry.

### Central Bank Digital Currency (CBDC)

- CBDC is the **legal tender** issued by a central bank in a digital form. They are issued and controlled by the central bank of a nation.
- They are pegged to the value of that **country's fiat currency.**

### What is the need for cryptocurrency governance?

- Privacy is an area of concern and to eliminate the scope for regulatory arbitrage there is a **need for cryptocurrency regulation.**
- As new payment methods appear, appropriate regulatory frameworks become critical.
- Well-placed legislation can go a long way in helping the agencies targeting financial crimes.
- The **Digital Currency Governance Consortium (DCGC)** was launched under the aegis of the World Economic Forum.

Present challenges	Possible Solutions
<ul style="list-style-type: none"> <li>Privacy and transparency;</li> <li>Cyber fraud,</li> <li>Chances of execution of unauthorized trades which don't come under any regulatory framework.</li> <li>Concerns over money laundering, terror financing, tax evasion, etc. with private crypto currencies like Bitcoin, Ether, etc.</li> </ul>	<ul style="list-style-type: none"> <li>By <b>maintenance of blockchain records.</b></li> <li>Protection of networks through the <b>setup of firewalls and encryption of information</b> will minimize the risk of cyber criminals.</li> <li><b>Proper regulatory legislation</b> will help especially those which target financial crimes.</li> <li><b>Introduction of National Digital Currency</b></li> </ul>

### Recent government initiatives

- The central government **announced to launch of its digital currency (CBDC).** RBI has been examining use cases and working out a phased implementation strategy for the introduction of CBDC with little or no disruption.
- In India, **legal enablers for a digital currency** have been put in place via the Finance Bill, 2022. It proposes that the CBDC "should also be regarded as bank notes".
- Other measures include decisions related to regulation, improving efficiency, resilience, and competitiveness of payment systems.

## PRACTICE QUESTION

- Do you think that Digital Currency can achieve the gap in the financial inclusion left over by the banking system of India?
- "Digital currencies have the potential to provide sizeable incremental value to a wide range of sectors". Explain in this context how digital currencies are to be the key source of competitive advantages.

# INITIATIVES FOR INDIA'S LABOUR REFORMS SINCE INDEPENDENCE

## CONTEXT:

Mahatma Gandhi's vision of India with no social divides existing in the country remained a thought as after 75 years of Independence there are several issues arise due to social inequality in the country. Labour reforms are still among one such issue.

### What are the present norms for labours in India?

#### • Constitutional Framework:

- ▶ Labour is a subject in the **Concurrent List** and, therefore, both the Central and the State governments are competent to enact legislations subject to certain matters being reserved for the Centre.
- ▶ **Article 14:** It provides for equality before the law or equal protection of the laws within the territory of India.
- ▶ **Article 16:** It talks about the right of equal opportunity in the matters of public employment.
- ▶ **Article 39(c):** It specifies that the economic system should not result in the concentration of wealth and means of production to the detriment of the entire society.

#### • Judicial Interpretation:

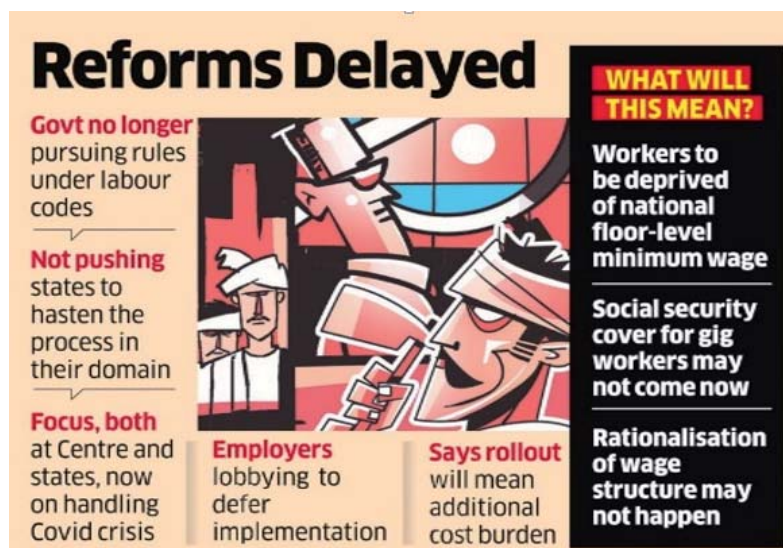
- ▶ In the case of **Randhir Singh vs Union of India**, the Supreme Court stated that even though the principle of '**Equal pay for Equal work**' is not defined in the Constitution of India, it is a goal which is to be achieved through **Article 14, 16 and 39 (c)** of the Constitution of India.

- **Legislative framework:** There have been several legislative and administrative initiatives taken by the government to improve working conditions and simplify labour laws. The most recent is the consolidated sets of **4 labour codes** which are yet to be implemented.

- ▶ Code of Wages, 2019
- ▶ Industrial Relations Code, 2020
- ▶ Social Security Code, 2020
- ▶ Occupational Safety, Health and Working Conditions Code, 2020
- ▶ The implementation process is delayed as states are yet to finalise their rules under these codes.

### What were the reforms introduced by the Government?

- The new codes have thrown light on the role of an "**Inspector-cum-Facilitator**" who has the responsibility of checking for compliance as well as facilitating businesses in achieving that compliance.
- ▶ The "**facilitator**" role seems to be a new element and this role could clash with the traditional responsibilities of an "inspector".
- This would enable companies to introduce **arbitrary service conditions** for their workers.



### Do they justify the demands of Labours in India?

- Left-Out Gig workers
- Small Start-ups and Informal Sector Left-out From Social Security Coverage
- Migrant workers, self-employed workers, home-based workers, and other vulnerable groups in rural areas are not covered under social security benefits.
- Non-Inclusion of Charitable or Non-Profit Based Establishments

#### Who are Invisible workers?

**Invisible labour** is the part that goes unnoticed and unrecognised and is thus unregulated. Generally, unpaid work is called Invisible labour.

### What can be the possible Implications?

Pros	Cons
<ul style="list-style-type: none"> <li>• Simplification of the Complex laws</li> <li>• Easier Dispute Resolution</li> <li>• Ease of Doing Business</li> <li>• Gender Parity</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of reducing social inequality</li> <li>• Exclusion of small sector labours</li> <li>• No provisions for Gender-based incentives</li> </ul>

### PRACTICE QUESTION

1. Work is part of everyone's daily life and is crucial to one's dignity, well-being, and development as a human being. Discuss in this light the gray areas of the new labour codes of India.
2. Differentiate between organized and unorganized sectors? What is the Framework Regarding Labours in India?

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## SC MOOTS VERDICT FOR 'BODILY AUTONOMY' UNDER MTP ACT

### CONTEXT:

The Supreme Court said it may loosen the restrictive grip of a 51-year-old abortion law which bars unmarried women from terminating pregnancies which are up to 24 weeks old, saying the prohibition was “manifestly arbitrary and violative of women’s right to bodily autonomy and dignity”.

### ● ABOUT

- The Supreme Court noted the Rules permitting termination of pregnancies of up to 24 weeks in seven specific categories.
- It includes survivors of rape or sexual assault, minors, in case of physical disabilities, and foetal malformation.



**MTP Act:** The **Medical Termination of Pregnancy Act of 1971** and its Rules of 2003 prohibit unmarried women who are between 20 weeks to 24 weeks pregnant to abort with the help of registered medical practitioners.

### ● ANALYSIS

#### What is women’s ‘bodily autonomy’?

- Bodily autonomy and integrity can be understood as the power to make our own choices about our own bodies.

- Laws regarding body autonomy pertain to abortion laws, marriage laws, gender identity laws, and even laws related to medicine, amongst others.

#### The sad reality;

##### • According to National Family Health Survey-4:

- ▶ In India, 12 per cent of currently married women (15-49 years of age) make independent healthcare decisions,
- ▶ 63 per cent decide jointly and
- ▶ For 23 per cent goes with the spouse decisions.

### Reproductive choice in India

- India has a **strong jurisprudence on reproductive rights** where reproductive choices are read within the personal liberty guaranteed under ‘**Article 21**’ of the Constitution.
- The **Supreme Court** has said that “reproductive rights include a woman’s entitlement to carry a pregnancy to its full term, to give birth, and to subsequently raise children; and that these rights form part of a woman’s right to privacy, dignity, and bodily integrity”.
- But the recently passed the MTP Act falls short of giving a woman full authority in deciding if an abortion is required after 24 weeks and relegates it to a board of specialists.

### Barriers to Accessing Safe Abortion Services in India

Despite the **Medical Termination of Pregnancy Act, 2021** allowing all women in India to abort a foetus up to 20 weeks of pregnancy and 24 weeks for women under special conditions, thousands have their **reproductive rights denied and physical autonomy curtailed**, mainly by the:

- Patriarchal attitudes of doctors and service providers
- Denied abortion service
- Improper implementation of abortion and anti-foeticide laws

- Social pressure
- Patriarchal morality
- lack of women's agency and fear of anti-foeticide laws
- lack of contraception options
- lack of medical or legal awareness
- lack of agency or autonomy over their own bodies (which is equally pervasive in urban spaces)

## PRACTICE QUESTION

1. Though women in post-Independent India have excelled in various fields, the social attitude towards women and the feminist movement has been patriarchal." Apart from women's education and women empowerment schemes, what interventions can help change this milieu?
2. In India, debate on the merits and demerits of unmarried women's right to abort their child is going on. Critically discuss ethical and rights issues involved in the abortion debate.

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# ADDRESSING THE CHALLENGES IN NEW-AGE DIGITAL COMMERCE

## CONTEXT:

Despite the rapid advancement of the digital platform, the process of integration of local businesses with a platform-centric e-commerce system is moving at a snail's pace.

## ANALYSIS

### Transformation in India's Consumer Behaviour:

- Governments, regulators and private enterprises have been adopting and encouraging the use of Digital commerce.
  - For example, the **National Payments Corporation of India (NPCI)** has mandated platforms in the UPI ecosystem to adopt the ODR for complaints and grievances connected to failed transactions.
  - **Ingram, SEBI SCORES, RBI CMS, MahaRERA** (or the Maharashtra Real Estate Regulatory Authority), and **RTIOnline** (or the Right to Information Online) are other examples of ODR systems that are widely used in the country.
- Additional Factors:
  - Adoption of Time-Saving Products and Services
  - Growing Interest in Customized Products
  - The Rise of the Female Decision Maker

Major problem faced by small businesses:	Steps taken by the government for e-commerce
<ul style="list-style-type: none"> <li>• Additional cost and restricted participation</li> <li>• Every e-commerce platform has distinct terms and conditions which limit the sellers' flexibility.</li> <li>• Centralizing Tendency of Digital Commerce Transaction</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Open Network for Digital Commerce (ONDC):</b> Department for Promotion of Industry and Internal Trade (DPIIT) has established the Open Network for Digital Commerce (ONDC), which is <b>open e-commerce</b> and enables access to small businesses and dealers.               <ul style="list-style-type: none"> <li>➤ It has made it possible for products and services from all participating e-commerce platforms to be displayed in search results across all network apps.</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>• Increased penetration of smartphones</li> <li>• Availability of cheaper data</li> <li>• Coronavirus pandemic</li> </ul>	<ul style="list-style-type: none"> <li>• The project to integrate e-commerce platforms through a network based on open-source technology has been tasked to the <b>Quality Council of India</b>.</li> <li>• <b>Pilot projects:</b> The ONDC began its pilot in five cities in April 2022, i.e., New Delhi, Bengaluru, Coimbatore, Bhopal, and Shillong.               <ul style="list-style-type: none"> <li>➤ Currently, the project has been expanded to 18 cities, and there are immediate plans to add more cities.</li> </ul> </li> </ul>
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**Online Dispute Resolution:** It is the **system of resolution of disputes**, particularly small- and medium-value cases, using digital technology and techniques of Alternate Dispute Resolution.

Benefits of the Online Dispute Resolution System:	Problems Associated with Online Dispute Resolution:
<ul style="list-style-type: none"> <li>• ODR has the potential to reduce legal costs, by way of reduced time for resolution</li> <li>• <b>Flexible Nature</b></li> <li>• <b>Encourages Negotiations:</b></li> <li>• <b>Simple to Access</b></li> <li>• <b>Availability in regional languages</b></li> <li>• <b>Easing the Judicial logjam</b></li> </ul>	<ul style="list-style-type: none"> <li>• Lack of Digital infrastructure</li> <li>• Lack of Digital Literacy</li> <li>• Privacy and Confidentiality Concerns</li> <li>• Mutual Consent of Parties:</li> </ul>

**Example: eBay Resolution Centre** uses the ODR and resolves over 60 million disputes between small traders every year. Another example is **Alibaba**, an e-commerce company that has also adopted the ODR to resolve disputes arising out of transactions over the platform.

### Improvements in Online Dispute Resolution Mechanism:

- ◉ **Increase Access to Digital Infrastructure:** Increased physical access to technology and infrastructure can only be achieved by the combined efforts of two key stakeholders - the Government and the judiciary.
- ◉ **Increase Digital Literacy:** Physical access to

technology and infrastructure is only one aspect of access to digital infrastructure. To unlock its true potential, users of such technology should be digitally literate.

- ◉ **Mainstream E-stamping:** As ODR often deals with inter-state disputes where disputing parties are residing in different jurisdictions, there is a need to harmonise stamp duty and procedural requirements across different States.
- ◉ **Block-Chain Technology:** It can be leveraged for the protection of e-evidence from being tampered with, thereby providing tamper-proof storage of evidence.
- ◉ **Government Participation:** Government and Public Sector Undertakings (PSUs) are amongst the biggest litigants in India.

### PRACTICE QUESTION

1. E-governance is not only about the utilization of the power of new technology, but also about the critical importance of the 'use value' of information.
2. What is Online Dispute Resolution? Also, discuss the Open Network for Digital Commerce. How it can help mitigate litigation risk and provide insights into consumer problems?

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# WITHDRAWAL OF PERSONAL DATA PROTECTION BILL

## CONTEXT:

The government has withdrawn the Personal Data Protection Bill from Parliament after several amendments were proposed by the Joint-Parliamentary Committee.

## ● ANALYSIS

### Why government withdrew the Personal Data Protection Bill?

- The Personal Data Protection Bill 2019 was under consideration by the joint parliamentary committee (JPC), and had been “**deliberated in great detail**”. It had proposed major amendments as well as recommendations for a comprehensive legal framework for the digital ecosystem.
- Considering the report of the JPC, the government has decided that there is a need for a ‘**comprehensive legal framework**’, so it has decided to withdraw the bill and decided to start afresh.

#### Personal Data:

- Data can be broadly classified into two types: **personal and non-personal data**.
- Personal data pertains to characteristics, traits, or attributes of identity, which can be used to identify an individual.
- Non-personal data includes aggregated data through which individuals cannot be identified.

### Concerns Regarding the Policy:

- **Lack of Data Protection Law:** Any data accessibility-and-use policy is incomplete without adequate public safeguards provided through a comprehensive data protection framework. Unfortunately, the progress on that front has been slow.
- **Misuse of Data:** There are also issues of conflict of interest and misuse of data for commercial or political purposes.
- **Citizens’ Attempts to Obtain Public Data:** Administrative control over data has also been

used to thwart attempts by users and citizens to obtain data for public use.

- **Disregards Reliable Independent Surveys:** Public data has often been used to discredit independent credible surveys, rather than complement them. Such records are often used to suit a political narrative.
- **Impact of Commercial Interests in Data:** Given that more data means more money, commercial interests will prompt the government to collect granular personal details through greater capture and increased retention periods. Over time, the original objectives for which databases are built will get diluted in favour of commercial interests.
- **Federalism:** The policy, even notes that the State governments will be, “free to adopt portions of the policy,” but it does not specify how such freedom will be realized.

### What did the JCP recommend?

- **Broader Data Protection:** JCP has expanded the scope of the proposed law to cover discussions on non-personal data — thereby changing the mandate of the Bill from personal data protection to broader data protection.
- **Trusted Hardware:** It has also recommended changes on issues such as regulation of social media companies, and on using only “**trusted hardware**” in smartphones, etc.
- **Provision of regulation for social media:** Changes on issues such as the regulation of social media.
- **Social media as a content publisher:** It has been proposed that social media companies that do not act as intermediaries should be treated as content publishers. Thus, making them liable for the content they host.
- **Inclusion of non-personal data:** JCP has recommended the inclusion of non-personal data.

## PRACTICE QUESTION

1. Strong data protection and privacy laws are important for the digital well-being of Indian citizens. Comment
2. The evolving technology is increasingly threatening the personal space and sometimes even without our knowledge. Corroborate the statement. How can this threat posed by rapid technological advancement be allayed?

# HEALTH INSURANCE FOR INDIA'S MISSING MIDDLE

## CONTEXT:

Under the Public health insurance policies, the middle segment of the population i.e. too rich to be covered by government health insurance and too poor to buy private insurance — has been one of Indian healthcare's most stubborn problems.

- According to NITI's Aayog document on how to cover the "missing middle", it was mentioned that 30 per cent of India's population — still lacked any form of financial protection for health.

## ANALYSIS

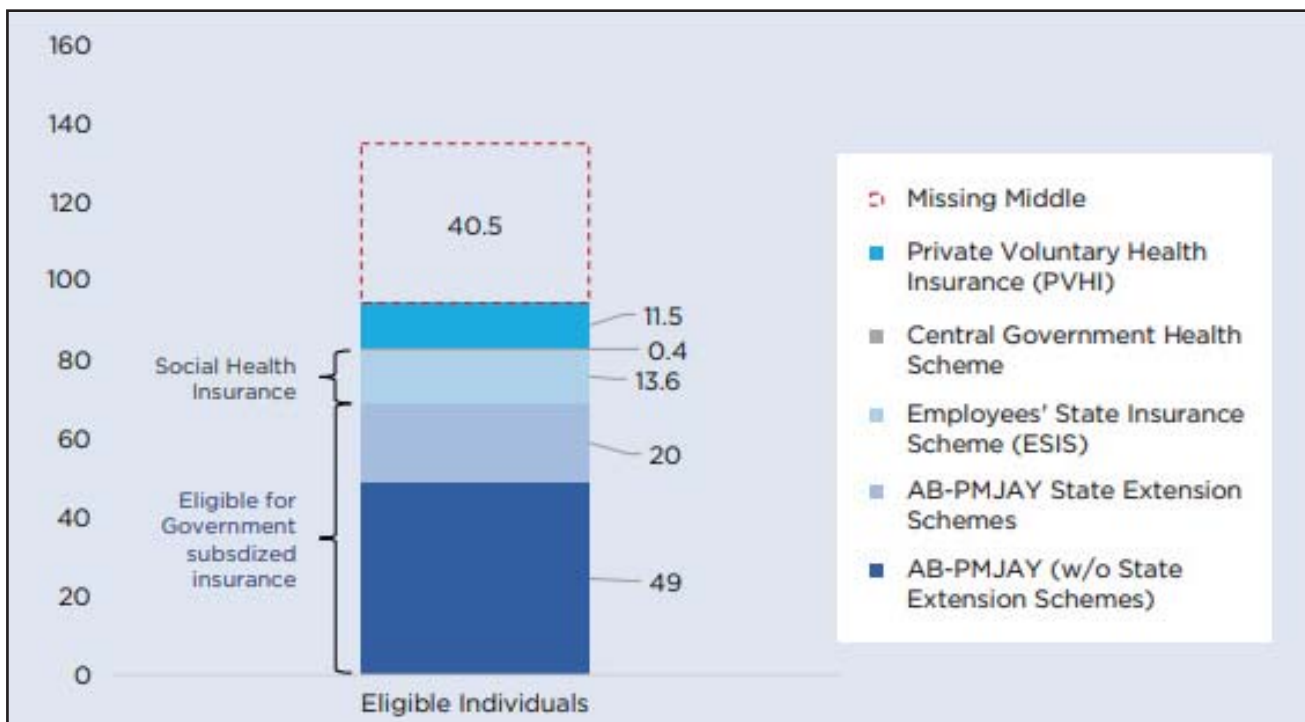
### What are the loopholes in present health insurance coverage for the middle man of India?

- Uncovered population:** In the absence of a low-cost health insurance product, the missing middle remains uncovered despite the ability to pay nominal premiums.
- Ignored segment:** Most health insurance schemes and products in the Indian market are not designed for the missing middle.
- Out of Budget:** Private voluntary health insurance is designed for high-income groups – it costs at least two to three times the affordable level for the missing middle.
- Affordable goes to BPL:** Affordable contributory products such as ESIC, and Government subsidized insurance including PMJAY are closed products.

They are not available to the general population due to the risk of adverse selection.

### What are its implications?

- High out-of-the-pocket expenditure (OOPE):** The private sector is characterized by high OOPE, leading to low financial protection, and is mostly self-employed or middle-income groups of the society.
- Impact on the standard of living:** The catastrophic health expenditure and its impact on savings and standard of living are experienced by a substantial share of the population, almost 1/4th at the 10% threshold level, connecting it to the purchase of health insurance as an investment for health security is not intuitive ex-ante (Ex-ante refers to future events, such as the potential returns of a particular security, or the returns of a company).



The '**missing middle**' is a broad category that lacks health insurance, positioned between the deprived poorer sections, and the relatively well-off organized sector.

- The missing middle refers to the **non-poor segments** of the population who remain prone to catastrophic and even impoverishing health expenditure, despite the financial capacity to pay for contributory health insurance.

**What are the challenges?**

**What can be done further to include the missing middle ones?**

- Lack of Awareness
- Identification and outreach to customers is the primary hurdle on the supply side.
- Lack of infrastructure

- Consumer education of health insurance is important to increase its uptake.
- Targeting affordable solutions
- Keeping the middle segment in focus during policy formulation
- Effective government Policies

## PRACTICE QUESTION

1. Appropriate local community level healthcare intervention is a prerequisite to achieving 'Health for All' in India. Discuss
2. Public health system has limitations in providing universal health coverage. Do you think that the private sector could help in bridging the gap? What other viable alternatives would you suggest?

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# THE LAW ABOUT PROTECTING CHILDREN AGAINST CORPORAL PUNISHMENT

## CONTEXT:

Recently, it has been observed that it is unconstitutional over allegedly involve students/children under the Juvenile Justice Act, with corporal punishment in schools.

### What are the likely impacts of Corporal punishment on children?

- **Behavioural problems:** Corporal punishment increases children's behavioural problems over time and has no positive outcomes.
- **Violation of children's Rights:** Corporal punishment is a violation of children's rights to respect for physical integrity and human dignity, health, development, education, and freedom from torture and other cruel, inhuman, or degrading treatment or punishment.
- **Risk of Escalation:** Studies suggest that parents who used corporal punishment are at heightened risk of perpetrating severe maltreatment.
- **Risk of Criminal Behaviour:** Corporal punishment signals to the child that a way to settle interpersonal conflicts is to use physical force and inflict pain. Such children may in turn resort to such behaviour themselves.
- **Damaged Relationship:** They may also fail to develop trusting, secure relationships with adults and fail to evolve the necessary skills to settle disputes or wield authority in less violent ways.
- **Lowering of Cognitive abilities:** Impaired cognitive and socio-emotional development, specifically emotion regulation and conflict solving skills.

The NCPCR guidelines for eliminating corporal punishment against children require every school to develop a mechanism. Every school has to constitute a '**Corporal Punishment Monitoring Cell**' consisting of two teachers, two parents, one doctor, and one lawyer (nominated by DLSA).

### Who is entrusted with the responsibility to ensure children are protected?

- Under Section 31 of the **RTE Act**, the **National Commission for Protection of Child Rights (NCPCR)** and the **State Commissions for Protection of Child Rights (SCPCRs)** have been entrusted with the task of monitoring children's right to education.
- The state governments under their RTE rules have also notified block/district level grievance redressal agencies under the RTE Act.

### Ethics of Corporal Punishment:

- Ethicists distinguish between three purposes of punishment: **retribution, correction, and deterrence**.
  - **Retribution** is regarded as the most fundamental. This is because punishment is chiefly a matter of justice: it is about giving a wrongdoer what he or she has come to deserve. Retribution, then, seeks to balance the scales of morality by inflicting deserved harm upon a wrongdoer.
  - **Correction and deterrence**, although desirable, are not essential to this goal. Indeed, both of these functions must presuppose retributive justice, for we cannot punish someone for the sake of correction or deterrence unless they first deserve it.
- The idea that corporal punishment to children is unjustified because it leads to diminished future outcomes in children is a puzzling one. Comparing children to hardened criminals is an inappropriate analogy.

Provisions	Description
• <b>Section 17 of the Right to Education Act, 2009</b>	It imposes an absolute bar on corporal punishment.
• <b>Section 75 of the Juvenile Justice Act</b>	It prescribes punishment for cruelty to children.
• <b>Section 323 of IPC:</b>	Pertaining to voluntarily causing hurt.
• <b>Section 325 of IPC:</b>	Is about voluntarily causing grievous hurt.

## **PRACTICE QUESTION**

1. What is corporal punishment? Discuss major provisions under the law against such punishment?
2. Corporal punishment is a violation of children's rights to respect for physical integrity and human dignity, health, development, education, and freedom from torture and other cruel, inhuman, or degrading treatment or punishment. Comment.

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# ANTI-DOPING BILL

## CONTEXT:

The National Anti-Doping Bill 2021, which aims to establish a statutory framework for the National Anti-Doping Agency (NADA), was recently approved by the Lok Sabha.

## ● ANALYSIS

### What are the key features of the Bill?

#### ● Prohibition of Doping in the sports:

- ▶ According to the proposed law, doping is prohibited in sports. It applies to athletes, athlete support staff members, and other individuals engaging in the sport.

#### ● Outcomes of a violation:

- ▶ Anti-doping regulations violations may lead to disqualification of the results, the confiscation of medals, points, and awards, disqualification from future competitions or events for a set amount of time, financial penalties, etc.

#### ● Statutory status for the National Anti-Doping Agency:

- ▶ The bill envisages the establishment of this National Anti-Doping Agency as a statutory body.
- ▶ It will be headed by a director general appointed by the central government.

#### ● National Board for Anti-Doping in Sports:

- ▶ The Bill establishes a National Board for Anti-Doping in Sports to make recommendations to the government on anti-doping regulation and compliance with international commitments on anti-doping.
- ▶ The Board will oversee the activities of the Agency and issue directions to it.

#### ● Data related to athletes and doping:

- ▶ The Agency will also have the power to collect certain personal data of athletes such as:
  - sex or gender,
  - medical history, and
  - Where about information of athletes (for out-of-competition testing and collection of samples).
- ▶ The Agency will prescribe the procedure for collection, usage, processing, and disclosure of such personal data.
- ▶ It will publicly disclose certain information such as the name of the athlete, the anti-doping rule violated, and the consequences imposed.

#### ● Disciplinary and Appeal Panels:

- ▶ The Board will constitute a National Anti-Doping Disciplinary Panel for determining the consequences of anti-doping rule violations.
- ▶ This Panel will consist of a chairperson and four Vice-Chairpersons (all legal experts), and ten members (medical practitioners and retired eminent athletes).

#### The Appeal Panel will consist of:

- ▶ A Chairperson (a retired High Court judge),
- ▶ A Vice-Chairperson (a legal expert), and
- ▶ Four members (medical practitioners and retired eminent athletes).
- Appeals against the decision of the Appeal Panel will lie with the Court of Arbitration for Sport (an international body with headquarters in Lausanne, Switzerland, that settles sport-related disputes).

#### ● Dope Testing Laboratories:

- ▶ The National Dope Testing Laboratory will be deemed to be the principal dope testing laboratory.
- ▶ The central government may establish additional national drug testing facilities across the country.

### Significance of the bill

- The law aims at **promoting inter-agency collaboration** in the fight against doping and achieving time-bound justice for sports persons.
- It is a step forward in the direction of fulfilling India's **commitment to international clean sports** obligations.
- The law would contribute to **building a powerful, impartial system** for determining anti-doping decisions.
- The legislation will also confer legal sanctity to **NADA** and the **National Dope Testing Laboratory (NDTL) in their operations**.

### What are the major concerns related to the bill?

- **Qualifications of the Director General are not specified:** The Bill makes no mention of the CEO's credentials; instead, it leaves this up to notification via rules.

- **Discretionary provision related to the removal of Director General:** The Director General may be removed from office by the central government for bad behaviours, incompetence, or “for any other cause.”
- **The independence of the CEO** may be impacted if these requirements are left up to the central government’s judgment.
- Additionally, this goes against the World Anti-Doping Agency’s directive that these organizations engage in their operations independently.
- The Board has powers to **remove the members of the Disciplinary Panel** and Appeal Panel on grounds that will be specified by regulations and are not specified in the Bill.

### **PRACTICE QUESTION**

1. Discuss the provisions of the recently passed National Anti-Doping Bill.
2. Doping is a public health issue. It jeopardizes the values, ethics and integrity of sport; and the health of those involved in it. Elaborate.

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# LANGUAGE AS A BARRIER: INCLUDING MOTHER TONGUE IN HIGHER STUDIES

## CONTEXT:

There has been various suggestion to introduce mother language in higher studies in order to promote Indian language

- The NEP provides for higher education institutions and programs in higher education to use the mother tongue or local language as a medium of instruction, besides offering programs bilingually.

## Provisions for Language

- The language policy of India is basically embodied in **Part XVII of the Indian Constitution** along with the **8th schedule** in reference to **articles 344 and 351** (which specify the languages of India for purposes mentioned in these 2 articles), and the articles concerning Fundamental Rights regarding language, education, and culture, etc.

## Positive Aspects of Higher Education in Regional Language

- **Subject-Specific Improvement:** Performance in science and math, in particular, has been found to be better among students studying in their native language compared to English.
- **Higher Rates of Participation:** Studying in the native language results in higher attendance, motivation, increased confidence for speaking up among students, and improved parental involvement and support in studies due to familiarity with the mother tongue.
- **Additional Benefits for the Less-Advantaged:** This is especially **relevant for students who are first-generation learners** (the first one in their entire generation to go to school and receive an education) or the ones **coming from rural areas**, who may feel intimidated by unfamiliar concepts in an alien language.
- **Increase in Gross-Enrolment Ratio (GER):** This will help provide quality teaching to more students and thus **increase Gross Enrolment Ratio (GER)** in higher education.
- **Promotes Linguistic Diversity:** It will also **promote the strength, usage, and vibrancy of all Indian languages**.
  - ▶ It would also help **prevent language-based discrimination**.

**Is there an actual need to introduce the regional languages in higher studies?**

- Language is closely related to culture and therefore to the **customs of people**.

- Democracy can become real to the common people only when politics and administration are conducted through a language they can understand.
- Socio-economic development

## Associated Challenges:

- **Insignificant for Institutions with Pan-India Admissions:** A regional language focus is not meaningful in a scenario where the institutes see entrants from across the country such as IITs.
- **Lack of Quality Material in Regional Languages.**
- **Lack of Quality Teacher Given the English-medium legacy of higher education in India, attracting and retaining quality teachers:** who are willing and able to teach in regional languages will be a challenge.
- **Maintaining Pace with Global Standards:** Delivering technical courses in regional languages may prevent students from competing in global labour and education markets, where fluency in English yields a distinct edge.

## ◎ WAY FORWARD

- **To develop a hybrid approach:** While it may not be possible to translate technical terms verbatim in the regional languages, a hybrid approach can be developed.
- **Pre-planning:** In the NEP 2020, the government has urged universities to create study material in regional languages to enhance students' understanding and empower them.
- **Expand physical infrastructure of Institutions:** If higher education programmes are offered in regional languages, there is no doubt that student enrolment will increase exponentially. Hence Infrastructure needs to be enhanced for more admissions.



- **Promote Digital Education:** To make programmes in regional languages functional and useful, institutions will have to substantially improve and improvise.
- **Field-specific targets:** For example; in the field of law — before the subject is taught in the Indian languages — the Central government should try to impress upon the judiciary to allow the use of Indian languages in court proceedings.

### **PRACTICE QUESTION**

1. "National Education Policy 2020 is in conformity with the Sustainable Development Goal-4. It intends to restructure and reorient the education system in India." Critically examine.
2. One of the main focal points of National Education Policy-2020 is the usage of the local language as the medium of instruction in higher education in India. Discuss the rationale behind this thought. Do you think it will ensure more enrolment in higher education?

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# ROHINGYA & REFUGEE POLICY FOR INDIA

## CONTEXT:

India's approach towards refugees, in general about the Rohingyas has raised several questions about policy on Illegal migrants.

Rohingya, an ethnic group, mostly Muslim, hail from the Rakhine province of west Myanmar, and speak a Bengali dialect.

Myanmar has classified them as "resident foreigners" or "associate citizens".

- **Foreign nationals who enter the country without valid travel documents** are treated as **illegal immigrants**.
- **There is no national law on refugees at present.** Only Standard Operating Procedures are issued by the MHA to deal with foreign nationals in India, who claim to be refugees.

The only protection they have is the right to life under **Article 21** and protection against arbitrary abuse of power under **Article 14** of the constitution.

## ANALYSIS

### What is India's stand on refugees?

- India is not a signatory to the 1951 UN Convention relating to the Status of Refugees and the 1967 Protocol.

**Foreigners Regional Registration Office (FRRO)** is responsible for tracking foreigners and their visas. The FRRO is under the administrative control of the MHA. Since Delhi is a Union Territory, law and order are under the Central government, it has **erupted the matter of managing the refugee issues pertaining to Rohingyas** is between the Delhi Government and the Central Government.

- All **foreign undocumented nationals** are **governed** as per the provisions of:
  - ▶ The Foreigners Act, 1946
  - ▶ The Registration of Foreigners Act, 1939
  - ▶ The Passport (Entry into India) Act, 1920
  - ▶ The Citizenship Act, of 1955

### Impacts on India from Illegal migrants

- It impacts the interests of local populations in the areas seeing large-scale influxes of illegal immigrants.
- **Political Instability:** It also increases the political instability when leaders start mobilising the perception of the citizens of the country against the migrants by the elites to grab political power.
- **Rise of Militancy:** The persistent attacks against the Muslims perceived as illegal migrants has given way to radicalisation.
- **Human trafficking:** In the recent decades, trafficking of women and human smuggling have become quite rampant across the borders.
- **Disturbance in Law and Order:** The rule of law and integrity of the country are undermined by the illegal migrants who are engaged in illegal and anti-national activities.

## PRACTICE QUESTION

Discuss the tenets of India's Refugee Policy?

What do you think about India's policy on Rohingya? Do you think India's policy needs to change?

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## RECALLING INDIA'S ANTARCTICA ACTIVITIES

### CONTEXT:

The Indian Antarctic Bill, 2022, passed in Parliament, seeks to protect the Antarctic environment and regulate activities in the region.

- The government is aiming to have India's own national measures for protecting the Antarctic environment and associated ecosystem.

### The region

- It is a cold terrain, located in a remote area in the **Southern Hemisphere** covered by the **Antarctic Convergence** – an “uneven line of latitude where cold, **northward-flowing Antarctic waters** meet the warmer waters of the world's oceans.”
- It has human settlements and Native population.
- The continent of Antarctica, including its ice-shelves, and all areas of the continental shelf adjacent to it along with all islands (including their

ice-shelves), seas, and air space south of 60°S latitude, are part of the **legislation's jurisdiction**.

### What is the Indian Antarctic Bill 2022?

- The Bill seeks to give effect to the **Antarctic Treaty, the Convention on the Conservation of Antarctic Marine Living Resources, and the Protocol on Environmental Protection to the Antarctic Treaty**.
- It also seeks to protect the Antarctic environment and regulate activities in the region.



India signed the Protocol on Environmental Protection to the Antarctic Treaty on 14th January, 1998.

### About Antarctic Treaty:

- The Antarctic Treaty came into force on 23 June 1961 after ratification by the twelve countries then active in Antarctic science.
- The Treaty covers the area south of 60°S latitude.
- **Its objectives:**
  - ▶ Demilitarize the Antarctica region.
  - ▶ Establish a zone free of nuclear tests and the disposal of radioactive waste.
  - ▶ Ensure that it is used for peaceful purposes only.
  - ▶ Promote international scientific cooperation in Antarctica.
  - ▶ Set aside disputes over territorial sovereignty.
- **Forty-six countries** have acceded to it, comprising around 80% of the world's population.
- Consultative (voting) status is open to all countries that have demonstrated their commitment to the Antarctic by **conducting significant research**.

### How is Antarctica governed?

- The continent is a no-man's land — a natural reserve that belongs to no country.
- It is only governed by global agreements — Antarctic Treaty and the Protocol on Environment Protection to the Antarctic Treaty or 'Madrid Protocol', and the 1980 Convention on the Conservation of Antarctic Marine Living Resources.
  - ▶ India is a signatory to all three treaties and the proposed bill is in adherence to them.
- The 1959 Antarctic Treaty now has close to 54 countries on board, of which 29 countries — including India — has the status of Consultative Party with a right to vote in the Antarctic Consultative meetings.

### Can India make a law in no-man's land?

- While no single country can stake any claim on any part of Antarctica, they have liberty to govern the areas where they have set up their research stations.

- India, so far neither had any law, nor any teeth to take action if a violation takes place.
- The enforcement of such laws will confer jurisdiction on the courts of India to deal with any dispute or crimes committed in parts of Antarctica.
- Legislation of such a kind will bind the citizens to the policies of the Antarctic treaty system.

### India's presence in Antarctica

- Currently, India has two operational research stations in Antarctica named Maitri, commissioned in 1989, and Bharati, commissioned in 2012.
- India has successfully launched 40 annual scientific expeditions to Antarctica till date.
- With Himadri station in Ny-Alesund, Svalbard, Arctic, India now belongs to the elite group of nations that have multiple research stations within the Polar Regions.

### Why the Antarctic matters today?

- **Huge landmass:** The continent of Antarctica, the **fifth-largest** in terms of total area, covers a significant part of the Antarctic region.
- **World's natural laboratory:** Called one of the world's most significant 'natural laboratories,' Antarctica witnesses as many as 30,000 tourists each year to experience Earth's most exquisite features.
- **Vital for science:** It is even more vital for science insofar as its great impact on the world's climate and ocean systems is a matter of intense research investigation.
- **Rich nature:** Though Antarctica is fragile and even more vulnerable; it is believed to hold rich deposits of oil and vital minerals. That is what attracts the world's major powers.
- **A Competitive location:** Antarctica's competition is rising day by day with major economies showing direct interest.
  - ▶ **For China:** It marked its presence as "a polar power with stated goals of greater leadership in international polar organisations and securing future resources to sustain economic growth, energy and food security..

## PRACTICE QUESTION

1. Throw light on the Indian interests in the Antarctic region. What role do you think Indian Antarctic Bill, 2022 can play in protecting the Antarctic environment and regulating activities in the region?
2. What is the Antarctic treaty? Discuss the initiatives launched by India in the Antarctic region and how they helped in preserving the Antarctic Environment.

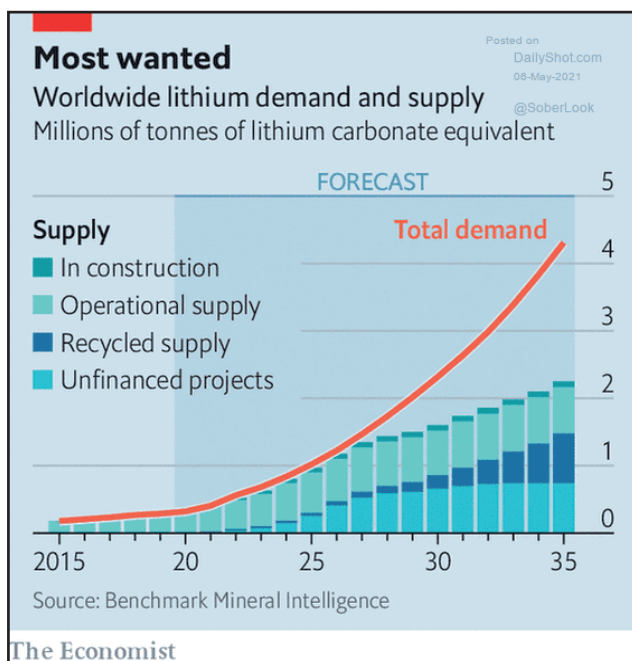
# INDIA KEEN TO JOIN US'S 'MINERALS SECURITY PARTNERSHIP' TO ENSURE THEIR SUPPLY

## CONTEXT:

Energy security and shift to a green future have put the focus on rare earth elements. However, India is import dependent on critical minerals. Thus, it needs “mining reforms, US partnership”.

## ◎ BACKGROUND

- China is one of the leading producers globally of critical minerals, with an estimated 70 per cent of the global production.
- In order to break the dominance and reduce dependence on China in mining and processing rare earth minerals, the United States recently announced the formation of a global alliance called the **Mineral Security Partnership (MSP)**.



Apart from the US, the other countries to have joined this partnership are: Australia, Canada, Finland, France, Germany, Japan, the Republic of Korea, Sweden, the UK, and the European Commission.

## ◎ ANALYSIS

### What is Minerals Security Partnership (MSP)?

- MSP is an ambitious new alliance formed by the US to secure supply chains of critical minerals.

- The goal of the alliance is to ensure that critical minerals are produced, processed, and recycled in a manner that supports the ability of countries to realise the full economic development benefit of their geological endowments.
- The focus would be on the supply chains of minerals such as **Cobalt, Nickel, Lithium** and also the 17 “rare earth” minerals.
- However, India is **not a part** of this partnership.

### Why these metals are ‘rare’ and ‘significant’?

- REEs are an essential — although often tiny — component of more than **200 consumer products**, including mobile phones, computer hard drives, electric and hybrid vehicles, semiconductors, flat screen TVs and monitors, and high-end electronics.
- They are known as “rare” because **it is very unusual to find them in a pure form**, but it turns out there are deposits of some of them all over the world - **cerium**, for example, is the 25th most common element on the planet.
- The term “earth” is simply an archaic term for something you **can dissolve in acid**.

### What is the aim of MSP? (Decrease Dependency on China for Critical Minerals)

- Since 1990, supplies of rare earth minerals became an issue because the Chinese government began to change the amount of rare earth minerals it allows to be produced and exported, and also started limiting the number of Chinese and Sino-foreign joint venture companies that could export rare earth minerals from China.
- The MSP is aimed at reducing dependency on China for rare earth minerals, according to media reports.
- Both the **MSP and the Australia-India Critical Minerals Investment Partnership** are aimed at unlocking the benefits of the critical minerals sector.

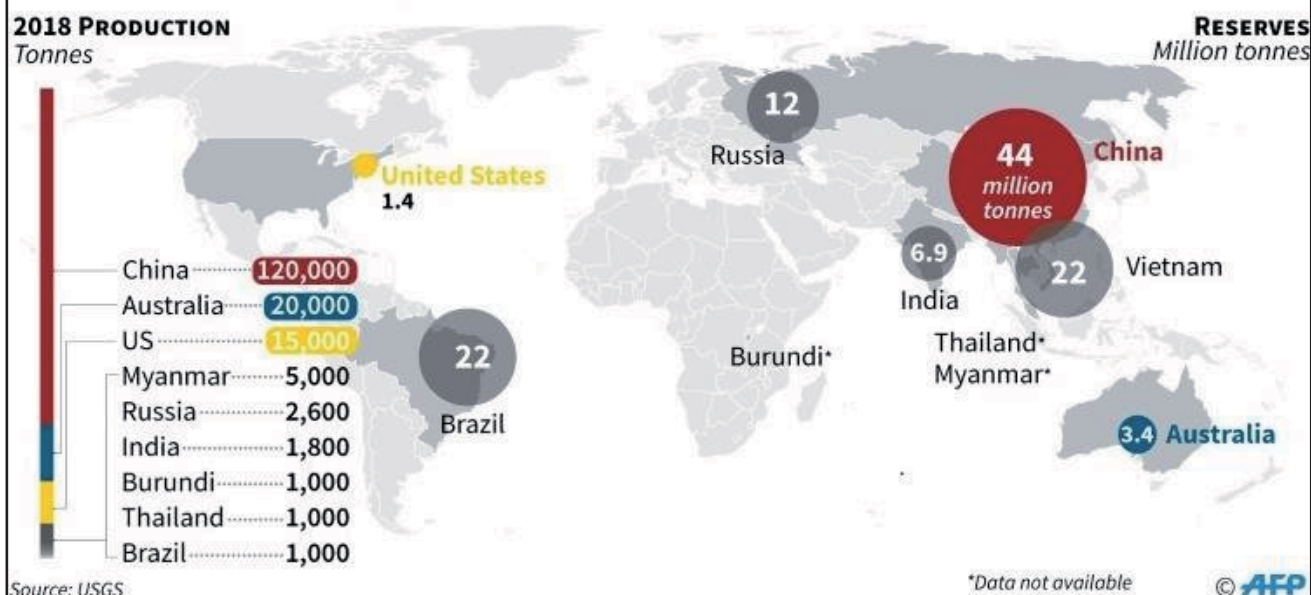


### India's position on Rare earth metal production

- Some REEs are available in India — such as **Lanthanum, Cerium, Neodymium, Praseodymium and Samarium**, etc.
- Others such as **Dysprosium, Terbium, and Europium**, which are classified as HREEs, are not available in Indian deposits in extractable quantities.

- Hence, there is a dependence on countries such as **China for HREEs**, which is one of the leading producers of REEs, with an estimated **70 per cent** share of the global production.
- If India is not able to explore and produce these minerals, it will have to depend on a handful of countries, including China, to power its energy transition plans to **electric vehicles**.

### Rare earth metals production and reserves



### PRACTICE QUESTION

- What are rare earth minerals? Why are these minerals important for India in its energy transition plans?
- "Demand for critical minerals, which are essential for clean energy and other technologies, are projected to expand significantly in the coming decades". Examine this statement in the context of the recently formed Minerals Security Partnership. Also highlights concerns for India.

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# PRIVATIZATION OF PUBLIC SECTOR BANKS (PSBs) IN INDIA

## CONTEXT:

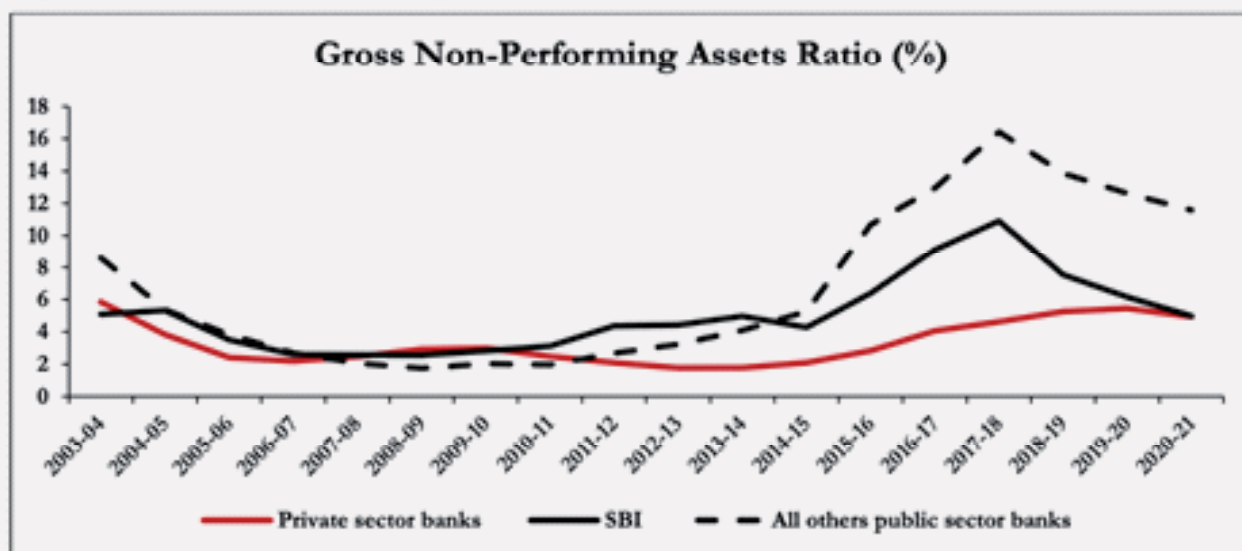
Recently India observed the 53<sup>rd</sup> anniversary of bank nationalisation where on the other hand in the Union Budget 2021-22, the government announced its decision to privatise two public sector banks.

## ANALYSIS

### What is the need for Privatisation?

- Degrading Financial Position of Public Sector Banks
- **Private sector banks (PVBs)** are far more efficient, far more productive and far less corrupt than the PSBs.
- **Part of a Long-Term Project:** This will free up the government, the majority owner, from continuing to provide equity support to the banks year after year.
- **Strengthening Banks:** The government is trying to strengthen the strong banks and also minimise their numbers through privatisation to reduce its burden of support.

Figure 9: Gross NPAs as a Proportion of Gross Advances: 2003-04 to 2020-21



Source: Reserve Bank of India statistical tables.

explained

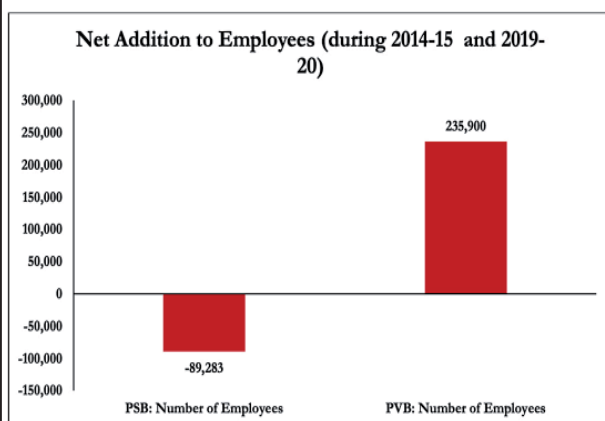
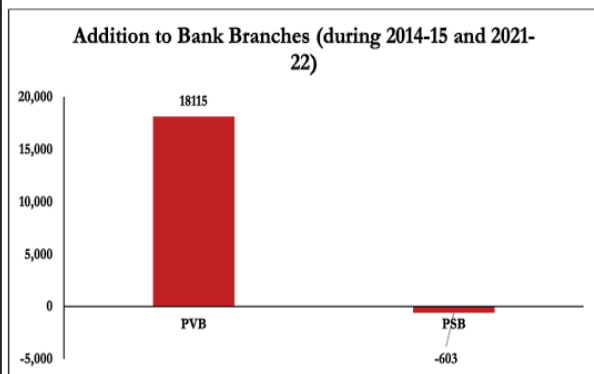
- **Private sector Banks are creating more employment:** Private Banks have not only added more branches but have also created new jobs while the public sector banks saw declines on both counts.
- **Recommendations of Different Committees:** Many committees had proposed bringing down the government stake in public banks below 51%:
  - The Narasimham Committee proposed 33%.
  - The P J Nayak Committee suggested below 50%.

### Does India require Privatization of all PSBs?

- According to a recent paper released, all PSBs should be privatised. But they also realise that this might be a tad too drastic for any government in India to do and they suggest privatising all except the **State Bank of India**.

### Pros and Cons of privatization of PSBs:

Figure 7: The Change in Employment and Bank Branches in PSBs and Private Banks



Source: RBI, Handbook of statistics on Indian Economy, Money and Banking, Bank Group wise distribution of Employees of Scheduled Commercial Banks.

explains

### Banking Laws (Amendment Bill 2021)

- The Bill aims to amend **banking companies' acquisition and transfer laws of 1970 and 1980** and the **Banking Regulation Act, 1949** to achieve the privatisation of two PSBs to meet disinvestment targets as stated by the finance minister in the **Union Budget 2021-22**.

- These laws had **led to the nationalisation of banks**, so relevant provisions of these laws **have to be changed to pave the way for privatisation**.

- This move will bring down the **minimum government holding in the PSBs from 51% to 26%**.

Pros	Cons
<ul style="list-style-type: none"> <li><b>Strengthening Banks:</b> The government is trying to strengthen the strong banks and also minimise their numbers through privatisation to reduce its burden of support.</li> <li><b>Creation of Big Banks:</b> One of the objectives of privatisation is also to create big banks.</li> <li><b>To reduce risks:</b> Big size banks and Privatization can reduce the risk associated with NPAs as the Private sector has stringent norms for loans.</li> </ul>	<ul style="list-style-type: none"> <li><b>Job Losses:</b> The privatisation will also result in job losses, branch closures and financial exclusion.</li> <li><b>Financial Exclusion of Weaker Sections:</b> The private sector banks concentrate on the more affluent sections of the population and the urban areas, leading to the financial exclusion of weaker sections of the society, particularly in the rural areas.</li> <li><b>Governance Issues:</b> Private sector banks run at the mercy of several groups of people and not by public consensus.</li> </ul>

## PRACTICE QUESTION

- Do you think the issue of NPAs in Public Sector banks would forego after the Privatization of PSBs? Critically examine
- Banks in modern times have two major functions viz. providing credit for economic growth and providing credit to priority sectors. Do you think that the privatization of PSBs can maintain this delicate balance?

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## CENTRE TWEAKS OVERSEAS INVESTMENT RULES

### CONTEXT:

In a bid to promote ease of doing business, the finance ministry notified the consolidated rules for overseas investment by Indian entities.

- The Foreign Exchange Management (Overseas Investment) Rules, 2022 will subsume extant regulations pertaining to Overseas Investments and Acquisition and Transfer of Immovable Property outside India Regulations, 2015.

### ANALYSIS

#### How overseas investments are governed?

- An overseas investment by a person resident in India is governed by the **Foreign Exchange Management (Transfer or Issue of Any Foreign Security) Regulations, 2004** and the **Foreign Exchange Management (Acquisition and Transfer of Immovable Property outside India) Regulations, 2015**.

#### What are the new tweaks in overseas investment norms?

- **Summation of APR:** Any resident in India acquiring **equity capital** in a foreign entity or **overseas direct investment (ODI)**, will have to submit an Annual Performance Report (APR) for each foreign entity, every year by December 31.
  - ▶ No such reporting shall be required where a person resident in India is holding less than 10% of the equity capital without control in the foreign entity and there is no other financial commitment other than equity capital or a foreign entity is under liquidation.
- Any resident individual can make ODI by way of investment in equity capital or overseas portfolio investment (OPI) subject to the overall ceiling under the **Liberalised Remittance Scheme (LRS)** of the Reserve Bank.

Currently, the LRS permits \$2,50,000 outward investment by an individual in a year

- **The earlier case:** Technology entrepreneurs and angel investors were mostly not eligible for NBFC licence.
  - ▶ The new rules have permitted Indian entities not engaged in financial services activities but with a three year net profit track record to invest in overseas entities involved in financial services activities.

### Opening Up

#### Non-financial entities can now buy stakes in foreign fintech cos

**Until** now only NBFCs in India were allowed to buy such stakes

**Move** to help new entrants in the sector



#### Transfers of foreign shares between relatives as gift allowed

**Earlier** such transfers needed RBI approval

**Move** to help various restructuring of family businesses

- **New portfolio route:** The government also created a new portfolio route through which such investors will now be able to buy less than **10% stake in foreign companies** without having to float a joint venture.
  - ▶ Until now, there was only one route of investment - **overseas direct investment (ODI)** and this route was primarily meant for those domestic entities that wanted to form a wholly owned subsidiary (WOS) or joint venture (JV) overseas.
  - ▶ In such entities, the Indian investor will exercise some amount of control.

**Prohibition:**

- Any Indian resident, who has been classified as a **wilful defaulter** or is under investigation by the CBI, the ED or the Serious Frauds Investigation Office (SFIO), will have to obtain a **no-objection certificate (NOC)** from his or her bank, regulatory body or investigative agency before making any overseas "financial commitment" or disinvestment of overseas assets.

Need of the move	Significance of revised regulatory framework
<ul style="list-style-type: none"> <li>Evolving needs of businesses in India</li> </ul>	<ul style="list-style-type: none"> <li><b>Easy investment:</b> These norms make it easier for domestic corporates to invest abroad.</li> </ul>

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Increasingly integrated global market</li> <li>Increasing need of Indian corporates to be part of the global value chain</li> </ul> | <ul style="list-style-type: none"> <li><b>Simplification</b> of the existing framework for overseas investment.</li> <li><b>Alignment with the current trend:</b> Aligned with the current business and economic dynamic.</li> <li><b>Promoting ease of doing business</b></li> </ul> |
|--|---|

**PRACTICE QUESTION**

Who is a wilful defaulter? What are the effects of declaring someone a wilful defaulter?

Recently government amended the overseas investment rule. Discuss in this regard how overseas investment is governed in India. What are the recent changes in the rules?

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# THE 'OPENSEA' TALE ON THE FUTURE OF NFTS

## CONTEXT:

Due to a fall in the crypto markets after a meteoric rise last year, the crypto exchanges are struggling to stay solvent. Non-fungible tokens or NFTS which belong to the same ecosystem have also taken a hit.

### What is OpenSea's place in the sector?

- **OpenSea** is a **decentralized marketplace** that allows users to buy and sell non-fungible tokens. OpenSea is said to be one of the largest NFT marketplaces in existence.
- It is based on **Ethereum blockchain data** and was used by two million traders who transacted at least once on the network.

NFTs are **digital assets** whose **ownership is verified** through **transaction records stored on blockchain**. Artwork, digital avatars, and accessorized monkeys are some of the most commonly traded NFTs.

### The Collapse of Crypto-Bubble:

- The **sales of digital goods on OpenSea jumped to a high in August 2021** as a result of bitcoin and Ether hitting their all-time high.
- Later, OpenSea's monthly volumes soared between December 2021 and January 2022 and appeared to be **replicating the rise in the monthly volume for Ethereum**, which shot over \$4.8 billion.
- But it **experienced a nosedive after its partner coin 'LINA' collapsed** and wiped off billions of dollars from the market in May 2022.
- As a result, **both Bitcoin and Ether fell to half of their values** in the first six months of 2022. Daily transactions on OpenSea have been gradually declining since then.

### Trust issues of users with OpenSea:

- OpenSea users complain of **excessive downtime** on the platform.
- There have also been reports of **breaches and security vulnerabilities**.
- OpenSea users were targeted by an alleged **phishing attempt**.
- There are also **ethics-related issues**.
  - ▶ A number of artists have complained that OpenSea users frequently **steal their work**, mint them as NFTs, and **begin profiting from them without their consent**.

- These artists have condemned the NFT platform for **not doing enough to combat art theft** and also for **making the stolen art takedown process troublesome** for non-crypto users.

### Future of OpenSea:

- **Uncertain Future:** At this time, it is difficult to derive any conclusion from the rise and fall of the Open Sea. The crypto run and the NFT boom, both had translated into the **hiring spree in order to scale the operations at a rapid pace**.
- **Hibernate for resilient recovery:** The market is entering into an unprecedented combination of crypto winter and broad macroeconomic instability. It is time to prepare the platforms for a prolonged downturn.
- **Optimistic Approach:** Many might have concluded that the era of NFTs is over and it's time to exit their positions and give up their creations, but there are enough in the world of crypto who believe that panic sellers are giving them generous discounts. The NFT market might be volatile, but there's enough underlying potential too.
  - ▶ **Volatility allows investors to develop strategies** like buying low, and selling high, which creates the possibility for astronomic returns.

### Future of NFTs and their Marketplaces:

- More people are already working on NFTs, blockchains, and cryptocurrencies than ever before.
- **Interoperability to become Essential:** As NFTs and metaverses develop, so will the complexity of their use, and interoperability between metaverses will be as important as their utility in real life.
- **Greater Ease of Adoption:** Web3 is a chance to reinvent and reimagine the undesirable parts of Web2.0.
  - ▶ When there are hacks or attacks, users have complete control over their data and funds, and there will be no intermediaries to turn to.
  - ▶ In Web3, security is a primary priority and doesn't set back growth and development.

- **Metaverse:** The metaverse has become a fast-growing industry and it is the **NFTs that will become the building blocks of these digital worlds**, and encoded utilities will unlock experiences such as VIP events or unique discounts.
- **Creating fluid socio-cultural interactions:** The integration of borderless virtual worlds and interoperability will expand the possibilities for utility, bringing a seamless experience and higher value for users.

## PRACTICE QUESTION

1. What are the Non-Fungible tokens? How has the NFT industry dealt with the fallout of the crypto market?
2. What is Open Digital Network Commerce? Discuss how it will ensure neutrality in digital commerce.

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# SEBI CALLS FOR STRENGTHENING OF GREEN BONDS

## CONTEXT:

SEBI has suggested for strengthening the framework of 'green bonds' by enhancing the definition of green debt securities and disclosures.

### ◎ ABOUT

- The proposals are aimed at aligning with the updated **Green Bond Principles (GBP)** published by the **International Capital Market Association (ICMA)**.
- It also suggested adding two categories of projects; **pollution prevention and control** and **circular economy adapted products** -- as eligible green projects.

#### What are Green Debt securities (GDS)?

- SEBI defines **Green Debt Securities (GDS)** as debt securities issued for raising funds that are to be utilised for projects or assets falling under certain categories.



### ◎ ANALYSIS

#### What are Green Bonds?

- A green bond is a debt instrument with which capital is being raised to fund 'green' projects,

which typically include those relating to renewable energy, clean transportation, sustainable water management etc.

- A bond is a **fixed income instrument** that represents a loan made by an investor to a borrower (typically corporate or governmental).
- Bonds traditionally pay a **fixed interest rate** (coupon) to investors.

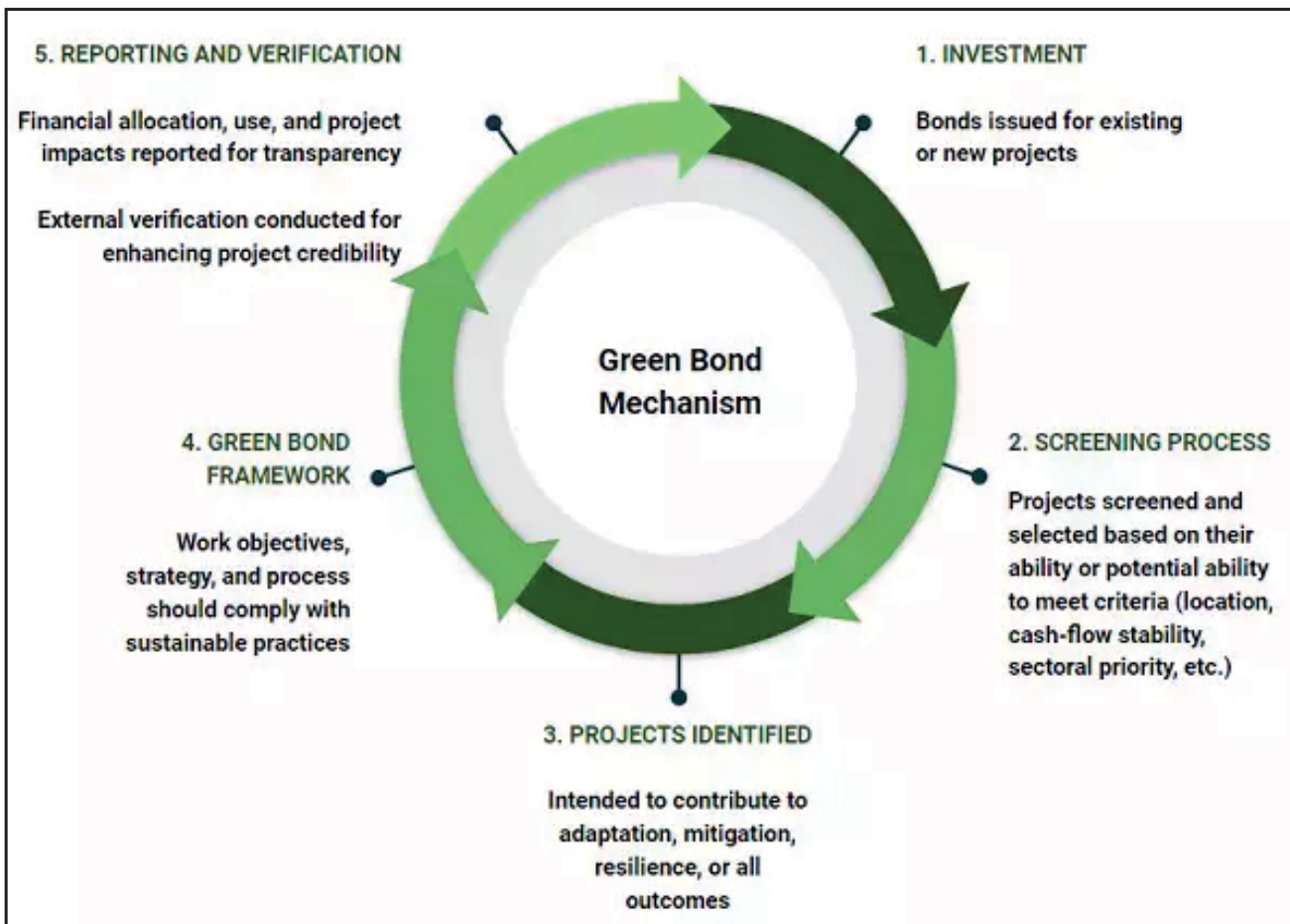
#### Who regulates Green bonds in India?

- The **Securities and Exchange Board of India (SEBI)** has put in place **disclosure norms** for issuance and listing of green bonds.

#### How Green Bonds can help Blue economy to grow?

- **India's potential:** India has a 7,500 kilometre-long coastline and 14,500 kilometres of navigable inland waterways, and the development of the blue economy can serve as a growth catalyst.
  - ▶ At present, the blue economy comprises 4.1 per cent of India's economy.
- **Enhances Reputation:** Green bonds enhance an issuer's reputation, as it helps in showcasing their commitment towards sustainable development.
- **Fulfilment of Commitments:** Ability to meet commitments, for signatories to climate agreements and other green commitments.
  - ▶ India's Intended Nationally Determined Contribution (INDC) document puts forth the stated targets for India's contribution towards climate improvement and following a low carbon path to progress.
- **Rise at Lower Costs:** Green bonds typically carry a lower interest rate than the loans offered by the commercial banks.
  - ▶ With an increasing focus of foreign investors towards green investments, it could help in reducing the cost of raising capital.
- **Support Sustainable Growth:** These green bonds have been crucial in increasing financing to sunrise sectors like renewable energy, thus contributing to India's sustainable growth.





### What are the Challenges for expanding Green bonds in India?

- **High Coupon Rate:** The average coupon rate for green bonds issued since 2015 with maturities between 5 to 10 years have generally remained higher than the corporate government bonds with similar tenure.
- **High Borrowing Cost:** It has been the most important challenge due to the asymmetric information. High coupon rate is one of the reasons for high borrowing cost.
- **Lack of Credit Ratings:** Lack of credit rating or rating guidelines for green projects and bonds.
- **Shorter Tenor:** Green bonds in India have a shorter tenor period of about 10 years whereas a typical loan would be for a minimum 13 years. Further Green Projects require more time to bring returns.

### PRACTICE QUESTION

1. Blue economy is the "sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of the ocean ecosystem". Examine this statement in the Indian context.
2. What are blue and green bonds? Discuss their relevance in ensuring sustainable finance in India.

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# INDIA'S BULLION EXCHANGE

## CONTEXT:

The foundation stone of the headquarters building of the International Financial Services Centres Authority (IFSCA) was recently laid by the prime minister in GIFT City in Gandhinagar.

## ● ANALYSIS

### What is Bullion?

- Bullion is the term for high purity physical forms of gold and silver that are frequently kept as bars, ingots, or coins.
- It is frequently kept by central banks as reserves or held by institutional investors, and it is occasionally regarded as legal tender, which is also held by the various central banks.

### What is Bullion Exchange?

- A Bullion exchange is a market where buyers and sellers may trade gold, silver, and associated derivatives.
- The London Bullion Market is the primary international trading center for gold and silver. There are other bullion exchanges across the world as well.

### What is IIBX?

- The **Indian International Bullion Exchange (IIBX)** was first announced in the 2020 Union budget to facilitate gold imports by Indian jewellers.
- It is a platform that not only **enrolls jewellers to trade on the exchange** but has also set up the necessary infrastructure to store physical forms of gold and silver.
- IIBX will facilitate **efficient price discovery** with the **assurance of responsible sourcing** and **quality**, apart from giving **impetus to the financialization of gold in India**.
- IFSCA is assigned with **notifying the eligible qualified jewellers** in India for directly importing gold through IIBX.

### Significance of IIBX:

- This will allow **India to gain its rightful place in the global precious metals market** and **provide integrity and quality to the global value chain**.
- IIBX will give a boost to the commitment of the Government of India towards enabling India to be able to **influence global bullion prices as a principal consumer**.

### Who can trade on the IIBX?

- Qualified jewellers will be permitted to import gold through the IIBX.
- To become qualified jewellers, entities require a minimum net worth of Rs 25 crore and 90 percent of the average annual turnover in the last three financial years through deals in goods categorized as precious metals.

### How will it work?

- Trading can occur in US dollars as well because this is an international exchange.
- One of the largest commercial centers in Asia is India, which has established itself as such.
- International players will be pleased to utilize our vaulting services since IIBX offers competitive rates.
- Due to the fact that this is a free trade zone, no duties will be paid.

### What is GIFT City?

- Gujarat's Gandhinagar is home to GIFT (Gujarat International Finance Tec-City).
- It consists of a **multi-service Special Economic Zone (SEZ)**, which houses India's first **International Financial Services Centre (IFSC)** and an exclusive **Domestic Tariff Area (DTA)**.
- The goal of GIFT (Gujarat International Finance Tec-City) is to become a global Centre for integrated financial and technology services, serving both India and the rest of the globe.

### What was the status till now?

- Currently, gold is imported into India on a consignment basis by designated banks and RBI-approved organizations.
- When dealing with domestic customers, banks and other organizations raise the price of the gold by adding a premium on top of the handling, storage, etc. fees they receive from the gold exporter.
- This cost is transferred by the buyer all the way to **the final consumer**.

**PRACTICE QUESTION**

1. India launched its first International bullion exchange. Briefly explain how it will help the end consumers of Gold.
2. Discuss how India International Bullion Exchange would help the country in maintaining its foreign exchange reserves?

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## GOVERNMENT'S OWN GIG WORKERS

### CONTEXT:

As outsourcing/contractual has become the dominant mode of working in the government, from highly specialized tasks to the most routine ones.

- ❑ The government has been worried about unequal remuneration and treatment of contract workers, but it continues to hire them in bigger numbers.

### ANALYSIS

#### Who are Gig Workers of the Government?

- The term "gig" is a slang word for **a job that lasts a specified period of time**. Traditionally, the term was used by musicians to define a performance engagement.
- Examples of gig workers include **freelancers, independent contractors, project-based workers, and temporary or part-time hires**.

#### How they are supporting the economy?

- They are based on flexible, temporary, or freelance jobs, often involving connecting with clients or customers through an online platform.
- The gig economy can benefit workers, businesses, and consumers by making work more adaptable to the needs of the moment and the demand for flexible lifestyles.
- In a gig economy, large numbers of people work in part-time or temporary positions or as independent contractors.
- The gig economy has many benefits for both the employee and employer.

#### Why it is not recommended to employee contractual employees?

- Lack of job security, irregular wages, and uncertain employment status
- Rising stress due to uncertainty associated with regularity in available work and income
- Limited access to the internet and digital technology
- The contractual relationship between the platform owner and gig worker denies the latter access to many workplace entitlements.
- Stress is due to pressure from algorithmic management practices and performance evaluation based on ratings.

#### Constitutional Provisions

Article	Title	Description
21A	Right to Education	The State shall provide free and compulsory education to all children of the age of 6 to 14 years in such manner as the State, by law, may determine.

### Hard Work Behind It

The govt is working towards providing adequate legal protection to contract workers

**PROPOSAL:**  
Drop word 'abolition' from Contract Labour (Regulation & Abolition) Act

**WHY:**  
It contradicts the regulation of the sector

**PROPOSAL:** Give staffing firms a national licence, which will be based on set criteria & renewed every 3 yrs

**WHY:** It will provide better social security for contract workers & help create more jobs in organised sector

- 55%: percentage of contract labour in public sector jobs
- 45%: percentage of contract labour in private sector
- 2 m: No. of contract labourers currently in organised sector
- 480 m: Total no. of workers in the country

24	Prohibition of Employment of Children in Factories	No child below the age of fourteen years shall be employed in work in any factory or mine or engaged in any other hazardous employment.
39	The state shall in Particular direct its policy toward securing	That the health and strength of workers, men, and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength

### What can be done to safeguard their interest?

- Increase access to institutional credit for platform workers and those interested in setting up their own platforms.
- Unsecured loans extended to first-time borrowers in the platform economy may be classified as Priority Sector Lending.
- Skill development of youth and workforce to make them employable.
- Government can ensure **universal coverage of platform workers** through the Code on Social Security.
- Paid Sick Leave, Health Access, and Insurance for gig workers.
- Occupational Disease and Work Accident Insurance to all delivery and driver partners.
- Retirement/Pension Plans and Other Contingency Benefits.

### PRACTICE QUESTION

1. "Outsourcing has become the dominant mode of working in the government". Discuss the statement with respect to the Agnipath scheme launched by Government.
2. Gig workforce is expanding in India as per NITI aayog's report. Discuss issues related to the contractual system of work. Suggest some suggestions in this regard.

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# COASTAL SECURITY IN INDIA

## CONTEXT:

Coastal security is one of the major concerns for India with a coastline of 7,516.6 km. The coastline also accounts for 90% of the country's trade.

## ◎ BACKGROUND

- India's coasts have always been vulnerable to anti-national activities. Numerous cases of the smuggling of goods, gold, narcotics, explosives, arms, and ammunition as well as the infiltration of terrorists into the country through these coasts have been reported over the years.
- External challenges emanating from across the border such as infiltration, illegal migration, smuggling, terrorism, etc. aggravate the internal security problems.
- Although the Indian security forces had responded swiftly to 'the 26/11 Mumbai attack', it exposed three significant cracks in India's maritime security calculus,
  - The porous nature of India's coastline;
  - The inadequate surveillance of the maritime domain; and
  - The lack of inter-agency coordination.

- It is important to ensure that we draw maximum advantage from the maritime sector – to benefit our economy and also to reinforce maritime security.

## Maritime and Coastal Security:

- Maritime security has been defined in the Indian Maritime Doctrine (IMD) as relating to freedom from threats at or from the sea.
- Although the **IMD does not define coastal security**, the **Indian Maritime Security Strategy (IMSS)**, an official publication of the IN defines it as a subset of maritime security, focused on the coastal waters.
- The coastal waters are considered, for the purpose of IMSS, as the water area seawards of the Indian coast up to the limit of India's Contiguous Zone (CZ) which is at 24 nautical miles from the baseline, or the International Maritime Boundary Line (IMBL), in case the latter is nearer.

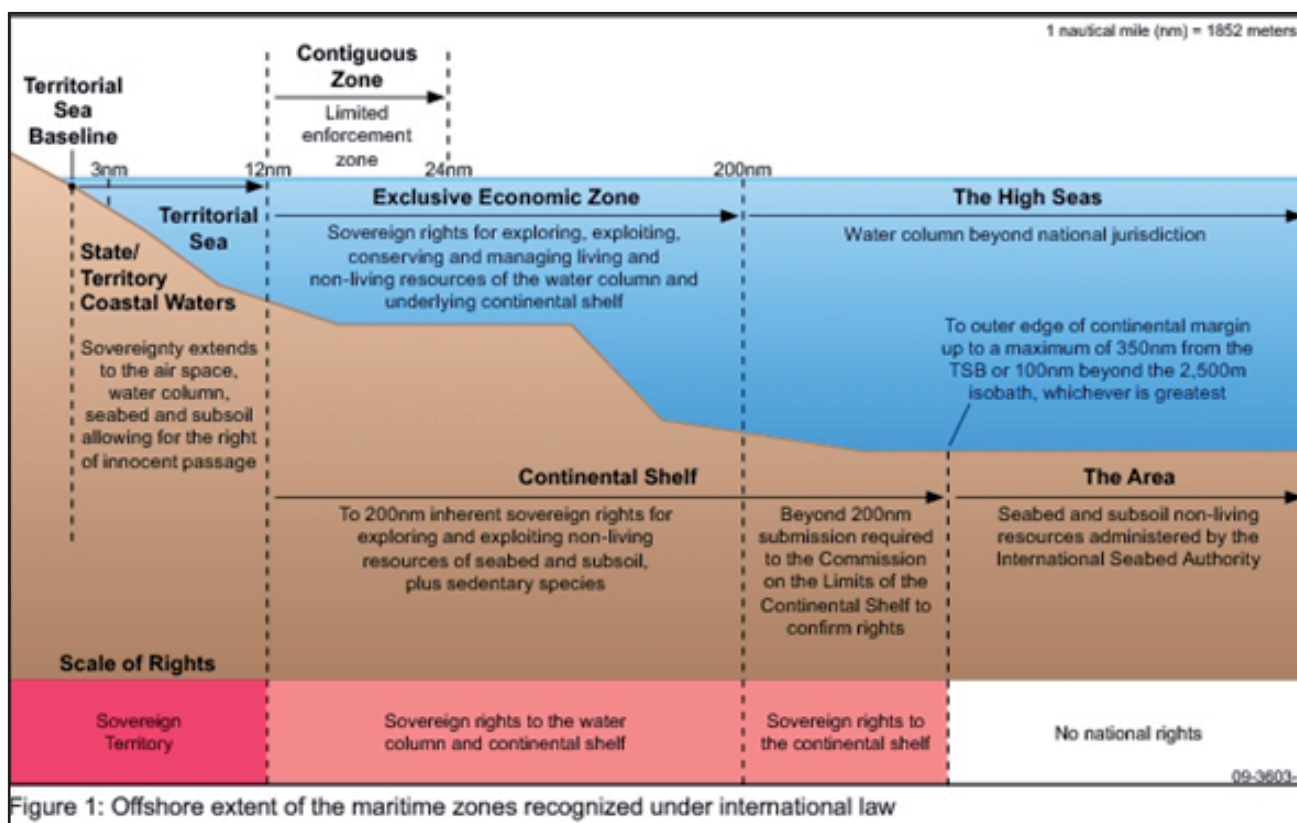


Figure 1: Offshore extent of the maritime zones recognized under international law

**Jurisdiction:** The **State Coastal/Marine Police (SC/MP)** have jurisdiction up to **12 nautical miles from the coast**; and the Indian Coast Guard and the Indian Navy have jurisdiction over the **entire maritime zone (up to 200 nautical miles)**, including the territorial waters (with the SMP).

- The **Border Security Force (BSF)** is deployed in the creek areas of Gujarat and Sundarbans in West Bengal.

## ◎ ANALYSIS

### Why Coastal security is significant for India?

- **Safeguarding India's diverse Topography:** India's coasts are characterized by a diverse range of topography such as creeks, small bays, backwaters, rivulets, lagoons, estuaries, swamps, mudflats, as well as hills, rocky outcrops, sandbars, beaches, and small islands.
- **Security for Disputed maritime Boundaries:** India's maritime boundaries with **Pakistan and Bangladesh** are not delineated because of **overlapping claims**.
- **Saving Fisheries and other marine resources:** India is the **7<sup>th</sup> largest fishing nation** in the world and Indian coasts account for approximately 4 million fishermen settled along the coast in 3288 marine fishing villages.
- **Coastal Population and development:** Besides fishing, other major industrial activities such as shipbuilding, manufacturing, oil exploration and refining, etc. are also concentrated in coastal areas. Indian coasts also house a number of urban centres which are hubs for industrial and economic activities.

### Additional areas of vulnerabilities of the Indian coastline:

- Indian coasts have been susceptible to the smuggling of items such as gold, electronic goods, narcotics, and arms.
- Hijacking, attacking, and sinking ships, taking hostages, sabotaging pipelines, and attacking cities and strategic installations like naval bases and petrochemical storage.
- Large-scale refugee influxes over the decades have resulted in widespread political turmoil in the Border States.
- Discontent in fishermen's communities interferes with the effective functioning of the coastal security.

- Due to the process of industrialization along the coastal region, the existence of strategic installations by oil companies, nuclear power plants, missile, and satellite testing centres have taken place, which are high-value targets for the terrorists.

### Technologies used for Coastal security and Management:

- The sensor network can include a combination of the various types of technologies such as **radar, Automated Identification System (AIS), Electro-Optical/Infra-Red (EO/IR) System, Identification system, Command, and Control system, etc.**
- Fundamental deficiencies in security:
  - **Conflates Policing with Maritime Border Guarding:** This erroneously conflates the responsibility of law and order (State List) with maritime border guarding (Union List).
    - This also leads to the problem of overlapping jurisdiction between the IN, ICG, and the SCP and a lack of unity of command at the ministry and force level.
- **Indian Navy and Indian Coast Guard under Different Departments in MoD:** The Army, Navy, and Air Force were placed under the **Department of Military Affairs (a department created within MoD)**, and the ICG was placed under the MoD. The Group of Minister report highlighted this anomaly and noted the requirement for coordination between the IN and the ICG in both peace and war.
- **Diffused Responsibilities:** Lack of clarity in jurisdiction between the IN, ICG, and SCP.

### Recommendations

- **Self-dependency:** To develop our own AIS type which can be easily fitted on the smaller craft that operates in our coastal waters to aid detection and identification. Presently, fitment of AIS is mandated only for vessels greater than 300 Tonnage.
- **Distress Alert Transmitter (DAT)** is provided by Coast Guard to transmit emergency conditions and position location to the central hub station via the UHF transponder of INSAT for the rescue operation. This technology could be innovatively used to indicate the likely threat observed by our fishermen while at sea.
- **The use of the Aadhar card** is being propagated as the main identity document for all important purposes including financial transactions. Proving the identity of fishermen at sea has been one of the key concerns.

- **Regulation of fishing:** Fisheries often cite inadequate staff and infrastructure to regulate fishing activities. The use of modern data handling devices that can provide instant information on fishing boats, their whereabouts, and other relevant information also needs to be explored.
- Port and container terminal security can be enhanced by making use of high-speed X-ray machines, CCTV surveillance, VTMS, biometrics; etc.
- **Deployment of Unmanned platforms:** Aerial vehicles are needed which will provide for quick launch and effective surveillance for prolonged periods.
- **Modernization and Augmentation needed:** Steadily augmenting force levels for effective surveillance and optimum coverage. Multi-mission maritime aircraft, Twin engine helicopters, State of art surface platforms with modern sensors.

### **PRACTICE QUESTION**

1. What do you mean by coastal security? Why coastal security is considered 'indispensable' for India?
2. What is the Coastal security scheme of the Government? What is the structure for the protection of coastal areas of the country?

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# DAM MANAGEMENT IN INDIA

## CONTEXT:

Recently, the outer part of the “Karam Dam”, which is being built on the Karam River, a tributary of the Narmada, collapsed.

- With the increasing events of Dam failures in India, questions the policy regarding Dam management and its accountability.

## ◎ BACKGROUND

- A dam is defined as a barrier built across a stream, river or estuary to confine and check the flow of water for such uses as human consumption, irrigation, flood control and electric-power generation.
- Lately, dams are seen more as hydropower generators with flood mitigation, irrigation and drinking water supply only being added benefits.
- However, globally about 2.2% of dams built before 1950 have failed mainly due to flooding, inadequate spillway capacity, bad workmanship etc.
- India ranks third globally with 5264 large dams in operation and about 437 are under construction. But India too has had its share of dam failures. There are more than 36 reported failure cases so far.
- The first failure was recorded in Madhya Pradesh in 1917 when the **Tigra Dam** failed due to overtopping.

- Structure does not meet the present design standard- both structurally and hydrologically
- States have been failing to provide sufficient budgets for maintenance and repair of the dam.
- Real-time inflow forecasting systems are not in place even in important reservoirs
- Dam design drawings or drawings as constructed are not available
- Dam Safety Organizations (DSO) in states are short of adequate manpower

## Government Initiatives

- Dam Rehabilitation and Improvement Project (DRIP):** Launched in 2012, with World Bank to improve safety and operational performance of selected dams, along with institutional strengthening with system wide management approach.

In 2018, the government approved the extension of the DRIP Project for two more years with the revised scheduled closure in June 2020. Presently **198 dam** projects are being rehabilitated under the DRIP Project.

## ◎ ANALYSIS

### Need for Dam Safety in India

- Over 75% of the country's dams are over 25 years old and about 164 dams are more than 100 years old.
- With the increasing number of dams becoming older and older, dam failures are more expected now.
- Ensuring Dam Safety is essential for safeguarding huge investments in infrastructure.
- It is also crucial for safeguarding human life, and the properties of the people living downstream of the dams.

### What are the concerns associated with the present system of Dam Management?

- Varied structural deficiencies
- Shortcomings in operation and monitoring facilities,

- Dam Health and Rehabilitation Monitoring Application (DHARMA):** It is a web-based software package to support the effective collection and management of Dam Safety data in respect of all large dams in India.
  - The software is designed for users at the Central, State and Dam level, with user permission rights governed by their respective licenses.
- Seismic Hazard Mapping along with the development of Seismic Hazard Assessment Information System (SHAISYS):** It is also web-based interactive application tool being developed in CWC under Dam Safety Organisation (DSO) to estimate the seismic hazard at any point in the Indian region.
  - The SHAISYS shall be capable of estimating seismic hazard using the deterministic as well as probabilistic approach.

- **Other Initiatives** – Other important activities include Design Flood Review, publication of important Guidelines as well as Manuals dealing with Dam Safety Management, preparation of O&M Manuals, and Emergency Action Plans.

**Dam Safety Act, 2021**

- **Dam Safety Act 2021** aims at surveillance, inspection, operation and maintenance of all specified dams across the country.
- The Act applies to all specified dams in the country i.e., those dams having a height of over 15m and between 10m and 15m with certain design and structural conditions.
- **Functions:** Functions of the committee will include formulating policies and regulations

regarding dam safety standards and prevention of dam failures, analysing the causes of major dam failures, and suggesting changes in dam safety practices.

**It constitutes two National Bodies:**

- **National Committee on Dam Safety:** Its functions include evolving policies and recommending regulations regarding dam safety.
- **National Dam Safety Authority (NDSA):** Its functions include implementing policies of the National Committee, and resolving matters between State Dam Safety Organisations (SDSOs), or between an SDSO and any dam owner in that state.

**PRACTICE QUESTION**

1. India is one of the most flood-prone countries in the world after Bangladesh and these are quite common throughout the country. Discuss the structural and non-structural measures India employed since the launch of the National Flood Control Program in 1954.
2. What are Flash Floods? Why the Himalayan and Coastal states are more prone to flash floods due to climate change?

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# 'FOREVER CHEMICALS' CONTAMINATING RAINWATER GLOBALLY

## CONTEXT:

According to a recent study, rainwater from many places across the globe is contaminated with “per- and polyfluoroalkyl substances,” (PFAs), which are called “forever chemicals” because of their tendency to stick around in the atmosphere, rainwater and soil for long periods of time.

### What are per- and polyfluoroalkyl substances (PFAs)?

- The per- and polyfluoroalkyl substances (PFAS) are a group of **chemicals used to make fluoropolymer coatings and products** that resist heat, oil, stains, grease, and water.
- PFAs can migrate to the soil, water and air during their production and use.
- Since most PFAs do not break down, they remain in the environment for long periods of time.
- Many PFAS, including perfluorooctane sulfonic acid (PFOS) and perfluorooctanoic acid (PFOA), are a concern because they:
  - ▶ **Do not break down in the environment,**
  - ▶ **can move through soils** and contaminate drinking water sources,
  - ▶ **Build-up (bioaccumulate)** in fish and wildlife.

#### PFAS are used in a wide range of consumer products due to their ability to repel both grease and water, including:

- In paper and cardboard food packaging (e.g. takeaway containers, popcorn bags, pizza boxes, ready-made cakes etc.)
- In non-stick cookware
- In textiles (e.g. waterproof outdoor clothing and equipment, carpets, mattresses etc.)
- In cosmetics (e.g. hair conditioner, foundation cream, sunscreen etc.)
- In electronics (e.g. smartphones)

- ▶ PFAS are found in rivers and lakes and in many types of animals on land and in the water.

### Risks to human health:

- Reproductive effects such as decreased fertility or increased high blood pressure in pregnant women.
- Developmental effects or delays in children, including low birth weight, accelerated puberty, bone variations, or behavioural changes.
- Increased risk of some cancers, including prostate, kidney, and testicular cancers.
- Reduced ability of the body's immune system to fight infections, including reduced vaccine response.
- Interference with the body's natural hormones.
- Increased cholesterol levels and/or risk of obesity.

#### Regulation of PFAS (Globally)

The **Stockholm Convention on Persistent Organic Pollutants** is an international treaty aiming to eliminate or restrict the production and use of the most toxic chemicals of global concern.

Currently, two sub-groups of PFAS are listed in the convention: PFOS and related substances since 2009 for global restriction and PFOA and related substances since 2019 for global elimination.

## PRACTICE QUESTION

1. What are Forever Chemicals? Discuss how they penetrate our environment and also discuss some suggestive measures to tackle the effects propagated by them.
2. Rainwater everywhere on Earth is unsafe to drink due to 'forever chemicals'. Examine

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# UN DECLARES ACCESS TO A CLEAN, HEALTHY ENVIRONMENT AS A UNIVERSAL HUMAN RIGHT

## CONTEXT:

The United Nations declares that every person on the planet has the right to live in a clean, healthy environment in a historic resolution.

### About Resolution:

- This resolution is about the **right to a clean and healthy environment**.
- It has been passed by over 160 UN member nations including India.
- **It is not a legally binding resolution**. But it will **encourage countries to incorporate the right to a healthy environment in national constitutions** and regional treaties.
- The resolution recognizes the right to a clean, healthy, and sustainable environment as a human right essential for the full enjoyment of all human rights and among others.
- It calls upon states and international organizations to **adopt policies and scale up efforts to ensure a clean, healthy, and sustainable environment** for all.
- It demonstrates that the member states can unite in the collective fight against the triple planetary crisis of climate change, biodiversity loss, and pollution.
- Russia and Iran remain abstained from voting.

### About Human rights and Environment:

- **Human rights and the environment are intertwined**, without a healthy environment; we are unable to fulfil our aspirations.
- Human rights cannot be enjoyed without a safe, clean and healthy environment; and
- Sustainable environmental governance cannot exist without the establishment of and respect for human rights.
- We may not have access to even the minimum standards of human dignity.

### Origins of Environmental Rights:

- The modern era of environmental law began in the late 1960s, when population growth, industrial expansion, and innovations in chemistry resulted in dramatic impacts on ecosystems, wildlife, and public health. Many industrialized nations adopted environmental national laws in the 1970s and 1980s.
- By the 1990s, many nations adopted constitutional provisions protecting the environment, which

ushered in what is known as a **rights-based approach to environmental protection**. It is normatively based on rights and directed toward protecting those rights.

### What is the significance of this resolution?

- About 50 years after the United Nations Conference on the Environment in Stockholm in 1972; a resolution is placing environmental issues at the global forefront.

#### Stockholm Declaration:

- This was the **first global convergence on the planetary environment**. The theme was 'Only One Earth'. 122 countries participated in the conference.
- It was the first declaration of international protection of the environment. It was held from 5th–16th June 1972.
- The Stockholm Declaration, contained 26 principles, placed environmental issues at the forefront of international concerns, and marked the start of a dialogue between industrialized and developing countries.
- **It was attended by Indira Gandhi.**

- As the right to a clean and healthy environment is not included in the **Universal Declaration of Human Rights, 1948**, this historic resolution will change the very nature of **international human rights law**.
- The resolution will also empower people, especially those in vulnerable situations including environmental human rights defenders, children, youth, women, and indigenous people.
- It will help to **reduce environmental injustices** and plug the protection gaps.
- It can **empower people, especially those in vulnerable situations**, including environmental human rights defenders, children, youth, women, and indigenous people.
- This landmark development demonstrates that the **member states can unite** in the **collective fight against the triple planetary crisis of climate change, biodiversity loss, and pollution**.

**Human Rights:**

- Human rights are rights inherent to all human beings, regardless of race, sex, nationality, ethnicity, language, religion, or any other status.
- It includes the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, etc. Everyone is entitled to these rights, without discrimination.

**International Human Right Law:**

- International human rights law lays down obligations that States are bound to respect. By becoming parties to international treaties, governments assume obligations and duties under international law to respect, protect, and fulfil human rights.
- The **United Nations has defined a broad range of internationally accepted rights**, including civil, cultural, economic, political, and social rights.

- It has also **established mechanisms to promote and protect these rights** and to assist states in carrying out their responsibilities.
- The **foundations of this body of law** are the **Charter of the United Nations** and the **Universal Declaration of Human Rights**, adopted by the General Assembly in 1945 and 1948

**Issues with the resolution:**

- The words 'clean', 'healthy', and 'sustainable' lack an internationally agreed definition.
- The resolution text also fails to refer to the foundational principle of equity in international environmental law.
- The General Assembly resolutions do not create binding obligations. Only through conventions and treaties do state parties undertake obligations for such rights.

**PRACTICE QUESTION**

1. "U.N. declarations of human rights are aspirational norms that seek to ensure a more just and equitable world." Examine the statement with regard to the U.N. declaration of the universal human right to a healthy, sustainable environment.
2. Our planet is going through a "triple planetary crisis" of human-driven climate change, widespread biodiversity loss, and unmitigated pollution. Discuss how these threats undermine the right to life, dignity, and health of the global population.

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# THE ENERGY CONSERVATION (AMENDMENT) BILL 2022 AND INDIA'S CLIMATE TARGETS

## CONTEXT:

In a bid to meet India's commitment to exceeding its Paris agreement climate targets, the Energy Conservation (Amendment) Bill 2022 has been tabled in Parliament.

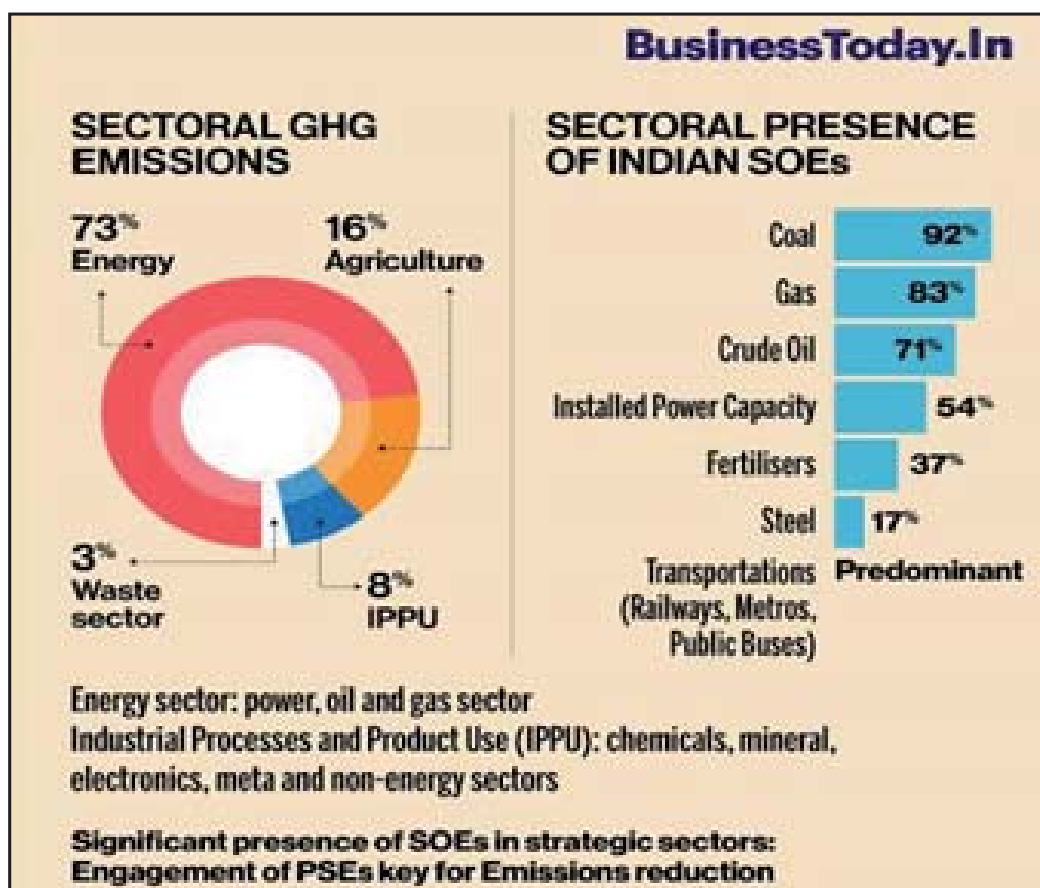
## ABOUT

- The main objective of these proposed amendments is to reduce India's power consumption via fossil fuels and thereby minimize the nation's carbon footprint.
- The Centre aims to develop India's Carbon market and boost the adoption of clean technology.
- India aims to meet its **Nationally Determined Contributions (NDCs)**, as mentioned in the Paris Climate Agreement, before its **2030 target date**.

### Key points of the Bill

- The **Energy Conservation (Amendment) Bill** seeks to increase India's demand for renewable energy, thereby reducing the nation's carbon emissions.

- The Bill proposes to amend the **Electricity Conservation Act 2001** to introduce changes such as incentivizing the use of clean energy by issuing carbon saving certificates. Some of the major changes proposed were;
- Defining the minimum share of renewable energy to be consumed by industrial units or any establishment. This consumption may be done directly from a renewable energy source or indirectly via the power grid.
- Incentivizing efforts to use clean energy by issuing carbon-saving certificates
- Strengthening institutions set up originally under the Act, such as the Bureau of Energy Efficiency
- Facilitating the promotion of green Hydrogen as an alternative to the fossil fuels used by industries



- Considering additional incentives like carbon credits for the use of clean energy to lure the private sector to climate action.
- Including larger residential buildings under energy conservation standards to promote sustainable habitats. Currently, only large industries and their buildings come under the ambit of the Act.

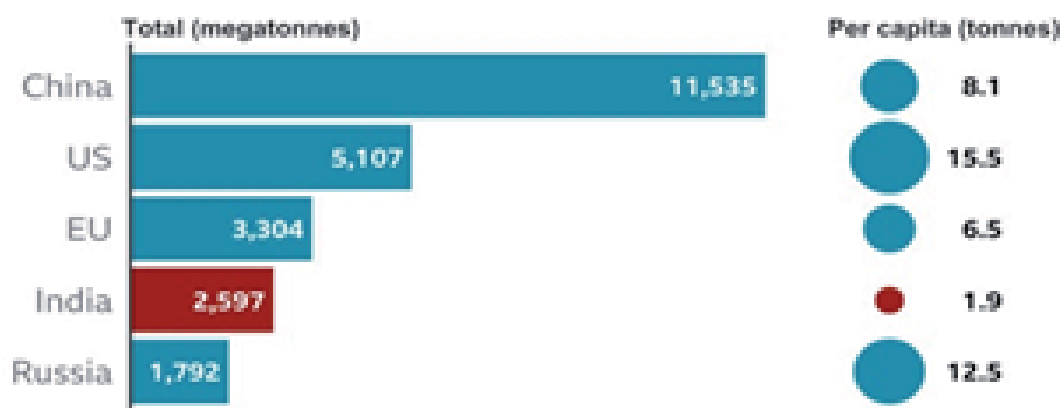
### What does the current Energy Conservation Act say?

- Currently, the Energy Conservation Act, 2001 (amended in 2010) governs the domain in India.

- The Act empowers the Centre to specify norms and **standards of energy efficiency for appliances, industrial equipment, and buildings** with a connected load over 100 kilo Watts (kW) or a contractual demand of more than **15 kilovolt-amperes (kVA)**.
- The Act established the **Bureau of Energy Efficiency**.
- The 2010 amendment extended the tenure of the Director General of the Bureau of Energy Efficiency from three to five years.

## India is the world's fourth biggest emitter of carbon dioxide

Total and per capita emissions of CO<sub>2</sub> per year



2019 data, EU includes UK  
One megatonne = 1,000,000 tonnes

Source: EC, Emissions Database for Global Atmospheric Research



**Framework for energy trading:** According to the Act, the Centre can issue energy **savings certificates** to those industries which **consume less than** their maximum allotted energy.

- However, this certificate can be sold to customers who consume higher than their maximum allowed energy threshold.
- Penalty:** In case of any violations under this Act, each offense shall attract a penalty of **Rs ten lakh** with an additional penalty of **Rs 10,000** for each day the offense continues.
- Appeal:** Any appeals against any such order passed by the Central or state government will be heard by the appellate tribunal already established under the **Electricity Act, 2003**.

### India's Commitment against Climate change

- India has committed to reducing the carbon intensity of its economy by **33-35 per cent by 2030** from its 2005 levels as part of its NDCs under the Paris Climate Agreement.
- The nation has also promised to achieve over 40 per cent of its power generation from **non-fossil-fuel energy** resources by 2030.
- In a bid to reduce its CO<sub>2</sub> emissions to 550 metric tonnes (Mt) by 2030, India has committed to creating an additional carbon sink for 2.5 -3 billion tonnes of CO<sub>2</sub> by increasing its tree and forest cover.

**What can be done further to achieve India's Targets?**

- **Sector-wise targets:** India needs to focus on sectorial targets for the **next ten years** and more to manage climate change impact.
- India should develop an explicit **carbon tax regime** that will help limit carbon emissions.
- **Other measures can be;**
  - Focus on increasing energy efficiency,
  - A greater thrust on electrification,
  - Shifting power generation from fossil fuels,
  - Expanding afforestation and developing carbon capture utilization and storage (CCUS) technologies.
  - Need for greater public-private partnerships to achieve the climate targets.

**PRACTICE QUESTION**

1. What are the key provisions of the Energy Conservation (Amendment) Bill 2022? Do you think it will propel India forward to help achieve its climate change targets?
2. India's energy transition started in the early 1980s with the setting of the Ministry of New and Renewable Energy. Discuss its major takeaways since then. Also, quote recent initiatives taken by the ministry in this regard.

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# DELHI POLICE'S USE OF FACIAL RECOGNITION TECHNOLOGY

## CONTEXT:

Right to Information (RTI) responses, reveals that the Delhi Police treats matches of above 80% similarity generated by its facial recognition technology (FRT) system as positive results.

### Why is the Delhi Police using facial recognition technology?

- The Delhi Police first started using FRT to trace and identify missing children as per a 2018 direction of the Delhi High Court in **Sadhan Haldar vs NCT of Delhi**.
- Delhi police later made use of this technology to investigate the anti-CAA protests in 2019.
- It has also used FRT specifically during the 2020 northeast Delhi riots, the 2021 Red Fort violence, and the 2022 Jahangirpuri riots.

- Facial recognition is an **algorithm-based technology** that creates a digital map of the face by identifying and mapping an individual's facial features, which it then matches against the database to which it has access.
- It is a **biometric technology** that uses distinctive features of the face to identify and distinguish an individual.
- It has evolved in many ways- from looking at the 3D contours of a face to recognizing skin patterns.

### Why is the use of FRT harmful?

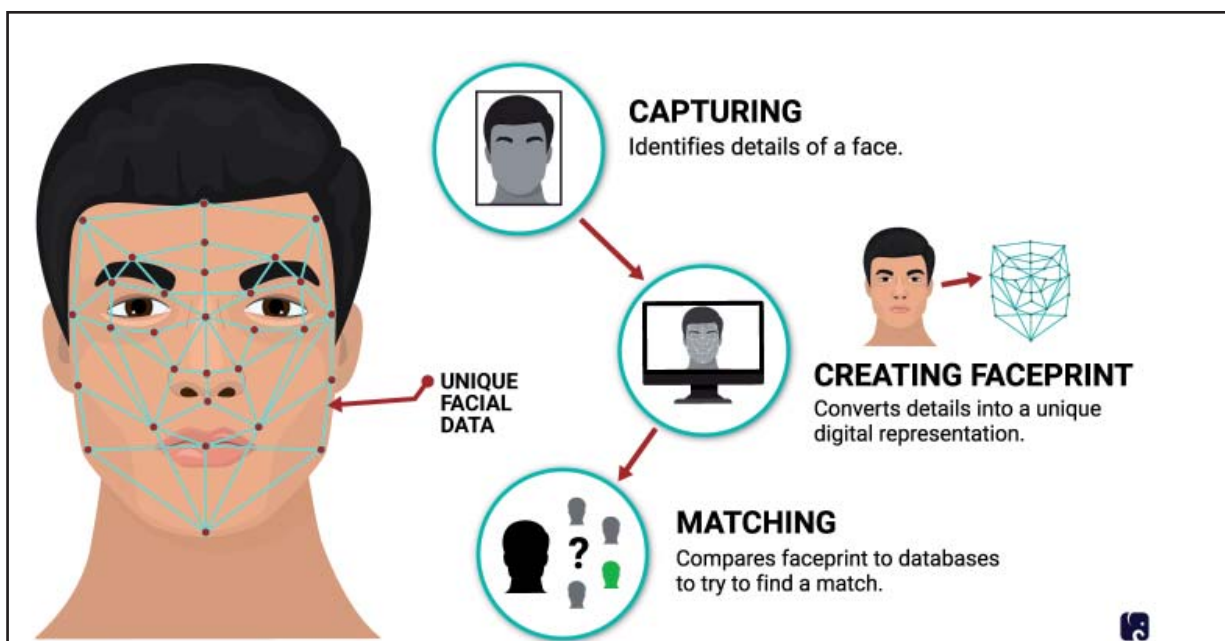
- **Misidentification Due to Inaccuracy of The Technology:**
  - It can result in a false positive, where a person is misidentified as someone else, or a false negative where a person is not verified as themselves.

One example of such "**exclusion**" is the *failure of the biometric-based authentication under Aadhaar* which has led to many people being excluded from receiving essential government services which in turn has led to starvation deaths.

- Mass Surveillance Due to Misuse of The Technology
- Violation of Internationally recognized best practices

### What does the right to Information Responses reveal?

- **Lack of reasoning behind the 80% similarity as the threshold:** The Delhi Police has revealed that **matches above 80%** similarity are treated as





positive results while matches below 80% similarity are treated as false positive results which may require human intervention.

- ▶ It is unclear why 80% has been chosen as the threshold between positive and false positive.
- **Categorization of below 80% results:** The categorization of below 80% results as false positive instead of negative shows that the Delhi Police may still further investigate below 80% results.
- ▶ Thus, people who share familial facial features, such as in extended families or communities, could end up being targeted.
- **Overboard collection of Data:** Delhi Police is matching the photographs/videos against photographs collected under Sections 3 and 4 of the Identification of Prisoners Act, 1920, which has now been replaced by the Criminal Procedure (Identification) Act, 2022.

- ▶ It may result in a violation of internationally recognized best practices for the collection and processing of data.

**Criminal Procedure (Identification) Act, 2022:**

- This Act **allows for wider categories of data to be collected** from a wider section of people, i.e., "convicts and other persons for the purposes of identification and investigation of criminal matters".

**Need for regulatory frameworks:**

- The usefulness of facial recognition tech in countering terrorism can only increase in parallel with the sophistication levels of the tech itself, but this would also highlight the risks of data privacy in managing large-scale data collection.

**PRACTICE QUESTION**

1. Facial Recognition Technology can be used as a tool to facilitate state-sponsored mass surveillance. Comment.
2. What is Facial Recognition Technology? Discuss the problems associated with its use in countries like India.

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# ALPHA FOLD: AI-BASED TOOL FOR PREDICTING PROTEIN STRUCTURES

## CONTEXT:

Deep Mind, a company owned by Google, announced that it had predicted the three-dimensional structures of more than 200 million proteins using Alpha Fold.

## ◎ BACKGROUND

**AlphaFold 1** (2018) was built on work developed by various teams in the 2010s, that looked at the large databanks of related DNA sequences now available from many different organisms (most without known 3D structures), to try to find changes at different residues that appeared to be correlated, even though the residues were not consecutive in the main chain.

Combining a **statistical potential based on this probability distribution** with the calculated local free-energy of the configuration, the team was then able to use gradient descent to a solution that best fitted both.

## ◎ ANALYSIS



### What is AlphaFold?

- AlphaFold is an **AI-based protein** structure prediction tool.
- It is based on a computer system called a **deep neural network**.

- Inspired by the human brain, neural networks use a large amount of input data and provide the desired output exactly like how a human brain would.
- The real work is done by the black box between the input and the output layers, called the hidden networks. AlphaFold is fed with protein sequences as input.
- When protein sequences enter through one end, the predicted three-dimensional structures come out through the other.

### How does the AlphaFold work?

- It uses processes based on **training, learning, retraining, and relearning**.
- The first step uses the available structures of 1, 70,000 proteins in the Protein Data Bank (PDB) to train the computer model.
- Then, it uses the results of that training to learn the structural predictions of proteins not in the PDB.
- Once that is done, it uses the high-accuracy predictions from the first step to retrain and relearn to gain higher accuracy of the earlier predictions.
- By using this method, alphaFold has now predicted the structures of the entire 214 million unique protein sequences deposited in the Universal Protein Resource database.

#### Global Distance Test:

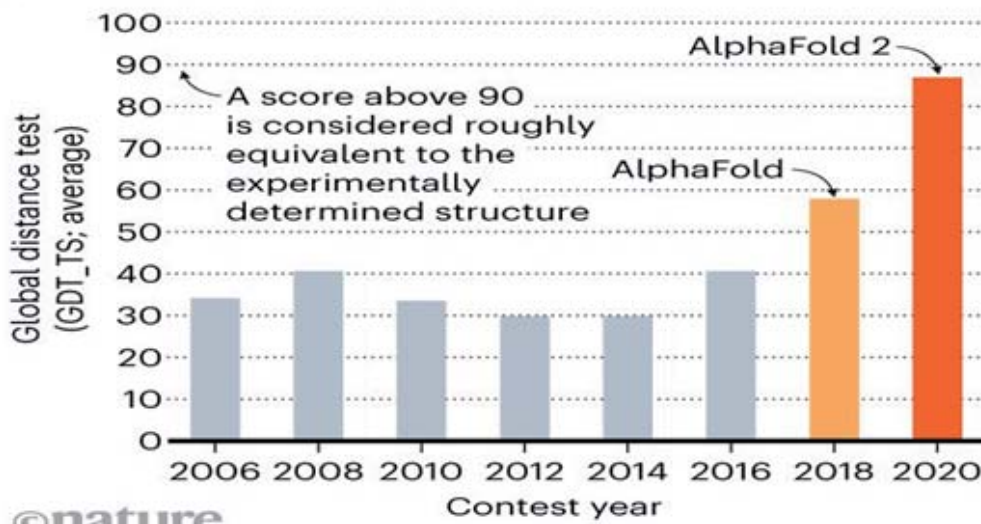
The **global distance test (GDT)** represents the "total score", which is a measure of similarity between two protein structures with known amino acid correspondences (e.g. identical amino acid sequences) but different tertiary structures.

### What is CASP14?

- DeepMind's AlphaFold placed first in the overall rankings of the **13th Critical Assessment of Techniques for Protein Structure Prediction (CASP)**.
- In November 2020, DeepMind's new version, AlphaFold 2, won CASP14.

## STRUCTURE SOLVER

DeepMind's AlphaFold 2 algorithm significantly outperformed other teams at the CASP14 protein-folding contest — and its previous version's performance at the last CASP.



- It gives ranking to the AlphaFold model for predicting the structures of proteins.

### What do these developments mean to India?

- For development of vaccines and drugs.
- Help in COVID and virus mutation understanding
- Encourage the PPP model
- Participation of academic institution.

### What are their contributions to the Health sector?

- SARS-CoV-2:** AlphaFold has been used to predict structures of proteins of SARS-CoV-2, the causative agent of COVID-19. The structures of these proteins were pending experimental detection in early 2020.

### What are some limitations of the Alpha-fold?

- The version of AlphaFold used to construct in this

database does not output multi-chain predictions/ (complexes).

- In some cases, the single-chain prediction may correspond to the structure adopted in the complex.
- In other cases (especially where the chain is structured only on binding to partner molecules) the missing context from surrounding molecules may lead to an uninformative prediction.
- For regions that are intrinsically **disordered or unstructured in isolation**, AlphaFold is expected to produce a low-confidence prediction (pLDDT < 50), and the predicted structure will have a **ribbon-like appearance**.
- AlphaFold **has not** been validated for predicting the **effect of mutations**. In particular, AlphaFold is not expected to produce an unfolded protein structure given a sequence containing a destabilizing point mutation.
- AlphaFold does not predict the positions of any non-protein components found in experimental structures (such as cofactors, metals, ligands, ions, DNA/RNA, or post-translational modifications).

## PRACTICE QUESTION

- What is AlphaFold? How does the AlphaFold work?
- AlphaFold has launched biology into an era of structural abundance, unlocking scientific exploration at digital speed. Discuss the importance of Artificial Intelligence in ensuring healthcare for all.

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**SECTION: B**  
**(CONTEMPORARY ISSUES**  
**BASED ESSAY)**

## THE USES OF SPACE TECHNOLOGY IN DEVELOPMENT CANNOT BE OVEREMPHASIZED, DESPITE ITS HIGH COST

Modern welfare states draw up national development plans and policies based on the perceived needs of their citizens. Many include an emphasis on reducing poverty, affordable and available housing, and community development. The goal of national development is to improve the lives of the citizens in question within the context of a growing economy and an emphasis on the good of the community as a whole.

The subjectivity and difference of opinion over perceived needs often raise debates on priority and focus areas for national development. Space technology is a cutting-edge research sector that requires a lot of money and financial support, while its revenue potential is bleak and often left unexplored in the guise of national interest and the prevention of the proliferation of advanced technology. Thus, there have been questions on the priority and need for space research in the developing world. Particularly in the case of India, the question is more pertinent among the developing countries, as it has developed a sophisticated space technology system over the past few decades. The space sector today plays a significant role in sectors ranging from agriculture to medicine and focuses on certain key portfolios. First, is Space applications; the vision of the Indian Space program is how to use Space technology to find solutions to the problems of the common man.

Space technology, as the powerful enabler, provides a variety of vital inputs for the holistic and rapid development of rural areas, and villages in specific. India has been among the world leaders in developing end-to-end capability in both satellite remote sensing and communication. ISRO has also been a champion in demonstrating the use of space technology for societal good. ISRO has piloted several socially relevant space application projects like the Satellite Instructional Television Experiment (SITE) using INSAT; and finding prospective groundwater zones to provide drinking water in villages, providing land and water resources development plans at the watershed level using IRS.

One of the major components and driving forces related to rural development is communication. It has been given the highest priority for bringing desirable social and behavioral change to the most vulnerable rural society. Satellite communications have the ability to simultaneously reach a large population, spread over vast distances, and inherently is a powerful tool to support development, education, and training.

Space-based services, emanating from Satellite Communication (SatCom) and Earth Observation (EO) hold much value in transforming the village society. While SatCom provides the conduit for effective delivery

of information and services across vast regions; the EO provides community-centric spatial information in terms of geo-referenced land records, natural resources, sites for exploiting groundwater for potable and recharge, the incidence of wastelands having reclamation potential, watershed attributes, environment, infrastructure related information, alternative cropping pattern, etc. Synthesizing spatial information with other collateral and weather information, EO also facilitates locale-specific advisory services at the community level. Space-based systems are effective in supporting disaster management at the community level, wherein the vulnerability and risk-related information, early warning, forecast of unusual/extreme weather conditions, etc., provide for building resilience at the village community level. Some of its other ambitious programs include Tele-education; Tele-healthcare; Land and Water Resources Management; Interactive Advisory Services; Tele-fishery; and the development of e-Governance services which include information and guidance to local people on village-oriented governmental schemes on agriculture, poverty alleviation, rural employment, social safety nets, and other basic entitlements, etc.

India is one of the most disaster-prone countries in the world with increasing vulnerability to cyclones, floods, landslides, droughts, and earthquakes. The Disaster Management Support (DMS) Programme of ISRO, provides timely support and services from aerospace systems, both imaging and communications, towards efficient management of disasters in the country. The DMS program addresses disasters such as floods, cyclones, drought, forest fires, landslides, and Earthquakes. These include the creation of a digital database for facilitating hazard zonation, damage assessment, etc.; monitoring of major natural disasters using satellite and aerial data; development of appropriate techniques and tools for decision support; establishing satellite-based reliable communication network; deployment of emergency communication equipment and R&D towards early warning of disasters.

While applications of space technology for national development are ample as evident from the discussion above, the key question is the sustainability and resource-use efficiency. As even though the intentions and plans may be noble, they cannot be pursued until they satisfy the basic policy conditions, or principles, which refer to the sustainability of the development process. The principles require the development process that be: Environmentally sustainable; Fiscally sustainable; and Institutionally sustainable. Environmental protection is not simply avoiding contamination or cleaning up its after effects, but it also embraces efforts to manage

renewable natural resources in a sustainable way. Fiscal and monetary stability is one of the prerequisites for a prosperous economy, and control of the fiscal deficit is in turn a requirement for that stability; Institutional sustainability, or viability, is one of the keys to ensuring that the strategy can continue to produce benefits over the medium and long run. Quick fixes in an institutional sense do more harm than good.

On all of these counts, ISRO and other space research bodies in India fare very well. ISRO has a dedicated program for water and resource mapping and its use for environmental preservation and improving resource-use efficiency is well-known and integrated into the

development plan. Regarding its own resource-use efficiency, the Indian space program is known as one of the most successful and cost-effective programs in the world and has a high success rate for launching satellites compared to developed countries, while doing so at the fraction of the cost. Similarly, on account of institutional sustainability, ISRO has fared well and has seen several leadership changes successfully. Particularly, this leadership has also been nurtured within its own ranks and eco-system making it even more sustainable. Thus, while India's space program is furthering the national interest, it is also doing the same in a cost-efficient and sustainable manner making it a true asset for the national development of India.

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# **SECTION: C**

## **(PRELIMS)**

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### **CURRENT AFFAIRS**

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## INTERNATIONAL DAY OF INDIGENOUS PEOPLE

◎ **CONTEXT:** August 9 is celebrated as International Day of the World's Indigenous People.

**2022 theme:** "The Role of Indigenous Women in the Preservation and Transmission of Traditional Knowledge".

### International Day of the World's Indigenous Peoples:

- In 1982, the United Nations General Assembly proclaimed 9 August as International Day of the World's Indigenous Peoples.
  - To commemorating the day of the first meeting of the United Nations Working Group on Indigenous Populations of the Sub-Commission on the Promotion and Protection of Human Rights, held in Geneva in 1982.

### Who are Indigenous people?

- As **defined by the United Nations**, Indigenous peoples are inheritors and practitioners of unique cultures and ways of relating to people and the environment. They have retained social, cultural, economic and political characteristics that are distinct from those of the dominant societies in which they live.

### Indigenous People in India

- Indigenous people in India are also called as **Scheduled Tribes**.
- Scheduled Tribes are said to be the earliest inhabitants on the Indian sub-continent.
- They are considered to be socially and economically least advanced.
- Gonds, with a population of 4 million are found in the central Indian states of Madhya Pradesh, Maharashtra, and Andhra Pradesh, are one of the most dominant tribes in India.
- Bhills of Western India, Santhals from the Eastern India, and the Andamanese from the Andaman & Nicobar Islands are some of the dominant tribes in India.

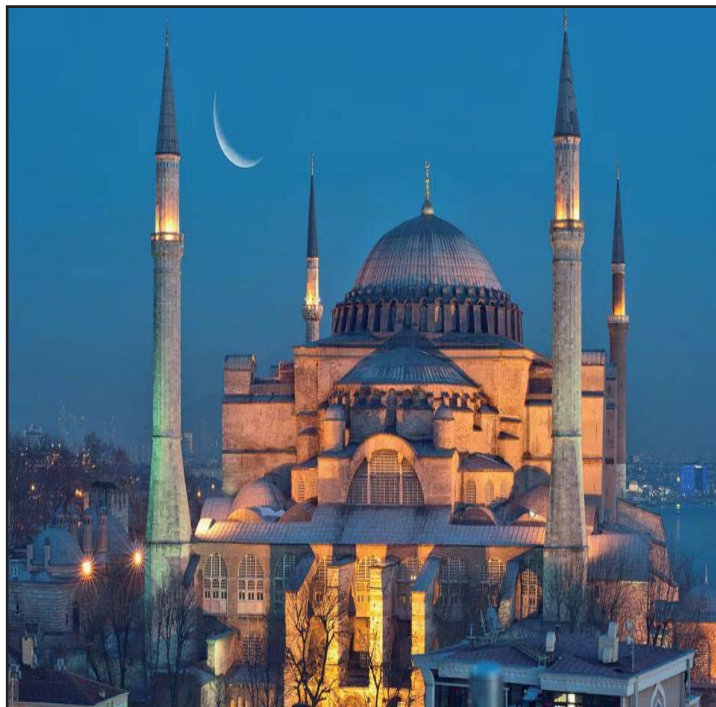
## HAGIA SOPHIA: THE STORY OF A WORLD HERITAGE SITE

◎ **CONTEXT:** Hagia Sophia has survived through various transformations, it has been a cathedral, a mosque, a museum, and now back to being a mosque. After being opened as a mosque, the site has hosted over 6.5 million viewers in the last two years.

### About the Site:

- The Hagia Sophia is a historic place of worship in Istanbul, Turkey, in Eastern Europe.
- It is the national landmark of Turkey, located at the center of the capital Istanbul.
- It was built by the Roman Empire as the basilica in 537 AD.
- Hagia Sophia was originally built as the **Greek Orthodox Christian patriarchal Basilica** in 537 AD by the **Byzantine Roman Empire** during the reign of **Jutinian I**.
- **Converted into mosque:** It was converted into a mosque by the **Mehmed the Conqueror of Ottoman Empire** in 1453.

- **Converted into museum:** It remained a mosque until 1931, and was opened as a museum in 1935 by the Republic of Turkey.



### Structure of the Heritage Site

- **length:** 269 feet and
- **Width:** 240 feet,
- Contained a domed roof stretching 180 feet above the ground.
- **Architectural Style:** It was built in a grand Christian basilica style and is the most significant surviving example of **Byzantine architecture**.
- **Columns:** The Hagia Sophia has 104 columns; many made of marble, imported from the Temple of Artemis in Ephesus—an ancient city near modern-day Selçuk, Turkey—and from Egypt.
- **Dome:** The main nave is covered by a central dome that is 107 feet in diameter and rises 180 feet above the ground
- **Minarets:** The four minarets surrounding the main dome were later added by the **Ottomon Empire**.
  - One minaret was built out of red bricks while the other three were built of white limestone and sandstone.

It was enlisted in the world heritage site by UNESCO in 1985.

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## RECALLING 'QUIT INDIA'

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© **CONTEXT:**

On August 9, 1942, the biggest mass movement of the Indian freedom struggle was launched.

## © ABOUT:

- August 8, 2022 marks the **80th anniversary of the Quit India Movement**.
- The Quit India Movement Resolution was passed at the **Wardha Conference** of All India Congress Committee in July 1942.
- The movement was launched at the **Bombay session** of the All India Congress Committee by Mahatma Gandhi on August 8, 1942.
- The **slogan 'Quit India' was coined** by '**Yusuf Meherally**' who was a socialist and also a trade unionist.
  - A few years ago, in 1928, it was Meherally who had coined the slogan "Simon Go Back".
- **Gowalia Tank Maidan** also known as **August Kranti Maidan**, in Mumbai is the place where Gandhi delivered his speech marking the beginning of the movement.
- Several national **leaders were arrested**; among them were Mahatma Gandhi, Abdul Kalam Azad, Jawaharlal Nehru and Sardar Vallabhbhai Patel.
- The event was followed by an uproar among the people and the **emergence of several young leaders** such as Ram Manohar Lohia, Jai Prakash Narayan, SM Joshi, and others who continued to fuel the fire of the movement throughout India during the period of World War II.

**Personalities Associated with Quit India Movement during British India**

- **M K Gandhi:**

He planned an all-out campaign to compel British withdrawal from India, after the failure of the Cripps Mission to reach a compromise. At the historic August meeting at (Tank in Bombay, Gandhi proclaimed his mantra- do or die'. He was arrested on August 9, 1942. He undertook a 21 day fast in February 1943 to protest against the Government actions against Indians involved in the movement.

- **Jayaprakash Narayan:**

He was a member of the Congress Socialist group and played a prominent role in the movement.

- **Ram Manohar Lohia, Aruna Asaf Ali, Sucheta Kripalani, Chhotubhai Puranik, Biju Patnaik, R.P. Goenka and Achyut Patwardhan:**

They were leaders associated with the underground movement and revolutionary activities in support of Quit India Movement.

- **Chittu Pande:**

He called himself a Gandhian, formed a parallel government and captured all the ten police stations in Ballia, in east UP in August 1942.

- **Usha Mehta:**

She actively supported the movement and was an important member of a small group which ran the Congress Radio. Jawaharlal Nehru initially supported the arch Moderates, who was opposed to Gandhi's plan, but later, he moved the Quit India Resolution on August 8, 1942.

- **Sumati Morarjee:**

She helped Achyut Patwardhan in his underground activities. She later became India's leading woman industrialist.

- **Matangini Hazra:**

She was a 73-year-old peasant widow in Tamluk, was killed in violence on September 29, 1942, when the Sutahata police-station was captured. Matangini kept the national flag aloft even after being shot.

- **Lakshman Naik:**

He was an illiterate villager, led a large tribal population from Koraput to protest against the Jeypore zamindari and attack police-stations. Lakshman Naik was hanged on November 16, 1942 for allegedly murdering a forest guard.

## NATIONAL FLAG DESIGNER PINGALI VENKAYYA BIRTH CENTENARY

◎ **CONTEXT:**

August 2 is the birth centenary of the designer of the national flag, Pingali Venkaiah.



### Pingali Venkayya

- Pingali Venkayya was a freedom fighter and the designer of the **Indian National Tricolour** who went on to become synonymous with the **spirit of free and independent India**.
- **Born on:** August 2, 1876 in Krishna district of Andhra Pradesh.
- Venkayya served as a soldier in the British Army in South Africa during the Anglo Boer war in Africa.
- A firm believer in **Gandhian principles** and an ardent nationalist, Venkayya met the Mahatma during the war.
- He was 19 when the meeting took place and formed an association which would last for more than 50 years.
- He met the Mahatma once again in Vijayawada and showed him his publication with the various designs of the flag.
- Acknowledging the need for a national flag, Gandhi then asked Venkayya to design a fresh one at the national congress meeting in 1921.
- Initially, Venkayya came up with saffron and green colours, but it later evolved with a spinning wheel at the centre and a third colour-white.
- The flag was officially adopted by the Indian National Congress in 1931.

- In 2009, a stamp was also issued to commemorate him, and the Andhra Pradesh government recommended his name for the Bharat Ratna in 2014.
- In 2015, the then Urban Development Minister M. Venkaiah Naidu renamed the AIR Vijaywada after Venkayya and unveiled his statue on its premises.



## EARTH HAS RECORDED ITS SHORTEST DAY SINCE THE 1960S

◎ **CONTEXT:** On June 29<sup>th</sup>, the Earth completed one full spin in 1.59 milliseconds less than its routine 24 hours. It was the shortest day recorded since the 1960s.

- ◎ **DETAILS:**
- The Earth has set the record for the shortest day ever recorded since scientists began **using atomic clocks** to measure its rotational speed.
  - In recent years, the Earth's rotation has accelerated, shortening some days by milliseconds. Since 2016 the Earth started to accelerate.

### The method Used

- Scientists used **precise atomic clocks** to measure the Earth's rotational speed.
- Scientists use a **measurement scale** called "**length of day**" to describe how fast or slow a planet is spinning.

The length of the day is the difference between the time the planet takes to complete one rotation on its axis or 86,400 seconds.

### What factors are affecting the rate of Earth's Spin?

- **Chandler wobble phenomenon:** It is a phenomenon that refers to the **small deviation** in the movement of Earth's geographical poles.
- **Long-term tidal effects:** The research attributed the larger trend of the Earth's slower spin mostly to the gravitational pull of the Moon, which causes tidal friction and slows down the Earth's rotations.
- **Climate change-induced surface variations:** Melting ice sheets in Greenland and Antarctica Changes in ocean circulation.
- **Geomorphic factors:** Movements in the planet's inner molten core Seismic activity, Wind speed, and shifting atmospheric gases.
- **Other reasons:** Activities that push mass towards the centre of the Earth will hasten the planet's rotation. Anything that pushes mass outwards will slow down the spin.

### What can happen if the Earth continues to spin faster on a sustained basis?

- **Difficulty in Timekeeping:** The changes brought to the speed of the rotation of the earth by any reason makes **timekeeping a difficult job**. If the Earth continues to spin

faster and days subsequently become shorter, scientists may have to introduce the first ever '**negative leap second**,' which involves subtraction of a second from clocks.

A **negative leap second** is a second that is subtracted from our clocks to keep them in sync with the Earth's rotation. It is the opposite of a positive leap second, which is a one-second addition to our clocks. The system of leap seconds was introduced in the early 1970s

- **Due to the long-term slowing** in the planet's spin, **27 leap seconds have been added to UTC**.
- As opposed to leap years, which have an extra day added, a negative leap second would mean clocks skip one second.

**Coordinated Universal Time (UTC):** Before 1972, this time was called **Greenwich Mean Time (GMT)** but is now referred to as *Coordinated Universal Time* or *Universal Time Coordinated (UTC)*. It is a coordinated time scale, maintained by the Bureau International des Poids et Mesures (BIPM). It is also known as "Z time" or "Zulu Time".

- **The devastating effect on software:** Since a negative leap second has never been tested on a large scale, "it could have a devastating effect on the software relying on timers or schedulers". In the year 2012, the website '**Reddit**' was left inaccessible for **30-40 minutes** due to the addition of leap second.

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## NOAA PREDICTS ABOVE-AVERAGE ATLANTIC HURRICANE SEASON

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### ◎ CONTEXT:

The on-going North Atlantic Ocean hurricane season will be more active than normal from August to November, according to the latest update issued by the United States' National Oceanic and Atmospheric Administration (NOAA), an American research Institute.

### Key-highlights of the predictions:

- NOAA predicted a **60 per cent** chance of an above-normal Atlantic hurricane season.
- The researchers said that there would be **14-20 named storms** in the remainder of the season, out of which **6-10** would likely become hurricanes and **3-5 could turn into major hurricanes**.
- La Niña aids in the formation, intensification and propagation of hurricanes in the North Atlantic Ocean.

### What are Hurricanes?

- Hurricanes are large, swirling storms.
- They can produce winds of **119 kilometres per hour (74 mph)** or higher.
- An **Atlantic hurricane** or tropical storm is a **tropical cyclone** that forms in the Atlantic Ocean, primarily between the months of **June and November**.

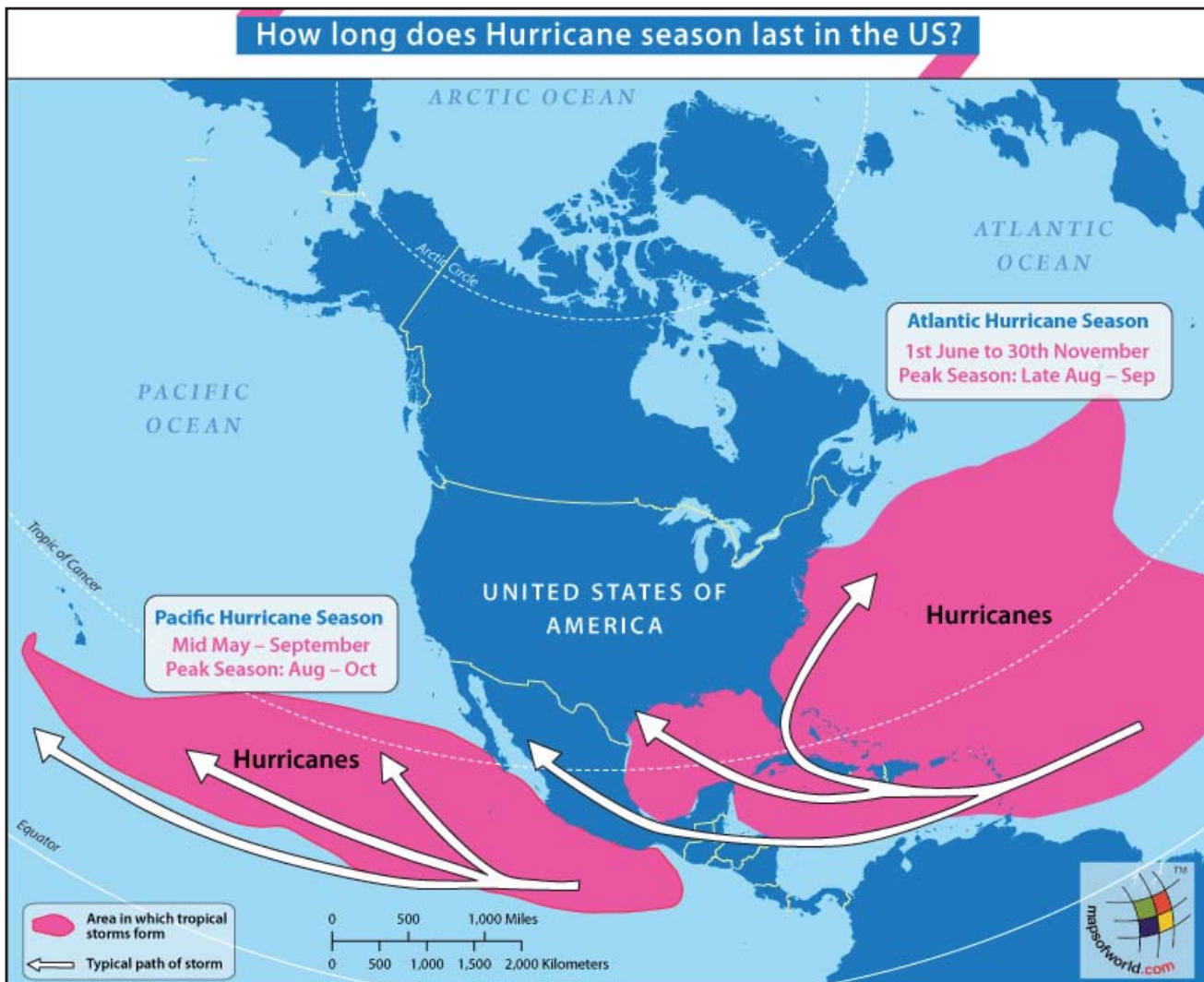


### Parts of a Hurricane

- **Eye:** The eye is the "hole" at the centre of the storm. Winds are light in this area. Skies are partly cloudy, and sometimes even clear.
- **Eye wall:** The eye wall is a ring of thunderstorms. These storms swirl around the eye. The wall is where winds are strongest and rain is heaviest.
- **Rain bands:** Bands of clouds and rain go far out from a hurricane's eye wall. These bands stretch for hundreds of miles. They contain thunderstorms and sometimes tornadoes.

### How Does a Storm Become a Hurricane?

- A hurricane starts out as a tropical disturbance. This is an area over warm ocean waters where rain clouds are building.



- A tropical disturbance sometimes grows into a tropical depression. This is an area of rotating thunderstorms with winds of 62 km/hr (38 mph) or less.
- A tropical depression becomes a tropical storm if its winds reach 63 km/hr (39 mph).
- A tropical storm becomes a hurricane if its winds reach 119 km/hr (74 mph).



**Conditions in favour of hurricanes in North Atlantic Ocean**

- La Nina
- Weaker Tropical Trade Winds

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## KERALA'S OWN INTERNET NETWORK AND SERVICE: KFON

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◎ **CONTEXT:** Kerala becomes the only State in the country with its own internet service.

**About Kerala Fibre Optic Network (KFON):**

- Kerala Fibre Optic Network (KFON) is a radical **public-funded project** conceived to ensure high-speed Internet access to an entire state.
- KFON has received both the **Infrastructure Provider and Internet Service Provider (ISP) licenses** from the Central government.



- The ambitious flagship project was launched in February, 2021.
- It is aimed to provide Internet connections to 20 lakh **below-poverty-line (BPL)** households in the State, and ensure universal Internet access and address the problem of digital divide.
- **KFON Ltd** is primarily an infrastructure provider for other ISPs operating in the State.
- Under the project, a venture of equal partnership between Kerala State Information Technology Infrastructure Ltd (KSITIL) and Kerala State Electricity Board (KSEB), 30,000 km of fibre optic cable will be laid connecting all parts of the State.
- The cable is being laid using the existing network of KSEB that has a network capacity of 2 lakh km in the State.

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## SWACHH SAGAR, SURAKSHIT SAGAR CAMPAIGN

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◎ **CONTEXT:** The "Swachh Sagar, Surakshit Sagar/Clean Coast Safe Sea" campaign is a 75-day citizen-led campaign for improving ocean health through collective action.

### Swachh Sagar, Surakshit Sagar Campaign:

- The campaign **has 3 strategic underlying goals** that target transformation and environmental conservation through behaviour change. The **three underlying goals** of the campaign are:
  - Consume Responsibly
  - Segregate waste at home and
  - Dispose Responsibly.
- **Aim:** The target of the programme is to remove **1,500 tonnes** of marine litter from the sea-coasts which will be a huge relief to marine life and the people staying in coastal areas.
- The coastal clean-up drive will be carried out at **75 beaches across the country with 75 volunteers for every kilometre** of the coastline.
- The campaign will culminate with the largest beach cleaning event on Sept 17, 2022 (International Coastal Clean-up Day) covering 75 beaches across India's 7500+km coastline.
- The campaign will **combine both virtual and physical formats** for delivering key messages and engaging the target audience in adopting lifestyle and behavioural changes that promote environmental sustainability.
  - **Examples of virtual activities** include quizzes, pledges and challenges.
  - Physical activities will include the actual beach clean-up along with **rallies, skits and contests** etc.



A **mobile app "Eco Mitram"** has been launched to spread awareness about the campaign and also for the common people for voluntary registration for the beach cleaning activity.

- It is the **first-of-its-kind and longest running Coastal clean-up campaign** in the world with highest number of people participating in it.
- Through this campaign, a mass **behavioural change** among the masses is intended by raising awareness about how plastic usage is destroying our marine life.

## INDIA TO BECOME ATMANIRBHAR IN DIAMMONIUM PHOSPHATE (DAP)

### ◎ CONTEXT:

As part of the AtmaNirbhar Bharat initiative to promote self-sufficiency in Fertilisers, Government of India has been advising and supporting the Indian fertiliser companies to strengthen their backend supply chain.

### Diammonium phosphate (DAP):

- Diammonium phosphate (DAP) is the world's **most widely used phosphorus fertilizer**.
- It is a preferred fertilizer in India because it contains **both Nitrogen and Phosphorus** which are primary macro-nutrients and part of 18 essential plant nutrients.
- Fertilizer grade DAP Contains **18% Nitrogen** and **46% Phosphorus (P<sub>2</sub>O<sub>5</sub>)**.
- DAP is **manufactured by reacting Ammonia with Phosphoric acid** under controlled conditions in fertilizer plants.

### Chemical Properties

Chemical formula:	(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub>
Composition:	18% N 46% P <sub>2</sub> O <sub>5</sub> (20% P)
Water solubility (20 °C):	588 g/L
Solution pH:	7.5 to 8

### General Properties:

- Excellent physical properties and nutrient content.
- free flowing & dust-free
- Water-soluble and ultimately leaves acid effect on soils.
- Reacts with water and gets converted into HPO<sub>4</sub> and NH<sub>4</sub>

### Non-Agricultural Use:

- DAP also acts as a **fire retardant**.
  - **For example**, a mixture of DAP and other ingredients can be spread in advance of a fire to prevent a forest from burning. It then becomes a nutrient source after the danger of fire has passed.
- DAP is used in various industrial processes, too, such as **metal finishing**.
- It is commonly **added to wine to sustain yeast fermentation** and to milk to **produce cheese cultures**.

## A SELF-REGULATORY ORGANISATION (SRO) FOR INDIA'S GOLD INDUSTRY

### ◎ CONTEXT:

With its new report, The World Gold Council-India has announced the launch of India's Self-Regulatory Organization for gold.

**Important facts:**

- With India being the **second largest gold consuming** nation in the world.
- It needs industry wide uniform standards as the World Gold Council (WGC) got its self-regulatory organisation (SRO).
- According to **Somasundaram PR, Regional CEO (India)**, World Gold Council, the Indian gold market is one of the world's largest and diverse.
- According to the Council, the SRO should be chaired by an independent and influential figure from outside India's gold industry.
- Other board members should include a 50:50 blend of industry leaders, such as trade body representatives, and senior external figures, with strong public, regulatory, legal service record.

**Benefits of Self-Regulatory Organization**

The establishment of professionally run self-regulatory organisation (SRO) will promote:

- industry's best practices,
- building on the work of the **Swarna Adarsh Abhiyan** initiative
- devising code of conduct for every industry vertical,
- providing certification for members who adopt these codes,
- Engaging with stakeholders across the gold value chain and advocating for best practice.
- The organisation would serve as the conscience keeper of the industry.

## UN REPORT ON CONTEMPORARY FORMS OF SLAVERY

◎ **CONTEXT:** A recent U.N. report which highlighted contemporary forms of slavery, pointed out that **Child labour, caste-based discrimination and poverty are closely inter-linked in India.**

◎ **ABOUT**

- Article 4 of the UDHR states that 'No one shall be held in slavery or servitude: slavery and the slave trade shall be prohibited in all their forms'.
- Slavery was the first human rights issue to arouse wide international concern yet it still continues today and slavery-like practices also remain a grave and persistent problem.

Contemporary forms of slavery	
<ul style="list-style-type: none"> <li>• traditional slavery</li> <li>• forced labour</li> <li>• debt bondage</li> <li>• serfdom</li> </ul>	<ul style="list-style-type: none"> <li>• children working in slavery or slavery-like conditions</li> <li>• domestic servitude</li> <li>• sexual slavery</li> <li>• servile forms of marriage</li> </ul>

◎ **KEY FINDINGS:**

- Contemporary forms of slavery are widely practiced around the world, including:
  - forced labour for China's Uyghur minority
  - bonded labour for the lowest caste Dalits in South Asia
  - domestic servitude in Gulf countries, Brazil and Colombia

- **Main causes of contemporary forms of slavery**
  - Deep-rooted intersecting forms of discrimination,
  - Result of historical legacies, such as
    - ▶ slavery and colonisation
    - ▶ systems of inherited status
    - ▶ formalised and State-sponsored discrimination
- Child Labour:
  - Child labour (among children 5 to 17 years of age), including its worst forms, **exists in all regions of the world.**
  - In Asia and the Pacific, the Middle East, the Americas and Europe, between 4% and 6% of children are said to be in child labour, and the percentage is much higher in **Africa (21.6%)**, with the highest rate in **sub-Saharan Africa (23.9%)**.
  - In India, **child labour, caste-based discrimination and poverty are closely interlinked.**
- Dalits in South Asia:
  - **Dalit women** in South Asia face severe discrimination, and as a result they are systematically **denied choices and freedoms in all spheres of life.**
  - **Manual scavenging**, predominantly carried out by Dalit women, is widely regarded as forced labour and a contemporary form of slavery, entailing **harsh working conditions** that have a negative impact on mental and physical health.
  - **Dalits in Bangladesh** are forced to undertake certain types of labour as a consequence of their assigned caste status and are almost exclusively working in **"unclean" jobs in urban areas**, like street sweeping and burying the dead.
- **Forced marriage:**
  - **Forced marriage** of women and girls is a concern in Asia, including **Cambodia, India, Kazakhstan, Sri Lanka, and Vietnam.**
  - In parts of the **Balkans**, half of all **Roma women** ages 20 to 24 are married before age 18, compared to around 10% nationally.

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## LADAKH LAUNCHES E-VEHICLE PLAN

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- ◎ **CONTEXT:** The Union Territory of Ladakh has come up with an electric vehicle policy, "Ladakh's Electric Vehicle and Allied Infrastructure Policy 2022".
- ◎ **KEY-POINTS:**
  - The policy aims to transform Ladakh into a torchbearer in terms of the adoption of electric vehicles in the country and envisions encouraging and cultivating an EV ecosystem in the Union Territory.
  - With this, the administration will encourage the citizens to procure and use e-vehicles to create a carbon-neutral future for the UT.
  - The policy entails a capital subsidy of 10 per cent on two-wheelers, three-wheelers and four-wheelers.
  - Public buses will be given a capital subsidy of 25 per cent under the policy.

**Electric Vehicles**

- An EV is a vehicle that operates on an electric motor, instead of an internal-combustion engine that generates power by burning a mix of fuel and gases.
- Benefits
  - Seen as a possible replacement for current-generation automobiles, in order to address the issues of rising pollution, global warming, depleting natural resources, etc.
  - Even though the concept of EVs has been around for a long time, it gained momentum amid the concern of rising carbon footprint and other environmental impacts of fuel-based vehicles.

**Indian Policies on EVs**

- In 2010, the Ministry of New and Renewable Energy (MNRE) announced a financial incentive for manufacturers for EVs sold in India.
- In 2013, India unveiled the **National Electric Mobility Mission Plan (NEMMP) 2020**.
  - It aimed to make a **major shift to EVs** and to address the **issues of national energy security, vehicular pollution, and the growth of domestic manufacturing capabilities**.
  - It offered subsidies and created a supporting infrastructure for e-vehicles but the plan has not been implemented.
- In the Union Budget 2015-16, the '**Faster Adoption and Manufacturing of EVs**' (FAME) scheme was announced, with an initial outlay of Rs. 75 crore.
- In 2017, the Transport Ministry highlighted its intent to move to **100 percent electric cars by 2030**.
- In February 2019, the Union Cabinet cleared a **Rs. 10,000-crore programme** under the **FAME-II scheme**.

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## INDIA'S ROLE IN UN PEACEKEEPING MISSIONS OVER THE YEARS

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**◎ CONTEXT:**

Two BSF personnel, who were part of the UN Peacekeeping Mission in the Democratic Republic of the Congo (DRC), were among five people killed during a protest in an eastern town near the border with Uganda.

**Key-highlights:**

- They were part of **United Nations Organization Stabilization Mission in the Democratic Republic of the Congo or MONUSCO**.

MONUSCO took over from an earlier UN peacekeeping operation – the United Nations Organization Mission in Democratic Republic of the Congo (MONUC) – on **1 July 2010**.

- A total **175 Indian peacekeepers** have so far died while serving with the United Nations.
- India has lost more peacekeepers than any other UN Member State.

## What is the U.N. Peacekeeping mission?

### Basic Guiding Principles guiding UN's Peacekeeping missions

- Consent of the parties
- Impartiality
- Non-use of force except in self-defence and defence of the mandate

- The U.N. Peacekeeping mission is a joint effort between the **Department of Peace Operations** and the **Department of Operational Support**.
- **Aim:** To assist host countries to transition from situations of conflict to peace.
- The U.N. began its Peacekeeping efforts in 1948 when it deployed military observers to West Asia.
- The Peacekeeping mission's role was to monitor the **Armistice Agreement** between Israel and its Arab neighbours.
- N. Peacekeepers provide security as well as political and peacebuilding support to conflict-ridden countries.

### India's contribution to UN Peacekeeping Missions

- Currently, **5,581 Indians** are part of various U.N. Peacekeeping missions.
- India has been among the largest troop-contributing countries to the U.N. peacekeeping missions.
- As of November 2021, India is the second-highest military (1,888) and fifth-highest (139) police-contributing country to the MONUSCO.
- India has been sending women personnel on UN Peacekeeping Missions.
- In 2007, **India became the first country** to deploy an all-women contingent to a UN Peacekeeping Mission.

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## 'CHABAHAR DAY' OBSERVED TO PROMOTE CHABAHAR – LINK TO INSTC

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### © CONTEXT:

The Ministry of Port, Shipping and Waterways (MoPSW) on July 31<sup>st</sup> observed 'Chabahar Day' in Mumbai to mark the Chabahar – Link to International North-South Transport Corridor (INSTC) – Connecting Central Asian Markets.

### © ABOUT:

- **India's vision:** To make **Shahid Beheshti Port** at Chabahar a transit hub and linking it to INSTC to reach out to Central Asian Countries.
- **INSTC (International North-South Transport Corridor)** is India's vision and initiative to reduce the time taken for EXIM shipments to reach Russia, Europe, and enter the central Asian markets.

### Chabahar Port:

- The Chabahar Port is a **key pillar of India's India-Pacific vision** to connect Eurasia with the Indian Ocean Region.
- The Chabahar Port located in Iran is the commercial transit center for the region and especially Central Asia.
- **The port** will also be **part International North-South Transport Corridor network** connecting India.



- Notably, the **first rail transit cargo from Russia to India** entered Iran recently through the Sarakhs border crossing, marking the official launch of the eastern section of the North-South railway corridor.



### International North-South Transport Corridor:

- International North-South Transport Corridor is a corridor to **increase trade between India and Russia**.
- This trade route is **7200 Km long** and the transport of freight is through a multi-mode network of **roads, ships, and railways**.
- This route connects **India and Russia through Iran and Azerbaijan**.
- The corridor is aimed at reducing the carriage cost between India and Russia by about 30 per cent and bringing down the transit time from 40 days by more than half.
- Russia, India, and Iran are the founding member states of INSTC.**
  - The agreement was signed in 2002.



- There are **13 member states** of the INSTC project – India, Iran, Russia, Azerbaijan, Armenia, Kazakhstan, Belarus, Tajikistan, Kyrgyzstan, Oman, Turkey, Syria and Ukraine.
- Bulgaria is the Observer State.** The Baltic countries like Latvia and Estonia have also expressed willingness to join the INSTC.

- India shows interest in extending INSTC membership to countries like Afghanistan and Uzbekistan.
- Establishing a land route via Kabul and Tashkent to form the INSTC's "Eastern corridor" would maximise the potential of this collaboration.
- Also, India wants to include Chabahar port to be included in the International North-South Transport Corridor (INSTC).

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## INDIA BEGINS COOPERATION WITH BAHRAIN-BASED COMBINED MARITIME FORCES

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© **CONTEXT:** India Starts Working with The Combined Maritime Forces In Bahrain.

### About CMF:

- The **Combined Maritime Forces (CMF)** is a multinational maritime partnership, which exists to uphold the **Rules-Based International Order (RBIO)** by countering illicit non-state actors on the high seas and promoting security, stability, and prosperity across approximately 3.2 million square miles of international waters, which encompass some of the world's most important shipping lanes.
- **CMF is commanded by a U.S. Navy Vice Admiral**, who also serves as Commander US Naval Forces Central Command (NAVCENT) and US Navy Fifth Fleet. All four commands are co-located at US Naval Support Activity Bahrain. In the immediate neighbourhood.
- The deputy commander of the CMF-B is a commodore of the United Kingdom's Royal Navy.
- India is the 35<sup>th</sup> member of this grouping. Pakistan is a full member of CMF.

### It is comprised of four task forces:

- CTF 150 (maritime security and counter-terrorism),
- CTF 151 (counter-piracy) and
- CTF 152 (Arabian Gulf security and cooperation)
- CTF 153 (Maritime security in the Red Sea & Gulf of Aden)

- It is a flexible organization and members are **not bound by either a political or military mandate**.
- **Role of CMF:** Protection of trade routes, Counter-terrorism, Counter-piracy and Curbing Illegal Fishing

### Working of CMF and India's Contribution:

- CMF is a coalition of the willing and does not proscribe a specific level of participation from any member nation. The contribution from each country, therefore, varies depending on its ability to contribute assets and the availability of those assets at any given time.
- CMF is a flexible organization and contributions can vary from the provision of a liaison officer at CMF HQ in Bahrain, to the deployment of warships or maritime reconnaissance aircraft. We can also call on warships not explicitly assigned to CMF to give Associated Support. This allows a warship to offer assistance to CMF whilst concurrently undertaking national tasking
- India has cooperated with CMF on various occasions. For instance, **the CMF's CTF 151** has **coordinated with Indian and Chinese warships** deployed on anti-piracy duties to patrol the Maritime Security Transit Corridor.

## EXERCISE PITCH BLACK IN AUSTRALIA

- ◎ **CONTEXT:** An Indian Air Force contingent has reached Australia to participate in Exercise Pitch Black 2022.

### Exercise Pitch Black

- Exercise Pitch Black is a **biennial three-week multilateral air combat training exercise** hosted by the Royal Australian Air Force (RAAF).
- Its last edition was held in **2018**.
- It was conducted for the **first time in 1981** between different RAAF units.
- It **ensures that the training and integration of forces** that occur during this exercise directly supports the Air Force's ability to conduct operations.
- This year's participants include Australia, Canada, India, France, Germany, Indonesia, Japan, Malaysia, the Netherlands, New Zealand, the Philippines, the Republic of Korea, Singapore, Thailand, the UAE, the UK and the US.
- Exercise Pitch Black 2022 is the Royal Australian Air Force's most significant International Engagement activity with forces participating from a wide range of partner and allied nations developing and enhancing military relationships at all levels.
- Exercise Pitch Black **features a range of realistic, simulated threats** which can be found in a modern battle-space environment and is an opportunity to test and improve our force integration, utilising one of the largest training airspace areas in the world.
- The Australian Navy was part of the Malabar naval exercise hosted by India in November 2020 as well as last year.

## UN TO SIGN TREATY ON OCEAN BIOLOGICAL DIVERSITY

- ◎ **CONTEXT:** The U.N. kicked off a conference recently aimed at creating a new, legally-binding global treaty to govern use of the high seas.

◎ **ABOUT**

- The ambition of the treaty is to;
  - reverse the current downward trend in biodiversity
  - protect marine life
  - guaranteeing safe access to international waters
- The treaty aims to help conserve biodiversity in **areas beyond national jurisdiction (BBNJ)** that lie **outside countries' 322-kilometre exclusive economic zones**.
- The high seas treaty, if agreed, would create a **new global body to enforce rules** laid out to protect about 30% of the world's oceans by 2030.

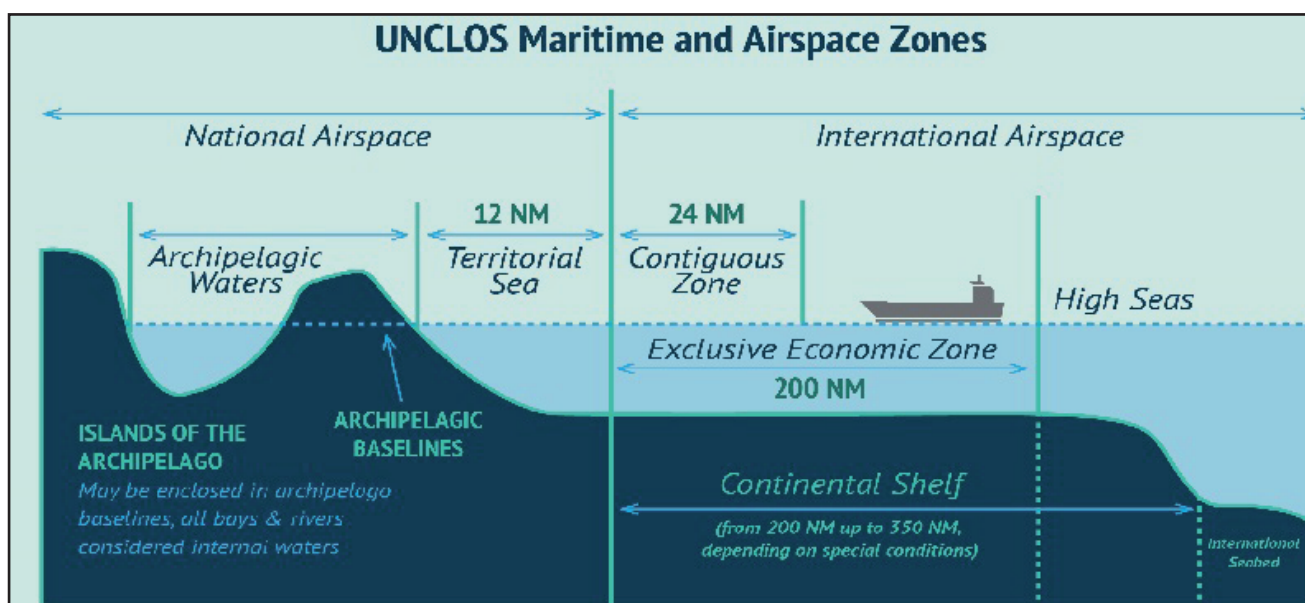
### High Seas

- The **"high seas"** refers to international waters — sea space that doesn't fall within any nation's sovereign or extended maritime zone.
- It would extend international law beyond **countries' territorial waters and exclusive economic zones (EEZs)**, which extend 200 miles from any nation's coastline, to cover a major portion of the currently unprotected waters from threats such as overfishing and unchecked seafloor mining.

- This treaty will provide a **first-ever legal framework** for the protection of biodiversity in international waters, including the creation of ocean sanctuaries, environmental rules, and the application of Environmental Impact Assessments preceding any human activities on the waters that make up nearly half of the planet

### UN Convention on the Law of the Sea (UNCLOS):

- UNCLOS was **adopted in 1982** and laid the foundation of ocean governance, with the first single set of rules for oceans and seas.
- There are two more instruments under the Convention:
  - The **1994 agreement on the implementation of Part XI of UNCLOS**
  - the **1995 UN Fish Stocks Agreement**
- The treaty on BBNJ will be the third legal instrument under the convention.



## RANGANATHITTU BIRD SANCTUARY REOPENS

### ◎ CONTEXT:

The sanctuary reopened for visitors after the place was flooded following heavy discharge from the Krishna Raja Sagara dam (KRS) in Karnataka.

### ◎ ABOUT

- The Ranganathittu Bird Sanctuary is also known as the '**Pakshi Kashi**' of Karnataka.
- It is a bird sanctuary in the Mandya District of the state of Karnataka in India.
- It is the **largest** bird sanctuary in the state with **40 acres** in area, and comprises **six islets** on the banks of the **Kaveri River**.
- The sanctuary has been designated as a protected **Ramsar site** since 2022.

The sanctuary's islets were formed when an embankment across the Kaveri River was built between 1645 and 1648 by the then **king of Mysore, 'Kanteerava Narasimharaja Wadiyar'**.

The ornithologist Salim Ali observed that the islets formed an important nesting ground for a large variety of birds, and persuaded the king of Mysore to declare the area a protected area in 1940.

- The sanctuary is currently maintained by the **Forest Department of Karnataka** and efforts are on-going to improve the sanctuary, including purchasing nearby private land to expand the **protected area**.
- In **2014**, around 28 sq. km around the sanctuary was declared as an **eco-sensitive zone**.

### What are River Islets?

- An **islet** is a very small, often unnamed island.
- Generally, an islet has little or no vegetation and cannot support human habitation. It may be made of rock, sand and/or hard coral; may be permanent or tidal (i.e. surfaced reef or seamount); and may exist in the sea, lakes, rivers or any other sizeable bodies of water.



- **Biodiversity in the region**
- Most of the park is within a 'riparian' (living or located on the bank of a natural watercourse) area.
- **Flora:**
  - Riverine reed beds cover the banks of the islands, while the islands themselves are covered in broadleaf forests, with dominant species being **Terminalia arjuna (Arjun tree), bamboo groves, and Pandanus trees**.
  - Eucalyptus and acacia trees have also been planted, which might lead to long-term eradication of native species.
  - The endemic and threatened lily *Iphigenia mysorensis* of the family Colchicaceae also grows in the sanctuary.
- **Fauna:**
  - Roughly 170 bird species have been recorded.
  - Of these, the painted stork, Asian openbill stork, common spoonbill, woolly-necked stork, black-headed ibis, lesser whistling duck.

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## SCIENTISTS PLANNING TO 'RESURRECT' THE EXTINCT TASMANIAN TIGER

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- ◎ **CONTEXT:** Scientists in the US and Australia have embarked on a \$15-million project to resurrect the thylacine or **Tasmanian Tiger**, that went extinct in the 1930s, using gene-editing technology.

**Thylacine or Tasmanian tiger:**

- Tasmanian tiger (*Thylacinus cynocephalus*), the only animal in the Thylacinidae family to survive in modern times, was a marsupial mammal that raises young ones in a pouch.
- Even though the species earned its nickname Tasmanian Tiger because of the stripes along its back, it was a slow-paced carnivorous that usually hunted alone or in pairs at night.
- The sharply clawed animal had a dog-like head and ate kangaroos, other marsupials, small rodents, and birds.
- At one time the Thylacine was widespread over continental Australia, extending north to New Guinea and south to Tasmania.

**The resurrection process:**

- Even though the last living thylacine died over 86 years ago, many embryos and young specimens of the species have been preserved.
- For the de-extinction project, the scientists will be using a genome sequenced from a DNA extracted from a 108-year-old specimen held at Australia's Victoria Museum.
- De-extinction will not be complete until the success of the **rewilding process** – reintroducing the animal to its native habitat — which will 'stabilise the fragile ecosystem of Tasmania.'

**Why is it the right choice?**

- The thylacine is a great candidate for de-extinction because it only went extinct in 1936 due to human hunting and the ecosystem we are looking to return it to is still intact.

**De-Extinction:**

- De-extinction, or resurrection biology, reverses plant and animal extinctions by creating new versions of previously lost species.
- Back-breeding, cloning, and genome editing are species restoration methods.
- The goal is to re-establish dynamic processes that produce healthy ecosystems and restore biodiversity.

**How De-extinction Works through Genome Editing?**

- Genome editing technology creates hybrids between living and extinct organisms.
- Scientists insert edited DNA from an extinct species into the nucleus of a reproducing cell.
- They use this technique to resurrect more species, including those whose remains are not well-preserved.
- Genome editing blends the desired traits that made the species unique with genes from the donor species.
- That is why the resulting organism is not completely identical to the extinct species but is a hybrid.

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## KARNATAKA'S MUDHOL HOUNDS

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**◎ CONTEXT:**

Mudhol hounds, a breed of hunting dogs native to north Karnataka, could be inducted into the Special Protection Group (SPG), the elite force protecting the Prime Minister of India.



**About Mudhol Hound Dog Breed:**

- Mudhol hounds are Indian sight hound dogs, also known as **Caravan, Mahratta, Pashmi hounds and Kathewar Dog**.
- They are mostly available in Karnataka, and some parts of Andhra Pradesh and Maharashtra.
- Mudhol hounds are well known for their **speed and chasing skills**. They are the first Indian dogs, introduced in the **Indian Army's inventory in 2017**.
- The Mudhol hounds are **very energetic and athletic dog** that need regular exercise and are not suitable for apartment life.
- Mudhol Hound is dogs are considered as **royal dogs of India**, The Government of India had issued a **postal ticket in his honor**.
- Mudhol Hound is the first ever Indian dog breed to **join the Indian Army**.
- Mudhol hound is **breed of sighthound from Indian**, which were one of the **fastest running dog breed of India**.

**The Origin and Breed History**

- The Mudhol Hound dog is **native from the small town Mudhol, in the Bagalkot district of Karnataka state**, from where it got its name Mudhol.
- It is believed that the former ruler of **Mudhol presented two puppies to King George V**.
- There is no reliable information on the origin of the Mudhol Hound dog breed, but most people believe that they are the **descendants of the Arabian Saluki**, or freshly bred dogs from Central Asia.
- These dogs were brought to India during the Mughal period, and the Mudhol Hound is a mixture of the native dogs of India and these imported dogs.

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## GLOBAL NORMS ON ENDANGERED SPECIES

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**◎ CONTEXT:**

Lok Sabha recently passed by voice vote the Wild Life (Protection) Amendment Bill-2021 that seeks to provide for implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

**◎ ABOUT:****Key provisions of the Wildlife Protection (Amendment) Bill, 2021:**

- **Standing Committees of State Boards of Wildlife:**
- The Bill proposes setting up of Standing Committees of State Boards of Wildlife.
- These committees will function like the National Board for Wildlife (NBWL).



- It will be able to make decisions on wildlife management and permissions granted for projects without having to refer most projects to the NBWL.
- **Rationalization of Schedules for Wildlife:**
- The bill rationalises Schedules for Wildlife under the Act by bringing it down from 6 to 4 major schedules.
- For example, A schedule I category of wildlife (such as Tigers) are the highest protected under the Act.

### Wildlife Management Plans:

- The Bill mandates that Wildlife Management Plans which are prepared for sanctuaries and national parks across the country will now become a part of the Wildlife Act.
- Further, they will have to be approved by the Chief Wildlife Warden of the state.
- Earlier, the plans were approved through executive orders.
- There is also the insertion of a **new section 42A about surrender of wild animals** and products.
- The inclusion of the **new Section 62A (I) that defines alien invasive species**.
- It has mandated the **need to consult the Gram Sabha** in protected areas falling under scheduled areas or areas recognised to possess forest rights based on claims under the Forest Rights Act, 2006.
- **Regulation on invasive species:** Bill empowers the central government to regulate the import and trade of invasive alien species.
- **Control of Sanctuaries:** Empower the government to regulate the business of Chief Wildlife Warden in line with the regulatory guidelines made by central government.
- **Voluntary Surrender of Specimen:** Any one surrendering any captive animal to the Chief Wildlife Warden, the person will not be compensated and the specimen of the captive animal will be considered as states property.
- **Penalties:** Penalties on violation of the rules has been revised and increased under this bill.

### The original Act:

- **The original Wild Life (Protection) Act acts to:**
  - prohibits people from hunting wildlife
  - provides legal safeguards for different species based on their threat status
  - regulates trade and commerce in wild species
  - imposes penalties for wildlife-related crimes
  - specifies the terms to declare protected areas
- The Act has been amended several times, in 1982, 1986, 1991, 1993, 2002, 2006 and 2013.
- The proposed amendment is likely the most expansive so far in scope: it covers more areas of legislation, from trade in wild species to permitting filmmaking in protected areas and controlling the spread of invasive species.

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## WORLD OVERSHOOT DAY: WORLD HAS ALREADY OVERSHOT NATURE'S BUDGET FOR REST OF THE YEAR

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### ◎ CONTEXT:

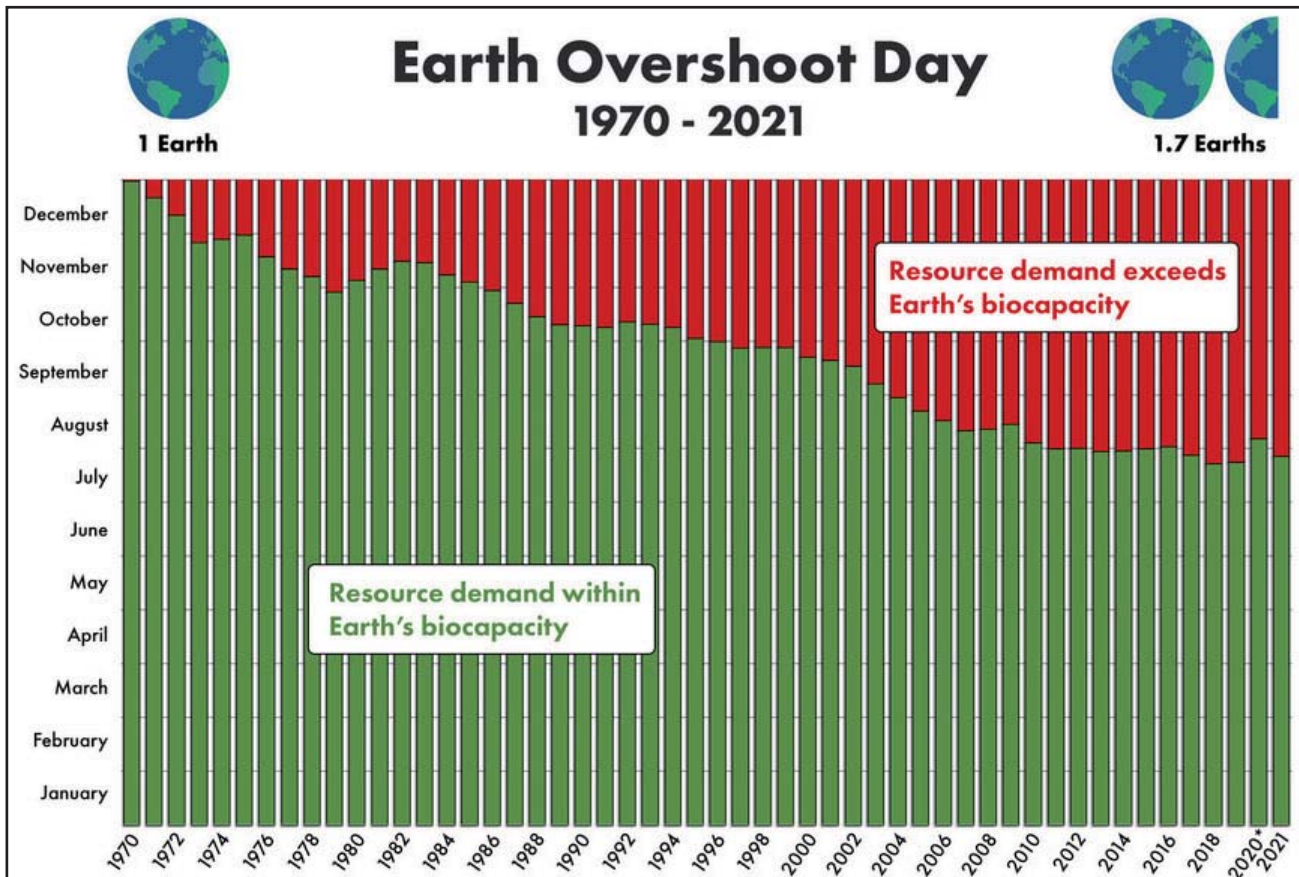
This year's Earth Overshoot Day was observed (28<sup>th</sup> July) a day before it was celebrated in year 2021 on July 29. It indicates that humanity's demand for natural resources exceeds what the Earth can provide.

## ◎ ABOUT

- The concept of Earth Overshoot Day was first **conceived by Andrew Simms** of the UK think tank New Economics Foundation, which partnered with Global Footprint Network in **2006** to launch the **first global Earth Overshoot Day campaign**.
- At that time, Earth Overshoot Day fell in **October**.
- **World-Wide Fund for Nature (WWF)**, the world's largest conservation organization, has participated in Earth Overshoot Day since

### How it is computed the earth's overshoot capacity?

- It is computed by Global Footprint Network by;



- **Dividing the planet's bio-capacity** (the amount of ecological resources Earth is able to generate that year), **by humanity's Ecological Footprint** (humanity's demand for that year), **and multiplying by 365**, the number of days in a year.

$$\text{Earth Overshoot Day} = (\text{Planet's Bio-capacity} / \text{Humanity's Ecological Footprint}) \times 365$$

- **The Ecological Footprint** is a metric used that comprehensively compares human demand on nature against nature's capacity to regenerate.

#### Global Footprints Network (GFN)

- Global Footprint Network is an **international non-profit organization** founded in the year 2003.
- Its key strategy has been to make available robust Ecological Footprint data.
- It was established as a charitable not-for-profit organization in each of three countries namely, United States, Belgium and Switzerland.

## NATIONAL GLOBAL TIGER DAY CELEBRATIONS 2022

### ◎ CONTEXT:

As the world observes International Tiger Day on July 29, there is need to look at the declining trend of tiger population (1,059 tigers have been lost since 2012)

### ◎ ABOUT

#### The Species

- **Tiger**, (*Panthera tigris*) is the largest member of the cat family (Felidae).
- In the wild, tigers are found in India, Nepal, China, Russia, Bhutan, Myanmar, Cambodia, Laos, Vietnam, Thailand, Sumatra (Indonesia) and Malaysia.

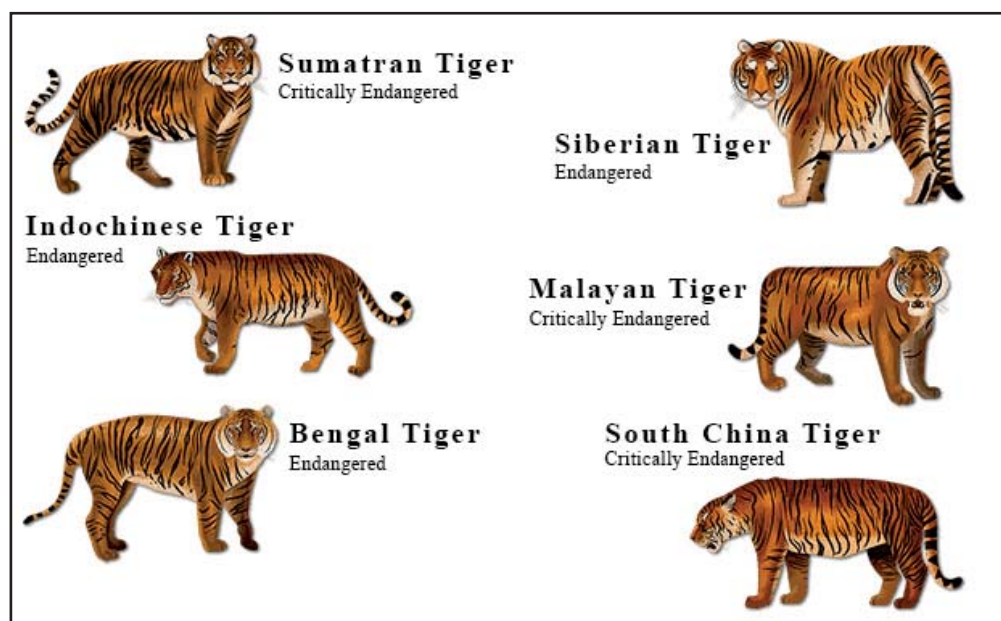
The five surviving sub species of tiger are

- **Indian Tiger or Royal Bengal Tiger** (*Panthera tigris tigris*) found in India, Nepal, Bhutan and Bangladesh;
- **Indo-Chinese tiger** (*Panthera tigris corbetti*) mainly found in Thailand and Peninsular Malaysia but are also found in Myanmar, Southern China, Cambodia, Laos and Vietnam;
- **Siberian or Amur Tiger** (*Panthera tigris altaica*) found in far east Russia;
- **Sumatran Tiger** (*Panthera tigris sumatrae*) found in the Indonesian island of Sumatra;
- **South China Tiger** (*Panthera tigris amoyensis*) found in China. The population found in Peninsular Malaysia has been given a status of separate sub species *Panthera tigris jacksoni*.
- The three sub species of tigers that became extinct in the past century are:
  - the Bali Tiger (*Panthera tigris balica*)
  - the Javan Tiger (*Panthera tigris sondaica*)
  - the Caspian Tiger (*Panthera tigris virgata*)

Recent reports indicate that the South China tiger is also extinct in the wild.

#### Why Tigers were important to be conserved?

- Important role in the health and diversity of an ecosystem.
- An indicator of the **well-being of the ecosystem**.



- It is a **top predator** which is at the apex of the food chain and keeps the population of wild ungulates in check, thereby maintaining the balance between herbivores and the vegetation upon which they feed.
- The extinction of this top predator is an indication that its ecosystem is not sufficiently protected, and neither would it exist for long thereafter.

#### Protection given to Tigers

- **WPA:** Indian Tiger is an endangered animal and is listed in the Schedule I of the Wildlife (Protection) Act, 1972.
  - This act gives it protection against hunting/poaching and trade for skins, bones and body parts.
- **CITES:** The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) makes international trade in tiger parts illegal.

#### What are the Methods used to estimate their population?

Techniques	Description
<ul style="list-style-type: none"> <li>• The pugmark census technique</li> </ul>	It is used during travels along the tiger dominated places. This involves observing paw prints in the ground and taking measurements of <b>width, length and indentation</b> to determine the individual that was in the location.
<ul style="list-style-type: none"> <li>• Using Camera Traps</li> </ul>	It involves setting up <b>surveying cameras</b> that activate when there is movement detected and will spontaneously take multiple photographs of the area.
<ul style="list-style-type: none"> <li>• Capture-recapture models</li> </ul>	This method is now commonly used in conjunction with tiger tracking. They not only <b>measure population numbers</b> , but also <b>measure demographic parameters</b> .

#### Important Government Initiatives

- **Project Tiger:** Project Tiger aims at tiger conservation in specially-constituted tiger reserves, which are representative of various bio-geographical regions in the country.
  - It strives to maintain viable tiger populations in their natural environment. As of 2019, there are **50 tiger reserves in India**, covering an area of 37,761 km<sup>2</sup> (14,580 sq mi).
- **The Wildlife (Protection) Act 1972** is a very powerful legislation.
  - It provides for penalties of **3–7 years** of imprisonment and/or fine of **INR 5,000 to 200,000** for the poaching of tigers.
- **National Tiger Conservation Authority:** National Tiger Conservation Authority (NTCA) is a statutory body under the Ministry of Environment, Forests and Climate Change.
  - It was established in 2005 following the recommendations of the Tiger Task Force.
  - It was constituted under enabling provisions of the Wildlife (Protection) Act, 1972, as amended in 2006, for strengthening tiger conservation, as per powers and functions assigned to it.



## ARTEMIS: NASA TO ANNOUNCE SITES ON MOON

### ◎ CONTEXT:

NASA has recently announced the 13 potential landing sites for its upcoming Artemis III mission, under which the US space agency will send the first woman and person of colour to the Moon.

### ◎ ABOUT:

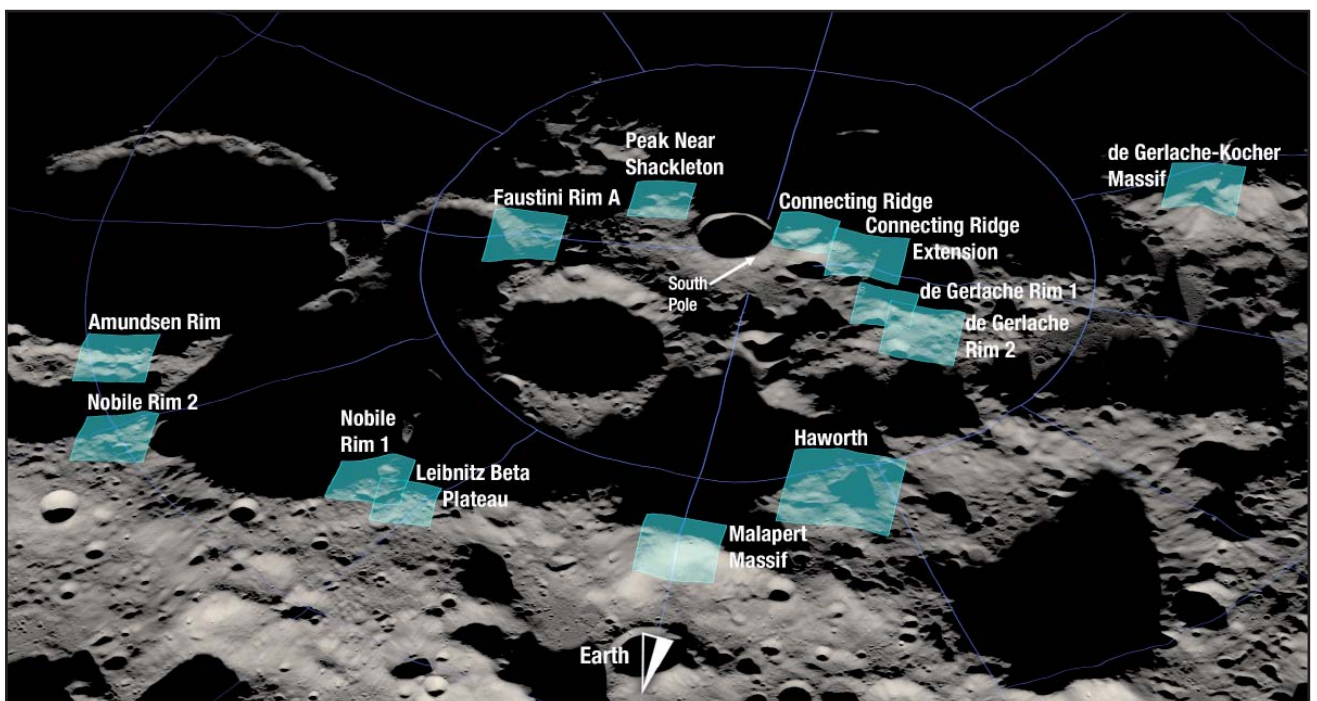
- NASA has identified the following 13 regions as candidates for the landing of its Artemis 3 lunar mission:

- |   |  |
|---|--|
| <ul style="list-style-type: none"><li>Faustini Rim A</li><li>Peak Near Shackleton</li><li>Connecting Ridge</li><li>Connecting Ridge Extension</li><li>de Gerlache Rim 1</li><li>de Gerlache Rim 2</li><li>de Gerlache-Kocher Massif</li></ul> | <ul style="list-style-type: none"><li>Haworth</li><li>Malapert Massif</li><li>Leibnitz Beta Plateau</li><li>Nobile Rim 1</li><li>Nobile Rim 2</li><li>Amundsen Rim</li></ul> |
|---|--|

- Each region is located within six degrees of the latitude of the lunar South Pole, and this proximity makes these sites scientifically significant.
- This is because the lunar South Pole has permanently shadowed regions rich in resources; it also has terrain unexplored by humans.

### Why is sunlight critical for the mission?

- Sunlight is required for a long-term stay on the Moon as it provides a power source and minimises temperature variations.
- Within each candidate site, there are areas with continuous access to sunlight throughout a period of six-and-a-half days, which is the planned duration of Artemis III.



**What is the Artemis mission?**

- **Next generation of lunar exploration**-NASA's Artemis mission is touted as the next generation of lunar exploration, and is named after the twin sister of Apollo from Greek mythology.
- **Uncrewed space mission**-It is an uncrewed space mission where the spacecraft will launch on SLS — the most powerful rocket in the world — and travel 2,80,000 miles from the earth for over four to six weeks during the course of the mission.
- **Land humans on the moon**- With the Artemis programme, NASA aims to land humans on the moon by 2024, and it also plans to land the first woman and first person of colour on the moon.

## ISRO LAUNCHES ITS SMALLEST ROCKET TO UNFURL TRICOLOUR IN SPACE

◎ **CONTEXT:** Indian Space Research Organisation (ISRO) is set to launch its smallest commercial rocket 'Small Satellite Launch Vehicle (SSLV)' recently.

- ◎ **ABOUT:**
- It will be launched to unfurl the Tricolour in space, from Satish Dhawan Space Centre in Sriharikota.
  - ISRO chairman S Somanath has called the new satellite a "game changer" that will drive India's dreams of breaking into the lucrative and booming small satellite launch market.
  - To mark the country's celebrations of 'Azaadi Ka Amrit Mahotsav', the SSLV will have a co-passenger satellite called 'AzaadiSAT' comprising 75 payloads built by 750 young girls students from 75 rural government schools across India.
  - The mission will conduct femto-experiments.
  - AzadiSAT also comprise of a solid-state PIN diode-based radiation counter, that will measure the ionising radiation in its orbit, as well as a long-range transponder. ISRO will use ground system developed by Space Kidz India, to establish telemetry and communication with AzadiSAT in orbit.
  - This project was specially conceptualized for the 75th Independence Day year celebrations to encourage scientific temper and create opportunities for young girls to choose space research as their career.

## INDIAN VIRTUAL HERBARIUM

◎ **CONTEXT:** Indian Virtual Herbarium, the biggest virtual database of flora in the country, is generating a lot of interest and turning out to be an eye-catching endeavour.

**Indian Virtual Herbarium:**

- A herbarium specimen is consists of dried plant parts with labelled information on Scientific name and collection data.
- It has immense use in plant identification, systematics studies and ecological studies.
- The Botanical Survey of India has more than 30,00,000 herbarium specimens persevered in different herbaria located in different parts of the country.



**What are Herbarium specimens?**

- A herbarium (Latin: hortus siccus) is a collection of plant samples with associated data for long-term study.
  - These materials may include pressed and mounted plants, seeds, dry fruits, wood sections, pollen, microscope slides, silica-stored materials, frozen DNA extractions, and fluid-preserved flowers or fruits; all are generally referred to as herbarium specimens.
  - Herbaria are usually affiliated with **universities, museums, or botanical gardens.**
  - Herbarium specimens help in **research work and studies** related to the subject.
  - It is also essential in **plant identification, systematics studies, and ecological studies.**
- **Developed by:** Botanical Survey of India(BSI)
  - **Purpose:** It is a digital database of plants and preserved parts of plants with labelled information.
  - **Features:** The herbarium provides information on plants in different categories such as Cryptogams (spore-bearing plants), Phanerogams (seed-bearing plants).
  - Both the groups are again divided into two categories which include genera; specimen and type specimens.
    - Each record in the digital herbarium includes an image of the preserved plant specimen, scientific name, collection locality, and collection date, collector name, and barcode number.
    - The digital herbarium also includes features to extract the data State-wise, and users can search plants of their own States, which will help them identify regional plants and in building regional checklists.
  - The digital herbarium also includes features to extract the data State-wise and users can search plants of their own States which will help them to identify regional plants and in building regional checklists.
  - **Significance:** This is the biggest virtual database of flora in the country. Moreover, this database also has immense use in plant identification, systematics studies and ecological studies.

**Major Herbaria in India**

The Botanical Survey of India (BSI) has more than 30,00,000 herbarium specimens persevered in different herbaria located in different parts of the country. The major herbaria in India are:

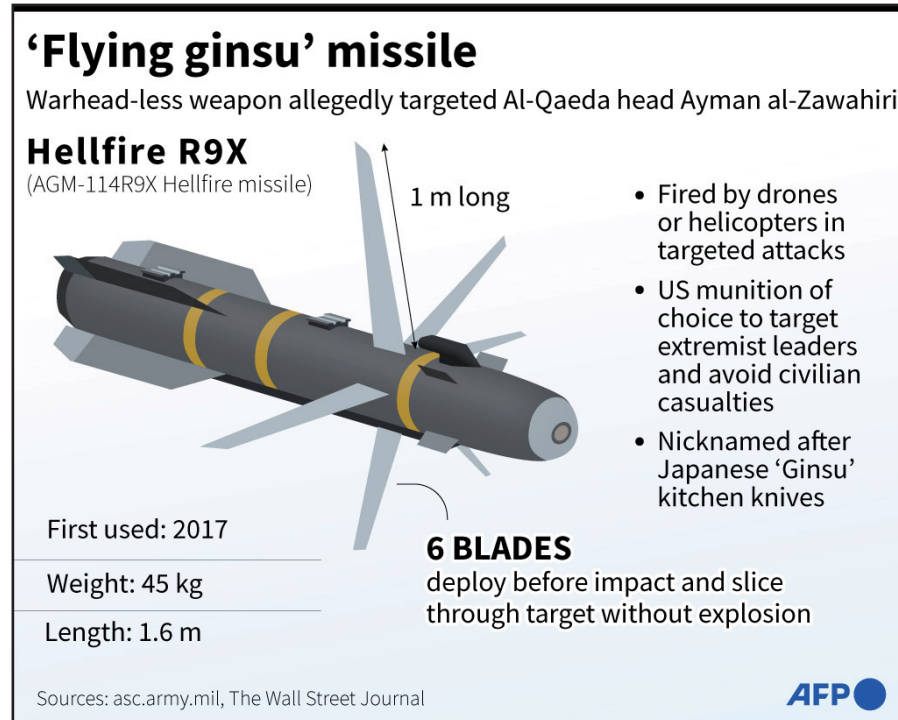
- The Central National Herbarium (CAL) located at Howrah, was established in 1795 and comprised about 2,000,000 (2 million) specimens. The first herbarium in the country is one of the most important Asian Herbaria.
- Forest Research Institute, Dehradun contains 350,000 specimens.
- The National Botanic Gardens, Lucknow contains 260,000 specimens.
- Blatter Herbarium, St. Xavier's College, Fort Bombay contains 200,000 specimens.
- Botanical Survey of India has herbaria attached to their regional centres and units in different parts of India.

## HELLFIRE R9X MISSILE

© **CONTEXT:** Ayman al-Zawahiri was killed in a US strike recently. The US military used its 'secret weapon', the Hellfire R9X missile, to kill him.

### Hellfire R9X Missile:

- The Hellfire R9X (or AGM-114 R9X) is a US-origin missile known to cause minimum collateral damage while engaging individual targets.



- It is also known as the '**Ninja Missile**'.
- This weapon does not carry a warhead and instead deploys razor-sharp blades at the terminal stage of its attack trajectory.
- This helps it to break through even thick steel sheets and cut down the target using the kinetic energy of its propulsion without causing any damage to the person.
- The blades pop out of the missile and cut down the intended target without causing the massive damage to the surroundings which would be the case with a missile carrying an explosive warhead.
- The Hellfire 9RX missile is known to have been in active service since 2017.
  - However, its existence became public knowledge two years later in 2019.
- It is a variant of the original Hellfire missile family which is used in conventional form with warheads and is traditionally used from helicopters, ground-based vehicles, and sometimes small ships and fast moving vessels.
- Hellfire is actually an acronym for Heliborne, Laser, Fire and Forget Missile and it was developed in the US initially to target tanks from the Apache AH-64 attack helicopters.
  - Later, the usage of these missiles spread to several other variants of helicopters and also ground and sea-based systems and drones.
- The Hellfire missile has other variants such as 'Longbow' and 'Romeo' apart from the 'Ninja'.

**Ayman al-Zawahiri:**

- Zawahiri took over the leadership of Al-Qaeda after the US Forces hunted down Osama bin Laden in Jalalabad of Pakistan.
- He served three years as a surgeon in the Egyptian Army, but his journey from an eye surgeon to becoming a most wanted global terrorist started after he met Laden in 1986, and joined Laden as his personal advisor and physician.
- In 1993, he took over the leadership of Islamic Jihad in Egypt and was found to be involved in the killing of over 1,200 Egyptians.

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## DEEP SEA BIODIVERSITY

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**◎ CONTEXT:**

The National Institute of Ocean Technology (NIOT), an autonomous Institute under Ministry of Earth Sciences (MoES) is establishing an Ocean Thermal Energy Conversion plant with a capacity of 65kW in Kavaratti Lakshadweep.

**Ocean thermal energy conversion (OTEC):**

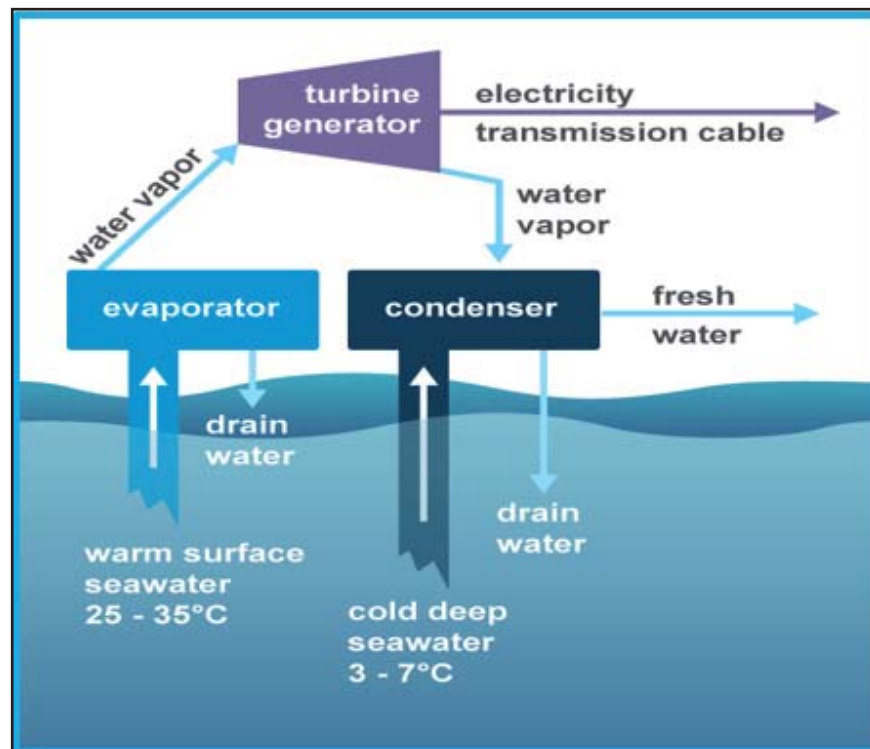
- Ocean thermal energy conversion (OTEC) is a process or technology for producing energy by harnessing the temperature differences (thermal gradients) between ocean surface waters and deep ocean waters.

**How it works?**

- Energy from the sun heats the surface water of the ocean.
- In tropical regions, **surface water can be much warmer than deep water.**
- This temperature difference can be used to produce electricity and to desalinate ocean water.
- Ocean Thermal Energy Conversion (OTEC) systems **use a temperature difference** (of at least 77° Fahrenheit) to power a turbine to produce electricity.
- Warm surface water is **pumped through an evaporator** containing a working fluid. The vaporized fluid drives a turbine/generator.
- The **vaporized fluid is turned back to a liquid in a condenser** cooled with cold ocean water pumped from deeper in the ocean.
- OTEC systems using seawater as the working fluid can use the condensed water to produce desalinated water.

**OTEC Plant:**

- Ocean Thermal Energy Conversion plant will be established by NIOT, with a **capacity of 65kW in Kavaratti Lakshadweep.**
- Ocean Thermal Energy Conversion plant **will power the Low Temperature Thermal Desalination (LTTD) based desalination plant** for conversion of **Sea water into Potable water.**
- The capacity of this LTTD plant is **1 lakh litre of potable water per day.**



### OTEC in India:

- India had **planned to set up an OTEC plant way back in 1980**, off the Tamil Nadu coast, but with the foreign vendor closing down its operation, it had to be abandoned.
- Chennai-based National Institute of Ocean Technology (**NIOT**), under the Earth Sciences Ministry has **now developed expertise in design, assembly and deployment** of deep sea pipelines, reviving India's hopes to explore Ocean Thermal Energy.
- **India's Potential:** India has the **potential to generate 180,000 MW** using OTEC, which demonstrates the prospects for OTEC in India in the future.

### National Institute of Ocean Technology (NIOT):

- The National Institute of Ocean Technology (NIOT) was established in November **1993** as an **autonomous society** under the **Ministry of Earth Sciences**, Government of India.
- NIOT is **managed by a Governing Council** and the Director is the head of the Institute.
- Major aim of starting NIOT under the Ministry of Earth Sciences, is **to develop reliable indigenous technologies** to solve the various engineering problems associated with harvesting of non-living and living resources in the Indian Exclusive Economic Zone (EEZ), which is about two-thirds of the land area of India.
- **Mission:**
  - To develop world class technologies and their applications for sustainable utilization of ocean resources.
  - To provide competitive, value added technical services and solutions to organizations working in the oceans.
  - To develop a knowledge base and institutional capabilities in India for management of ocean resources and environment.

# NASA'S JAMES WEBB CAPTURES DEEPER EDIFICE OF CARTWHEEL GALAXY

## ◎ CONTEXT

James Webb Space Telescope caught Cartwheel Galaxy that is located about 500 million light-years away and appears like a wheel of a wagon.

## ◎ ABOUT

- **Cartwheel Galaxy**, located about 500 million light-years away in the **Sculptor constellation**, has been caught with the James Webb Space Telescope.



- The structure **appears like a wheel of a wagon**, and Webb reveals the galaxy's central black hole along with the information about star formation.
- Astronomers called the galaxy a '**ring galaxy**' because of its two rings – a bright inner ring surrounded by a colourful one.
  - The appearance of the galaxy is justified by the high-speed collisions that have taken place internally between a large spiral galaxy and a smaller galaxy which is not visible in the image.
  - The rings have been discovered with an extremely hot dust filled bright core consisting of gigantic young star clusters.
  - The outer ring, expanded for 440 million years, consists of star formation and supernovas.
- **Cartwheel galaxy** has been explored **earlier with the Hubble Space Telescope** but the same had failed may be due to the thick layer of dust which obstructs the view. **Webb with an infrared gaze explored the uncovered part of the Cartwheel galaxy.**
- Webb Telescope had not just revealed the observations of the galaxy's present structural formations but also **determined that Cartwheel is in a very transitory stage.**

### Key features of JWST are-

- JWST will operate in an orbit around the Earth-Sun L2 Lagrange point, ~ 1.5 million kilometres away from Earth. This makes its operation, pointing and stability requirements much simpler in comparison with HST

- It orbits around the Earth at an altitude of ~570 km above it.
- The telescope and the instruments will operate at the extremely low temperature of -233°C, which prevents the instrument's own infrared emission from overwhelming the signals from the astronomical targets

## LUMPY SKIN DISEASE SPREADS TO 25,000 BOVINES IN RAJASTHAN

### ◎ CONTEXT:

**With the lumpy skin disease spreading fast among bovine animals in western and northern Rajasthan, cattle-rearers in the State are suffering heavy losses.**

- In India it was first reported from **Mayurbhanj, Odisha in August 2019.**

### Key Points:

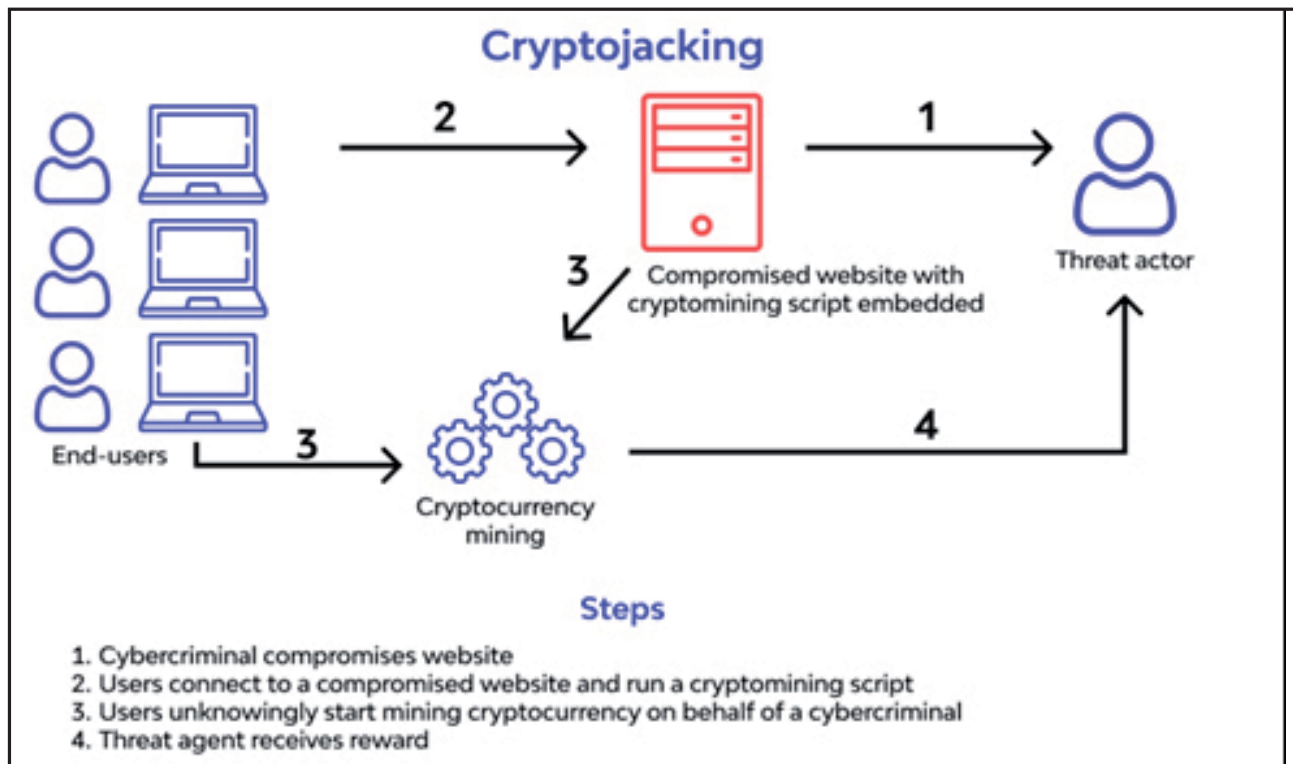
- LSD is endemic **to Africa** and parts of **West Asia**, where it was first discovered in 1929.
- In Southeast Asia the first case of LSD was reported in Bangladesh in July 2019.
- In India, which has the world's highest 303 million heads of cattle, the disease has spread to **15 states within just 16 months.**
- Lumpy skin disease (LSD) is a viral disease of cattle and water buffalo.
- **Virus:** Poxvirus Lumpy skin disease virus (LSDV).
  - The virus is one of three closely related species within the genus capripoxvirus, the other two species being **Sheep pox virus** and **Goat pox virus.**
- **Symptoms:**
  - It appears as nodules of two to five centimetre diameter all over the body, particularly around the head, neck, limbs, udder (mammary gland of female cattle) and genitals.
  - The lumps gradually open up like large and deep wounds.
  - Other clinical signs include general malaise, ocular and nasal discharge, fever, and sudden decrease in milk production.
- **Effect:** According to the Food and Agriculture Organization (FAO) the mortality rate is less than 10%.
  - **Vectors:** It spreads through mosquitoes, flies and ticks and also through saliva and contaminated water and food.
  - **Prevention:** Control and prevention of lumpy skin disease relies on four tactics - movement control (quarantine), vaccination, slaughter campaigns and management strategies.
  - **Treatment:** There is no treatment for the virus, so prevention by vaccination is the most effective means of control.
    - Secondary infections in the skin may be treated with Non-Steroidal Anti-Inflammatories (NSAIDs) and also antibiotics when appropriate.
  - **Implications:** This will have a devastating impact on the country, where most dairy farmers are either landless or marginal landholders and milk is among the cheapest protein sources.



## CRYPTOJACKING, THE CYBER-ATTACK CARRIED OUT BY CRYPTO MINERS

### ◎ CONTEXT:

According to a new report, Cryptojacking' attacks on computer systems have gone up by 30% to 66.7 million in the first half of 2022 compared to the first half of last year.



### What is Cryptojacking?

- Cryptojacking is a **cyber-attack** wherein a computing device is hijacked and controlled by the attacker, and its resources are used to **illicitly mine cryptocurrency**.
- Hackers seek to hijack any kind of systems they can take over—desktops, servers, cloud infrastructure and more—to illicitly mine for crypto coins.
- In most cases, the malicious programme is installed when the user clicks on an unsafe link, or visits an infected website — and unknowingly provides access to their Internet-connected device.

### Understanding Coin mining

- **Coin mining** is a legitimate process in the cryptocurrency world that releases **new cryptocurrency** into circulation.
  - It involves **solving complex computational problems** to generate **blocks** of **verified transactions** that get added to the blockchain.
- The reward for the first miner who successfully manages to update the crypto ledger through this route is **crypto coins**.
- But the race to crack this **64-digit hexadecimal number code** needs considerable computing power involving state-of-the-art hardware, and electrical power to keep the systems involved up and running.

**How does Cryptojacking work?**

- Cryptojackers co-opt devices, servers, and cloud infrastructure, and use their resources for mining.
- The use of 'stolen' or cryptojacked resources slashes the cost involved in mining.

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## THE STREET, IN 360-DEGREE PANORAMIC VIEW

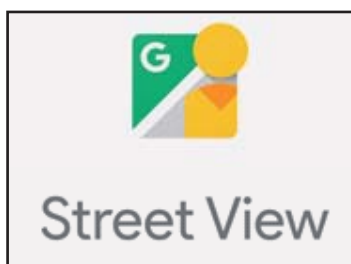
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**◎ CONTEXT:**

**Google Street View is finally available for ten cities in India and is expected to roll out in about 50 more cities by the end of the year 2022.**

**What is Google Street View?**

- Google Street View is an **immersive 360-degree** view of a location captured using special cameras mounted on vehicles or on backpacks by data collectors moving around the city streets.
- The images are then patched together to create a 360-degree view which users can swipe through to get a detailed view of the location.
- It is available to view on **Android and iOS** using the app, or as a **web view**.
- In India, unlike in other markets, Google Street View is powered by images from third parties as per the **National Geospatial Policy, 2021**.

**What is Geo-spatial Technology?**

- Geospatial Technology is **an emerging field of study that includes Geographic Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS)**.
- Geospatial technology enables us to acquire data that is referenced to the earth and use it for **analysis, modelling, simulations, and visualization**.

**Application of Geo-spatial Technologies**

- **Geospatial data:** is data about **objects, events, or phenomena that have a location on the surface of the earth**.
  - GNSS & Positioning
  - Scanning
  - Earth Observation

**Street View in India**

- The **National Geospatial Policy, 2021** lets Indian companies collect map data and license it to others.
- Google has tied up with **Tech Mahindra and Mumbai-based Genesys International** to enable Street View for 10 Indian cities initially.

- This is **the first time Google** is working with partner data to enable this feature.]
- In India, the data will be collected and owned by **these partners**.

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**SECTION: D**  
**(QUIK BYTE)**

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**CURRENT AFFAIRS**

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## PANDURANG KHANKHOJE

- Pandurang Sadashiv Khankhoje (1884 –1967) has started an association with the radical pro-Indian independence 'Ghadar Party'.
- He was born in Wardha, Maharashtra, in the late 19th century.
- According to his biography by his daughter Savitri Sawhney, Khankhoje was an ardent admirer of the French Revolution and of the American War of Independence.
- The Hindu reformer Swami Dayanand and his Arya Samaj movement, which called for a spirit of reform and social change, became the hero to a young student group led by Khankhoje.
- After spending time with nationalists from Japan and China, he eventually moved to the US, where he enrolled in college as a student of agriculture.
- In Mexico during the 1920s, he established the Escuelas Libres de Agricultura Mexico (1924-1928) - free agricultural colleges where he successfully experimented with varieties of corn.



## GORIMA HAZARIKA

- Born in **1939**, she was a renowned Sattriya dance exponent.
- She belongs to **Assam**.
- She started learning dance from a very early age, under **Sattriya stalwarts** namely, **Raseswar Saikia Borbayan and Ghanakanta Bora**.
- Hazarika, a **Sangeet Natak Akademi** awardee, was also proficient in **Kathak**, which she learnt from Delhi's Kathak Kendra.
- She also learnt **Odissi** and was the first person who established **Odissi in Assam**.
- She is also credited with creating Sattriya dance costumes in a style more appropriate for the women dancers.



### About Sattriya Dance:

- Sattriya is a dance form that has its roots in the **Vaishnavite** movement which was propagated by scholar Sankaradeva in the **15th century in Assam**.
- The Sattriya dancing style was once only performed by the male residents of "sattras" or Vaishnav monasteries.

## AZAADISAT

- AZAADISAT is a satellite mission with the ambitious vision to encourage Government school children (from economically weak backgrounds) with the basic understanding and knowledge of space and tutor them to build a small experiment and launch it to the edge of space through a **"Balloon Satellite" or through an "Orbital Satellite"**.

- The satellite has **75 Femto experiments, selfie cameras** to click pictures of its own solar panels and long-range communication transponders.
- **Weight:** eight-kg
- **Mission life:** six months
- This is the **first of its kind space mission** with an **all-women concept** to promote women in STEM (science, technology, engineering and mathematics) as this year's **UN theme is 'Women in Space'**.

The primary payload of the first demonstration flight of SSLV is an earth observation satellite MicroSat 2A.

## EX VINBAX 2022

- Ex VINBAX is Bilateral Army Exercise between **India and Vietnam**.
- The third edition will be conducted **Chandimandir, Haryana**.
- Vietnam is also an important partner in **Act East policy** of India as well as **Indo-Pacific vision**.
- Last edition was conducted **in 2019**
- **Theme:** Ex VINBAX 2022 will be held under the theme- "employment and deployment of an Engineer Company and a Medical Team under United Nations Contingent for Peacekeeping Operations".

## 44<sup>th</sup> CLASS CHESS OLYMPIAD

- The 44th Chess Olympiad (also known as the Chennai Chess Olympiad), organised by the Fédération Internationale des Échecs (FIDE).
- The world's biggest team chess championship, featuring players from **187 countries**.
- **Location:** Mamallapuram.
- **Duration:** July 29 to August 10.
- Over 20,000 players are participating in the Olympiad.
- It consists of open and women's tournaments, as well as several events designed to promote the game of chess.
- **Teams** - 188 (Open) and 162 (Women)
- **Nations** - 186 (Open) and 160 (Women)
- **Venue-** Jawaharlal Nehru Stadium (opening and closing ceremonies)
- **Previous Event** - Batumi 2018
- **Next Event** - Budapest 2024



## HERITAGE SITES IDENTIFIED FOR THE 'NATIONAL IMPORTANCE' TAG

**Context:** Twenty heritage sites have been identified for the national importance tag.

### Sites identified:

- rock painting at Chintakunta, Andhra Pradesh;
- rock art site Murgi at Rdanag, Leh;



- Kaleshwar Mahadev Temple, Kalesar (Manyala Panchayat), Himachal Pradesh,
- Seven mounds (RGR 1-RGR 7) scattered around two villages (Rakhi Khas and Rakhi Shahpur) in Hisar district of Haryana are part of the Harappan-era Rakhigarhi archaeological site.
- RGR 7 a cemetery site.
- two ancient mounds at Haryana's Rakhigarhi and
- the age-old Anangtal in Delhi

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## NANOTECH TATTOO

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- The device could be used to send readout of the wearer's vital signs if connected to biosensors, including for instance an electrocardiogram.
- The electronic tattoo ink is made of liquid metal and carbon nanotubes that can deliver vital body information.
- The ink is non-invasive and made from particles based on gallium, a soft, silvery metal also used in semiconductors or in thermometers.
- Platinum-decorated carbon nanotubes help conduct electricity while providing durability.
- When it is applied to the skin, even with rubbing the tattoo doesn't come off, this is not possible with just liquid metal.



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## NAGALAND GETS 2<sup>nd</sup> RAILWAY STATION AFTER 100 YEAR

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- Nagaland got its second Railway station on **Dhansari-Shokhuvi railway line** after a gap of more than 100 years, since Dimapur station was opened in **1903**.
- The project of **Broad Gauge (BG) line** connectivity from Dimapur (Dhansiri) - Zubza (Kohima) (82.50 km) in Nagaland was sanctioned in 2006-07.
- The hill segment would run an estimated 50km, while the plains segment from Dhansiri station (Karbi Anglong) to Shokhuvi runs an estimated 30km for an estimated total of 80km.
- The Dimapur-Zubza line will have around **20 tunnels and 19 major bridges**.
- Shokhuvi Railway station is part of the Dimapur-Zubza Railway project.

The railway station is an alternative train route for **Nagaland** and **Manipur** passengers to Guwahati.

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# **SECTION: E**

## **(CONCEPTS)**

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**CURRENT AFFAIRS**

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### ▣ Corporal Punishment

- A **corporal punishment** or a **physical punishment** is a punishment which is intended to cause physical pain to a person.
- When it is inflicted on minors, especially in home and school settings, its methods may include spanking or paddling.
- When it is inflicted on adults, it may be inflicted on prisoners and slaves.

### ▣ Convicted person

- A convict is a person who has been found guilty — convicted — of a crime and is serving a sentence in prison.
- When you convict (accent on the second syllable) someone of a crime, you find them guilty. The person is then a convict (accent on the first syllable).

### ▣ E- Governance

- Electronic governance or e-governance is the application of information technology for delivering government services, exchange of information, communication transactions, and integration of various stand-alone systems between government to citizen (G2C), government-to-business (G2B), government-to-government (G2G), government-to-employees (G2E) as well as back-office processes and interactions within the entire governance framework.
- Through e-governance, government services are made available to citizens through IT.

### ▣ Citizenship

- A legal status and relation between an individual and a state that entails specific legal rights and duties. Citizenship is generally used as a synonym for nationality (see: nationality).

### ▣ Difference between constitution and Law

- The Difference between Law and Constitution provision in case of conflict is that the constitutional provision prevails, whereas the law is considered void or invalid by the Supreme Court of India.

### ▣ August Offer

- The August Offer was an offer made by **Viceroy Linlithgow** in 1940 promising the expansion of the Executive Council of the Viceroy of India to include more Indians, the establishment of an advisory war council, giving full weight to minority opinion, and the recognition of Indians' right to **frame their own constitution**.

### ▣ Heritage Sites

- A historical site, a building, or an area of the unspoilt natural environment, considered to be important to a country or area's heritage. The problems of managing heritage sites of this type.
- The three elements used to describe historic heritage are **Fabric, Stories and Culture**. One or all of these things make up the historic heritage of a place.

### ▣ Indus valley Civilization

- The Indus Valley Civilisation, also known Indus civilisation, was a Bronze Age civilisation in the north-western regions of South Asia, lasting from 3300 BCE to 1300 BCE, and in its mature form from 2600 BCE to 1900 BCE

### ▣ Digital Currency

- Digital currency is a form of currency that is available only in digital or electronic form.
- All cryptocurrencies are digital currencies, but not all digital currencies are cryptocurrencies.

### ▣ Blue Economy

- According to the World Bank, the blue economy is the 'sustainable use of ocean resources for economic growth, improved livelihoods, and jobs while preserving the health of ocean ecosystem'.
- European Commission defines it as "All economic activities related to oceans, seas and coasts.

### ▣ Foreign Investments

- Foreign investment refers to **the investment in domestic companies and assets of another country by a foreign investor**. Large multinational corporations will seek new opportunities for economic growth by opening branches and expanding their investments in other countries.

### ▣ Endangered species

- An endangered species is a species that is very likely to become extinct in the near future, either worldwide or in a particular political jurisdiction.
- Endangered species may be at risk due to factors such as habitat loss, poaching and invasive species

### ▣ Botany

- Botany is the branch of Biology that deals with the study of plants." The term 'botany' is derived from an adjective 'botanic' that is again derived from the Greek word 'botane'.
- One who studies 'botany' is known as a 'botanist'. Botany is one of the world's oldest natural sciences.

### ▣ Geo-spatial Technology

- Geospatial Technology is **an emerging field of study that includes Geographic Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS).**

### ▣ Atomic Clocks

- An **atomic clock** is a clock that measures time by monitoring the frequency of radiation of atoms. It is based on atoms having different energy levels.
- Electron states in an atom are associated with different energy levels, and in transitions between such states they interact with a very specific frequency of electromagnetic radiation.
- This phenomenon serves as the basis for the International System of Units' (SI) definition of a second.

### ▣ Endemic Diseases

- An infection is said to be endemic in a population when that infection is constantly maintained at a baseline level in a geographic area without external inputs. For example, chickenpox is endemic in the United Kingdom, but malaria is not.

### ▣ Space exploration

- **Space exploration** is the use of astronomy and space technology to explore outer space.
- While the exploration of space is carried out

mainly by astronomers with telescopes, its physical exploration though is conducted both by un-crewed robotic space probes and human spaceflight.

- Space exploration, like its classical form astronomy, is one of the main sources for space science.

### ▣ Electromagnetism

- Electromagnetism is **a branch of Physics that deals with the electromagnetic force that occurs between electrically charged particles.**
- The electromagnetic force is one of the four fundamental forces and exhibits electromagnetic fields such as magnetic fields, electric fields, and light.

### ▣ Space station

- It is a large artificial satellite designed to be occupied for long periods and to serve as a base (as for scientific observation) — called also space platform.

### ▣ Nanotech

- Nanotechnology refers to the branch of science and engineering devoted to designing, producing, and using structures, devices, and systems by manipulating atoms and molecules at nanoscale, i.e. having one or more dimensions of the order of 100 nanometres (100 millionth of a millimetre) or less.

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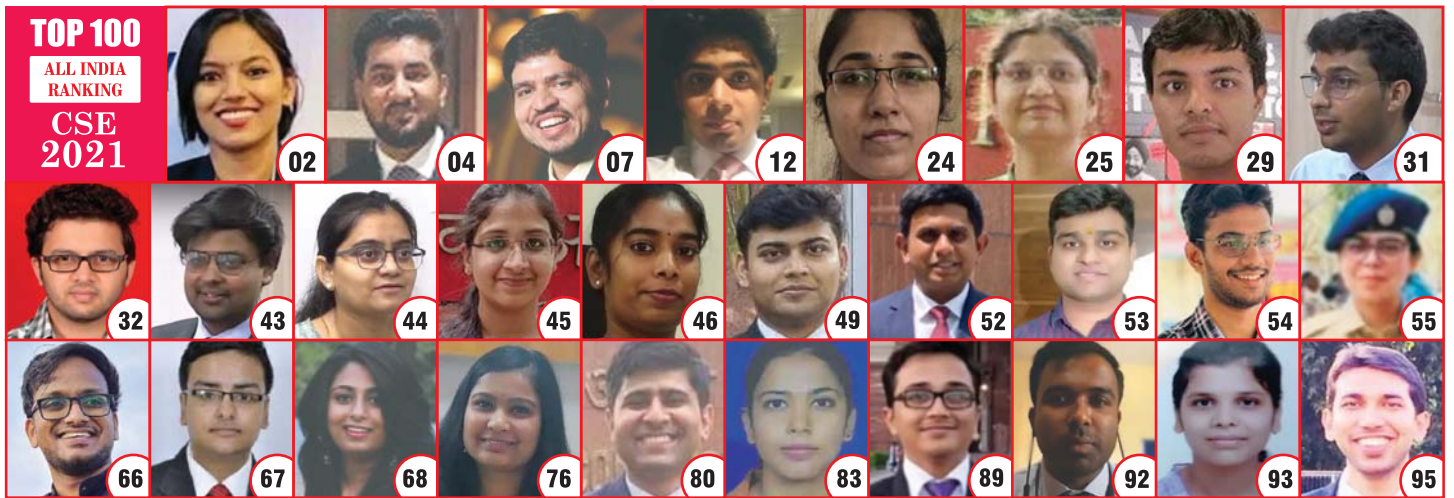
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**SUCCESS IS A PRACTICE WE DO!**

